

DESCRIPTION
OF THE
SURVEYED TOWNSHIPS
AND
EXPLORED TERRITORIES
OF THE
PROVINCE OF QUEBEC

TAKEN FROM THE OFFICIAL REPORTS OF SURVEYS FYLED IN THE CROWN LANDS DEPARTMENT,
AS WELL AS FROM THOSE OF THE GEOLOGICAL SURVEY OF CANADA
AND OTHER OFFICIAL SOURCES

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TABLE OF CONTENTS.

COMMISSIONER'S REPORT.....	PAGES.
PRELIMINARY NOTES.....	XIII
	XVII

SURVEYS.

COUNTY.	TOWNSHIP.	SURVEYORS.	PAGES.
<i>Argenteuil</i>	Grandison	(Allbright)	3
do	Grenville, Gore	(MacMartin)	4
do	Montcalm	(Quinn)	4
do	Wentworth	(Barnard)	5
do	Wolfe	(Laviolette, Barnard, Leclerc)	6
<i>Arthabaska</i>	Bulstrode	(Legendre)	13
<i>Beauce</i>	Adstock	(Legendre)	14
do	Ditchfield	(O'Neil, J.-G. Bignell)	14
do	Gayhurst	(J. Bignell)	16
do	Jersey	(W. Henderson, R.-J. Ross)	17
do	Linière	(Neilson, R.-J. Ross)	21
do	Louise	(J.-G. Bignell)	22
do	Marlow	(A. Ross, J.-G. Bignell)	22
do	Price	(J.-B.-O. Legendre, F. Legendre)	24
do	Risborough	(Bouchette, A. Ross, J.-G. Bignell)	25
do	Shenley	(J. Bignell)	29
do	Spalding	(Duchesnay, J.-G. Bignell)	29
<i>Bellechasse</i>	Armagh	(Casgrain)	31
do	Bellechasse	(Lavergne)	31
do	Buckland	(A. Ross, Dubé, Fournier)	33
do	Daaquam	(Casgrain)	35
do	Roux	(Tétu, Lavergne)	35
<i>Berthier</i>	Brassard	(Laporte)	39
do	Provost and Brassard	(Laurier)	40
do	Provost	(Laporte)	41
<i>Bonaventure</i>	Carleton	(Murison, Lepage)	46
do	Casupscull	(Legendre)	50
do	Cox	(Bélangier)	50
do	Mann	(Legendre)	55
do	Metapedia	(Legendre, Lepage, Bélangier)	58
do	Milnikek	(LeBer)	67
do	New Richmond	(Roy)	68
do	Patapedia	(Macdonald)	71
do	Port Daniel	(Bourget)	71
do	Ristigouche	(Legendre, Belanger)	73
do	Assemetquagan	(Legendre)	75

COUNTY.	TOWNSHIP.	SURVEYORS.	PAGES.
<i>Champlain</i>	Boucher	(Barnard)	76
do	Carignan	(De Lachevrotière)	77
do	Langelier and River Croche	(De Lachevrotière)	78
do	Lejeune	(Du Tremblay, LeBer)	80
do	Malhiot	(De Lachevrotière)	82
do	Mekinac	(Legendre)	85
do	Polette	(Desruisseaux)	86
do	Turcotte and Polette	(Wallace)	86
do	Mekinac to lake Edward	(Casgrain)	92
<i>Charlevoix</i>	Callières	(Gagnon)	96
do	Chauveau	(Demeules)	97
do	DeSales	(Demeules)	104
<i>Chicoutimi</i>	Alma Island	(Duberger)	106
do	L'Anse St. Jean	(Tremblay)	106
do	Bagot	(Tremblay)	108
do	Boileau	(Gagnon)	110
do	Bourget	(Duberger, Dumais)	110
do	Chamouchouan	(Dumais)	113
do	Chamouchouan and Demeules	(Tremblay)	115
do	Charlevoix	(Dumais)	116
do	Caron and Mésy	(Dumais)	116
do	Dalmas	(Du Tremblay)	119
do	Dalmas and Taillon	(Du Tremblay)	121
do	Delisle and Duberger	(Tremblay)	124
do	Demeules	(Du Tremblay)	127
do	De Quen	(Du Tremblay)	128
do	Dolbeau	(Du Tremblay)	131
do	Dufferin	(Gagnon)	132
do	Ferland	(Boivin)	133
do	Jonquières	(Duberger)	135
do	Labarre and Kenogami	(Demeules, Du Tremblay)	136
do	Labrosse and Albert	(Gagnon)	141
do	Laterrière	(Gosselin)	142
do	Metabetchouan	(Du Tremblay)	142
do	Metabetchouan and Charlevoix	(Gagnon)	149
do	Normandin	(Dumais)	150
do	Otis	(Tremblay)	156
do	Ouiatchouan	(Dumais)	159
do	Parent	(Tremblay, Dumais)	161
do	Perigny	(Tremblay)	167
do	Racine	(Du Tremblay)	168
do	Roberval	(Dumais)	169

COUNTY.	TOWNSHIP.	SURVEYORS.	PAGE.
<i>Chicoutimi</i>	Ross	(Maltais)	170
do	Signai	(Dumais)	171
do	Signai, Labarre and Caron	(Tremblay)	174
do	Saint-Germain	(Gagnon)	174
do	St. Hilaire	(Du Tremblay)	175
do	Simard	(Wallace, Dumais)	177
do	Simard, Tremblay, Falardeau	(Tremblay)	180
do	Taché	(Du Tremblay)	181
do	Taillon and Delisle	(Langlois)	182
do	Taillon	(W. Tremblay)	183
<i>Compton</i>	Chesham	(O'Dwyer, Blaiklock, Fletcher)	185
do	Ditton	(O'Dwyer)	188
do	Emberton	(O'Dwyer)	192
do	Marston	(Blaiklock)	196
do	Whitton	(Fletcher)	202
do	Woburn	(Blaiklock)	203
<i>Dorchester</i>	Langevin	(Casgrain, Henderson)	211
do	Metgermette North	(Temple, Proulx)	218
do	Metgermette South	(Legendre)	220
do	Standon	(Roy)	220
do	Ware	(Henderson)	221
do	Watford	(A. Ross, Duchesnay)	221
<i>Gaspé</i>	Cape Rosier, Gaspé Bay North and Fox	(Poudrier)	224
do	Chloridorme	(Painchaud)	225
do	Christie	(Painchaud)	226
do	Christie and Duchesnay	(Roy.)	226
do	Denoue	(Painchaud)	229
do	Douglas	(H. O'Sullivan)	230
do	Douglastown	(LeBouthillier)	231
do	Duchesnay	(Painchaud)	232
do	Fortin	(Painchaud)	233
do	Pabos	(Painchaud)	234
do	Percé	(LeBouthillier)	236
do	Rameau	(Painchaud)	238
do	Taschereau	(Painchaud)	239
<i>Joliette</i>	Joliette	(Quinn, Martin, Dorval)	241-242
<i>Kamouraska</i>	Bungay	(Desrochers)	243
do	Pohenegamook	(Fournier)	243
<i>L'Islet</i>	Arago	(Belanger)	245
do	Ashford	(Dugal, Fournier)	245
do	Beaubien	(Breen)	246-248

COUNTY	TOWNSHIP.	SURVEYORS.	PAGE.
<i>L'Islet</i>	Fournier	(Verreault)	247
do	Garneau, Casgrain & Lafontaine.	(Têtu).....	247
do	Lessard	(Breen).....	248
do	Lessard and Beaubien.....	(Belanger).....	249
do	Leverrier.....	(Têtu).....	250
<i>Maskinongé</i> ..	Chapleau	(De Lachevrotière).....	251
do	Decalannes	(De Lachevrotière).....	252
do	Houde	(Arcand).....	254
do	Masson.....	(De Lachevrotière).....	255
do	Peterborough	(Laurier, Martin).....	255
<i>Megantic</i>	Coleraine.....	(Taschereau)	257
do	Thetford	(Legendre).....	257
<i>Montcalm</i> ..	Archambault	(Mathieu)	258
do	Archambault and Lussier.....	(Quinn)	259
do	Dorchester	(Gilman, Regnaud).....	260
do	Lussier	(Quinn, Mathieu)	259-260
<i>Montmagny</i> ...	Ashburton	(Langlois, Laberge).....	262
do	Bourdages	(Têtu, Casgrain).....	262
do	Rolette and Panet.....	(Têtu)	263
do	Talon.....	(Belanger, Têtu).....	266
<i>Ottawa</i>	Addington.....	(McArthur).....	268
do	Addington and Labelle.....	(McMartin).....	268
do	Amherst.....	(McMartin).....	269
do	Aumond	(Magrath).....	269
do	Baskatong	(Woods)	270
do	Blake.....	(Roney, Johnston).....	270
do	Bouchette	(Roney, Rainboth).....	272
do	Bouthillier	(McArthur).....	273
do	Cameron.....	(Lucas, Rainboth).....	274
do	Campbell.....	(Rainboth).....	275
do	Clyde.....	(Mathieu).....	276
do	Dudley and Kiamika.....	(Allen).....	277
do	Egan.....	(O'Hanly).....	278
do	Hincks.....	(McArthur).....	279
do	Joly.....	(Crawford).....	280
do	Kensington.....	(Roney).....	280
do	Kiamika.....	(Mathieu).....	281
do	Labelle.....	(Mathieu).....	282
do	Lathbury.....	(Johnston).....	282
do	Lesage.....	(Martin).....	283
do	Loranger.....	(Martin).....	284
do	Lytton.....	(McArthur).....	285

COUNTY.	TOWNSHIP.	SURVEYORS.	
<i>Ottawa</i>	Marchand	(Crawford, Martin, Mathieu).	
do	McGill	(Rainboth)	
do	Mulgrave	(Johnston)	
do	Ponsonby	(McArthur, Crawford, Fletcher).	297
do	Pope	(Griffin)	291
do	Portland	(Rauscher)	291
do	Portland East	(Rainboth)	292
do	Portland West	(Rauscher)	293
do	Preston	(Mathieu)	294
do	Ripon	(Johnston)	295
do	Robertson	(Rainboth)	296
do	Suffolk	(Symmes, Rainboth)	297
do	Suffolk and Ponsonby	(Griffin)	298
do	Wakefield and Templeton	(Austin)	298
do	Wells	(Roney)	299
do	Wobassæe	(Rauscher)	300
<i>Pontiac</i>	Aberford	(Sinclair)	302
do	Aldfield	(McGrath)	302
do	Alleyn	(Holmes)	302
do	Boisclair	(Michaud)	303
do	Church	(Roney)	304
do	Clapham	(Roney)	304
do	Duhamel	(Roney, Dumais)	304
do	Dorion	(O'Hanley, McArthur)	306
do	Duhamel, Laverlochère and Guigues	(Ashe)	310
do	Fabre	(Dumais)	312
do	Guigues	(Roney, Dumais)	313
do	Huddersfield	(Griffin, Brabazon)	315
do	Leslie and Cawood	(Roney)	316
do	Lorrain	(Dumais)	317
do	Mansfield	(Brabazon)	317
do	Sheen	(Evans)	318
do	Thorne	(Roney)	320
do	Waltham	(White)	322
<i>Portneuf</i>	Bois	(De Lachevrotière)	324
do	Chavigny	(De Lachevrotière)	325
do	Colbert	(Langlois)	326
do	Colbert and Ossonane	(Griffin)	327
do	Colbert and Rocmont	(Déry)	327
do	Gosford and Rocmont	(Déry)	330
do	LaSalle	(Robertson)	330

COUNTY.	TOWNSHIP.	SURVEYORS.	PAGE.
<i>Portneuf</i> . . .	LaSalle and Larue	(Lefrançois)	331
do	Montauban	(Déry)	333
do	Tonti	(Page)	333
<i>Rimouski</i> . . .	Awantjish	(Breen, LeBer)	334
do	Bedard	(D'Auteuil, Garon)	336
do	Biencourt	(Doucet)	337
do	Chesnier	(Duval)	337
do	Dalibaire	(Lepage)	338
do	Duquesne	(Garon)	339
do	Flynn	(Garon)	340
do	Humqui	(LeBer, Roy)	340
do	Lepage	(D'Auteuil)	343
do	Macpés	(Bradley, Garon)	344
do	Massé	(Grondin)	346
do	Matalek	(Grondin)	347
do	Matane	(Bradley, Lepage)	348
do	Milnikek	(Murison)	351
do	Neigette	(Grondin, Garon)	352
do	Nemtayé	(LeBer, Poudrier)	353
do	Ouimet	(Grondin)	354
do	Robitaille	(Doucet)	354
do	Romieu	(Lepage)	354
do	Romieu and Dalibaire	(Lepage)	355
do	Saint-Denis	(Hili)	355
do	Tessier	(Grondin, Hill, J. G. Bignell)	356
do	Tourelle	(Le Bouthillier)	357
<i>Saguenay</i> . . .	Albert		359
do	Bergeronnes	(Du Tremblay, Boivin)	360
do	Escoumains	(Boivin)	363
do	Iberville	(Du Tremblay)	364
do	Manicouagan	(Du Tremblay)	365
<i>St. Maurice</i> . .	Belleau	(De Lachevrotière)	367
do	Desaulniers	(De Lachevrotière)	368
do	Caxton (Gore)	(Arcand)	368
<i>Temiscouata</i> . .	Begon	(Doucet, St. Pierre)	369
do	Botsford	(Duval)	370
do	Cabano	(Têtu, St. Pierre)	371
do	Demers	(Doucet)	372
do	Estcourt	(Casgrain)	373
do	Hocquart	(Fournier)	376
do	Packington	(Dugal)	376
do	Packington and Robinson	(Têtu)	377
do	Raudot	(Fournier)	378

COUNTY.	TOWNSHIP.	SURVEYORS.	PAGE.
<i>Terrebonne</i> . . .	Beresford and Howard	(Lavolette)	380
do	Wexford	(Regnaud)	381
<i>Wolfe</i>	Garthby	(Wells, Richard)	383
do	Ham	(Poudrier)	384
do	Stratford	(Wells)	385
do	Stratford and Garthby	(Michaud)	385

EXPLORATIONS.

DISTRICT.	TERRITORY.	SURVEYORS.	PAGE.
<i>Ottawa</i>	Region between lakes Temiscamingue and Abbitibi	(McOuat)	387
do	Between Montreal and Ottawa	(Wagner)	409
do	Headwaters of the Ottawa	(Symmes, Russell, Wagner)	414
do	Block A, Pontiac	(J. O'Sullivan)	426
do	The Upper Ottawa	(J. Bignell)	433
do	Otter Tail river	(Cimon)	434
do	Rivers Rouge, Lièvre and Petite-Nation	(Russell)	435
do	Upper Lièvre	(J. Bignell)	443
do	Bear river	(McMartin)	445
do	River Rouge	(Sinclair)	447
do	River du Diable	(McMartin)	451
<i>St. Maurice</i>	Between the Lievre and St. Maurice, west part	(Temple)	454
do	St. Maurice district, west section	(Arcand)	456
do	St. Maurice district, east section	(Arcand, Temple)	456
do	River Manouan to lake Kempt	(De Lachevrotière)	459
do	River Manouan from Temple's line to lake Kempt	(De Lachevrotière)	460
do	Lake Nemicachique	(De Lachevrotière)	462
do	River du Loup	(LeBer)	463
do	Lakes and rivers in the township of Radnor and seigniory of Cap de la Magdeleine	(Barnard)	464
do	River à la Chienne	(Barnard)	466
do	Between the St. Maurice and Mekinac rivers, from Mekinac township to lake Edward	(Legendre)	467
do	Rivers Moïse and Croche	(Pagé)	469
do	Country between La Tuque and Lake St. John	(Blaiklock)	469

DISTRICT.	TERRITORY.	SURVEYORS.	PAGE.
<i>St. Maurice</i> ...	Rivers Trenche and Pierriche...	(Gagnon).....	471
do	Salmon and Windigo rivers.....	(Gagnon).....	473
do	River Matawin and its tributaries	(Barnard).....	479
<i>Quebec, Portneuf and Batiscan.</i> — Country between the Jacques-Cartier and Batiscan rivers..... (Proulx)..... 481			
do	Country between St. Raymond and lake Edward..	(Dumais).....	490
do	North branch of the river St. Ann	(Fafard).....	494
do	River Talayarde.....	(Lefrançois).....	495
do	River Mauvaise.....	(Lefrançois).....	496
do	Rivers Towachiche and Eau Mortes.....	(Du Tremblay).....	496
<i>Lake St. John</i> ..	Valley of Lake St. John.....	(Richardson).....	497
do	Rivers Ouiatchouan, Bostonnais and Batiscan.....	(Dumais).....	503
do	Rivers Ouiatchouan, Batiscan, Bostonnais and St. Maurice..	(Dumais).....	518
do	Country between Cedar lake and Lake St. John.....	(H. O'Sullivan).....	522
do	River Metabetchouan and its tributaries.....	(Casgrain).....	523
do	Region between lake Lacroix and the Metabetchouan.....	(De Lachevrotière).....	524
do	Block F.....	(Casgrain, Têtu).....	525
do	Rivers Mistassibi, au Rat and Wassiemska.....	(Dumais).....	531
do	Little Peribonka river.....	(Dumais).....	537
do	River Shipshaw.....	(Du Tremblay).....	539
do	Rivers Valin, Betsiamits, Shipshaw and Peribonka.....	(Du Tremblay).....	543
do	River Valin, North Branch.....	(Du Tremblay).....	546
do	Rivers à Mars and Ha ! Ha !... (Vincent).....	(Vincent).....	547
do	Rivers Upikauba and Aux Ecorces.....	(Maltais).....	548
do	Country around Lake St. John..	(Langlois).....	549
do	Region along the Desmarais road.	(Desmeules).....	552
do	Region along L'Anse St. Jean road.....	(Tremblay).....	558
<i>Saguenay</i>	From the Saguenay to the Bay of Seven Islands.....	(Richardson).....	560
do	River Sainte Marguerite.....	(Gagnon).....	564
do	Region along the Maritime road.	(Desmeules).....	569

DISTRICT.	TERRITORY.	SURVEYORS.	PAGE.
<i>Saguenay</i> . . .	Rivers Petite and Grande Bergeronnes, Escoumains, Sault-au-Mouton, Portneuf and Sault-au-Cochon	(Dumais)	570
do	Rivers Betsiamits, Loup - Marin and Outardes	(Casgrain)	584
do	Rivers Outardes, Betsiamits and Peribonka	(J. Bignell)	593
do	Rivers Blanche and Colombier	(Lavergne)	595
do	Rivers Manicouagan, Pentecost, Trinity and Godbout	(J. Bignell)	596
do	River Moisie	(Casgrain)	599
do	Rivers St. Marguerite, à la Truite and Manitou	(Gagnon)	599
do	Rivers St. John, Mingan, Natashquan and Esquimaux	(Forgues)	602
do	Rivers Musquarro and Kegashka	(Forgues, DuTremblay)	607
do	Washcootai	(Forgues)	608
<i>Northern Height of Land</i> —	Mistassini expedition 1884-85	(J. Bignell, Low)	610, 919
do	By the Saguenay to Hudson Bay	(Albanel)	637
do	Headwaters of the Saguenay, St. Maurice and Gatineau	(Richardson)	644
do	Upper St. Maurice, Gatineau and Ottawa	(J. Bignell)	657
<i>Gulf District.</i>	Mingan Islands	(Richardson)	662
do	Island of Anticosti	(Richardson)	663
do	Magdalen Islands	(Painchaud)	674
<i>Gaspé</i>	Description of the Magdalen river	(Richardson)	679
do	District between Magdalen river and Gaspé Bay	(Richardson)	685
do	Magdalen river	(Bell)	688
do	Mont - Louis, Anse - Pleureuse, Pierre and Claude rivers	(LeBouthillier)	689
do	Matane, St. Anne, Cape Chat and Douglastown rivers	(Murray)	691
do	St. John or Douglastown and Dartmouth rivers	(Ells)	698
do	Pabos and Port Daniel rivers	(Legendre)	701
do	Pabos, Port Daniel, Hall, Little Cascapedia and Nouvelle rivers	(Legendre)	706
do	Bonaventure river	(Murray, H. O'Sullivan)	708

DISTRICT.	TERRITORY.	SURVEYORS.	PAGE.
do	Bonaventure and Cascajedia rivers	(Ells)	716
do	Gulf Shore, Cape Chat and Cascapedia rivers	(Logan)	720
do	Rivers St. Anne and Cascapedia. (Low)		728
do	Nouvelle river, West Branch	(Murison)	737
do	Casupscull river	(Lepage)	738
do	Interior of G. spé p. ninsula.	(Bureau)	741
<i>Rimouski and Temiscouata</i>	County of Rimouski. (Lepage)		754
do	Rivers Rimouski, Noire and Caribou	(LeBel)	760
do	River Sifrois	(LeBel)	762
do	River Touladi and tributaries.	(Casgrain)	763
do	Country between lake Squatook and Madawaska	(H. O'Sullivan)	766
do	Cabano road	(Tétu)	768
do	Cabano and Pohenegamook road	(Casgrain)	769
do	River Noire region	(Casgrain)	772



FISH AND GAME.



SALMON AND SEA-TROUT RIVERS, (North-Shore)

	PAGE.		PAGE.
Jacques Cartier	773	Godbout	782
Montmorency	774	Little Trinity	782
Ste Anne du Nord	774	Trinity	783
Du Gouffre	775	Pentecost	783
Murray	775	Calumet and Little Marguerite	783
Canard and Noire	775	Ste Marguerite (en bas)	783
Saguenay	775	Moisic	784
Little Saguenay	776	Trout	784
St. John (L'Anse St-Jean)	776	Manitou	784
Eternity	777	St. John (North Shore)	785
A Mars	777	Magpie	786
Ste Marguerite (en haut)	777	Mingan	786
Little and Great Bergeronnes	779	Manitou (branch of the Mingan)	786
Great Escoumains	779	Little Romaine	787

PAGE.	PAGE.		
Sault-au-Cochon	779	Great Watsheshoo, Corneille, Pasha- sheebo, Nabissipi and Agwanus..	787
Sault-au-Mouton	780	Natashquan	787
Portneuf	780	Musquarro	788
Laval	780	Kegashka	788
Colombier	780	Washecootai	788
Blanche	780	Romaine or Olomanasheebo	788
Plover	780	Coacachoo, Etamamu and Napateepi.	789
Betsiamits or Bersimis	780	Netagamu	789
Missiquinak, Papinachois, Outardes and St. Pancras	782	Little Meccatina, Ste. Augustine and Corkewetpeeche	789
Manicouagan	782	Esquimaux or St. Paul	789
Mistassini	782		
Becsie or Sheldrake	782		

SALMON AND SEA-TROUT RIVERS, (South-Shore).

PAGE.	PAGE.		
Rimouski	789	Ma'baie	792
Grand Metis	789	Grand River	792
Matane	789	Little Pabos	793
Tartigo and Blanche	790	Grand Pabos	794
Great and Little Mechins and Great and Little Capucins	790	Port Daniel	795
Cape Chat	790	Grand Bonaventure	795
Ste. Anne des Monts	790	Little Cascapedia	797
Claude, Anse Pleureuse, Pierre and Mont-Louis	790	Grand Cascapedia	798
Magdalen	790	Nouvelle and Escuminac	801
Dartmouth	791	Restigouche	802
York	791	Metapedia	804
St. John (Gaspé)	792	Casupscull	805
		Humqui	807
		Assemetquagan	807

LAND-LOCKED SALMON WATERS.

PAGE.	PAGE.		
Lake St. John and its tributaries	808	Ashuapmouchouan or Chamouchouan.	809
Belle Rivière	808	Mistassini	809
Metabetchouan	808	Peribonka	809
Ouiatchouan	808	Little Peribonka	810
Ouiatchouanishé	809	Grand and Little Discharge	810
Aux Iroquois	809		

 INLAND LAKES AND STREAMS.

	PAGE.		PAGE.
<i>Ottawa Division :</i>		<i>Lake St. John Division :</i>	
Ottawa county.....	811	Chicoutimi county	824
Pontiac "	813	Charlevoix "	826
<i>Montreal Division :</i>		<i>Saguenay Division.....</i>	826
Argenteuil county.....	814	<i>Gaspé Division.....</i>	827
Montcalm "	815	<i>South Shore Division.....</i>	828
Joliette "	816	Rimouski county	828
<i>Three Rivers Division :</i>		Témiscouata "	829
Berthier county.....	816	Kamouraska "	829
Maskinongé "	816	L'Islet "	829
St. Maurice "	817	Montmagny "	830
Champlain "	818	Bellechasse "	830
<i>Quebec Division :</i>		<i>Eastern Townships Division.....</i>	830
Portneuf county.....	822		
Quebec "	823		
Montmorency "	824		

To His Honor,

The Honorable AUGUSTE REAL ANGERS,

Lieutenant-Governor of the Province of Quebec.

MAY IT PLEASE YOUR HONOR :

I beg to submit the *Description of the Surveyed Townships and Explored Territories of the Province of Quebec, taken from the official reports of surveys filed in the Crown Lands Department, as well as from those of the Geological Survey of Canada and other official sources.*

The object of this publication is to supply information with regard to the agricultural, forest and mineral resources of the Crown domain.

The Crown Lands department has been in the habit, especially for some years past, of publishing certain extract from the reports of surveys and explorations ; but there is in the vaults of the department a multitude of reports, which have not yet seen publicity, although they contain much valuable information. As for those which have been published, it is not an easy matter to procure them all without a certain amount of labor which few persons care to undertake, and it is moreover almost impossible to co-ordinate, them so as to be able to form an opinion of the value of any particular region as regards either the quality of the soil, the character of the timber or the existence of minerals. Lastly, the reports of the Geological Survey of Canada, especially the earlier issues, contain information of great value respecting parts of the Crown domain generally little known. These early reports have become extremely rare, so that there hardly remained any other way to bring them to the knowledge of the public, except to reprint them.

I venture to hope that, in making the value of our public lands better known, this book will have the effect of stimulating the demand for those

lands, thereby increasing the revenues of the Government and giving a powerful impetus to the great work of colonization, which are the two principal objects I am striving to attain in the administration of this department.

Ideas more or less erroneous are generally entertained regarding the geography or rather the superficial geology of the province of Quebec: because the estuary of the St. Lawrence is bordered by two ranges of mountains, it is concluded that the country traversed by these heights is everywhere mountainous, rocky and barren; and, in very many minds, the notion is rooted that we have no good arable lands outside of the immediate valley of the great river, which does not amount to a fourth of the total extent of the province. I trust that the present publication will remove these false impressions, since it clearly establishes that, between these ranges of hills, there are immense plains, with a soil, to say the least, as rich and as easy to cultivate as that of the great St. Lawrence valley itself, which is designated by our geologists under the name of the Champaign region.

An analysis of the reports of surveys and explorations shows that behind the mountain chain, extending from Cape Tourmente to the Ottawa a little above Hull, there is an immense plain which stretches to the eastward through the valley of the river Matawin to the neighborhood of the St. Maurice. The general level of this plain is not more than 250 or 300 feet over that of the sea and is only broken at rare intervals by small rocky ridges or hills. On striking the region of the Matawin, the general direction of this plain trends towards the north north-east and then continues by the fine plateau between the rivers Trenche and Windigo to Lake St. John, where it connects with that splendid valley bounded by the mountains bordering the Saguenay on the north-east. The length of this belt of level lands, mostly of remarkable fertility, is close upon 400 miles and its average breadth approaches 60, which forms an area of 24,000 miles or 15,360,000 square acres. The region drained by the part of the Ottawa, comprised between the headwaters of that river and Lake Temiscamingue as far as the height of lands, forms another plateau lying 600 or 700 feet

above the sea level, generally flat and including a good deal of arable land under the head both of soil and climate, and is separated on its southern side by another range of mountainous country from the great plain already described.

I invite Your Honor's attention to these facts, which are attested by the official reports of surveys and explorations, and which conclusively show that this northern region, too often represented as a country of mountains and for the most part unsuited to settlement, contains more than 20,000,000 of acres of good level lands, where colonization and agriculture may be carried on under the most advantageous conditions.

In rear of the mountains of the south shore, there is the great Silurian and Devonian plain extending from the river Chaudière to Gaspé and comprising 3,000,000 acres of the best arable lands or very nearly as much as the total acreage under cultivation in the whole province. It is impossible to read the reports of the explorers without being struck with the immense resources which these fine lands offer to agriculture. In my own report for the fiscal year 1888, I directed Your Honor's attention to the advantages which this region holds out to agriculture, and I trust that this volume will have the effect of directing a portion of the colonizing movement towards this fine country, which is capable of sustaining a numerous population in ease and comfort.

Even should this book have no other effect except to spread a better knowledge of these two great fields for colonization, I am of opinion that its utility will be already established beyond question.

GEO. DUHAMEL,
Commissioner of Crown Lands.

CROWN LANDS DEPARTMENT, }
Quebec, 8th October, 1889. }

PRELIMINARY NOTES.

The present publication is divided into two parts: surveys of townships, and surveys or explorations of districts, rivers and territories. The first part is arranged according to counties and gives, under the name of each township, in the order of date, the essential portions of all the reports of survey that have been made upon such township. By comparing these different reports, an exact idea can be formed of each township from the agricultural, forest or mineral point of view or, in other words, whether it contains good arable land, timber or mines capable of being worked. The reports of explorations of districts furnish similar information, the only difference being that it applies to more extensive and less clearly defined tracts.

Now let us glance at the principal characteristics of each region :

OTTAWA REGION.

This region has an area of about 40,130.53 miles or 25,683,540 acres. It embraces the counties of Pontiac, Ottawa, Argenteuil, Two Mountains, Terrebonne, Laval, Montcalm, L'Assomption, Joliette and Vaudreuil, as well as parts of the counties of Berthier, Maskinongé and St. Maurice. The greater portion of this territory belongs to the Laurentian formations, which is tantamount to saying that, in many places, its surface is generally broken, rocky and mountainous. It is cut in all directions by large rivers, of which the principal are the following :

<i>Names.</i>	<i>Length.</i>	<i>Area Drained.</i>
Du Moine.....	120 miles	1,600 miles.
Noire.....	128 "	1,120 "
Coulonge.....	160 "	1,800 "
Gatineau	400 "	9,000 "
Du Lièvre.....	160 "	3,000 "
Petite Nation.....	50 "	1,250 "
Rouge.....	100 "	3,000 "
Du Nord.....	45 "	1,200 "
L'Assomption.....	50 "	500 "

These rivers furnish fine water powers and splendid channels for the floating and transport of timber. Their valleys also contain good agricultural lands, holding out all the advantages desirable to colonization, which is advancing rapidly in this region. Owing to the lumber trade, the settlers find an excellent market for their farm produce in the *chantiers*, as well as work during the winter for themselves and their working cattle.

A very erroneous opinion generally prevails regarding the quality of a great part of the lands in the Ottawa region. Because these lands are covered with pine forests, it is taken for granted that they are necessarily poor and unsuited to tillage. This is a mistake, as has been proven by experience and by surveyors who are regarded as authorities in such matters. Here is what Surveyor James McArthur says in a report dated the 21st October, 1864 :

“ The opinion advanced by interested parties that pine timber only
“ grows upon soil of inferior quality is merely a popular fallacy, which the
“ experience of every practical farmer and lumberer on the Ottawa proves
“ to be incorrect, for it is a fact that cannot be disputed that the best
“ quality of white pine timber is usually found growing among hard wood,
“ and that the most productive farms in this section of the province were,
“ in their primitive state, covered by a very considerable proportion of pine
“ timber.”

The fact is that the finest agricultural lands in the valleys of the Rouge, the Lièvre and Gatineau rivers were formerly covered with splendid pine forests, where the lumber merchants carried on extensive and lucrative operations. At many points, colonization has followed in their wake and transformed these lands into fine farms which now support a numerous agricultural population in ease and comfort.

Generally speaking, the soil of the Ottawa region consists of a yellow loam, composed of ferruginous clay mixed with sand, usually fertile and easily tilled. But there are exceptions which deserve to be noted. Thus, in the lake Temiscamingue country and as far as lake Abbitibi, there are immense tracts of clay and loam lands of the greatest fertility. A zone of similar, but still richer and more extensive lands occurs about sixty miles to the northward of Hull and takes in the townships of Lytton, Egan, Maniwaki, Campbell, Robertson, Kensington, Sicotte, Aumond, Bouthillier, Kiamika and Dudley, as well as several other of the surrounding townships. In one of his reports, Mr. James McArthur states that nowhere else in the

Ottawa country is there so large an extent of really good and fertile lands as in the townships of Maniwaki, Egan, Aumond, Sicotte and Lytton. These lands are generally level, their surface being only broken by a few rocky hillocks, are traversed by magnificent streams and offer in all respects the greatest advantages to agriculture. The soil for the most part is composed of excellent clay, occasionally mixed with a yellow loam and, in some places, with fine gravel. This gravel lessens the stiffness of the clay and makes it easier to drain, as well as more penetrable to the air and the other atmospheric agents, a circumstance which proportionately increases its agricultural value.

This belt of good lands extends towards the north-east into the valley of the Matawin, which is comprised in the St. Maurice region, and unquestionably constitutes one of the finest regions of the whole province for colonization and agriculture.

The region more to the southward, comprising the townships almost wholly settled or in course of settlement, is more hilly and rocky, and its soil is generally less rich and more difficult to cultivate, which, however, has not prevented it from being inhabited by a numerous and prosperous population in the counties of Ottawa, Argenteuil and Terrebonne and from still presenting a vast field for colonization.

It is well to note that, in the counties of Argenteuil and Ottawa, the lands which adjoin the river are far from being as good in point of soil as those further back in the interior, that is to say, that they are more broken, hilly and rocky and less fertile than the lands situated in the rear and more to the northward. It is in this quarter that the main chain of the Laurentides is traversed or rather cut by the Ottawa river and consequently the lands nearest the banks of that river belong to the Laurentian system and are marked by all its characteristics, while the region more to the northward is not touched by those mountains and naturally presents a more level and fertile soil. All the explorers who have traversed this region more to the northward agree in saying that it forms in every respect one of the finest agricultural sections of the province. It is broken only by low hills covered with a light but fertile soil and separated by valleys in which a great deal of alluvial, clay and occasionally sandy and loamy lands of the greatest richness occur. Frequently, these lands are enriched with vegetable *débris* and mould which form one of the most advantageous soils for tillage. Lands of this kind are therefore preferred and sought out by the settlers, especially in the valleys of the Gatineau and Du Lièvre rivers,

where there are extensive settlements for more than sixty miles into the interior (*)

As for the climate, a glance at the map of the province is enough to show that by far the greater part of the colonizable lands of the Ottawa lie to the southward of the latitude of Quebec and the remainder very little north of it. But this difference of latitude is more than compensated by the longitude. It is calculated that a degree of westing is equivalent to a corresponding rise of a degree in the temperature. Now, the difference of longitude between Quebec and the Ottawa region is from four to ten degrees and the same difference is observed in the temperature, as established by experience and vegetation in the absence of thermometrical observations. The bass wood, which the climate prevents from growing in the neighborhood of Quebec, is to be found nearly all over the Ottawa region, even to the north of lake Temiscamingue, in the environs of which the maple, elm and hemlock also occur — all woods whose growth invariably bespeaks a climate favorable to agriculture.

Besides its forests, which are the richest and finest in the province, the Ottawa region contains considerable mineral wealth. One of its iron mines has long been worked and, in several other places indications have been found of deposits susceptible of profitable development, when the means of transportation are easier. The mines of phosphate of lime or apatite already furnish enormous quantities of a product of superior quality, and there is every reason to believe that many others will be discovered fully as extensive and as rich. In the meantime, the mines actually in operation are not less the richest and the most prolific yet discovered either in America or Europe.

(* *Le Nord*, p. 29.

 ST. MAURICE REGION.

This region is traversed throughout its greatest length by the noble river whose name it bears. Allowing for its sinuosities, the course of the St. Maurice is upwards of 350 miles in length and it takes its rise at about 1,500 feet above the level of the sea at Three Rivers. Its principal affluents are the following :

<i>Left bank.</i>		<i>Right bank.</i>	
Mekinac... ..	30 miles.	Shawinegan	35 miles.
Bostonnais (Little).....	37 “	Matawin..... ..	95 “
Bostonnais (Great).....	50 “	Rat..... ..	35 “
Croche..... ..	90 “	Vermillon..... ..	75 “
Trenche..... ..	102 “	Flamand	40 “
Pierriche (Little).....	22 “	Manouan	77 “
Pierriche (Great)	25 “	Au-Ruban	36 “
Windigo	50 “		

Starting from a point about a dozen miles distant from the mouth of the river St. Maurice, the St. Maurice territory is everywhere hilly and even mountainous in many places. The soil all over consists of a generally good yellow loam, except in several of the river valleys, which contain splendid alluvial lands. Among others may be more particularly mentioned the valleys of the rivers Mekinac, Bostonnais, Croche, Flamand, au Rat, Wessonneau and Vermillon. On the left bank of the St. Maurice as far as the confluence of the river Croche, there are hardly any settling lands except in the region of the lake and river Mekinac, in which are situated the townships of Mekinac, Boucher and Carignan, and the township of Malhiot, at the mouth of the river Bostonnais. In rear of these townships and contiguous to the St. Maurice, there are at several points among the mountains numerous strips of good land, but their extent is too limited to permit the formation of advantageous settlements. Exception, however, must be made for the region of the Great Bostonnais river, which comprises about 175,000 acres of arable land suited to colonization. This tract is comparatively level, especially in the upper part of the valley and possesses an easily cultivated soil, mainly composed of yellow loam and grey loam, generally overlaid with a rich vegetable mould.

One range could probably be opened for a distance of sixty miles from its mouth, on each side of the river Croche, whose valley, hemmed in

between two ranges of mountains, contains alluvial lands of remarkable richness.

Beyond the river Croche, there is a stretch of good lands, which calls for special mention. These lands are bounded to the east by the range of heights adjoining the river Croche, to the west by the river Windigo, and to the north by the heights in which the rivers Trenche and Pierriche take their rise. The area embraced within these limits has a superficies of 1,500,000 acres and is composed of the best tillage lands. Apart from a few rocky hillocks, chiefly in the neighborhood of the St. Maurice, these lands are level, with a slope to the southward. They have nearly all been swept by fire, which greatly facilitates the work of clearing them. There still remain some stretches of primitive forest, but the timber is generally of second growth, which, however, does not prevent there being a sufficiency for the requirements of settlers. The soil, free from rocks, is composed of a yellow and a grey loam, mixed with sand in some places and everywhere covered with a rich bed of mould. There is here, in fact, one of the finest openings for colonization.

From the river Windigo to Kirkendatch, a distance of a hundred miles, the soil presents few advantages to agriculture, judging from the tests made thus far, and the climate does not seem to be much more favorable. At Weymontachinque, a little higher up than the confluence of the Windigo, excellent cereal and root crops have been raised, but they cannot be relied upon with certainty, as they are frequently prevented from coming to maturity by frosts and the shortness of the agricultural season. Beyond Kirkendatch, and on both sides of the St. Maurice, the country is absolutely unfit for cultivation, as well owing to the nature of the soil as to the climate: at the most it could only be turned to profitable account by utilizing for pasturage the natural meadows which are met with at several places on the banks of the St. Maurice.

There are upwards of 850,000 acres of cultivable land, as far as soil is concerned, in the valleys of the rivers Manouan and au Ruban, which are in general pretty level. Unfortunately, however, it is claimed that the temperature is never high enough to ripen cereals in the neighborhood of Weymontachinque, a post situated in latitude $47^{\circ} 54' 24''$, so that all occupying the same astronomical position must be struck off.

The valleys of the river Flamand, Great and Little, and of the river des Grandes-Battures form a triangle, having its apex at the

southwestern extremity of lake Mondonak and an area of about 600,000 square acres. These lands are generally level, except around lake Mondonak, where they are mountainous and unfit for tillage. The part which adjoins the St. Maurice appears to be of the same quality as the lands of the river Pierriche, on the opposite bank, equally level and possessing a soil composed of good yellow and grey loam. According to the reports of the surveyors who have explored this region, the plateau from which the Great Flamand river draws its waters consists of level and pretty good land, supporting a growth of pine, tamarac and birch.

The rivers Vermillon, au Lait, LaTuque, au Rat, Wessonneau and Bête-Puante, as well as most of the numerous lakes in that region, are bordered by strips of alluvion, forming a soil of superior quality, and, throughout its whole extent, the climate is the same as at Three Rivers, with this difference that, if the mercury falls a little lower in winter, it rises on the other hand higher in summer, to such a degree, in fact, that all the grains, which ripen along the St. Lawrence, come equally to perfect maturity at the river au Rat, more than sixty miles to the north of Three Rivers. The explorations thus far made go to show that, in the region drained by these different rivers, there is enough good land to form several parishes.

Next comes the immense valley of the river Matawin, with an area of about 1,250,000 square acres. It measures sixty miles in length from east to west and its breadth, which hardly exceeds fifteen miles in the vicinity of the St. Maurice, enlarges considerably going west until it exceeds fifty miles between lakes Cypress and Morialice. The vicinity of the St. Maurice is mountainous and slightly rocky, but, in advancing westward, the rocks disappear, the ground becomes more and more level and the quality of the soil notably improves, after passing the eastern boundary of the county of St. Maurice. From this point, the valley of the Matawin forms a great plateau of good arable land, with a soil composed of rich yellow loam and grey loam, generally covered with a layer of vegetable mould, sometimes mixed with slight beds of gravel or a light and sandy soil. The heights are covered with these different kinds of soil, but the lands bordering the rivers and lakes are richer and present to the view of the explorer immense alluvial tracts of the highest fertility. These rich alluvial plateaux occur principally on the banks of the river du Milieu and lake Clair, in the counties of Maskinongé and Berthier. (*)

(*) *Le Nord.*

In 1869, Hon. Louis Archambault, then Commissioner of Agriculture and Public Works, visited the valley of the Matawin, and here is what he stated of that region :

“ To the north of Montreal, within a few years, colonization has made a great stride in crossing the Laurentian chain and in introducing settlers into the valley of the river Mantawa, an affluent of the St. Maurice, the waters of which flow from the same plateau as those of the tributaries of the Ottawa.*** A few miles farther up, the township of Provost is reached, by cutting perpendicularly the southern line of this township. Here, the land is good and fit for settlers, as the Laurentian chain is passed. Three miles from this, is the settlement of the Rev. Mr. Provost.

“ This group is the centre of a fine parish ; for a radius of not less than six miles, in all directions, extends a plateau of splendid lands, principally wooded with maples, a clear indication in itself of the fertility of the soil. There is a limestone quarry here, on the shores of lake St. Louis. For three consecutive years, the crops in this settlement have attained the most perfect maturity.

“ Where the road crosses the river Mantawa over a floating bridge, the eye discerns lovely promontories and fine prairies. On descending to the east the land is level and continues so until Pine lake is reached, where is situated the extensive farm worked by Mr. Hall, a wealthy merchant of Quebec, for the purpose of supplying his lumber chantiers. In general the soil consists of yellow land tolerably deep : here and there it is dry and sandy.

“ Ascending the river towards the west, beyond Mount Roberval, splendid forests and good lands are met with ; the soil is also loamy and occasionally rocky. The timber is usually hard wood, but there is still some pine. The portage is passed at the Rapide Brulé, where we enter the valley of the river des Aunaies, a tributary of the Mantawa. Here the land is low and prairie. As far as the eye can reach, it discovers but a forest whose vivid green is here and there marred by patches scarred and withered by fires. On either side of the river, the land is excellent in quality, and ample room exists for the formation of at least two fine parishes.

“ From the Rapide Brulé, whence begins the valley of the Aunaies, to lake Bourget, there are about thirty-two miles navigable ; in all there are five portages, the longest of which is about fifteen acres. The banks of the river are in some places five and in others twelve feet in height ; some

portions of the land are covered with hay, while others are richly studded with alders, which line long distances and indicate great richness of soil. These 36 miles along the shores of the Mantawa afford every opportunity for the establishing of not less than six new parishes.

“ Where the river Bourget falls into the Mantawa, the land to the north and west as far as the eye can reach is level. The soil is composed : 1° Of a bed of decomposed vegetable matter of several inches in depth. 2° It is in other places overlaid with coatings of a whitish sand which is not unlike ashes in appearance. 3° There are depths of a yellowish loam which is very rich. 4° The subsoil is a greyish clay mixed with sand representing silicious clay. The forest consists of red and white spruce, tamarac, cedar and white birch. To the north, in the direction of the sources of the river Milieu, hard wood is to be found and fine maple groves abound.

“ The climate is similar to that of the valley of the St. Lawrence ; rains and storms are not more frequent, and yet in winter there falls less snow, than on the mountains ; a fact, which no doubt contributes much to render the climate on the other side of the Laurentides extremely mild, is that this chain of mountains protects the plains against the north-east winds.

“ From the mouth of the river Bourget to the head of the Mantawa, there is room for six or eight parishes, and on the strip of hardwood land that runs towards the head of the Milieu river, four or five other parishes might probably be established.

“ Descending to the south, by lake à la Hache, and taking the northern slope, up the Laurentides, a vast territory is reached, covered with hard wood groves that stretch to the west as far as river aux Lièvres. In this space, if we include the land situated to the south of lake Bourget, on which the Provost road passes, there is room to establish six parishes.

“ It will appear then that in the section of country, which I have just attempted to describe, it is possible, due allowance being made for unproductive patches of land, to organize advantageously on both shores of the river Mantawa, without being obliged to go far back, about 24 new parishes, capable of containing forty thousand souls.

“ At the head of the Mantawa, the valley unites itself with the plateau watered by the Rouge river and the river du Lièvre ; and further on with

the lands crossed by the Gatineau and its tributaries; we then enter into the valley of the Ottawa." (*)

The foregoing clearly shows that the St. Maurice region contains immense stretches of good agricultural lands. The region of the rivers Windigo and Trenche, as well as the great valley of the Matawin, among others, offers to settlement advantages which are scarcely excelled in any other part of the province. In the portion of the St. Maurice territory, where the climate is favorable to farming operations, there are rocky and barren spots, but these are the exception and not the general rule.

With the exception of phosphate of lime, the economic minerals of the St. Maurice region are about the same as those of the Ottawa. The ores of iron are found nearly all over, but chiefly in the lands of Laurentian formation, of which the magnetic oxyde is, so to say, the characteristic. Limonite or bog ore, which is produced by the decomposition of the oxydes of iron in the bed rock, occurs in almost every place where water has rested and, in several instances, in workable quantities. Plumbago, of excellent quality, is said to exist in the gneissoid rocks of the Coucoucache and the river au Rat, and a vein of galena occurs in a chain of rocks on the banks of the river Trenche. It is probable that a careful exploration by competent men would lead to the discovery of really important mineral wealth, but unfortunately the Geological Survey has never yet thought proper to extend its investigations to this region.

BATISCAN, PORTNEUF AND QUEBEC REGION.

To the northward of the county of Portneuf, the country traversed by the river Batiscan contains, properly speaking, no land suited to colonization. The amount of land, susceptible of tillage, is too limited to permit even small and unimportant settlements to be formed in the few places where settlement is possible. In the most favored spots, enough of cultivable space can hardly be found to make three or four farms. The whole of this region is nothing but a series of rocks, which are often bare, and ravines almost without bottom. This tract of sterile land extends eastward to the Murray river, in the county of Charlevoix, and must be classed among the regions which hold out no prospect to colonization. In addition

(*) Report of the Commissioner of Agriculture and Public Works for 1869, pages 13 to 17.

to the fact that the soil is rocky, poor and too broken to be cultivated, the temperature is also too low and too damp to ripen grain. On these mountains, there is frost in every month of the summer, and the condensation is such that the smallest clouds, coming from the south chiefly, are precipitated in rain as they pass over these heights. The sole resources of this country are fish, which are abundant, timber, and pasturage in the parts ravaged by fire, which, along the Lake St. John colonization road, in the neighborhood of Great Lake Jacques Cartier, have an extent of 20 to 25 square miles. In this great brulis, where there remain only a few trunks of trees, there are, along the rivers, around the lakes and between the rocky hills, splendid pasturages abounding with grass of the best quality. The forests are almost exclusively composed of conifers and include a good deal of fine spruce, which is being worked by different lumber merchants. Fish in this region are everywhere abundant in the rivers and myriad lakes with which it is dotted, and fur-bearing animals are found in it in pretty considerable numbers, especially the caribou, which frequent particularly the section traversed by the colonization road to Lake St. John.

LAKE ST. JOHN REGION.

This region presents one of the finest and vastest fields to the great work of colonization. It is naturally divided into two very distinct parts: the southern to the south of the lake and the northern and northwestern to the north and west of the lake.

The belt to the south of the lake is generally mountainous and rocky, but embraces a good deal of land susceptible of advantageous cultivation, as proven by the prosperous condition of the numerous settlements which it contains. The poorest and most uncultivable part lies south of lake Kenogami, where the chain of the Laurentides throws out a spur to the northward, which extends to the banks of that lake. At the two extremities of this belt, that is to say, to the east and to the west, there is much more arable land, and this land is also of much better quality. Mr. Surveyor Dumais has established that, in the region of lake Bouchette and Commissioners' lake, there is a sufficient quantity of good land to form prosperous settlements and that the work of colonization might be pursued there under the best conditions. To these natural advantages must be added the

facilities furnished by the Quebec and Lake St. John railway, which runs through this district.

The eastern part contains equally good lands. It is traversed by the great St. Urbain road, which gives it easy communication with the ports of St. Alphonse and Chicoutimi. Like the western part, the soil of the eastern section is rocky, sandy and light in certain places; but it is composed generally of a rich yellow loam easily tilled, and it may be said of these lands that they are far superior to many others, which support in ease and comfort the populations dwelling in them.

But the finest lands, without exception, of the whole of this region are found to the north of Lake St. John. From the river Shipshaw westward, this lake is encircled by a belt of level land only broken by the splendid rivers which traverse it and by a few rocky hillocks. These fine lands rise in a gentle slope northward, which gives them a good southern exposure and renders them all the more favorable to agricultural operations. In the township of Dalmas, situated between the two Peribonka rivers, the soil is composed of an extremely rich clay or yellow loam, and the timber is everywhere tall and mixed, including the elm and ash, which sufficiently denote the richness of the land. In the valley of the Little Peribonka river, Mr. P.-H. Dumais noted the prevalence of the following woods; grey spruce, grey pine or cypress, birch, aspen, white and yellow pine, poplar, ash, elm, willow, alder, bass wood, hazel, mountain ash and soft maple. He adds that the soil, in general slightly undulating for the first forty miles, is composed of grey and yellow clay, alluvion mixed with sand, on the banks of the river, and covered with a rich mould on the higher plateaux.

More to the west, between the Peribonka and Chamouchouan rivers, lies the rich and extensive valley of the Mistassini and its principal affluents, the Mistassibi, au Rat and Wassiemska. Three fourths at least of the lands drained by these rivers are adapted to tillage. They are composed of grey or yellow loam or clay mixed with sand on the surface, with a very deep alluvial subsoil, free from rocks, except in a few places where they crop out to break the almost uniform level of the plateaus, chiefly between the thirtieth and fortieth miles from the mouth of the river. The forest is a second growth dating from half a century and includes all the various kinds of timber of the Lake St. John region, except cedar. The river au Rat flows through similar lands, winding in a great level, alluvial bottom covered with splendid timber. The same remarks apply to the section traversed by the river Wassiemska, which is nearly as large as the Mistassini and navi-

gable for a great part of its course, above the rapids and small falls which obstruct the first ten miles. Here is what Mr. Surveyor Dumais says in his report on the survey of the magnificent basin of the Mistassini and its tributaries :

“ I cannot close this report, Mr. Commissioner, without calling your attention to the fact that the work I have done upon these three rivers has fully confirmed the opinion I had formed of this part of the Lake St. John valley from the first explorations I made therein by order of the Government of the province.

“ I am convinced that the greater part of this region comprised in the vast basin which surrounds Lake St. John, especially on the northern side, that is to say, an extent of four millions of acres in superficies, is composed of lands the most favorably adapted to agriculture, as well on account of the richness of the soil as of the mildness of the climate.

“ As a fair comparison, I think I am warranted in stating, without fear of being taxed with exaggeration, that we have in this Lake St John basin a sufficiently large extent of fine and good land to easily furnish homes for, as dense a population as any inhabiting the finest part of the St. Lawrence valley, that occupied by the counties of Richelieu, Yamaska, Verchères, Bagot, St. Hyacinthe, Rouville, St. John's and Napierville. The alluvions of Lake St. John are deeper and more extensive than those watered by the rivers Richelieu and Yamaska. As for the climate, we have nothing to envy those places.”

According to the statements of all the explorers, the valley of the river Chamouchouan contains still better lands. A clay soil prevails everywhere, and in many places it is overlaid with a thin bed of sand, which, by mixing with the clay when ploughed, admirably adapts this soil to wheat culture. There are neither rocks nor ravines, and the land all over is of the easiest tillage, especially in the townships of Demeules and Ashuapmouchouan, which have a collective area of 80,000 acres. The township of Dufferin, higher up the Chamouchouan river, contains lands as rich, if not richer, according to the statement of Mr. Surveyor Gagnon. It is everywhere a strong loam or a layer of yellow loam or sandy mould, resting on a clay, subsoil. This tract is level, free from rocks and covered with different kinds of well grown timber—birch, elm, ash, aspen, spruce, balsam fir and some pine, in the places which have not been swept by fire.

In 1884 or 1885, the Abbé Laflamme conducted explorations in the Lake St. John Region for the Geological Survey and here is what he says of the valley of the river Chamouchouan :

“ In a long excursion which I made along the Ashuapmouchouan river, I had occasion to satisfy myself of the immense extent of arable soil embraced in this fine section of the country. These quaternary clays are all of marine origin and extraordinary fertility. Colonization would, in this direction, find a very important outlet.”

These good lands continue along the river Chamouchouan towards the north-west, and towards the south-west they extend to the fine plateau embraced between the rivers Trenche and Windigo, in the St. Maurice region

The splendid lands, situated to the north and especially to the north-west of Lake St. John, merit the special attention of all friends of colonization. They represent an area of about 5,000,000 acres or sufficient to establish and support in comfort a farming population of 250,000 to 300,000 souls. They hold out special facilities and advantages to agriculture from the fact that, being level and free from rocks, they permit the use of all the improved agricultural implements which economize labor and render farming easier, more expeditious and less expensive, and they could be cultivated quite as advantageously, to say the least, as the finest parts of the valleys of the Richelieu and Yamaska rivers.

SAGUENAY REGION.

This designation covers all the territory lying to the east of the river Shipshaw and of the Saguenay, from the St. Lawrence to the Height of Lands, forming the northern boundary of the province, or a superficial area of about 65,000,000 acres.

This immense territory has been generally depicted as a barren region in point both of soil and climate, with very few forests susceptible of being lumbered, and, where the rocks are not absolutely bare, covered with a stunted growth of worthless timber. In accepting as correct this erroneous opinion resulting from the ignorance that has prevailed until late years as to the true character of this great region, the door has been shut against the colonization of nearly a third of the land forming the total territory of

the province, and the largest portion of this northern district has been classed as uninhabitable or at the best as only good for hunting and fishing, though it offers unquestionable advantages for lumbering and even for farming, as has been clearly established by the explorations within the last twenty years.

In analyzing the reports of the different explorers, the conclusion is easily or rather forcibly reached that the whole of this great country is divided into plateaus running from south-west to north-east in a direction almost parallel with the shore of the St. Lawrence. These plateaus are divided from each other by rocky hills rising above the general level and forming, so to say, the angles of the steps or terraces by which the land rises to the summit of the divide between the waters flowing into the St. Lawrence and those running towards Hudson's Bay and Straits.

All the great rivers, which drain this country, flow as nearly as possible from north-west to south-east or perpendicularly to the general trend of the chains of heights or mountains. A glance at the map and, especially, an examination of the surveyors' notes will show that the affluents of these great rivers have a very nearly uniform south-west and north-east flow or parallel to the general course of the plateaus and transversely to that of the main streams to which they carry the tribute of their waters. The reports of the explorers also show that the courses of these great rivers are in almost every case characterized by an alternation of long stretches of calm water with series of cascades and falls hollowed out of the solid rock of the mountain range. There is no need of much reflection to conclude that these stretches of calm water, where the river beds are generally wider than in the parts broken by falls and cascades, occur at the spots where these rivers cross the plateaus comprised between the rocky ridges which bound them to the north and south. All this is perfectly established by the report of Mr. John Neilson, bearing the date of December, 1888, on the exploration of the river Mecatina. Here is what he says :

“The physical features of the section of country drained by this important river are materially different from more western sections of the province of Quebec, particularly north of the St. Lawrence, where mountain chains as a rule follow the larger water courses, rising abruptly, often precipitously, extending on either side in low, broken hills between which lie numerous tributary lakes often elevated several hundred feet above the artery which they feed ; while the country through which the “ Little Mecatina ” flows, which may be termed the South Eastern Labrador

"Slope," is marked by chains of low hills running parallel to and increasing in height the further you recede from the coast, forming a number of "plateaus" from which the river drops to the one below in a series of falls and rapids. Of these rapids and falls five, with intervening "plateaus," are encountered in the short distance of $14\frac{3}{4}$ miles from the sea; beyond that distance the first of the two great "plateaus" that characterize the section surveyed is met, through which the river now undivided, increasing in width and depth, flows placidly with the exception of minor drops at "Smooth Water Rapid" and another below "Pork Island." Here the first important barrier is encountered — a well defined chain of hills trending S. W., varying in height from 200 to 400 feet, and extending in breadth about six miles through which the stream narrowed to 4 or 5 chains forges its way in continuous *chutes* and rushing rapids marked on the accompanying plan as "*Le Rapide des Sept*" after which a second wide "plateau" presents itself. The river, widening at some points to 30 chains and over, flows gently past "William" and "Margaret Islands," where among a numerous group of sand bars and gravelly islets, a stiff current is met to "Mok-Shebi," a small tributary flowing from the north-east along the base of a second chain of hills varying in height from 300 to 500 feet and through which, from a north-westerly direction, the river, with ever increasing current, issues, passing the goal of the present survey 68 m. 58.47 chs. from initials, where posts of standing spruce, squared and cut six feet from the ground and duly marked, stand to indicate the limit of this survey and exploration.

"Beyond the terminals, the river, much narrowed and considerably decreased in volume, bends northerly and tortuously rushes in chutes and foaming rapids through the often precipitous gorges that mark this by far the greater of the two well defined mountain ranges met since leaving the coast, and known to the Indians as the "*Misto-wa-no-ni-gan-wajo*" or Rough Mountain range.

"Information obtained through the polite intervention of Mr. Scott H. B. Co. clerk, at Musquaro, from an Indian named Martin, as well as from personal observation, the "*Misto-wa-no-ni-gan-wajo*" range, cannot be less than twelve or fifteen miles wide; in this distance the stream, forcing its way through many impediments, descends in a grade of from 50 to 60 feet per mile and, according to the Indian Martin, at one point plunges over a precipice of great height, forming an unrivalled water-fall, so remarkable that our informant, in the figurative style peculiar to his race, described it as the highest in all the word * * * *

“ The country bordering the Mecatina on either side, apart from the mountain ranges above described, which in a general sense may be said to run parallel to the line of coast, is studded with low, mostly isolated, rounded hills, peat bogs, and lakes, the former having their base, and the latter their bed, at no great elevation above the stream to which they are tributary. Upward from the Natagamu portage the bald hills which characterize the coast cease to hold, and thence to the extremity of the present survey the country is thickly timbered with spruce, balsam, white birch, scattered hill tamarac, much increasing in size as you ascend, which form the principal ligneous growth throughout the region explored. The finest timber remarked is to be found on the second “ plateau ” extending from the “ *Rapide des Sept* ” to Mok-Shebi ; spruce measuring from 15 to 20 inches is common enough, but even 25 inches may be here and there met with. This timber, through generally free from the usual flaws that materially affect value, is tough, close-grained, and knotty. The same is true of balsam, but the scattered groves of hill tamarac observed on the “ second plateau,” would, for use as railroad ties, rather gain than otherwise by the increased capacity for holding spikes.

“ The soil on either side of the stream, as well as along the numerous sluggish creeks that drain the “ plateaus ” described, is, in almost every case, composed of *deep beds of gray clay or loamy deposits fully equal in richness to similar soils found in our best agricultural districts.* At several points on the river bank, level strips of land exist, sufficient in length and width to make up good-sized farms and, often in near proximity, may be found extensive “ beaver meadows ” thickly matted with an unusually luxuriant growth of wild grass whence the settler could house an almost unlimited supply of winter feed.

“ The islands, four of which deserve notice, namely: “ Sunday,” “ Indian,” “ William ” and “ Margaret,” are large, well timbered and composed of rich loamy soil. “ Indian Island,” one of the finest and largest, is situated by river but $11\frac{1}{2}$ miles from the coast; and perhaps not much more than half that distance direct (latitude) would be the best locality to test the practicability of agriculture in this hitherto overlooked vast section of the province of Quebec; all, however, would depend on the climate, regarding which I can only say that if the splendid summer weather experienced during July and August, 1888, may be looked upon as an average, I do not hesitate to say that roots, vegetables, and the hardier sorts of cereals could be cultivated with success and return in excess of even some of our very best districts.”

The same phenomena as regards the succession of hill ranges and intermediate plateaus have been remarked in the exploration of all the large rivers more to the westward. Everywhere, series of rapids and falls, indicating the presence of mountain chains, alternate with intervals of still water, denoting plateaus through which the rivers flow in wide, deep beds, almost without change of level. These facts are clearly enough established by the reports on the exploration of the St. John, Musquaro, Trinity, Moisie, Ste. Marguerite, Pentecost, Manicouagan, aux Outardes, Betsiamits, Sault-au-Cochon and Portneuf rivers.

All these data go to show that the superficial configuration of the great country lying east of the Saguenay is formed by an alternating series of rocky ridges and intermediate plateaus or anticlinals of rock and synclinals filled with quaternary deposits. Add to this information that supplied by the general teachings of geology, and it becomes easy to form a pretty correct idea as to the nature of the soil of this region.

It is well known that the glaciers, in their descent from the polar regions, carried with them on their under surface masses of clay, with other substances of like nature, which they deposited as they melted in more southerly regions. This explains the origin of the clay lands found in the Saguenay country to the eastward of that river, as well as in the valley of Lake St. John, where there are in some places beds of clay as much as six hundred feet deep. To the action of the glaciers, depositing these clays, succeeded that of erosion produced by the marine and fluvial currents. As the sea, which covered the lower sections of the province during the Champlain period, subsided; the waters of the higher portions of the northern country, in their flow southwards, scooped out the beds of the great rivers traversing the region under consideration, eroding the rock ridges and depositing the sands derived from such erosions in the low lying grounds near them. Naturally the clay sediments previously deposited by the glaciers were covered over by these sands, which, in turn, carried by the rivers towards the south, there encountered the great current coming from the south-west and were distributed by it along the shore of the Gulf from the Saguenay downwards, precisely in the same manner as were the sands carried down by the Ottawa and the St. Maurice, in the region more to the westward. It will be easily understood that these beds of sand are all the thicker the nearer they occur to the actual shore of the sea; as the sea, which covered the higher grounds, subsided, the course of the rivers lengthened, acquired more strength and occasioned a greater erosion, the

detritus of which, below, was increased by all that had already accumulated above.

All this is corroborated by the facts ascertained by the explorations of late years. It is established by the report of Mr. James Richardson, of the Geological Survey, that, from the Saguenay downwards, the banks of the St. Lawrence are nearly everywhere formed of beds of clay, often of considerable depth, overlaid by beds of sand attaining a depth of even fifty feet. But this depth diminishes on going inland and it is unquestionable that, at the height of the sea of the Champlain period, the sandy alluvions, must have been altogether local and only met with in the immediate vicinity of the rivers, always overlaying the clay sediments arising from the breaking up of the glaciers. It would follow that throughout the whole of this vast Saguenay country, at a certain distance from the coast, the soil or arable land is composed in great part of clay sediments, often of great depth, so that instead of being arid and barren in point of soil, as is generally pretended, it should be, in this respect at least, fully as rich as the other sections of the province.

It is so in the Mecatina river country, as established by Mr. Neilson, and even in the parts more to the westward. Mr. Forgues mentions clay as part of the soil seen along the rivers Natashquan, Mingan and St. John, in the lower part of their courses, and he reports that this land is successfully cultivated in certain places. Mr. Gagnon reports that, for the first fifty two miles of the river Ste. Marguerite upwards from the sea, the soil is nearly everywhere composed of clay overlaid with sand. On the twenty third mile of his survey, Mr. Casgrain noted the existence of clay in the valley of the river aux Outardes. Mr. Low, Mr. Bignell, and nearly all the other explorers attest the presence of clay along the Betsiamits, and here is what Mr. Thomas Simard stated in a communication addressed to *Le Journal de Québec* :

“ For fifteen years engaged in the Hudson Bay Company's service, I have on several occasions traversed the country on the banks of the river Betsiamits and its environs, from its mouth on the St. Lawrence to its headwaters. The land along the banks of that river and in its neighborhood is generally composed of a clayey soil for about twenty leagues backward from its mouth into the interior. Its principal constituent is clay. On the north side, there are about three leagues of this land wooded with birch, bouleau, balsam fir, spruce, &c., tall and large, mixed with some pine. The land on the south side is of similar quality for a distance of ten to

twelve leagues from the St. Lawrence and the timber consists of tamarac, ash, birch and a good deal of white and red pine. Throughout the whole of this tract, as far as the Sault-au-Mouton, there are seven or eight lakes, and all the land on both sides of the river is pretty level, especially on the south side. There, falls are met with, formed by an extensive chain of mountains, showing no arable land except a few isolated plateaus. On the top of this chain, there is a lake of warm water, which never freezes over..... Starting from this lake, we begin to find birch, a little pine, ash, spruce, balsam fir, &c., as far as lake Poup-Magan. Between these two lakes the land is level on both sides of the river as far as the eye can reach, except a few isolated mountains. The soil is a strong yellow and black loam."

The existence of this great plateau, vouched for by Mr. Simard, is confirmed by Mr. Dumais in his report on the survey of the river Sault-au-Cochon. "On leaving the 101st mile"—he says—"the mountains disappear altogether, the river has worn a channel eighty to a hundred feet deep in the plain (*plateau*) which extends from the base of the mountains on the north to the St. Lawrence, running to the east until lost to sight near the river Betsiamits, and to the west as far as the bay of Mille-Vaches." In the valley of the river Blanche, between the Betsiamits and the Sault-au-Cochon, "the soil is nearly everywhere a gray or yellow clayey loam," and, as in the valley of the river Colombier, the land is level, according to the statement of Mr. Surveyor Lavergne. These level, clay lands continue towards the west: Mr. Dumais tells us that, in the Escoumains river region, "the land is very good for several miles along the river, especially to the north-east, and is composed of clay, marl, gray and yellow earth and sand mixed with fine gravel." The same surveyor indicates the clay lands he noted in the country of the Bergeronnes rivers and Mr. Richardson cites the opinion of Senator David Price to show that a belt of clay land extends from l'Anse à Baude to the river Ste. Marguerite, towards the north.

The foregoing pretty clearly establishes that, throughout the whole of the vast Saguenay country, the arable soil is composed of glacial or quaternary deposits, of which clay is the chief constituent element, which is tantamount to saying that these lands are naturally fertile, when they are not overlaid by beds of sand of recent origin.

This conclusion hardly agrees with several of the surveyors' reports published in this volume. But the difference is readily explained. Most of the surveyors only explored during the winter season, when the snow renders it almost impossible to ascertain the nature of the soil *de visu*, and nearly

all of them also confined their work to the immediate banks of the rivers, without penetrating into the interior to assure themselves of the character of the surrounding country. Now, it is well known that, owing to the action of erosion, which wears away the rocks, and the alluvions which cover with sand the banks of the streams coming down from the mountains, the vicinity of rivers, situated as are those of the Saguenay region, is nearly always rocky, sandy, and barren to all appearance; but better land is met with on going back from the immediate banks of those rivers, as has been established by Mr. Simard, in the case of the Betsiamits. In support of this contention, the aspect of certain rivers of the Lake St. John basin need only be cited. It is a matter of common notoriety that the rivers Peribonka, Mistassini and Chamouchouan flow through lands of marvellous richness and fertility; yet, in their estuaries and on their banks, only sand and stones, the products of erosion and alluvion, are to be seen.

But, in any case, the nature of the soil of the Saguenay country is well indicated by the forest growth of that region. Experience teaches that all lands producing good merchantable timber are sufficiently fertile to be classed among good agricultural lands; now, it is a fact that the forests of the region under consideration or at least of the part comprised between the Saguenay and the Betsiamits furnish excellent merchantable timber for export, as attested by the large trade carried on there for upwards of thirty years past. According to the surveyors' reports, there is just as fine wood in the country extending to the eastward as far as the river Moisie. Mr. Surveyor Lavergne reports that the river Blanche is bordered by forests rich in spruce and red, yellow and white pine, most of which are of good quality. The same species, suitable for trade, are found on the Manicouagan, Pentecost and Godbout rivers, together with cedar in the valley of the Trinity river. Mr. Gagnon says that "the river Ste. Marguerite — east of the Pentecost river—and its tributaries are well covered with merchantable timber, such as white spruce of good quality and in large quantity, of thirty to forty inches' diameter at the stump, and this from its mouth for a distance of fifty-two miles" The same surveyor noted similar forests much further to the eastward, in the Manitou river country, where "there is a tract of fifty miles in length by four or five, more or less, in breadth, well timbered with white spruce, from thirty to forty inches in diameter at the stump. " Lastly, as we have already seen, Mr. Neilson found, in the valley of the Mecatina at a comparatively small distance from the straits of Belle-Isle, forests of spruce measuring in general fifteen to twenty inches in diameter, and some running even to twenty-five inches.

It must be admitted that the land on which such trees grow is far from being barren and might even be cultivated with advantage.

In the western part of this vast country, the valley of the river Valin, although pretty broken, contains a little good land and a great deal of fine merchantable timber. The townships of Tremblay, Harvey, St. Germain, Labrosse and Albert, situated more to the south east along the Saguenay, are partly settled. These townships are somewhat broken and even mountainous and rocky, but nevertheless include some fine valleys of good land favorable to agriculture. The township of Tadousac is chiefly composed of sandy alluvions and embraces but little land susceptible of advantageous tillage. The best parts occur between L'Anse à l'Eau and the river Baude. These good lands extend backwards into the valley of the river Ste. Marguerite towards the north and eastwards into the township of Bergeronnes, which possesses some excellent lands to the west of the river of the same name. The township of Escoumains also contains a sufficient extent of good land to permit of the formation of considerable settlements over and above those already existing. The work of colonization might be continued from this township as far as the fine plateau of lake Cassette, some 25 or 30 miles from the coast. The township of Iberville, which comes next, is, to say the least, equally favorable — its generally undulating lands being of good quality. There are neither swamps nor bottoms, and the mountains are too small to be hurtful. The forest is composed of mixed timber and covers the whole township, except the fifth and sixth ranges, which have been burnt over and are rocky.

Further to the eastward are the townships of Portneuf, Laval and de la Tour, fully as advantageous as the preceding. At ten miles' distance back from the St. Lawrence, the mountains disappear and the rivers flow through a plateau which extends as far as the eye can see from east to west. This plateau is level and composed of a sandy soil, mixed with yellow and grey loam, resting on a clay subsoil, especially in the valley of the river Portneuf, which contains a good deal of land of the best quality and of timber, whose size and length indicate a really rich soil.

Mr. John Bignell reports that "the banks of the river aux Outardes are sandy and not generally high; that land fit for settlement may be found along the whole river for a distance of two hundred miles, in tracts varying in area from 50 to 5,000 acres, and that in the aggregate upwards of 70,000 acres might be made available."

Still further to the eastward, in the valleys of the rivers Manicouagan, Pentecost, Trinity and Godbout, Mr. John Bignell asserts that there are 150,000 acres of land adapted to cultivation. Although the soil is sandy, thin and easily exhausted, it can be enriched with sea-weed, fish-offal and other marine manures easily procurable on the spot by the inhabitants.

All these data go to show that to the north of the St. Lawrence, between the Saguenay and Pointe des Monts, there are at least a couple of millions of acres of arable land, both in point of soil and climate. There are also arable lands further to the eastward, as established by the reports of Mr. Forgues, and principally by that of Mr. Neilson on the river Mecatina, whose mouth lies to the east of the 60th degree of longitude and north of the 50th of latitude, about 500 miles below the Saguenay. If, as Mr. Neilson pretends, roots and the hardier cereals can be cultivated in the valley of that river, they should also be cultivable in the intermediate country more to the westward and notably in the valley of the river Ste. Marguerite, near the river Moisie, where there are large tracts of good land. The conclusion therefore is inevitable that this Saguenay country, so long represented as almost completely arid, barren and worthless for settlement purposes, contains enough good land to render it a colonizable region, at least in many parts, and one that might be occupied by an agricultural population, when the other regions actually considered more desirable shall have been all taken up.

It is scarcely necessary to state that the ligneous growth which predominates in the Saguenay region chiefly belongs to the family of the conifers. Red pine occurs in the valley of the Little Bergeronnes river, and white pine is found throughout the whole region embraced between the Saguenay, the St. Lawrence and the Manicouagan, for a distance of fifty to sixty miles from the shore of the St. Lawrence, in the plateau of the river Betiamits and the Bergeronnes. These pine forests have been lumbered for the past thirty years, especially in the Escoumains section, and have furnished to the export trade immense quantities of fine timber.

White spruce of excellent quality is more abundant than white pine. It occupies the same region as the latter, but extends very much further to the northward and north-eastward, where it forms extensive forests capable of being easily and advantageously worked. Along the Trinity, Manitou and Ste. Marguerite rivers, that is to say: in the region of the Moisie, upwards of 200 miles east of the Saguenay and for 50 miles inland, Mr. Surveyor Gagnon found splendid forests of white spruce measuring as

much as 30 and 40 inches in diameter or, in other words, wood that is not excelled in its dimensions by any derived even from the best forests of the province. Mr. Neilson, as has been seen, has found in the valley of the Mecatina white spruce of fifteen to twenty and even twenty-five inches in diameter, which renders it suitable for export, so that it may be said without exaggeration that the white spruce is in quality and quantity fit to be worked over a distance of more than 500 miles to the eastward of the Saguenay.

Red spruce or tamarac, in very much smaller quantity, is found very nearly over the whole of the same tract. The finest forests of this wood are met with at the head of the north-west branch of the river Ste. Marguerite; red spruce abounds, says Surveyor Gagnon, and it is of the finest growth.

Cedar is met with in the region of the Bergeronnes rivers and the Escoumains, in that of the Manicouagan near the coast and even in that of the river Natashquan.

Birch is a common enough wood between the Saguenay and the river Betsiamits for fifty miles from the St. Lawrence. It is found in the townships of Bergeronnes, Escoumains and Iberville, and even far to the north of those townships. The same may be said of ash and elm, which are seen even in the Moisie river region.

The bass wood or linden is found in the valley of the Little Bergeronnes river for a distance of fifteen miles from the St. Lawrence, and along the river Betsiamits to beyond the falls, forty-five miles from its mouth. The existence of this wood in these localities is attested by Mr. P.-H. Dumais (see page 572) and by Mr. Eugene Casgrain (see page 585), two of the most competent and reliable explorers.

The existence of bass-wood in these localities is one of the strongest evidences in favor of the soil and climate of this country. It is well known that this wood only grows in the richest lands and the most propitious climates; it occurs only rarely in the Quebec region and, properly speaking, only figures in the forests of the finest portions of the Eastern Townships, of the Yamaska valley and the Ottawa region. This tree only grows in rich, mellow and deep soils and the most favorable climatic conditions are essential to its full development. According to Brown, it is generally found in places where the sugar maple, the white ash and the hemlock flourish most. The fact that it occurs in the Saguenay country as far

down as the region of the Betsiamits is one of the most incontrovertible proofs of the adaptability of the climate of that country to the culture of all the ordinary cereals and also a conclusive proof of the richness of the soil.

It is needless to add that the white birch (bouleau), as well as the black and grey spruce and the grey pine (cyprés) are met with everywhere, even in places the least favored in point of soil and climate. Aspen and poplar also abound and the balsam fir is of common occurrence nearly everywhere.

The following from the explorers' reports will show the distribution of the different woods in the principal portions of the Saguenay country :

The region of the river Ste. Marguerite, which falls into the Saguenay, has been surveyed by Mr. Gédéon Gagnon. In speaking of the main branch of this stream, above its confluence with the north fork, he supplies the following notes :

“ The north-east part of the river, from the 16th mile to the 30th, is less mountainous than the south-west part. Although white pine is not abundant on this stretch of the river, it is nevertheless the part which shows the most. Beyond the 30th mile, pine is very rarely seen. White spruce, however, is abundant on both sides of the river, but not large enough to be merchantable.....The tract between the 26th and 30th miles is less mountainous, but the land is equally unsuited to tillage. I saw no hard wood after leaving the 8th mile. Between the 35th and 50th miles, white spruce is abundant in many places and of large size. The spruce found there is merchantable. There are also some white pines on the tops and sides of the mountains.....On the last ten miles of the survey, I noted no merchantable timber ; small grey and white spruce being the prevailing woods on the flats and ravines ; the mountains are moreover nearly bare. From the west line of the township of La Brosse, south-west of the river Ste. Marguerite, to the 17th mile, there is a range of mountains covered with hard and soft wood of good growth and running almost parallel to the river. The bottoms on this side of the river have a depth of from 40 to 50 chains and are formed of rich soil, their depth being sufficient to make a fine range. Elm, ash and birch are of fine growth. All the northwestern part from the mouth of the river to the 33rd mile is bordered by the mountain chain of the river Ste. Marguerite. There is, however, a strip of level and cultivable land, of 50 to 70 chains, richly clothed with soft and hard

wood. Elm and ash are the predominating kinds. All the tract—four or five ranges—comprised between the townships of St. Germain and La Brosse, is generally adapted to cultivation, although mountainous around the lakes. But these mountains are splendidly timbered with hard and soft woods, which proves that the extent of uncultivable land in this region would not be an obstacle to the colonization of this part of the Saguenay country, as one might be led to think at the sight of the mountains along the Saguenay. The unsurveyed tract between the townships of St Germain and LaBrosse contains about 50,000 acres of cultivable land, allowing for the space occupied by the mountain range bordering the Saguenay which is unsuited to settlement.

“ Near the west side line of the township of La Brosse to the north-east of the river Ste-Marguerite, white spruce of 15 to 20 inches is fairly plentiful in all the cuts between the surrounding mountains. Some clumps of white pine are also observable in different directions to within a few chains of the west side line of La Brosse, but they are few and small. On the 7th mile, there are some clumps of white pine, at a distance of about a mile to the north of the river, but they are of limited extent; I also noted white pine on the 12th mile in a northerly direction, but in small quantity, for a distance of three or four miles. In addition to the birch, elm and ash already mentioned, along the whole plateau traversed by the south-west arm of the river Ste. Marguerite, between the 1st and 30th miles, there is also a sufficient quantity of white spruce from 15 to 20 inches in diameter for profitable lumbering, especially to the north-east. The south-west side of the river, along the same distance, is richly wooded with hard wood, with a few white pines here and there and easily got at, to form part of such lumbering.

“ At the 36th mile, on the south-west side of the first fall, known under the name of the fall of the Fraye-au-Saumon, I crossed several miles in a northerly direction and noted from the heights a considerable stretch of good land in rear of the townships of Harvey and Tremblay, well timbered with hard wood, among which white birch predominates. There also pine is scarce and the spruce grows smaller after the 33rd mile.....There is no white pine between the 43rd mile and the source of the river; all this section is wooded with medium-sized grey and white spruce—merchantable spruce being rare. There is no hard wood beyond the mountains to the north-east of the river after the 43rd mile.

“ *Conclusion.*—On the south-west branch of the Ste. Marguerite, to the 30th mile, white spruce, large enough to be merchantable, exists in fairly

large quantity for advantageous working and the river presents no obstacle to the drive. There is a small quantity of seemingly sound white pine. In the last six miles of the survey of the north-west branch, large tamarac is abundant. There is no cultivable land along this tributary. Beyond the 16th mile of the survey of the north-east branch of the river Ste. Marguerite, there is no cultivable ground. From the 16th to the 40th miles, white spruce is the only timber worth working : there is no hardwood and very little pine."

The following notes are found in Mr. Dumais' report on the survey of the rivers Bergeronnes, Escoumains, Sault-au-Mouton, Portneuf and Sault-au-Cochon :

Little Bergeronnes.—"The soil is composed of clay and alluvial earth in the meadows, and of grey and yellow earth mixed with sand on the uplands ; the wood on the heights is of several kinds, among which white birch, balsam and spruce predominate, with a few white, red and grey pine. The lake des Sables, the most important on the river, is thirteen or fourteen miles in circumference, being about four miles in length by two and a half wide. There are several lumbering camps located in its neighborhood, but the greater number of the saw logs are procured on the upper part of the river to the north-east of the lake. The high mountains surrounding it are well covered with every variety of timber to be found in the Saguenay district ; spruce, white birch, balsam, white and red pine, yellow birch, poplar, cotton wood, cedar, alders and basswood are all to be met with either separately or growing together. On the sixteenth mile, the river divides into two branches, the principal one going towards the west, the other in a northeasterly direction. The aspect of the country is everywhere the same ; the wood is less and less leafy as we penetrate further into the interior ; pine and spruce are more plentiful and of excellent quality. At the twentieth mile post, on the headwaters of the river Petite Bergeronne, a narrow gorge extends to the westward, and at a distance of two miles may be seen the chain of mountains bordering the river Ste. Marguerite, while still further, just visible above the horizon to the south-west, are the summits of the Saguenay hills. Pine and spruce are found as far as the source of the Petite Bergeronne, down which they may be floated without any other improvements than those already made "

Escoumains.—"There is little or no timber in this section remaining to be cut. A great part of the forest was long ago destroyed by fire, and the new growth will never be of any value ; there are, however, a few clumps

of fine looking timber, but the quantity is insignificant. The country to the height of lands presents very much the same appearance. Black spruce and balsam are the principal woods."

Sault-au-Mouton.—"The varieties of wood which predominate are spruce, white birch, scrub pine, tamarac and pine; the land is generally undulating and rocky. The mountains on the upper part of the river are not very high."

Portneuf.—"A third fall of some twenty feet, (on the 25th mile) necessitates a portage of a few arpents to the east of the river. The burnt lands are dotted here and there with small patches of growing timber, in which some large pine and spruce trees are to be found, while the rest are chiefly balsam, white birch and black spruce. The table lands—towards the 43rd mile—covered with scrub pine, which border on the river and extend to the base of the mountains, are composed of sand, yellow earth and small rounded pebbles. I descended the Portneuf to the chief fork on the fifty-sixth mile; from there I scaled this branch as far as the heights, keeping always towards the east in order to reach as soon as possible the river Sault-au-Cochon. In the whole course of this exploration I met with no change in the nature of the soil. Pine, spruce and scrub pine were met with along the first seven miles, but, after passing the Grande Chute, black spruce and white birch cover the greater part of the land watered by this branch, which receives several small tributaries from the western side and the outlets of a number of lakes."

Sault-au-Cochon.—"Beginning operations at the north end of the lake forming the head of the river Sault-au-Cochon, I scaled this lake and a succession of small ones, following their direction down as far as lake Kakuskanus or lake des Pêcheries, of which I made a complete scaling. On this upper part of the river, the country is all one rocky and mountainous tract covered with spruce, white birch and balsam of middling length and size. The hills—between the 56th and 62nd miles—are clothed with black spruce, white birch, poplar and balsam; in the ravines the timber is larger, especially the white spruce, but the quantity is small compared with that of other kinds. The timber below the Grand Portage is of better quality, but the prevailing varieties are white birch, scrub pine, spruce and balsam, &c., &c."

"From the sixty-third to the hundred and second mile the river is not interrupted by any rapid, but flows peaceably between the two parallel chains of mountains rising above it, crossing the narrow valley at intervals."

The river des Bouleaux discharges itself from the west side on the 65th mile. Several other small rivers do the same on one side or the other, and the mountain gorges which give passage to these tributaries are generally better wooded than the valley of the river proper; spruce, pine, white birch, scrub pine, cypress, balsam and poplar are found of a good size and excellent quality; the best of the pine, however, has been cut. The firm of Price, Brothers & Co., sent lumberers in here last fall to work from the river or lake à Cassette on the eighty-eighth mile down towards the falls on the hundred and first mile. I scaled the lake à Cassette, and I think that the best part of the pine and spruce are to be found in its neighborhood, although these lands were worked nearly twenty years ago, but trees that were small then have had time to become fit for cutting. On leaving the 101st mile, the mountains entirely disappear. The prevailing woods are scrub pine, black, grey and red spruce, balsam, white birch, aspen, poplar, pine, moose-wood and alder. The soil is of better quality, and the timber of a size and length only found on the best."

Further to the eastward are the Laval, Blanche and Colombier rivers, explored by Mr. Surveyor Lavergne in 1873. Here is what he states in his notes:

Laval.—"The timber on the first thirty miles is generally balsam, spruce and white birch; however, on going back from the river, both on the right and left, spruce and white and yellow pine of good quality and in pretty large quantities are found. At twenty miles from the coast, the river forms three falls which succeed each other at short distances, where saw or other mills might be built at slight cost. The last part of the river Laval traverses a less mountainous country than the first, but its soil is poorer, being composed of nothing but grey and yellow sand. The bulk of the wood consists of small grey spruce mixed with balsam and a few tamaracs."

Blanche.—"This river, also irregular, flows over a less mountainous country than the river Laval; no mountains are met with piled one upon the other; the country is only rolling. The stream is bordered by rich forests of spruce and red, yellow and white pine of good quality, and the soil is a grey or yellow clay."

Colombier.—"This river is not less capricious in its course than the other two; nevertheless, it flows through a generally level region, but the soil is poor in timber—grey spruce and bouleau being about the only kinds

met with, except towards the head of the river, where there are some pine and tamarac. On the 8th mile of the river, there is a fall of 20 feet high.

Next comes the Betsiamits river which has been explored by Messrs. Casgrain, Bignell and Low. Here is what is found in Mr. Casgrain's notes:

Betsiamits.—"Considered as a forest for the supply of marketable timber, the region drained by the Betsiamits and its numerous tributary streams is of very little value; it appears to have been frequently devastated by terrible fires, which have destroyed every thing in their way, though in some places which the fire has spared, and where pine, spruce birch and ash are found of an excellent growth, there is no doubt that the utilizing of these forest treasures would prove extremely profitable. From the falls to the sixth mile, the river flows almost continuously through steep mountains. Six streams and rivers empty themselves into it, two from the east and four from the west. These waters are similarly enclosed by mountains. Within this space along the Betsiamits and all its tributaries, valuable wood is found, viz pine, spruce, bass wood, birch and ash; the forest continues to be equally good as far as the eighth mile, that is to say, to about fifty miles from the St. Lawrence. This small forest is surrounded by burnt spaces as far as the eye can reach."—(*Casgrain.*)

"For the first forty five miles from the mouth, the river is perfectly navigable. Its banks and the adjacent mountains are covered with a good forest growth, composed of white spruce, red pine, white birch, tamarac, aspen and balsam fir. The large timber ends at about eight miles from the first fall. After that there is a young growth of the same woods, but the trees are hardly eight inches in diameter. All this country has been burnt over at a comparatively recent time.

"The river valley, cut in the surrounding table-land, varies from a quarter of a mile to one mile in width. Its sides are formed by Laurentian hills elevated from two to six hundred feet above the stream. These hills are well wooded with white and black spruce, tamarac, balsam, poplar and birch, and quantities of valuable timber are taken out every year, and cut up by the steam mill at the mouth of the river. About thirty miles up the river and northwards, the country has been traversed by frequent and extensive fires, which have left very little of the original forest, the region being, for the most part, covered with second growth timber of aspen, poplar, white birch, banksian pine and spruce, none of which has attained a large size.

“The shores of lake Pipmaukan are principally low, but in places are rocky and rise in elevations of one to two hundred feet above the water, the whole being covered with a fair growth of white spruce, balsam, spruce and white birch.” (*A.-P. Low*)

These data are completed by the letter of Mr. Thomas Simard already cited.

River aux Outardes.—“As we ascend the river from the coast, the growth of timber is fir, spruce, bouleau, aspen and cypress. At the distance of 200 miles, the quantity of bouleau and aspen diminishes very much, and a few miles further they entirely disappear, and we find only small spruce, tamarac and cypress, and at the head of the river and height of land, only small stunted black spruce is found.” (*Bignell*)

Manicouagan.—“The country from the falls up to the forks is rough and hilly, and in some places mountainous; the soil, where elevated above the freshets, is dry sand overlaying a bed of clay and the growth is fir, bouleau and spruce, with an occasional pine. About the two great lakes, Moosh-au-lagan and Tshimanicouagan, the soil is sandy and the growth is fir, spruce, bouleau, aspen, cypress and tamarac, but, beyond the lakes, spruce of an inferior quality predominates, and where we turned back in latitude 52° 12', the only growth is small black spruce and tamarac.” (*Bignell*)

Godbout and Trinity.—“The same description as already given will apply to both of these rivers, viz: mountainous country, good land near the river, the same unvarying growth of fir, spruce, bouleau and aspen, with occasionally cypress and tamarac, and some pine on nearing the coast, there being however a little more pine on the Trinity than on the other rivers, and on the Godbout near the coast may be found some cedar, which is not found elsewhere.” (*Bignell*)

Pentecost.—“We struck the headwaters of the Pentecost in a growth of spruce and tamarac; the stream flows hence tranquilly for about nine miles passing through several small lakes, and then begins rapidly to descend, falling, in the distance of fifteen miles, as many hundred feet, being occasionally broken by falls and rapids. The country along the Pentecost is rough and mountainous; good land is found along the river, and the growth of timber is better than along the Manicouagan; considerable spruce (some of it of a very fine quality) and tamarac are found along its

entire length, a distance of eighty miles, and, on approaching the coast, a little pine may be found." (*Bignell*)

Ste. Marguerite.—"The banks of the river Ste. Marguerite and its tributaries are well covered with merchantable timber, such as white spruce of good quality and in large quantities, of thirty to forty inches diameter at the stump. This heavy growth of timber continues from the mouth of the river up to the Grand Portage, a distance of fifty-two miles, except a space of nine miles by one and a half in depth, between the river au Canard and the river Ochogan, which has been ravaged by fire. Along the Grand Portage the timber consists of hard and soft woods mixed, of medium size. The soil is sandy and rocky. From the river à Gamache to the river Kamalshinekikatest, a distance of twenty-four miles, the mountains disappear, heaps of sand are seen in all directions and plateaus of twenty to thirty arpents in extent at different places, well timbered with hard and soft woods, including considerable quantities of merchantable white spruce of good growth. The sides of the mountains in the distance were swept by fire about fifteen years ago. From the river de la Montagne Blanche to the forks, a distance of thirty-three miles, the greater part of the forest has been destroyed by fire. Some isolated spots bear trees of large size, of both hard and soft varieties; in others the growth appears to be that of fifteen or twenty years." (*Gagnon*)

Moisic.—"The banks are sandy and generally high. The timber consists of fir, white spruce, white birch and aspen. Along the first 12 miles the wood has all been cut off, leaving nothing but fir and small white birch." (*Casgrain*)

Balsam fir, spruce and white birch, with an average of 10 inches in diameter, are about the only kinds of wood met along this river." (*Duburger*)

River à la Truite.—"The timber on this river, from the mouth up to lake à la Truite, was in great part destroyed by fire some four or five years ago. The land along the principal stream is well covered with merchantable timber, such as white spruce, and is suitable for cultivation on both sides for about a mile. Elsewhere the timber is of middling and small size." (*Gagnon*)

Manitou.—"The Manitou is a river on which timber may be manufactured to great advantage. With the exception of about two-thirds of the land north-east of lake Manitou, which has been ravaged by fire, there is a tract of fifty miles in length by four or five, more or less, in breadth, well

timbered with white spruce, from thirty to forty inches in diameter at the stump, around the lakes and tributaries and along the Manitou itself. This river flows through lands of a sandy nature, fit for cultivation, extending from fifteen to twenty arpents on each side, especially between the lakes Asec and Manitou." (*Gagnon*)

According to Mr. Surveyor Forgues, the only woods along the St. John, Mingan, Natashquan, St. Paul and Musquarro, are balsam-fir, spruce and white birch, with a diameter of from three to eight inches. These remarks, however, apply merely to the parts nearest the coast, which were alone visited by Mr. Forgues. He would probably have found larger timber if he had penetrated more inland, judging from the result of the explorations made to the westward and eastward along others rivers and notably along the Mecatina, where Mr. Neilson only met good timber at a certain distance from the sea. It seems pretty probable that, in the section adjoining the coast, along all these rivers, the best timber has been cut off by the fishermen and the inhabitants or destroyed by fires, the traces of which are unfortunately visible everywhere. The woods seen by Mr. Forgues are in all likelihood only a second growth replacing the original forest destroyed by the axe and by fire near the sea, but which should still exist more inland in the parts not yet reached by the explorers.

An analysis of all these notes of survey necessarily leads to the conclusion that in the whole of this vast Saguenay region, there are immense forests susceptible of being lumbered and capable of supplying good timber in almost unlimitable quantities for export.

Minerals also form in favor of this region an incontestable source of wealth. In addition to the molybdenite of Quetachoo bay, the cupriferos philipsite of Watsheshoo and the building and ornamental stones, which are not without importance, there are deposits of ochre and magnetic iron which possess considerable value.

The deposits of ochre are found at Pointe des Monts, on the banks of the little river St. Augustin, at Manicouagan, the Jeremie islands and near the Little Romaine river, in the township of Iberville. At the first named place, the deposit is three or four acres wide and forms beds of two to three feet in thickness on the slope of a hill. The natural color is yellow, brown and black. The Manicouagan deposit is much more extensive. Mr. Obalski is even of opinion that it is the most important on the whole coast. It occurs at Paint Cove (*l'Anse à la Peinture*), where it covers a frontage of a

mile and a depth of eight or ten acres, and has a thickness of five or six feet. It seems to be older than the others. Opposite the Jeremie islands, at about a mile from the coast and along a small brook, for a distance of a mile, with a depth of several acres, there is a bed of ochre which attains as much as fourteen feet in thickness, according to the statements of the people of the locality. The deposits of the township of Iberville are extensive. have a thickness of five or six feet, and have been worked for some years if they are not still, by Mr. John Argall, for an English company. Five men could prepare four tons a day for shipment. The color of the ochres, when delivered to the trade, is a light red, a brown red, red, light yellow and yellow. The two last colors are natural.

Iron is met with in the form of magnetic sand. This sand is found nearly everywhere along the shore from the Saguenay to beyond Natashquan, for a distance of about 450 miles and along certain rivers for thirty miles inland, on the water's edge and sometimes forty and fifty feet above its level. This is equivalent to saying that these magnetic sands are in illimitable quantities. Here is what Mr. James Richardson said on the subject in a report on the geological exploration of the North Shore :

“ In addition to the economic materials already mentioned, the iron sands of this region, which have attracted considerable attention, may be noticed. The deposits of these sands at Moisie have been examined by Dr Hunt, who has shown that they belong to the stratified silicious sands of the district, which here overlie the old marine clays, at considerable heights above the present sea level. In many places I observed beds holding so much iron ore as to show dark or nearly black layers among the grey and brown silicious sands. They were seen, of this character, at various places along the coast, at heights up to 100 and even 200 feet above tide-level while on the Manicouagan river, twenty-four miles from its mouth, where it attains a height of 256 feet above the sea, the banks of sand exhibited the same dark-coloured bands of iron sand, from forty to fifty feet above the water.

“ On the coast between Portneuf and Sault-au-Cochon, and also between the river St. Margaret and the Bay of Seven Islands, hills of post-tertiary clays, containing marine fossils, and attaining heights of from 50 to 150 feet, are often seen to be capped with from forty to fifty feet of similar fine and coarse brown sand, banded with dark layers likewise charged with black iron ore.

“ The rich accumulations of ore which are seen along the beach appear, as Dr. Hunt has remarked, to result from a natural process of concentration by the action of the water upon these sands ; they were observed in a great many places on the coast, about high water mark, in strips from three to nine and twelve feet wide, and from two inches to two feet in thickness, often extending, without interruption, for miles. It is said that the visible extent and the richness of these local deposits is somewhat affected by the varying action of the wind and water. The places at which I noticed these belts of iron sand along the portion of coast examined are as follows, viz :

“ 1. The vicinity of Tadousac, for a distance of three miles downwards.

“ 2. From Jeremie to Bersimis, and thence to the Papinachois, a distance of twelve miles.

“ 3. The peninsula at the mouths of the Outarde and Manicouagan rivers, for forty miles.

“ 4. From English Point to Pentecost river, for eight miles.

“ 5. The coast on both sides of the St. Margaret river, for ten miles, making in all sixty-six miles.

“ In all these places except the first named, near Tadousac, I think that the quantity of ore is such that it might be collected with profit, especially by the aid of proper concentrating machinery. Water-power, if needed, is accessible in several localities near the iron sands ; among others, at the falls of the river Baude, on the coast, three miles below Tadousac ; at the falls of the Papinachois, also on the coast ; at those of the Outarde and Manicouagan, at the head of tide-water (respectively twelve and fifteen miles from the general trend of coast) ; at a fall in a stream, on the coast, half a mile north-east of Pentecost river ; and at the falls of the St. Margaret, three miles from the coast.

“ The mouths of the Bersimis, Papinachois, Outarde, Manicouagan, Pentecost and St. Margaret, all afford safe harbours, with sandy bottoms, which vessels drawing twelve feet of water may enter at high tide, although the access is somewhat difficult, on account of numerous sand-banks. In any of them a wharf extending from forty to fifty feet from the shore would be sufficient to reach the channel.”

Mr. Gagnon, who surveyed the rivers Ste. Marguerite, Trout and Manitou, states that along all these streams are found the purest deposits

of iron. "Along the whole course of the river Ste. Marguerite" — he reports — "beds of magnetic sand are found at different points. These begin at the river au Fer and end at the river Ochogan, a distance of 18 miles. The last lake on the river Ste. Marguerite is surrounded by high mountains in which iron ore is also met with. It is also found on the north-west and south-west banks of Trout lake, on the river of the same name."

Mr. Hunt, who is an authority in such matters, submitted samples of these magnetic sands to analysis and obtained the following results :

	Betsiamits sand.		Moisie sand.		Mingan sand.
Protoxyde of iron.....	85.56	.....	85.79	.....	80.46
Titanic acid.....	3.50	.....	4.15	.....	6.50
Oxyde of manganese.....	Indet	.....	0.40	.....	0.52
Lime	traces	.....	0.90	.....	0.75
Magnesia.....	.....	.....	.....	.....	0.70
Insoluble residue.....	3.85	.....	1.95	.....	4.20
	<hr/>		<hr/>		<hr/>
	92.91		93.19		93.13
	<hr/>		<hr/>		<hr/>
Oxyde of magnetic iron.....	92.44	.....	92.68	.....	86.92
Metallic iron.....	66.56	.....	66.73	.....	67.58

An extremely careful analysis by the same chemist showed in the Moisie iron only .0094 of sulphur and .0184 per cent of phosphorus, which indicates one of the purest and most profitable irons.

The magnetic sand might be cleaned and separated on the spot for exportation in the raw state or for smelting there. Fuel would be easily procurable, as the forests of the region include large quantities of white birch, which makes one of the best charcoals. The coal of Nova Scotia is also comparatively near at hand, and, with the aid of the easy harbors of the North Shore, might be delivered to the furnaces for about the same price as the ironmasters pay in England for their fuel.

The fisheries of the Saguenay country are unquestionably the richest in Canada, and, even, in the world. Nowhere else can so many and such beautiful rivers be met with and, as may be seen on reference to the part of this work under the head of *Fish and Game*, the portions of these rivers, which the salmon cannot ascend, abound with the finest trout, and in some

places with several other species of fish. There are in the Saguenay country also immense lakes swarming with fish, such as lakes Milnikek, on the Portneuf river, Pipmaukan and Natuakaminu on the Betsiamits, Kakuskanus or des Pêcheries, on the Sault-au-Cochon, Pletipi at the head of the river aux Outardes, Mooshaulagan and Ishimanicougan, at the head of the Manicouagan, Mistecopin, on the Pentecost, Nipissis, on the Moisis, and Matameck, on the Trout river. Mr. Neilson says that, according to the statements of the Indians, the Little Mecatina river takes its rise in two lakes larger than Lake St. John. These great lakes, with their pure, limpid and deep waters, are so many reservoirs, in which the finny species multiply *ad infinitum* to stock the rivers by which they discharge. The purity and coldness of their waters impart to the fish, chiefly trout, an exquisite flavor, a fact noted by Mr. Neilson. As a question of fact, it is impossible to find a region where river fishing is more abundant and where the fresh water trout, the sea-trout and the salmon are in greater quantity and of better quality and larger size.

But these fresh water fisheries are insignificant as compared with the harvest of the sea along the whole coast. It is there that the greater part of the cod, the herring, the mackerel and the halibut annually exported from Canada are taken. All the great fish-firms, the Robins, LeBouthilliers and several others maintain establishments on the North Shore, where they catch the bulk of their fish, which is then sent to Gaspé, Percé and Paspebiac, to receive the finishing treatment for foreign exportation.

It is also along this shore that the Halifax merchants purchase a large portion of the fish which they export and it is well known that American fishermen also make fortunes in these waters, where they are more successful than the Canadians owing to the superiority of their tackle. Still, the sea adjacent to this Saguenay country might, without the slightest danger of exhaustion, be made to yield ten times more fish than is actually taken in it. And the prosecution of this industry is rendered all the easier by the fact that good harbors can be found everywhere, in which the fishermen can land or be certain of absolute shelter in foul weather, without taking into account that they need not go far from the shore to load themselves with fish. If, to the other species, the whale and the seal be added, which frequent the coast in myriads, the conclusion—generally accepted, in fact—will be easily reached that the fisheries of the North Shore are the richest extant. These fisheries are also capable of supplying, in the shape of fish offal, immense quantities of the richest manure, which is important

from the points of view of the colonization and agriculture possible in this country, containing as it does much first quality land. For the year 1888, the statistics of the fisheries of the Saguenay region gave the following figures :

Salmon, salt, barrels.....	851
" fresh, lbs.....	195,678
Trout, barrels.....	161
Cod, quintals.....	54,629
" tongues and sounds, barrels.....	22
Halibut, lbs.....	58,447
Herring, barrels.....	10,351
Mackerel, ".....	19
Eels, ".....	10
Canned lobsters, lbs.....	7,000
Common fish, barrels.....	10
Seal skins.....	16,375
Porpoise skins.....	26
Seal oil, gallons.....	86,264
Porpoise oil, gallons.....	100
Codliver " ".....	47,425
Fish used as bait, barrels.....	15,748
Fish used as manure, barrels.....	279
Fish used for local consumption, barrels.....	3,224

Total value of all this fish.....\$427,709.40

It must be remarked that the figures given for the salmon—851 barrels or 170,207 lbs of pickled salmon and 195,678 lbs of fresh salmon—only cover the product of the net fisheries on the coast and in the estuaries of the rivers ; to which should be added the quantity taken with the line in the latter, above tide water, which is also considerable. Unfortunately, there are no statistics showing the yield of this mode of fishing ; but it may be safely asserted that it amounts to at least 100,000 lbs, which would bring up to about half a million of pounds annually the quantity of salmon taken in these places ; and these figures might be doubled with the greatest facility, seeing that a large number of the salmon rivers are not angled.

It may therefore be unhesitatingly stated that its extensive tracts of good land, its fine forests, its inexhaustible iron mines and its valuable fisheries, the most prolific in the world, render the Saguenay or North

Shore region one of the most interesting sections of the province, where settlers and workmen are the only things needed to develop its abundant natural resources. Within some years past, the construction of a railway to the straits of Belle-Isle has been mooted for the purpose of shortening the transit between the parts of America situated more to the westward and European ports. Between the Saguenay and the straits of Belle-Isle, the building of this road would be of the easiest, and the ocean passage could be effected at the most in four days by steamer. Should this scheme be ever realized, the resources of the Saguenay country will double in value and a large portion of it will be rapidly peopled.

HEIGHT OF LANDS' REGION.

Under this head is designated the belt of highlands formed by the northerly slope of the principal chain of the Laurentides, hitherto set down as the northern boundary of the province. The information supplied by the few explorers who have visited this region would seem to indicate that, on account of the climate, it is uninhabitable from its eastern extremity to the plateau in which the St. Maurice and the Ottawa take their rise; beyond this last point, the climate is favorable to all kinds of crops and, in many places, the soil is of good quality and even rich in the space comprised between the Ottawa and lake Abbitibbi. The height of the mountains diminishes considerably going towards the west and south-west; at the head of the rivers aux Outardes and Manicouagan, it attains 3,700 feet over the sea level, while between lake Nikoubau and lake Mistassini, a couple of hundred miles further to the south-west, it falls away to 1,359 feet, and at about 200 miles from the last named lake, it hardly exceeds 800 feet, as lake Abbitibbi, which lies to the north of the watershed or "height of lands"—to use the common expression—is not more than 847 feet above the level of the sea. In the angle formed by the deflection of this ridge line towards the south-west and in which the rivers Gatineau and St. Maurice take their rise, the altitude is about 1,500 feet.

In the region lying north of Lake St. John, the country adjoining the "height of lands" is generally level, with a slight slope to the southward, and dotted with large lakes, evidently hollowed out by glaciers. Isolated hills, from 300 to 500 feet high at the most, break in some places the uniformity of the general surface of this section. The soil, everywhere

composed of transported matter of the glacial age, consists of clay and alluvial sand. There are extensive moraines, supporting a stunted growth of tamarac and other trees. On the higher and drier grounds, the forest vegetation is composed of white birch, poplar, balsam fir and white spruce which frequently exceed eight inches in diameter.

More to the westward, in the region comprised between File-Axe lake and the headwaters of the Gatineau, the land is drier, more sandy and rocky and much more mountainous. Clay is only rarely seen, and nearly everywhere the soil is made up of sand, very often barren, with an exceedingly poor forest growth, where the bush has not been altogether destroyed by fire. Strange to say, the soil and timber are much better on the other side of the "height of lands." Mr. Bignell reports that "the timber is more abundant and larger on the northern side of the height of lands than it is on the southern and contains a good deal of merchantable spruce. There are also large tracts of good land between the southwestern extremity of lake Mistassini and Lake St. John." At the head of the Chamouchouan and the Gatineau, the sand of which the soil is almost exclusively composed sometimes forms terraces attaining as much as a couple of hundred feet in height.

West of the sandy country in which the St. Maurice and the Gatineau take their rise, the region embraced between the Ottawa and the height of lands forms a plateau broken only at rare intervals by a few rocky headlands, and possessing a soil composed of glacial or quaternary clays occasionally mixed with sand. These lands, in many places and over extensive tracts, are remarkably fertile and clothed with fine forests, in which maple and white oak occur, especially in the western section in the vicinity of lake Temiscamingue and the river Blanche, one of the principal affluents of the Ottawa. Elm and ash are found on the low lands as far up as the latitude of lake Abbitibbi. The other ligneous growths are red and white pine, white spruce, cedar, and, in less favorable places, balsam fir, white birch, gray spruce and gray pine (*cyprès*).

The foregoing notes apply more particularly to the lands comprised between lakes Temiscamingue and Abbitibbi, to beyond the river Blanche, going eastward; but it seems evident that these lands continue for sixty miles further, as they were found by Mr. Bignell in the region adjacent to the 77th degree of longitude, 125 miles to the east of lake Temiscamingue. He states that the banks of the river Kapitajewano are everywhere low and flat, that the soil is excellent and that, at the confluence of the river, au

Indian has a large clearing and raises good crops and he emits the opinion that considerable settlements will be formed in this region owing to the uniformity of its level and the large extent of good lands which it contains.

In fact, the region embraced between the height of lands and the Ottawa comprises about 3,000,000 acres of good land, with a uniform level, formed by glacial and quaternary deposits nearly all composed of clay and offering a first quality soil.

Apart from those on the Ottawa, the forests of this region of the height of lands are virtually of no value; in addition to being too remote, their wood is too small and of kinds too little sought after to make it worth while to work them. But the case is different with the lands lying north of the Ottawa, where there are fine forests of pine and white spruce, which have, for some years, been the object of considerable lumbering operations.

As regards the mineral resources of this region, McOuat, in his explorations between the Ottawa and lake Abbitibbi, found in several localities copper pyrites and small quantities of the green carbonate of the same metal. He also noted the presence of magnetic iron at other points, and notably at the eighth portage of lake des Quinze, as well as the existence of other minerals, sometimes in workable quantities.

GULF REGION.

This region comprises the principal islands situated in the gulf of St. Lawrence, especially the Mingan, Anticosti and Magdalen Islands.

The Mingan islands are, agriculturally, worthless, that is to say, they contain no arable soil. In this respect, Anticosti is better endowed, if we are to believe the statements of Mr. Richardson who claims to have seen good arable land there at West and Heath points. He even notes certain crops, the raising of which bespeaks a soil and climate favorable to agricultural operations, and, basing himself on the teachings of geology, he emits the opinion that the surface of this island must be generally level, and that the soil is of the same composition as that of the Genesee valley, one of the most fertile portions of the State of New-York. He also believes that the climate, especially in the southern part, would not be an obstacle to agriculture. Lastly, he notes the existence of good merchantable timber. If

all this information be correct, there is no doubt that Anticosti offers advantages to settlement, especially when the wealth of its fisheries are taken into account.

The Magdalen islands are much richer, and, as stated by Mr Painchaud, it is even claimed that they possess a more fertile soil than Prince Edward Island, which is so often styled "the garden of North America." Unfortunately, these islands contain very little timber, and the inhabitants are obliged to import their fuel from Pictou. This drawback, coupled with the excessive rentals paid by these people for the tenure of their lands, prevents the population from increasing and has even driven away a large number of them.

GASPÉ REGION.

This region, especially in its eastern part, is divided into four distinct belts or zones separated by the two mountain ranges, which traverse it almost from one end to the other. On the side towards the St Lawrence, the coast is skirted by a strip of comparatively level land, nearly everywhere well suited to cultivation, and whose breadth varies from six to fifteen miles and over. In rear of this belt of arable lands, rises the chain of the Shickshock mountains, whose breadth varies from six to twelve miles. This mountain chain forms the northern limit of an immense plateau which is bounded to the south by another chain of hills extending almost in a straight line from Percé to beyond the river Patapedia. South of this chain of headlands, between the great Patapedia river and Percé, there occurs another plateau of generally level land, of excellent quality, embracing all the settlements on the Bay des Chaleurs, where agriculture has made marked progress, especially within some years past.

The soil, along the shore of the St. Lawrence, is composed of the debris of rocks of the Quebec group, which is tantamount to saying that it is generally fertile. At several points, and notably in the valley of the river Metis, there are large stretches of remarkably rich clay lands. The arable lands forming this belt and adjoining the St. Lawrence extend in some places beyond the range of mountains, following the course of certain rivers and especially that of the river Matane, whose valley connects with the great arable plateau at the head of the river Nouvelle and in the region of the Causupscull. If the *Gaspé and Peninsula Short Line Railway* should ever be

built, the valley of the river Matane would offer an excellent route for a branch line extending to the village of Matane on the coast.

The great inland plateau, which extends from Gaspé to Causupscull and even very much further to the westward, between the Shickshocks and the range of hills more to the south, contains immense tracts of excellent arable land. The breadth of this plateau varies slightly according to the trend of the two mountain ranges bounding it to the north and south ; but it is everywhere considerable. According to the statement of Mr. Low, of the Geological Survey, after crossing the chain of the Shickshocks. " the country becomes comparatively flat, with small hills of 200 to 300 feet, among them being a few isolated granite peaks which rise to a height of more than 1,400 feet. This region is a continuation of the Devonian table-land which extends from near lake Metapedia, along the south side of the Shickshock range to lake St. Anne and to the Magdalen and York rivers, forming an almost level tract of country from the Intercolonial railway near lake Metapedia to Gaspé Basin, more suitable for a branch line of railway to Gaspé than the route by way of the coast from Metapedia station. "

Mr. Ells, another member of the Geological Survey, states that this plateau contains from 1,200 to 1,500 square miles, and that, if not subject to early frosts, its agricultural value is great, as the soil is generally of excellent quality. He also expresses the opinion that this great plateau offers the best and much the shortest route for the construction of a railway terminating at Gaspé.

The same explorer adds that the valleys of the Notre Dame mountain chain and of several streams examined in that direction contain a large quantity of splendid timber which has not yet suffered from disease of any kind and which will be a source of revenue during many years. In the region of the Little Cascapedia river, there is good spruce, as well as white birch, on the flats along the river, and pine in quantity on the heights. The same forests extend to the eastward, and all the explorations thus far made establish that this great inland plateau and the whole of Gaspesia, in fact, constitute one of the finest forest regions of the province.

This country is also rich in minerals of economic importance. At the head of the river Ste. Anne and along the Magdalen and Dartmouth rivers, there are mountains of serpentine, in which asbestos and chromic iron, two valuable minerals, are also found. Further to the eastward, are the oil-bearing lands of the Gaspé limestones actually on the point of being developed

by an American company, who are making borings to endeavor to discover the petroleum reservoirs.

All these resources give unquestionable value to this great inland plateau until lately represented as an utterly barren region. Agriculturally speaking, the only drawback feared would seem to be the climate; but, apart from the fact that the forest growth appears to furnish a conclusive answer to the objections made under this head, it is very evident that frost, the only inconvenience apprehended, would be no longer to be feared the moment that cultivation had removed the cause which may produce it at present, that is to say, the humidity of the soil. Moreover, the Shickshock mountains act as a protection to this region from the cold north and north-east winds, while the southern range of hills intercepts the moist air currents from that direction.

The lands comprised between the shore of the Bay des Chaleurs and the range of heights extending almost in a straight line from the neighborhood of Percé to the mouth of the river Ristigouche are nearly all of excellent quality. They have been formed by the disintegration of the Silurian, Devonian and sub-carboniferous rocks, which all produce an excellent soil. In New-Brunswick, it is admitted that the best soils are generally found on the Silurian system or the lower and middle members of the carboniferous. The middle carboniferous, or at least a good part of it, is composed of schistous clays, of purple and red sandstones, producing a compact and tenacious soil, frequently even a heavy clay. With the addition of a little lime, this kind of soil becomes wondrously fertile. The Silurian lands generally contain a sufficient quantity of lime, are easily worked and only very slowly exhausted of their fertility.

Such are the two kinds of soil composing in general the lands bordering on the Bay des Chaleurs. In several places, these good lands extend far into the interior, and notably along the splendid valley of the Bonaventure river, where they stretch back for twenty-five to thirty miles from the sea shore. These lands are free from rocks, even on the tops of most of the mountains, which are nearly all covered with good arable soil, as noted by Mr. Ells, of the Geological Survey of Canada, who reports that the information collected by him as to the character of the interior leads to the conclusion that, on the top of these plateaus, the soil, in many places, is very favorable to tillage.

An idea of the fertility of these lands can be formed from the following facts :

According to the data furnished by the census, the average yield of wheat to the acre in the province of Ontario is 10.42 bushels ; while in the counties of Bonaventure and Gaspé it is 13.95 bushels to the acre, that is to say, that it exceeds by 2.93 bushels to the acre the yield in the province of Ontario, where farming is certainly conducted with greater care than it is in Gaspesia. This yield is not even surpassed by the rich wheat lands of Minnesota, where the average is only 12.4 bushels to the acre, according to the report of the Minneapolis Board of Trade for 1887. Taking as the basis of calculation the figures supplied by the census, the average yield of wheat is 8.04 bushels to the acre in the province of Quebec, 10.85 bushels in New-Brunswick and 11.78 bushels in Nova Scotia, which is far beneath the figures given for Gaspesia. This more than any thing else will give a correct idea of the fertility of the soil of the counties of Bonaventure and Gaspé, and especially of the region adjoining the sea, which is the only part of this immense territory, where a little agriculture is carried on.

The rich forests of this region are also well worthy of attention. The white spruce is, perhaps, not as abundant or as large as in other parts of the province such as the Ottawa and St. Maurice regions ; but it is longer and turns out a wood of better quality, almost as good, in fact, as white pine. The latter timber is found in many places, even along the rivers flowing northward into the gulf of St. Lawrence ; but the finest forests of it occur in the valley of the Bonaventure river as well as in those of the two Cascapedias. It is also found more to the westward, and the dimensions of some of the trees can be judged from the fact that last winter, in getting out the timber for the Metapedia bridge, pines were obtained west of that river, which yielded pieces of square timber measuring 54 feet 6 inches long and 14 inches in diameter at the small end. Cedar is everywhere found in abundance, and especially so in the southern part of Gaspesia, where some is to be found measuring as much as 18 and even 20 feet in circumference. Mr. Sullivan reports that he has never seen any to compare with the cedar of the Bonaventure river. Besides ash and elm, there is also a great deal of maple and birch. Mr. Surveyor Legendre reports that, in the Bonaventure river country, he has seen birches sufficiently large to turn out pieces of 30 feet in length and 20 inches square. The existence of these fine woods attests the fertility of the soil, for it is evident that such trees could not grow except on rich and deep land.

The mineral wealth of this region is yet little known ; the forests which still cover nearly the whole of it have hitherto prevented the making of thorough explorations, but the partial surveys made by the Geological Survey clearly show that the belt occupied by the Shickscock mountains contains an abundance of valuable minerals. There are whole mountains of serpentine, with which chromic iron and asbestos are associated. More careful and exhaustive surveys will, no doubt, bring to light the extent and quality of the deposits already noted. Moreover, the beds of the Lauzon formation—which in other parts of the province is pre-eminently the metalliferous formation—are too abundant in Gaspesia to not yield there the same mineral riches which they contain elsewhere.

TEMISCOUATA AND RIMOUSKI REGION.

In his *Topography of Lower Canada*, Bouchette represents as barren and worthless the lands of the interior lying behind the mountain range, which skirts the St. Lawrence. The foregoing notes show clearly that he is mistaken as regards the counties of Gaspé and Bonaventure, and he is, perhaps, still more so with respect to Rimouski and Temiscouata.

In fact, the rear portion of these two counties is made up of a belt of splendid land, unquestionably forming one of the finest sections of the province from the colonization standpoint. Between the rear line of the townships of Nemtayé, Humqui, Metalek and Milnikek, and the line formed by the seigniorship of Metis and the Patapedia river, there is a tract of about 211,200 acres of excellent arable lands, adapted to the most advantageous tillage, drained by beautiful rivers and dotted with charming lakes. Some places are a little mountainous ; but, in general, these fine lands are either level or slightly undulating. The forest, which is composed of mixed timber, contains spruce, white birch, maple, birch, hazel, mountain ash and cedar, as well on the heights as on the low lands. South of the townships of Ouimet and Massé, as far as the boundary line of the province, and between the seigniorship of Metis and the Patapedia river, in the east, and the line formed by the lake and river Mistigoueche, in the west, there is another tract of about 225,000 acres of excellent agricultural lands, of which the soil is generally level and of good quality, except towards the confluence of the two branches of the Patapedia, where the ground is rocky, broken and of mediocre quality, which reduces to

about 180,000 acres, the available area of first quality lands. South of the townships of Ouimet and Flynn and between the rocky chain adjoining the eastern bank of the Rimouski river, there is still another stretch of about 160,000 acres of splendid lands, slightly rolling in going back from the lakes and rivers and generally composed of a rich yellow loam of the first quality. The finest lands occur in the region of the Mistigouèche which is magnificent in every respect. The least favorable are situated in the rocky chain of the Rimouski river and the hills adjoining the boundary line, where the soil is thinner and often gravelly. South of the townships of Duquesne, Chenier and Biencourt, between the Rimouski river and the eastern line of the county of Temiscouata, there are about 225,000 acres of excellent arable land. Some spots near the Rimouski river and boundary line are a little mountainous, with a frequently dry soil; but the remainder forms a splendid plateau, whose surface is hardly broken, except by a few slight undulations. The soil is almost everywhere composed of a rich yellow loam, and, in the valleys of several rivers, of a greyish earth of the utmost richness, as indicated by the presence of the cedar and mountain ash, as well as by the variety of the other woods met with.

All this goes to show that, in the part of the county of Rimouski lying to the south of the Notre Dame mountains, between the Intercolonial and the county of Temiscouata, and including the northeastern corner of the county of Bonaventure, there are nearly 850,000 acres of the finest agricultural lands, generally level, composed of excellent soil, easy to cultivate, well drained and dotted with a number of fine lakes which add to the beauty of the scenery. The general level is only broken by slight undulations calculated to facilitate the drainage, and offering no obstacle to tillage or the opening of roads. With respect to soil and superficial configuration, this region absolutely resembles the finest part of the Eastern Townships, except that it is more level.

The same lands extend towards the south-west in the county of Temiscouata. The area embraced between the eastern boundary of this county and lake Temiscouata contains lands of altogether superior quality, surpassing, according to the statement of Mr. Surveyor O'Sullivan, the finest lands in other parts of the province. "I have heard"—says he—"a great deal of the Lake St. John district, the Ottawa valley, the Eastern Townships, &c., and from time to time I have surveyed more or less through each of the said districts, and I must say that, for richness of soil, the whole country between lake Squatook and the provincial boundary line surpasses any tract of bush land I have yet surveyed. It may be called a rolling, hilly

country, but the greatest difference of level between the highest hills and deepest valleys would not here exceed seven or eight hundred feet ; and strange to say that it is on the highest elevations we find the best soil and timber. In Madawaska, the bottom flats are covered with cedar ; birch, beech, spruce and fir are confined to the side hills, and the summits are crowned with splendid maple sugaries through which one might drive a carriage without cutting a twig. The soil throughout is heavy clay generally of a greyish blue colour, but in some places approaching to yellow. There are no boulders ; some detached rocks and stones of a softer nature are visible here and there ; but with the exception of an occasional out-cropping ledge on the steep side hills, there is nothing to hinder the free use of the plough, when the land would be cleared off."

In many places, there are extremely rich alluvial lands, especially along Basley's brook and Owen's river, the discharge of lake Squatook, and the Eagle lake and river. "This last river"—says Mr. Casgrain—"is still water along nearly the whole of its narrow and very tortuous course. It is bordered by flats wooded with elm and ash and the soil is alluvial and very rich.

These splendid lands continue to the west of lake Temiscouata as far as lake Pohenegamook and beyond it. The only break occurs in the mountainous sections adjoining lake Temiscouata. "These lands"—says Mr. Surveyor A. F. Tetu—"not being in general of superior quality might, perhaps, frighten the settler as regards the character of those of the interior, but, to disabuse his mind on this head, he has only to take one of the branches of the Blue river and follow it to the river St. Francis ; he will find the lands of such equal goodness that he will not fear to locate upon them". Here is the description he gives of them :

"The Cabano road traverses one of the finest sections of the country. The absence of rocks and stones, even on the surface, is especially noteworthy. Apart from the two mountains of the Cabano, there are no hills sufficiently steep to prove an obstacle to tillage. Everywhere the maple predominates, mixed with cedar and ash. Splendid rivers and numerous brooks water the country, beautifying its scenery and contributing to its richness. On the Cabano river, there is a powerful water power. The branches of the Baker river, to the south of the Cabano road, also offer a number of heavy falls and excellent water powers. Lastly, I do not hesitate to say that there is no part of the country where the work of clearing can be prosecuted so cheaply and would yield larger returns to the settlers

than the whole of the territory lying to the south of the Taché road between lake Temiscouata, the frontier of New Brunswick and the river St. Francis."

All these lands form part of the great Silurian plain, embracing, to the east of the Metapedia river, nearly the whole of the southern part of Gaspesia, and extending westward to beyond the Chaudiere river in the Eastern Townships. Further on than lake Pohenegamook, this Silurian belt occupies the southern part of the townships of Chabot, Painchaud and Chapais, and the central portion of the townships of Dionne, Casgrain and Leverrier; here, its northern limit trends in a straight line towards the west, taking in the southern quarter of the townships of Talon, Rolette and Roux, and extends to the Chaudiere river, passing to the north of Cranbourne. It also takes in the lands lying to the south of that line and the provincial boundary, that is to say, the townships of Panet, Bellechasse, Daaquam, Ware, Langevin and Watford, together with the seigniories of Aubert de l'Île and Rigaud-Vaudreuil.

The arable soil and sub-soil of this great Silurian plain are derived from the decomposition of the underlying rocks, the slates and calcareous schists, to which they owe their fertility. These schists are sometimes cut by dykes of eruptive rocks, felsites and dolerites, whose debris are often mingled with those of the limestone rocks and produce the sandy or gravelly parts of the superficial deposits. The surface is generally undulating and well drained by numerous water-courses. These last are bordered by flats of varying, but often considerable width, forming large stretches of the best possible lands. The soil of these flats is composed underneath of sand and gravel overlaid with six to ten feet deep of loam made up of clay or clayey matter, and exceedingly fine sand, absolutely of the same composition as the loess of certain European countries and of the Mississippi valley. These flats are the only parts to which lime might be useful as an amendment or fertilizer; the other soils, arising from the disintegration of the underlying limestone rocks, are strongly calcareous and need no lime. All these lands are generally free from rocks and perfectly tillable, even on the tops of the highest hills, a fact proven moreover by the settlements of St. Alexis of Metapediac.

In these Silurian lands, the higher and drier parts are wooded with white spruce, balsam-fir, white and red pine, yellow and red birch, red bouleau, aspen, birch, two or three kinds of maple, mountain-ash, hornbeam, hazel, &c., while the forests on the low lands or swamps produce white spruce, white bouleau, aspen, white cedar in abundance, black ash,

alder, willow, red osier, and dogberry, and, on the flats and along the water courses, the elm and balsam-poplar are very common. The trees are generally large and tall. In the region of St Alexis and Mill-Stream, a goodly number of pines were obtained last year, which turned out pieces of 54½ feet long and 14 inches square. The hardwood swells, covered with maple, birch and beech, mixed with a few balsam-firs and white spruces, constitute a striking feature of these lands. On the heights, the groves of sugar maple are numerous, going westward. Another equally salient feature is the almost complete absence of hemlock and black spruce.

It may be unhesitatingly asserted that this great Silurian plain covering an area of about 1,500,000 acres offers to colonization incontestable advantages and especially a soil whose richness and easy cultivation are not excelled and rarely equalled in any other part of the province. Shielded from the northern and north-eastern winds by the mountain range which separates it from the St Lawrence, and possessing a good southern exposure, it enjoys a climate exceedingly favorable to agriculture, which further enhances its many natural advantages.

SUPERFICIAL GEOLOGY.

In his *Geology of Canada*, published in 1863, Sir William Logan has represented the province as formed of two mountain ranges separated from each other by the comparatively narrow valley of the St. Lawrence. This description has given rise to the unfortunately too widely spread opinion that outside of the plain adjoining our great river, the remainder of the province is nothing but a mountainous country, including only a few patches of arable land susceptible of more or less advantageous settlement. An exception is hardly made in favor of the Eastern Townships. It needs but a slight examination of the superficial configuration of the province to show that this opinion is erroneous, that, in these pretended mountainous regions, there are immense level plains, free from rocks, composed of a fertile soil and susceptible of easy and profitable cultivation.

Northern Plateau.—The Laurentian formations border the north shore of the river St. Lawrence from the eastern extremity of the province at the straits of Belle-Isle to Cape Tourmente, thirty miles below Quebec. From this latter point, they gradually recede from the river, from which they are distant sixteen miles at the Maskinongé river and thirty in rear of Montreal,

where their trend takes a westerly direction to strike the Ottawa in Grenville. To the northward, these lands are bounded by the "height of lands" or watershed, which constitutes the principal mass of this formation.

The surface of this great plateau is characterized by a series of low-lying plains separated from each other by ridges, whose direction, generally from south-west to north-east, is remarkable for its parallelism. Their bearing is the same as that of the chain which forms the border contiguous to the valley of the St. Lawrence. The breadth of this chain or range of heights is about ten miles between the Ottawa and the St. Maurice; but, at the latter point, it merges with the other coming from the north-west in continuing the deflection forming the height of lands towards the headwaters of the Ottawa, the Gatineau and the St. Maurice, which are bordered by it on both sides. The junction of these two chains forms the mountainous area comprised between the St. Maurice, to the west, the valley of the St. Lawrence, to the south, that of Lake St. John to the north, and the region of the lower Saguenay, to the east. Beyond this latter region, the mountains recede considerably from the shore of the St. Lawrence, leaving between them and the coast the great plateau of the Saguenay, whose surface, as has been already shown, is divided into belts separated from each other by mountainous and rocky ridges running towards the north-east.

Between the eastern limit of the province and the head of the rivers Manicouagan and aux Outardes, the mountain range of the height of lands runs east and west, with a slight deflection towards the north; at the headwaters of the river aux Outardes, it assumes a general south-west direction, which it maintains as far as the head of the Gatineau river whence it continues nearly straight west to the boundary line dividing the province of Quebec from that of Ontario. According to the explorations thus far made, the highest part of this chain occurs towards the head of the river aux Outardes, where the Otish mountains rise to a height of 3,700 feet above the sea level. This height seems to diminish going eastward, and certainly does so towards the south-west, as it is only 1,359 feet at the head of the St. Maurice and 900 at the most between lakes des Quinze and Abbitibbi. Towards the centre of the Ottawa region, about in the direction of and on the line formed by the 47th degree of latitude, there is a kind of *coteau* or range of somewhat higher lands than the plains on either side which seem to be a secondary anticlinal. On reaching the region of the St. Maurice, it rises to the north-east and forms the dividing ridge between the valley of the Chamouchouan and the fine plateau between the rivers Windigo and Trenche. In this belt of highlands, lie the largest lakes of

the Ottawa region, such as lake Keepawa and Grand lake, as well as lakes Kakebonga, Mejomangoos and Kempt. The last named is some twelve hundred feet over the level of the sea, while lake Keepawa is only 760 feet, which proves clearly enough that the elevation of the ground diminishes going westward.

The same falling away in height characterizes the mountain range adjoining the St. Lawrence valley, whose principal peaks show the following heights :

	Height.
Eboulements Mountain, in Charlevoix.....	2,547 feet
Ste. Anne's do Montmorency	2,687 "
Trembling do Argenteuil.....	2,060 "

West of the St. Maurice, the general height of this chain of mountains is at the most 700 feet over the sea level, which is hardly the height of hills in many other countries, and it is evident that such an elevation cannot exercise a marked influence on the temperature.

The space comprised between these mountainous belts forms extensive rolling plains, whose surface is only rarely broken through by the underlying rocks. In the Ottawa region, where they occupy an area of about 20,000,000 acres, these plain lands are not so elevated above the sea level as is most of the inhabited part of the Eastern Townships and possess a soil, to say the least, fully as rich and much more level. The finest part occurs to the south of the anticlinal of lake Keepawa, and continues eastward to the St. Maurice by the great valley of the Matawin. In the Gatineau country, the general elevation hardly exceeds 375 feet, as, at the confluence of the river Desert, the surface of the water is only 369 feet higher than that of the sea. North of the anticlinal of the large lakes, there is another plain traversed by the Ottawa and extending to the height of lands. The average elevation of these lands scarcely exceeds 700 feet, as lake Temiscamingue, which drains this country, is only 612 feet over tide-water. Here is what Mr. Russell says of the configuration of this plain :

“ There is, though with great unevenness, a general uniformity of altitude in the country going from the height of land of the Coulonge, Du Moine and Keepewa rivers, northward, to the slope to Hudson Bay. The depression in crossing the Ottawa being inconsiderable, it may be considered a rough plateau and but slightly inclined to the westward, however much it may rise in the opposite direction towards the sources of

“ the St. Maurice and Saguenay rivers. The highest hills, seen some miles inland of lake des Quinze, were about three hundred and fifty feet in height ; this added to the one hundred and forty feet fall in the river between would give four hundred and ninety feet, height of the Victoria lake hills, relatively to the four hundred and fifty feet of those below, or barely a difference when using mere estimations. These, the extreme highest points seen on the survey, would have an altitude above the sea of twelve hundred and fifty to thirteen hundred feet. ”

It is easy to form an idea of the other lands from what has been established by the surveys with regard to the townships actually laid out or subdivided into farm lots. The notes supplied by the surveyors may be summed up as follows for each township of the Ottawa region :

Addington and Labelle — flat and rolling, slightly broken near lake Maskinongé ;

Alleyn—level, first quality strong loam ;

Aumond—level surface, only varied by a few small hills ;

Baskatong—level or slightly broken ; splendid lands ;

Blake—hilly, good land ;

Bosclair—western part mountainous ; the remainder level ;

Bouchette —rolling land, hilly in the 7th and 8th ranges ;

Bouthillier—level ; fine lands ;

Campbell—level, first quality land ;

Cameron—pretty level, but rocky ;

Chichester—mountainous ;

Clyde—mountainous and rocky in the neighborhood of Amherst ;

Dorion—flat in the eastern part ; level plateau covered with hardwoods ; rocky in the parts adjoining the Pickanock and other rivers.

Dudley and Kiamika—level, fine lands ;

Egan—flat ; a few rocky hills ;

Fabre—flat ; a few rocky hills ;

Huddersfield—level, clay soil pierced by some rocky hills ;

-
- Hincks*—rolling, broken and rough in some places ;
Joly—mountainous and rolling ;
Kensington—fine land, nearly all level ;
Lathbury—some parts rough ;
Lesage—broken, a good deal of good land ;
Leslie and Carwood—rough in the northern section ;
Lytton—very level, excellent lands ;
Mansfield—pretty level, rough in the centre ;
Marchand—level or rolling ; lower part a little mountainous ;
McGill—northern part mountainous ;
Mulgrave—broken surface, pierced by ledge of granite.
Ponsonby—surface broken by hills of 200 feet high ;
Pope—flat, level, superb lands ;
Portland—slightly mountainous, heights running from north to south ;
Preston—several parts hilly ;
Ripon—hilly ;
Sheen—hilly, chiefly in the northern section ;
Suffolk—parts rolling ; others very hilly ;
Thorne—hilly and rocky ;
Waltham—hilly in the neighborhood of the Black river ;
Wells—hilly in the northern part.

The surveys and explorations of territories also establish that, instead of being a country of mountains, the Ottawa region forms a generally level plain, whose surface is barely diversified by those accidents of the ground common to all countries even the most level. Once the mountainous strip is crossed, which bounds this region to the south, the country becomes level. Mr. Wagner notes that, after crossing the mountainous region between the rear line of Grandison and the east branch of the river Rouge, neither mountains, nor hills are any longer seen. Here is what he says :

“ *Rouge Section* is, as a whole, level and undulating, no mountains or hills of any consequence, with the exception of the one constituting the

division of the watershed between the tributaries of the Lièvre and Rouge rivers.

“ Near the west side of river Rouge, two or three deep gullies occur in which creeks are running, but beyond this the surface is almost level, with only a few stones or boulders on the surface, and the land must be warmer since I found more ice when advancing into the next section than here.

“ The soil varies between heavy and light loam of both colors, yellow and black. The extent of this tract of good land is the best adapted for agricultural purposes, which I found during my survey of one hundred and six miles, and is equal to the best lands of Upper and Lower Canada ; it is also larger than, perhaps, any one not acquainted with this section of the province of Quebec might imagine. It would open a home to a large proportion of those young Canadian farmers, who cannot remain on their father's homesteads, and who at present emigrate to the neighbouring republic.

“ The distance between the Rouge and Lièvre rivers is twenty-eight, miles and sixty-six chains ; from this deduct about three miles west of Rouge, which leaves about twenty-five miles.

“ Thence downwards about forty miles and upwards twenty miles, that is, above the Bouleau farm, and we get an area of one thousand five hundred and fifty miles ; add to this an area of ten miles by seventy miles west of the Lièvre or seven hundred square miles or one million and a half of acres of land well adapted for agricultural purposes.

“ The predominating timber here is the maple, having in its company birch, (black and yellow), balsam, but no beech, as far as I could see ; in the swamps, we found cedar, ash and elm ; pine were few and scattered and not in groves as in a regular timber country.

“ This tract of land appears to me to be of an alluvial formation over limestone or Silurian outcrops of limestone in a primitive state. I found these near the height of land and again on the Lièvre at the Cedar Rapids below Tapanee. ”

Mr. Russell has noted the same thing : “ The river Little Nation ”—he says—“ may be considered as lying along the centre of a tract of habitable country that extends back from the river Ottawa in a northwesterly direction, with certain interruptions, as far, I am led to believe, as the Baskatong, and embraced between the rivers Lièvre and Rouge, until they turn

away in a northerly and northeasterly direction. The head of the Nation seemed to me almost a better country for agricultural purposes than the already settled part about its mouth. In like manner, the shores of the Lièvre appeared rougher and more barren for about fifty miles of its lower course than for the succeeding sixty or seventy above that; on the contrary, the lower valley of the river Rouge is the most favorable portion of its basin. These facts would agree in pointing out a band of good country extending as mentioned north westward from the Ottawa at the mouths of the rivers Nation and Rouge."

Mr. Symmes reports that "from the headwaters of the Du Moine until you approach the Gatineau, the country is very level and might be compared to the table lands of Mexico." According to Mr Wagner's statement, the country around lakes Barriere and Ponchette, towards the head of the Ottawa, "is only broken in a few places by hills of no importance; the remainder is rolling." From Mr. Bignell, we learn that from lake Expanse to lake Victoria, the banks of the Ottawa "are low, and in many places grassy. The soil is good. The ground is level and no hills are visible." He expresses the opinion that on account of the uniform level of this region and the large extent of good land which it encloses, there is every reason to hope that considerable settlements will be made in it as soon as it is known. Lastly, the reports of Messrs. O'Sullivan and McOuat clearly establish that the region extending from lake Temiscamingue to lake Abbitibbi is a level clayey plateau, pierced in some places by rocky hills.

All these facts clearly show that instead of being a country of mountains, as so many imagine, the Ottawa region, in rear of the narrow mountainous strip bounding it to the south, is a great and comparatively low plain, with a surface now level and now rolling, pierced in some spots by the underlying rocks and rising almost imperceptibly towards the east and north until it connects with a level plateau, the average of whose elevation over sea level does not attain eight hundred feet.

This plain country is continued northward in the St. Maurice region by the plateau of the rivers Trenche and Windigo, and thence to the north west and north of Lake St. John to beyond the river Shipshaw. Limestone seems to be the principal underlying rock in nearly the whole of this tract, even in the St. Maurice section, where its presence has been noted at Coucoucache. To the southeastward of this plain country runs the mountains chain above described.

The nature of the arable soil of these great plains is pretty well indicated by the surveyors' reports and, in the absence of more precise informa-

tion, it is easy to form an opinion as regards the unsurveyed parts from the data supplied by geology.

The arable soil is derived from two principal sources : the disintegration of the underlying rocks and transported matter. Sir William Logan notes that, in the Ottawa region, the principal hill ranges are formed of red feldspathic gneiss and that the limestone beds occur at lower elevations or in the valleys. As the hills only monopolize a comparatively limited area, the conclusion is inevitable that limestone is the underlying rock in the low grounds or arable lands.

According to the same authority, these limestones disintegrate rapidly under the influence of atmospheric agents. The outcroppings of some of them have such little cohesion that, with a shovel or a pick, they can be easily broken up into small fragments, whose pulverization produces the surrounding soils, which are all very fertile. The principal mineral substance found in association with these limestones also produce in decomposing recognized elements of fertility, such as mica, which yields potash ; serpentine and amphibole, which produce magnesia ; and apatite or phosphate of lime. The cause of this rapid disintegration is probably iron pyrites, which occur in small crystals in the limestone ; by engendering sulphuric acid, these pyrites convert a part of the limestone into plaster or sulphate of lime, which hastens the pulverization of the rock and renders its ingredients easily assimilable, thus transforming them into agents of fertility.

The transported matter is composed of clays, sand and gravel belonging to the tertiary and quaternary ages. The clay sediments, which characterize the greater part of the Ottawa region, are derived from the glaciers, which played so important a part in the superficial configuration of the country. The matter dropped by these glaciers was nearly all clay, and as the waters in which those glaciers melted away rose 800 to 900 feet over the present tide level, the glacial epoch must have been comparatively prolonged and the deposits to which it gave rise necessarily attained a great depth in many places. They were increased by those of the quaternary period which are considerable and contain marine shells and fresh water marks. The river alluvions formed the sand and gravel generally found in the vicinity of the banks of streams.

Everything therefore points to the conclusion that, apart from the summits of the higher and more mountainous parts, which must have been denuded by the glacial action, the low grounds of this Ottawa plain must

have a generally deep soil, and this conclusion is confirmed by the exp'orations of the surveyors, who place this fact beyond question, as may be seen on reference to their reports.

Southern Plateau.—The northern boundary of this plateau is formed, as nearly as possible, by a line starting from Missisquoi bay on Lake Champlain and ending at St. Croix, on the St. Lawrence, thirty miles above Quebec. It is divided into two very distinct slopes by a great anticlinal, the highest parts of which constitute the Notre-Dame mountain range, which is only a continuation of the Alleghanys or Green Mountains of Vermont. The general trend of this chain of hills is from south-west to north-east or parallel to that of the plateau of the Laurentides. The principal peaks of this mountainous belt are the mountains of Sutton, Knowlton, Orford, Ham, Cole-raine, St. Ronan in Buckland, Buard and Paradis at the head of lake Temiscouata, St. Donat, Bayfield and Logan, in the county of Rimouski, Terrace and Serpentine in Gaspé. More to the south, another but much lower mountain belt runs nearly direct west from the neighborhood of Percé to the headwaters of the river Ristigouche, a little beyond the western extremity of the county of Bonaventure. The principal peaks of this range are mount Tracadigèche or Carleton, 1,800 feet high, and the peak of Patapedia, 1200 feet high. Further towards the south-west, still another mountain chain coming from the United States follows, as a general rule, the line of the International boundary and forms the southern limit of the counties of Beauce and Compton.

West of the Chaudière river, where the ground is much more disturbed, there are several minor anticlinals which cut the principal one already described, in the perpendicular or transverse sense, but to the eastward the mountain range forms a mass with a uniform direction and a much more regular surface than the western section of the plateau. The general level of their eastern part is also lower than that of the country to the south-west, judging from the elevation of the larger lakes above the sea, as shown by the following table :

Western region.			Eastern region.		
Lake	St. Francis	890 feet.	Lake	Temiscouata	467 feet.
"	Aylmer	795 "	"	Metapedia	480 "
"	Memphremagog	756 "			

In Gaspesia, the region in which the Ste. Anne and Cape Chatte rivers take their rise is about 600 feet over the sea level, which is with a very

slight difference the elevation of Lake Huron and the other great lakes of the west. The central part of this interior region of Gaspesia is, perhaps, higher, but it may be stated without hesitation that, from Gaspé to the river Chaudière, the level of the plateau from which the mountainous belt juts up does not exceed 700 feet above that of the sea. The much more level belt which skirts the northern side of the mountains from Missisquoi bay to the gulf of St. Lawrence is very much lower, and does not on the average exceed 150 feet over the sea, especially in its western part. The elevation of the lands to the south of the mountain belt is greater and increases as the boundary line of the United States is approached. They are also much more broken to the west than they are to the east of the Chaudière river.

The whole of this southern plateau belongs to the Silurian, Devonian and Carboniferous formations, pierced by eruptive rocks which compose most of the mountains of the region. The schists and calcareous sandstones, from which the greater part of these lands has been formed, always produce by their disintegration a fertile soil, and it is shown by experience, in the case of the Eastern Townships, and, by the surveys and explorations as regards the great belt which extends from the Chaudière to Gaspé, that the lands of that country are rich, easy to cultivate, and most advantageous for settlement. The softness of the rocks and their sensitiveness to the influence of atmospheric agents hasten their disintegration, which generally produces a deep bed of arable soil. This is precisely what has been established, as already seen, by the explorations carried out in the Temiscouata, Rimouski, and Gaspé regions. Even on the hills, as in the vicinity of the Ristigouche, Metapedia and Patapedia rivers, the surface is composed of arable soil, everywhere of great depth and free from stones and rocks. And it is there, too, that often the finest timber is found.

Valley of the St. Lawrence. — This section occupies the area comprised between the two plateaus just described. It is a plain, whose perfectly smooth and uniform level is only relieved by the Yamaska, Rougemont, Belœil, Mont Royal and Rigaud mountains, eruptive masses of trap, isolated from each other and monopolizing but a very limited extent of the surface. Its soil is generally composed of clay, proverbial for its richness and so deep that nearly all over it is impossible to reach the rocks at a depth of 100 and even 200 feet. It is formed of marine deposits, in which the bones of whales have been found on the mountain of Montreal. This great valley constitutes one of the richest and finest agricultural regions imaginable.

DESCRIPTION

OF THE

SURVEYED TOWNSHIPS.

COUNTY OF ARGENTEUIL.

Township of Grandison.

With regard to the quality of the soil and its adaptability to development, I have to speak in the highest terms of that portion which I laid out, but the remainder of the township consists of nothing but a lake and mountain, as shown on my plan.

To the west of Grandison the country is unsurpassed by any in Lower Canada,—thousands and thousands of acres, with not a stone upon them, level and well watered. The largest and best portion of the north side of the Ottawa is yet unsettled; there are farms in the interior belonging to the lumber merchants, whose equal is not to be found elsewhere in Lower Canada; therefore, if it is the intention of the Government to encourage the colonization of the northern region, I would strongly recommend that a colonization road be opened through from North River settlement to the River Lièvre, running through the rear of DeSalaberry, through Clyde, and about thirty miles in rear of the township of Dartwell, where a valley can be found suitable for a road all the way through. It would be certainly necessary to explore the route previously to laying it out, and endeavour to run it through the best part possible, for many roads are laid out and not to the purpose so long as the money to be obtained is all that is looked for, and not the advantage the of settlers.

I would not be in a position to speak of the back country as I do, if I had not traversed and explored most of the region, north of the Ottawa River as far as Moose River, and a finer country I have never seen than that between the North River and the Gatineau; if even a winter road were cut through, it would answer the purpose for a few years. It is necessary that something should be done to prevent our young men from emigrating to the United States. I do not refer so much to the old country people, for it is their nature to roam, but we see daily hundreds of our Lower Canadians leaving, who know nothing about the back country and are under the impression that it is nothing but a range of mountains.

(*G. A. Albright*, 21st February, 1870).

Gore of Grenville.

The soil on the whole is very rocky and mountainous, only a small proportion being fit for settlement, apart from what is already taken up. The timber is very large and of excellent quality, hemlock, spruce and hard wood being in abundance.

(*G. E. MacMartin*, 1879).

Township of Montcalm.

I proceeded to complete the survey of the fifth range, thence to lot thirty eight in the sixth range being an undulating surface, timber principally spruce, with scattered hard wood therein, the remainder of the sixth range being a worthless mountain.

The seventh range from the centre line is undulating and stony, but intermixed with some good land. The eighth range along the whole breadth of the township is also undulating and stony, but there are many arable lots therein well fitted for settlement, being well watered with living streams and some lakes of pure water abounding with speckled trout and also other species of fish; beaver, on these lakes and adjacent streams, are more numerous than in any other part. I have also seen there many otter, mink, and other species of amphibious animals, and the woods abound with the moose,

and caribou, deer, and many other furry species, affording a profitable pastime to the settler, trapper and hunter.

One of the settlers states that he makes as much as forty pounds, by his hunting and trapping, every season.

There are no roads through this township.

It would afford a good field for settlement, were roads made thereto to encourage settlers.

(*T. C. Quinn*, July, 1871.)

Township of Wentworth.

I have the honor to lay before you my report of the re-survey of the four rear ranges of the township of Wentworth.

The total extent comprised in this survey is twenty three thousand one hundred and seventy acres, two thousand two hundred and ninety three of which are made up of lakes, leaving twenty thousand eight hundred and seventy seven acres subdivided into farm lots. Of this amount, twenty seven lots, containing five thousand two hundred and eighty one acres, are occupied and partly tilled. Throughout this whole extent of country, I found only three posts which belonged to the original survey, and some old traces, which were very insufficient.

The information imparted to the public about the resources and the forest and agricultural value of this township generally, as well as of the portion comprised in this re-survey, which a colonization society at Montreal has undertaken to colonize, appears to me a sufficient reason to dispense with treating the subject.

In concluding this report, I take the liberty to recommend that a re-survey be made of the line between the sixth and seventh ranges on the twenty lots to the east. This wish has been conveyed to me on behalf of the colonization society already mentioned in my report. This recommendation I urge because a front road has been opened across the first three lots to the east, and also because I saw for myself how easily this road could be continued to lot number twenty of these ranges, where it would meet the road which now leads to the Falls

(*James Barnard*, 13th March, 1882.)

Township of Wolfe.

I have the honor to lay before you the report of my survey of the part of the township of Wolfe surveyed by me during last season, pursuant to your instructions dated the 28th of October 1863, which entrusted me with the survey and subdivision of the arable portion of the first six ranges of this township situated in the county of Argenteuil.

The northern line of Montcalm, by its direction, forming, with the north-western line of Beresford, an obtuse angle of $96^{\circ} 35'$, renders, as a matter of course, all the lots of the first range of the township of Wolfe irregular. In my special report of the contents of the irregular or broken lots of the township of Wolfe, which I surveyed, I have also included the list of those of the first range.

The surface, in this part of the first range, is generally undulating; but there, are several level lots and nearly all of them are so at the base. The portion adjoining the township of Montcalm is more uneven, the soil being more mountainous as it approaches the centre line. Hard wood is found all over the first range; the soil is yellow, containing very little sand.

Several lots, in the first range, are occupied by settlers who have already made quite extensive clearings.

Good crops were raised during last season off these lots, and satisfactory settlements are already formed there. I remarked that the little river crossing the base line on lot number eleven, and emptying into Lake au Caribou, offers, on said lot number twelve, a water power, which, though only slight, will hereafter be of some benefit to the settlers.

I then continued successively the survey of each range and its subdivision into lots, up to the centre line. I scaled lakes au Caribou, de la Baie, Manitou, Vaseux, de la Rouge and Cornu on the ice, and retained the names given to these lakes by the settlers.

These lakes seem to be all quite shallow. The water in them is pure, except in lake Vaseux, where it is somewhat muddy.

The environs of all these lakes are clothed with beautiful hard wood trees, except a very narrow belt of soft wood, such as cedar and spruce, which generally borders all these lakes.

I did not meet with any remarkable river. Two large sized brooks empty,

one into lake au Caribou, and the other, from lake Cornu, into lake de la Rouge.

The red trout found in the latter lake have given it its name.

Many little brooks and springs were, doubtless, crossed by my lines, without being noticed, owing to the snow and ice which covered them up.

These ranges contain some of the most desirable land for settlement. The soil is very good, being made up of a yellow clay containing but little sand and slightly rocky. It is generally undulating, but in a great many places level. The mountains are few, their elevation slight, and their slope or inclination gentle. I saw only two steep mountains, but they were not high, and their slope ran southward and stretched far away level or undulating. Hard wood is the only kind found growing all over, for there are no swamps. In many places, and over considerable tracts, the maple is the only wood, without mixture of any other, with the exception of a few isolated elm or bass wood trees. These forests contain magnificent sugaries, which are always highly prized by the settler.

The trend of the mountains is from east to west, and all the division lines have their starting point on the top of a mountain or hill, or on its southern slope, which they follow for a greater or less distance.

The space comprised between the division lines is every where more level than on the lines. While running my lines, and during my operations, I met no fallen trees, except a very few, so that I am not able to supply any information regarding the direction of the hurricanes.

I met no pine groves, nor even isolated pine-trees, with the exception of a few very scattered ones, and of inferior quality, growing on the edges of the lakes, the only places, so to speak, where a little building timber can be found, such as cedar or white spruce. I met only a few hemlock trees. In point of resources, the region, which I have just surveyed, offers for colonization a quantity of unquestionably the most advantageous land which the northern townships have so far furnished. In fact, the mountains are scarce, their elevation slight and their slopes gradual and susceptible of being cultivated. The soil is good. The only trees covering it are beautiful hard woods, with extensive and splendid sugaries.

These furnish the poor settler with a considerable supply of potash, which offers the readiest means to enable him to support his family until he can clear ground enough to grow food for his subsistence.

From the information which I obtained from hunters and from my own personal observation, I have reason to believe that the part of Wolfe, which yet remains to be surveyed, will be quite as suitable for settlement as the portion of it just surveyed.

The best way to develop the resources of this township would be to run roads through it. A colonization road, connecting with the Beresford road, would populate this township at once, notwithstanding its remoteness.

At the solicitation of the settlers whom I met in Wolfe, I take the liberty of appealing to your generosity for a delay of two years from the Government in favor of the settlers in this township for the payment of the first instalment on their lots.

(*God. Lavolette*, 15th January, 1884.)

Topographical Notes.

The part of the township of Wolfe, which I have subdivided, is separated by nature into two basins, one of which drains its waters into River du Nord and the other into River Rouge.

This township partly contains the watershed of these two rivers. Consequently, it presents, in great part, high lands broken by mountains and lakes. In this respect, it rather resembles the adjoining townships situated in the Laurentides. The eastern half of the fifth, sixth and seventh ranges has its slope towards River du Nord, into which it drains its waters by way of the little river, which has its source in the seventh range and issues from the township of Wolfe, in the south-eastern part of the sixth range. This little river appears to be large enough to float timber. The brooks which discharge into it have several good water powers, some of which are shewn on the annexed plan.

The valley of this little river contains but little low land suited to cultivation. This portion of the township is chiefly mountainous. The other part of the fifth, sixth and seventh ranges and all the upper ranges, have their slope towards the River du Nord. It contains some splendid valleys, especially in the eastern part of the eighth and ninth ranges and around lake Wolfe, and extensive table lands in the western part of these

ranges, which are susceptible of cultivation. In the eastern part of the eighth and ninth ranges, a double range can be formed, from which quite easy communication can be had with the settlements at River Rouge and those of lake des Sables, by following the direction of the valleys adjoining it.

The western portion of the sixth and seventh ranges also contains some very advantageous lots, which will encourage the formation of a parish to be located on the colonization road just opened by the Government. The stream which flows through the seventh and eighth ranges offers a number of water powers. The only ones shewn on my plan are those which are to be met with along the line.

The western portion of the fifth range is partly crossed by the mountain running eastward to lake Rouge. It terminates in a swamp which appears to extend over several lots. Apart from its size, this swamp presents nothing remarkable. Its surface appears to be capable of being easily drained, and I am inclined to think that it could then be cultivated.

In the tenth range there is another swamp which appears to be extensive, although I did not go over the whole of it. From what I have seen of it, it could be turned into beautiful meadow land, for hay grows there naturally and the soil seems to be a rich alluvion.

LAKES.

In the part of the township of Wolfe which I have subdivided, there are, in addition to fifteen small lakes, five or six others whose area varies from thirty to a hundred acres. Lake Wolfe alone covers a surface of several hundred acres. The abundance of trout which these lakes contain may be of great help to settlers and fishing for them has already been turned to profitable account by parties settled in the adjoining township. These lakes are likewise remarkable for the clearness and freshness of their waters, which attain a considerable depth in some places.

NATURAL MEADOWS.

Natural meadows of considerable extent are found along the edges of the lakes emptying into the little river which takes its source in the ninth and tenth ranges, where it issues from the township. These meadows, which are now the resort of wild animals, could be utilized to feed the cattle of the early settlers.

SPRINGS AND BROOKS.

The rivers and lakes which I have already mentioned are fed by a quantity of springs and brooks that are met with on nearly every lot, as will appear from the adjoining plan on which they are pointed out.

SOIL.

The soil is generally rocky on the top of the mountains ; but, on the slopes and table lands, it consists of a yellow earth rich enough to grow grain and vegetables. The lots generally contain a proportion of arable land fit for producing all that is needed for the requirements of the settlers. The soil appears to be every where adapted to pasturage, and the resources of the township may be said to be unlimited in this respect. As the soil, is naturally fresh and well watered, there is no reason to dread either dry or rainy seasons.

ROCKS.

The rocks just referred to all present the same physical characteristics ; absence of stratification, greyish color, irregular cleavage, very little hardness. Away from the abrupt flank of the mountains, they show no bare surface, except on numbers forty one and forty two, on the line between the sixth and seventh ranges.

TIMBER.

The prevailing kinds are hard woods which generally cover all the high lands. In the order of their relative abundance, they consist of birch, maple, beech, white birch and iron wood. Elm, bass wood, ash and cherry are also found in less quantities. The soft woods are white spruce, tamarac, cedar, hemlock, pine and aspen. The richness of this township in timber may well be styled inexhaustible.

Allowing one half as the proportion of arable land, it may be said that the other half will remain in forest, which will continue to grow and be renewed forever. In this respect, this township has the advantage over many other parts of the country. Other regions which were once well wooded have been laid waste by storms and fire far more than by the axe ; and, though the land has been thus cleared, the forest has been des-

troyed, without being turned to any account for the settler. But the part of the township which I subdivided is not much exposed to these dangers. I saw only one range in which the wind had done any damage, and the fallen trees there are confined to the lands fit for tillage. Apart from these fallen trees, I met only one place, on the western boundary of the township, where the wood was withered up on account of the dryness of the soil. The mountains being only scantily covered with hard wood, and the valleys generally marshy, it may be said that there is little danger of bush fires. The various woods are well adapted to the manufacture of potash, which is carried on generally in this part of the country. They also offer a remuneration amply sufficient to cover the first cost of clearing. Although pine is not found in great quantities in this township, it has, however, been worked to some extent.

ROADS.

This lumbering has caused a network of roads to be run through the western portion of the township, towards the River Rouge. These roads are advantageously located, and, although they are only suited to winter vehicles, they will be of some assistance to the settlers, inasmuch as they afford them a means of communication with the settlements on that river. These roads debouch on the colonization road in actual use, and which runs across the township through the fourth, fifth and sixth ranges. This latter road, apart from its difficulty of access, on account of the bad state of the base road of the township of Beresford presents difficulties of its own, such as to render the hauling of loads of even five hundred pounds weight over it scarcely possible. These difficulties are due to the location of the road, which crosses one of the biggest mountains in the township. The ascent of this mountain is altogether too steep for a colonization road, and for this reason the present road is not adapted to the speedy advancement of colonization. In my opinion, it would have been better to have run this road in the neighborhood of the little river which comes, down through the sixth range. The present road would, in that case do for a front road, and the money spent on it by the Government would not be lost for the locality. But, to ensure the rapid progress of colonization in this part of the country, it is of great importance that the Government should use the utmost care in the selection of the best route for a road that would afford the most convenient communication with the other settlements. The money which the Government would spend for this

would avail not only to the settlement of this township, but also to open up a great many others situated in the valley of River Rouge, which the township of Wolfe connects with that of River du Nord.

(*J. Barnard*, 27th February, 1873).

To complete the verification of the sixth range, I ran a line in rear on this range, between lots numbers twenty eight and twenty nine, the measurement of which gave me 83.35 chains.

This spot is fairly level, having only a few slight undulations and forming a contrast in this respect with the remainder of the township, which is generally mountainous, but where nevertheless advantageous farm sites are to be found.

The soil is of superior quality and generally free from rocks.

The merchantable timber, such as pine, has been cut away long ago. Only a few trees are to be found there now, and they are of no value. Merchantable spruce is found but very rarely. The most prevalent woods, of any value, are maple and cherry. The *ulmacea* are represented by magnificent elms, which from time to time attract attention.

I noticed that the road which crosses the fifth and sixth ranges, and which was made with the assistance of Government grants, has been the means of attracting to this region lately some hardy pioneers, who are actually clearing a portion of the range just surveyed by me.

After completing the verification of the sixth range, and, as the state of the ice was favorable, I proceeded to scale lakes H el ene, Carr e, Nantel, Godon, Gautier,   la Petite Truite and Wolfe, which last is nine miles in circumference. This latter lake is known to the inhabitants of Ste. Agathe only by the name of Lake aux Quenouilles. This name takes its origin from the bulrushes, of the *typhace* family, improperly called quenouille (*distaff*), which are found growing in great abundance in the large bay on the north east

Trout abound in all these lakes, and I was not a little surprised to find that fishing for them is carried on extensively during the close season.

Their banks are generally covered with a growth of various woods, comprising cherry, maple, fir, red and grey spruce, but as the land rises, hard wood generally predominates.

(*L. Leclerc*, 18th January, 1875.)

COUNTY OF ARTHABASKA.

Township of Bulstrode.

For the general details of the land and the quality of the soil, I must refer to my Field Book. However, I may state that the seven first ranges are nearly all covered with soft wood. The land is low and not suited to tillage. As to the timber, it has almost completely disappeared. But there is an undergrowth of young spruce trees, which will be of considerable value in a few years. The land of the other five ranges is better, and somewhat higher. The most part of the tenth, eleventh and twelfth ranges is already settled.

During the course of this survey, I found no trace of mines or quarries of any kind.

(*J. B. O. Legendre*, 3rd December, 1872.)

COUNTY OF BEAUCE.

Township of Adstock.

Trout and little Saint Francis lakes are very deep and swarm with fish. Trout abound in the first named, while whitefish are the most numerous in the second.

The soil of the tract I passed over is generally fit for cultivation, though not of superior quality. It would be very suitable for pasturage, the natural meadows affording a sufficient quantity of fodder for wintering the cattle. The arable portions of the township would yield ordinary cereals in abundance.

The merchantable timber, principally pine, has all been cut by the limit-holders. What was spared by the woodcutter's axe has been completely destroyed by the two great fires which ravaged this township, sweeping off all the different kinds of wood that grew so abundantly there.

The semi-calced trunks of gigantic trees, which strew the soil, lie there as an accusation against the careless *coureur de bois*, who is yearly the cause of the great fires which destroy the finest forests of our townships.

Several settlers have already begun to make clearings on the front line of the seventh range, from number one to number ten, inclusive. The magnificent results already obtained by these pioneers will certainly attract a large number of other settlers to follow their example.

The part which I subdivided is easy of access, especially since the Government has opened a road extending as far as the little lake Saint Francis.

(*F. O. A. Legendre*, 1st August, 1883.)

Township of Ditchfield

In the course of my proceedings, I observed that the general quality of the soil in the township of Ditchfield is sandy earth, the surface is rolling and hilly to a degree more than ordinary, yet these hills are good lands and

can generally be cultivated to the summit. The six ranges surveyed contain land of various appearance—hills, fertile vales, swamps and marshes, yet upon an average the whole is of a good quality and well fit for colonization. The timber is generally a mixture of spruce, birch and fir. Yet cedar swamps and hard wood hills with maple are occasionally to be met with. The part of the township not yet surveyed contains land more generally covered with hard wood, and, ascending from the sixth range towards the east, the northern part of this unsurveyed portion is of a quality inferior to none that I have seen, while in the southern part (as where the south line runs) though the soil is of ordinary good quality, the surface thereof is more broken and abounding with abrupt inequalities.

The beautiful location of this township makes it a desirable situation for settlements, which will facilitate its colonization ; by which means its main capabilities will be developed.

This township is adapted for farming purposes, and offers a fair prospect of becoming a flourishing colony, not only in agriculture, but also in commerce, bounded as it is, towards the west by lake Megantic, which is navigable from head to foot, a distance of about eight miles, and moreover embracing in its interior lake Mecanvamack, which extends eastward to within a few miles of the province line and causes it to bear a more than ordinarily pleasing aspect, from which state of things we may reasonably infer that a speedy colonization thereof might be effected by adopting a course calculated to promote that end.

(*J. O'Neil*, 4th April 1856.)

The south half of the residue of this township is mountainous and hilly and pretty stony ; but there is nevertheless some good land. The soil, generally, is more or less sandy and the stones seem to be very thick in some places, while in others there are very few.

The north half is more level or where hills occur they are not so steep and abrupt. The soil is not so sandy and generally not so stony. There are some small parts of it that are worthless, but not a great extent. I should class the soil altogether as very fair, to say the least of it.

With regard to the timber, there is a very considerable quantity of fine spruce and a few scattered pine ; there is also a great deal of fine birch and

some maple. In some places there is a good deal of cedar and silver birch, (bouleau), not saying anything of the fir.

In reference to the old line between the fifth and sixth ranges, it has all been reopened, well blazed and correctly reposted ; it was visible from the Spalding line to lot forty one inclusive, beyond which no trace of it could be found on the prolongation of that line. After some searching the old line was found at six chains and nine links more to the east. I joined the extremities of the two lines by drawing a line due east from the part between lots forty and forty one, for the above mentioned distance, when I again followed out the old line as far as the line of Louise. Few of the old posts were found standing and some more were found on the ground covered with moss, but none could have found them in walking through the woods except by correct chainings.

The land there is apparently the same as above. There is a little more hard wood and some second growth poplars, bouleau, and birch.

I beg to mention that the centre line of Ditchfield is really between lots twenty six and twenty seven, instead of between twenty five and twenty six as was supposed.

(*J. Geo. Bignell*, 20th July, 1882.)

Township of Gayhurst.

Gayhurst is comparatively level, the only range of hills being between the ninth and tenth ranges, not however covering sufficient space to be of much importance, and a portion of the first range is somewhat broken by gullies ; the land from the fifth to the tenth range is generally excellent, the only drawback being that it is in some places rather stony, producing principally a hard growth ; from the fifth to the first, there is more soft growth produced, but there is a great deal of good land.

A portion of the first three ranges, at the north east end, I left undivided, because, being slightly inferior to the remainder, some time might elapse before the lots were taken, the posts would have decayed, and the survey consequently rendered useless.

The township is well watered throughout, some of the streams being considerable and affording good mill sites.

There is every probability of a large portion of this township being quickly settled, as I noticed that families and young men come in almost daily, with the intention of taking lots in the neighborhood—they are altogether Canadians of a thrifty and industrious class.

I consider that if the road which runs between the second and third ranges of Aylmer were prolonged through Gayhurst to the river Chaudière, it would tend very materially not only to the settlement of Gayhurst, but also to that of the other townships on the river.

(*J. Bignell*, 26th August, 1853)

I then returned to lot number twenty-six and ran the range lines between the first and second, second and third, and the third and fourth ranges.

This portion of Gayhurst is well timbered and exceedingly well watered, there being several heavy streams running through it, all of them offering an abundance of water power. The land between these streams is elevated and comparatively level; the soil is good and fit for settlement, and there is no doubt that the early completion of the road through this township will be a great inducement to intending settlers.

(*J. Bignell*, May, 1866.)

Township of Jersey.

Having already, in former reports, made you acquainted with our transactions up to the time when we finished the survey of Jersey, I have now only to state my impressions as to the general features of that township, quality of soil and timber, and prospects of early settlement.

In the northwesterly section, after rising over high steep rocky hills from the Chaudière up the first range, towards its rear, the country becomes a level plain or table-land, which extends northeasterly through the second and third ranges, but becomes undulating and hilly on block A. Throughout all this section as well as the southeasterly part of the township, the timber is large and sound and of the most valuable kinds—spruce, balsam,

pine, larch, cedar and white birch, and, when the land rises, yellow birch, maple, hemlock, iron wood and many other kinds.

On the second range line (N. W.), with two or three exceptions, the soil is quite unfit for any kind of culture, but improves considerably in the second and third ranges, and block A is mostly all very fine land.

The southeasterly section is very superior in quality of soil to the northwesterly ; like it, it rises from the Chaudière abrupt and steep in the first and second ranges, into a level plain on the third range line. At the south east end of this range is a high hard wood mountain, and two or three others more to the rear of this section.

About a third of the land in the third and fourth ranges has been burned about twenty-five years ago and has grown up with young balsam, spruce, larch and white birch so rank and close as to be almost impenetrable. The burned land also extends into the fifth and sixth ranges, but less extensively. Much excellent land is found in the fifth and sixth ranges, also in the northwesterly end of the seventh and eight ranges ; but the south east end of the seventh range is so very bad that I left off running the range line at lot No. 60.

On the whole, this section of the township contains a large proportion of good land, more especially in the fifth and sixth ranges, agreeably diversified by hills and dales.

Pine and spruce of the best quality abound in every part of the township. The spruce has been neglected ; but a large proportion of the best pine has been cut down and half of it left to rot on the ground for some trifling defect not amounting to a tenth of its value. In many places the white birch is the only hard wood fuel to be met with, indispensable to speedy settlement. I regret to say that most of these trees have been cut down to obtain the bark, and left to encumber the ground.

In former reports, I have mentioned the indications of copper and gold seen here ; we have also met with a dark brown pigment resembling umber. On lot 29, in the 7th range, we found a shrub, some six or eight feet high, so perfectly elastic, that it might serve as a substitute for bottle corks when cut transversely. Peeled lengthways, it comes away to the very center in filaments, fine or coarse, as may be required, and as strong as hemp, retaining all its pliability in its dry as in its green state, and twisted into

ropes, it would become for farmers a very valuable substitute for hempen rope, for traces and other uses.

Throughout this township, the great defect is the stony and, in many places, rocky nature of the soil, which will be much more difficult to clear up and plough than the lands in most parts of Frampton. But there is also much good land unencumbered with stones, especially in the southeasterly section.

Geological Remarks.

The specimens of the rocks in Jersey which I had obtained were unfortunately lost on our way out, by cutting through the bag in which they were carried. Among these specimens were the following :

Limestone, mostly of a bluish gray color, was seen in several places.

Quartz, for the most part embedded in clay slate or sandstone, with copper interspersed through it, we found in three or four places.

Sandstone, silicious, thickly studded with small angular specks of iron pyrites, we met with—none of this last metal larger than a pin's head and no indication of magnetic ore anywhere.

Sandstone of the kind called *arenaceous* was met with in the beds of brooks, in which, by help of a magnifying glass, very minute particles of what appears to be gold can be seen.

Sandstone, of the kind termed *grits*, excellent for sharpening tools, was frequently met with.

Sandstone of various qualities, next to clay slate, is the predominant rock in Jersey, horizontally stratified in most instances. Many very large masses of sandstone rock were met with, which, with sharp angles, could not be boulders, although placed wholly above the ground ; no quartz was observed in these loose rocks, although very abundant in what was seen *in situ*.

Clay slate is the predominant rock in Jersey, the cleavage always perpendicular, with a slight inclination to the north west, containing more or less quartz and of the ordinary grayish color ; none of the dark blue or finely laminated was met with. In the beds of brooks, the clay slates appeared to stratify horizontally.

Epidote, a greenish, stratificated, whitish kind of rock was met with in the 8th range.

Jasper, very hard and reddish, brick colour, finely veined by a darker mineral, was found in the large stream, lot No. 14, 2nd range, north west section.

Soapstone, a very soft dark gray rock, easily cut into any shape by a knife, appears to be the same as that described by Doctor Hobart, in his *Geology of Shetland*, under the native name of *kleber*; I forget the scientific appellation bestowed on it by the Doctor.

Conglomerate, of gravel, very dark brownish, within small boulders.

Black Sand, met with in almost all the larger streams.

Pigment, a kind of powder resembling the sienna or umber used by painters, found in a vein of quartz *in situ*, in the 3rd range, N. E.

Granite, syenitic or gneiss, never seen *in situ*; some very small water-worn boulders were occasionally met with.

(*W. Henderson*, 3rd November, 1864.)

On this tract of land, there is a good quantity of spruce for lumber. The soil in general is good, especially between the ninth and eighth ranges, where it is level and chiefly timbered with hard wood. The land between the sixth and seventh ranges is more broken, but is good for settlement; the largest quantity of spruce is along this line. If a road was made somewhere in this vicinity from the River du Loup to the Chaudière, there is not the least doubt but that this land would be all settled in a short time; but, as it is, it will take some time before the lands are taken for actual settlement, as there is no road on that side of the River du Loup.

(*R. J. Ross*, 26th October, 1883.)

Township of Linière.

Continued south east outline reverse lots of Metgermette to second and hird range. The country through which this line runs is the best yet met with. The slope is gradual to the south east branch of the Metgermette, the timber is of the largest hard wood kinds, the soil clay.

(John Neilson. 17th April, 1866.)

Resumed north west outline and prolonged it north east to Metgermette line, which was found at seventy chains and fifteen links. Very good land on both sides of the line, and but a few stones.

Continued to prolong third and fourth range..... passed very good land, pretty free of stones.....

Bearing on top south bank Portage, south No. 38 west, prolonged one hundred chains third and fourth range, through average land, mixed timber, with some ash; broken land, but of good quality as above.

Prolonged north outline reverse lots Portage river from third to fourth range; found Metgermette-Linière line at eighty three chains and eighty links..... This reverse passes through probably the best land yet met with. A fine stream runs along nearly the whole length of number nine of fourth range, offering every advantage for personal enterprise in alluvial digging. The same stream cuts the front of number fifteen reverse lot of Portage river. The soil is a deep rich gray clay mixed with sand. The primitive timber has been destroyed by fire.

(John Neilson, June, 1866.)

The soil of this tract of land is in general very good. There is a *sugary* established, on lots 18 and 19 of the third range, by one Pierre Poulin, of Saint Côme, and there is sufficient maple on lots 17, 18 and 19, in the fourth range, to establish one or two more *sugaries*. There is no lumber of much importance. There is a small quantity of spruce and some good cedar in parts, about sufficient for the wants of settlers in building and fencing. The land, on the whole, is good for farming purposes, and there is not the least doubt but that it will be taken up as soon as advertised for sale.

(R. J. Ross, 26th October, 1883.)

Township of Louise.

The central portion of the township is comparatively level, but the south and east portions are exceedingly mountainous and rugged, especially along the boundary line. The soil is generally light and sandy, and in some places very stony. The greater part of the township has been ravaged by fire; the burnt portion extending from the line of Ditchfield in a southeasterly direction to near the fourth range, from lot 26 to lot 42. Within these limits nearly everything has been destroyed. A considerable quantity of pine has been cut in this township, but there is still some remaining on the mountains along the boundary line. There is abundance of spruce, especially on the first ten lots of the second and third ranges, and on lots 7 to 18 of the first range.

The whole township, except the south east corner, near Woburn, is well watered, and I have been informed, since completing my survey, that there is an excellent water power on the Spider river (*rivière des Araignées*), near the middle of the first range, but, not having scaled this river, I did not fall in with it.

(J. Geo. Bignell, Dec. 1880.)

Township of Marlow.

The land in general, in this section, (ranges 10 to 3, inclusive, from centre line to river Chaudière and Jersey line) is of inferior quality, being chiefly soft wood, with a good deal of swamps. I met occasionally a small swell of mixed wood, with a light, loamy soil, but too small in quantity to form a settlement. Single detached farms might be formed here and there. The ninth range line is an exception to this, as it is tolerably good from the river to the centre line and would form a point for a settlement on the two ranges 8 and 9.

There is a good quantity of merchantable spruce timber scattered through the whole of the survey; there had formerly been a good quantity of pine, but all the good has been cut and carried away.

There are a number of brooks from ten to twenty links wide, which will serve for mining purposes and greatly increase the value of the lands.

(Andrew Ross, December, 1864.)

“ This township is more level than that of Risborough, and the quality of the soil, though not better than the best part of Risborough, is altogether better adapted for agricultural purposes on account of the proportion of good land being much greater. The spruce timber is not in as great quantity as in some parts of Risborough, but in many places it is larger and of better quality, there not being so many dry trees. Altogether I should class this township as good, to say the least of it. The greatest inconvenience for agriculture, in both townships, (if it can be considered so) is the scarcity of water courses to supply cattle in summer time.

“ With reference to the mining resources of these townships, I have collected specimens of stone (which I produce) that will speak for themselves.

“ I carefully noted all the visible quartz veins I came across during the progress of my work. The rocks are stratified and seem to run in about a northeasterly direction.

“ The quartz veins, where more than one exist in the same vicinity, seem to run sometimes towards, and away again from each other, or separate to again join further on. A very fine one of some two or three feet wide, but I cannot say what depth, exists on lot No. 6 in the second range of Marlow. It is easily seen as there has apparently been a dislocation in the strata, a fault, dyke or slip, if I can call it so. I took specimens there also. I likewise produce specimens of quartz veins taken in a shaft sunk on lot No. 1 in the 7th range of Marlow. This shaft is about six feet square and some sixteen feet deep; the two quartz veins in it which seem to run towards each other in a northeasterly direction, are about five feet apart. The size of one is about ten inches broad, and the other some six inches.”

(*J. Geo. Bignell*, 17th April, 1882.)

This part of Marlow, (ranges 9, 10, 11 and 12), is very level, although there exists an even up-hill grade going towards the south-east, excepting the valley of the Samson river, along which there is a steep and pretty high bank, sometimes on the one side, and then again on the other, and sometimes near the river, and then again at a certain distance therefrom, giving a strip of alluvial soil. But in any case the flat meadow land does not extend more than some four or five chains at the utmost. A few other

valleys of streams or gullies are met with, but altogether this part of Marlow can be classed as level.

The greater part of this portion of Marlow contains some very fine land, and especially along the Chaudiere and Samson rivers, where hard wood is found, and hard and soft wood mixed, and again large soft wood.

The soil is principally loam and clay, and sometimes black muck. In some places, especially where the land is wet, we find the soil to be the stony "hard pan," with a thick bed of moss over it. Generally the soil is more or less stony all through.

The pine timber was all or very nearly all cut and removed some years ago, as well as a considerable portion of the spruce, but there still remains in some parts quite a quantity of spruce of superior quality.

A couple of settlers have gone in and begun clearing some of the land; doubtless, others will soon follow, as the means of communication become easier.

I noticed quite a number of dry standing spruce trees apparently diseased; they appear to have been in that condition from five to eight years.

(*J. Geo. Bignell*, 18th August, 1886.)

Township of Price.

Nearly the half of the land, in this township, is generally swampy and bad, while the other half may be settled, though it is only land of middling quality. Most of the forest consists of mixed soft woods, spruce, cedar, fir and pine, and the rest is mixed hard wood.

I searched for the front lines between ranges 3 and 4, 4 and 5, 5 and 6, and I can certify that these lines were not drawn, for there is no trace of any line in the vicinity of the central line, opposite these front lines. I don't think the land is very good in the 4th, 5th and 6th ranges, which I consider not surveyed; but, from what I saw, I believe that half of it could be settled.

In the tract which I surveyed, I found no stone or rock indicating

the presence of minerals of any value. I may add that I passed elsewhere no mountain or ledge of a nature to contain metals of any kinds, such as gold, copper or lead.

(*J. B. O Legendre*, 15th Feb., 1870.)

“ The whole of the land surveyed, except lots 13 and 14 of ranges B and C, is fit for cultivation. The soil, though rocky, is composed in great part of whitish earth.

“ Although the merchantable timber, especially the pine, has been cut by the limit-holders, there still remains enough for the requirements of settlers.

“ While I was engaged in making the survey, several persons came to see the lots newly laid out, and expressed their intention of settling there shortly.

“ It appears to me that the best means of encouraging the prompt settlement of this part of the township of Price would be the opening of a road from the Disraeli route, between lots 37 and 38 of the first, second and third ranges, and to continue it between ranges B and C as far as Lake St. Francis.”

(*F. Legendre*, 18th Feb., 1884.)

Township of Risborough.

Commencing at a post on the north west outline of the township of Risborough, marked range X and XI, I started the range-line, south $20^{\circ} 20'$ east astronomically, from aforesaid post at right angles to the Risborough line, which I found to bear north $65^{\circ} 40'$ east astronomically, and produced the same, subdividing the lots of twenty-six chains perpendicular breadth, to the intersection of the boundary line between the “ *United States* ” and “ *Canada*,” where I planted a stone boundary and squared post, duly marked according to instructions. In traversing this tract, I found the first eight lots well fitted for cultivation, the remaining lots, to the boundary line, being a high rugged country, composed of shale and ledges of slate and quartz, also quartz rocks in ledges of from two and

a half to three feet, running in a southwesterly direction, of a fine quality, also large quantities of "iron pyrites." The rocks in general are largely impregnated with "galena" and the bottom of the rivers with black sand, together with slate, and quartz gravel.

The numerous small streams and two of considerable note are a means of watering the surrounding country; they all keep a flow of water during the year; they average from six inches to three feet of water. I would consider that the range line between the 11th and 12th still undivided forms the height of land between the waters of the river du Loup and those of the river Samson having traced the small streams to their source, which fall into the Samson, three quarters of a mile north east of range ten and eleven and found that beyond this the small streams ran easterly into the du Loup, after running and picketing the Risborough line towards the south west, eighty chains eighty links, where I planted a squared post duly marked between the ninth and tenth ranges. This range is not of so rugged a nature, the land rising in a gradual ascent to the boundary and crossing all the streams as aforesaid, also the ledges of quartz. The land here is fit for cultivation. Thence I admeasured south west along the Risborough line eighty chains eighty links, where I planted a squared post duly marked, for the eighth and ninth ranges.

This line all through is well fitted for cultivation; the soil is loamy, with clay and gravel, and the rise is very gradual. It is well watered, the line crossing the small streams and brooks, in the accompanying plan, also the quartz ledge as traced on this range, running in the direction as aforesaid. Thence I traced and opened up the Risborough line south westward to the distance of eighty chains and eighty links where I planted a squared post duly marked, for the seventh and eighth ranges.

This range is in richness of soil and large growth of timber equal to the other ranges, and fit for settlement. It crosses a number of streams and rivulets, and also the Samson river, where the quartz ledge intersects, as traced on the plan. Thence again, along the Risborough line, south westward eighty links, where I planted a squared post duly marked, for the sixth and seventh ranges.

This range is of considerable value, there being very extensive sugaries.

The trees are of a large size and grow thickly together. The land is rather rolling, but of rich black soil, stony in parts, but well fitted for farming. It is also watered by numerous small streams, also by the river Samson, and the last branch thereof. The quartz ledge passes through this range.

Thence I admeasured along the Risborough line, opening up and blazing the same on each side, to the intersection of the Spalding line 130 chains 05 links, where I completed the subdivision of the south west part of Risborough, as required by my instructions. I was unable to complete the scaling of the river Samson, as required, but only that portion of it from the Spalding line to its intersection with the Risborough line, at range ninth, where I terminated the work.

I would humbly beg to bring to your notice that some years ago a road was partially opened up from the Kennebec road, along the Risborough line crossing the River du Loup, and brushed out as far as the river Samson. I would beg to suggest for your consideration that if this road was regularly opened up, from the Kennebec road to its junction with the road already traced in the field, to Jersey Point, as represented on the accompanying plan, it would be the means of settling and making that large section of wild lands of the Crown a source of revenue to the Government from the fact that, all along this route, the lands on each side without exception are fertile and advantageous to the settler, being so close to the leading highways to Quebec, Sherbrooke and the United States.

(*C. I. Bouchette*, 29th May, 1865.)

The portion of country I have surveyed is composed chiefly of swells, with hard wood around the base, then broken rocky ledges with hard and mixed wood, and the top rocky, with spruce and other soft woods. It would be impossible to make roads upon any one of the lines I have surveyed.

The River du Loup branches into a number of fine streams, which will be very valuable for mining purposes.

The whole of the merchantable pine has been cut and taken away; the spruce, in general, is of an inferior quality for lumber.

The general rock is slate, with quartz veins running through it. There are some extensive ledges totally of quartz. I have not seen it in such quantity in any other parts I have surveyed. I saw only one boulder of granite and one ledge of sand stone (white).

Although this tract I have surveyed is not adapted for an agricultural country, there are many fine tracts of lands in the valleys amongst the hills,

and if it become a mining country, which from appearances I think it will' these valleys would form pretty spots for the miners' habitations.

(*Andrew Ross*, July, 1865.)

The portion of country I have surveyed is very mountainous and unfavorable, in general, for agricultural purposes; it would be very difficult to make roads through it and impossible upon the lines I have run.'

There is no pine timber upon this tract and what spruce there is, is very inferior, being short and knotty.

The general rock is slate. I saw several quartz ledges, but the time was unfavorable for geological research, as the snow was upon the ground the whole of the time I was out, and was one foot deep when I left the height of land upon the twenty ninth of October.

There are a great many streams, but in general very small, at the headwaters of the River du Loup.

(*Andrew Ross*, 20th Nov., 1865.)

In Risborough, I ran the following lines, namely: between ranges 3 and 4, 14 and 13, 13 and 12, 12 and 11, from lot one to eighteen, inclusive.

This township is more mountainous than Marlow, but a very small portion of it, indeed, if any, can be called unfit for agricultural purposes, as the most hilly and stony parts can be put into grass for hay or pasture.

The quality of the soil in some places is very good, while in no place scarcely can it be called very bad altogether. I should call it very fair. There is still considerable spruce timber almost throughout all I surveyed, and in some places particularly it is very plentiful.

(*J. Geo. Bignell*, 17th April, 1882.)

In general features this part (ranges 5, 6, 7, 8 and 9), of Risborough is unlike most of the rest of the township, being much more level.

There is a somewhat even gradual up-hill grade from the river Chaudiere, going towards the south-east or towards the province line. It is nevertheless somewhat hilly, but not mountainous as in some other parts of the township. A few gullies, like everywhere else, are occasionally met with, at the bottom of which there nearly always is a stream; as a rule here the gullies do not run a great distance.

The soil generally is very good, being nearly all loam with a little black muck. It is somewhat stony, but at the same time very fertile. This information I obtained from parties who took up lots within this surveyed portion some years ago, and who have more or less extensive clearings made and live on their lots and have raised some two or three crops therefrom. I have entered the names of those settlers on my plan, and have also laid down the approximate extent of their improvements.

A great quantity of the merchantable timber of all kinds has been drawn away, but there still remains a considerable quantity of spruce in some parts, which is of a large size, and superior quality. I noticed a certain number of dry spruce trees, apparently diseased. They appear to have been dry some five to eight years. The proportion of them here is not as great as in Marlow.

(*J. Geo. Bignell*, 23rd August, 1886.)

Township of Shenley.

The land throughout is generally good, and sufficiently well watered and, with the exception of some short, abrupt hills, on the first two miles, is comparatively level.

(*J. Bignell*, March, 1862.)

Township of Spalding.

The land, throughout the township of Spalding, is for the most part of good quality loam, though rather stony in places, yet, on the whole, very well adapted to agricultural purposes, and may be classed as first rate farming land.

The timber is also of superior quality and of average growth, generally mixed, the principal kinds being birch, maple, spruce, cedar, balsam and some pine.

The whole township is well watered, many of the streams being of considerable size and affording excellent mill sites, and water privileges, amongst which I may mention the Nebnellis and Kokombis, names given by the Indians. The river Chaudière itself is a very rapid stream, at low water being not more than two feet in depth and of an average width of about two chains, although at spring floods it rises to considerable size. The banks are in many places rather uneven, while, in others, good flats of arable land extend to the water edge.

(A. Duchesnay, July, 1867.)

During the whole time of this survey, the weather was very fine, there not being one half day's work lost. The seventh range of this township is slightly undulating, north east of centre line; but a little more hilly at the south west. The soil is not too sandy, not very stony and is well adapted for agriculture. There is considerable maple and birch, also a great quantity of fine spruce, although the greatest part of it has been cut and removed.

The VIII and IX ranges are more mountainous than the VII and more stony in most places. There is a great quantity of very fine spruce through nearly the whole of the two ranges. There is also considerable hard wood. Small water courses are scarce. Taking the residue of this township altogether, it should be classed as very fair, as can be seen by the field notes.

(J.-Geo. Bignell, 20th December, 1882.)

COUNTY OF BELLECHASSE.

Township of Armagh.

Pursuant to verbal instructions received from the Deputy Commissioner of Crown Lands, I altered as requested the division of the lots in the 3rd, 4th and 5th north west ranges of the said township, the 3rd range from No. 38 to No. 57, the 4th range from No. 32 to No. 57, and the 5th range from No. 1 to No. 57, inclusively. The ground on the whole is stony, but level and well suited to tillage. The timber consists of spruce, birch and a little maple, and here and there a few pines. No attempt has yet been made to open up or settle this region, although the whole is well adapted for colonization and cultivation.

In concluding this report, I must say that these lots will be shortly taken up, especially if the Government opens a road of about five miles in length, passing along the side line of the 3rd, 4th and 5th north west ranges, and thence crossing the line between Nos. 27 and 28, on the 3rd north east range and coming out at the church.

(*E. Casgrain*, 5th January, 1831).

Township of Bellechasse.

According to instructions, I proceeded to renew or retrace the chaining and scaling of the division line between the townships of Roux and Bellechasse across the whole breadth of those townships, and also the chaining and scaling of the line between the first and second ranges of this township from the Mailloux road to the line between Bellechasse and Langevin townships.

I also did some chaining on the Grand Mailloux line, along the base of the ranges, as the whole appears by my notes of survey and journal.

The soil, in the part which I traversed, is, generally, the same as in the township of Roux; being a yellow, gray and black earth; while the country is not so uneven, but generally more level or gently sloping.

The principal rivers of any importance which I crossed are the rivers *aux Originaux* and *Bric*. On the latter, at the Grand Mailloux line, a Mr. Lamontagne is at present engaged in some extensive operations in changing the site of his saw and grist-mills, by transporting them from one side of the river to the other, and in slightly changing the actual course of the river with a view to the more advantageous working of his mills.

Fish are not abundant in these rivers, the principal kind being trout, which in the vicinity of the mills are found of a large size. They are also found in a small river crossing the first, second and third ranges, running through the Grand Mailloux line, on the last range in the vicinity of the line between this and the second range.

A stream which cuts the line between the first and second ranges at lot No. 45 offers, at a few acres to the south, a site and water-power suitable for a saw-mill.

The soil generally is good for cultivation. Nearly all the farms in these localities are taken up, and many of them are much advanced and in a good state of cultivation. The prevailing timber is spruce and fir, with bouleau, birch and maple in some localities. In some places, birch and maple are the most plentiful, and at some distance from the range-lines on either side some fine sugaries are met with and we also meet them in some places along the range-lines. But unfortunately, hurricanes, running north-west to south-west, have here done serious damage in overturning everything in their course, a circumstance which gave us much extra work in many places on the division line of the townships of Roux and Bellechasse.

The land which I have just resurveyed and laid out in farm lots comprises a superficies of ten thousand five hundred acres.

Before closing my report, I believe it my duty to advise as very desirable the opening of a road to connect the township of Bellechasse with that of Langevin, as the want of one is greatly felt, and it would very much accelerate colonization. This road, in order to favour the settlement of the country, should as far as possible cross the best lands, and be as level as practicable, a circumstance very important in the opening of a colonization road, in regard to expense of construction and facility of traffic. To further this object, I believe it would be well to have a preliminary survey made of some of the ranges of the township of Bellechasse, which offer the best facilities for the purpose. Such a survey would obviate the mistake so often made of opening roads in an non explored country, where it is very difficult,

if not impossible, to lay out the ground, as I have very often had occasion to note and where it has happened that, after a few years' existence or even shortly after the settlers have commenced work, they have found it impracticable, and then the location of the road has to be changed, petitions have to be sent to the Government, a new road has to be opened to avoid an impracticable road, and the whole work to be commenced over again.

(*P. E. Lavergne*, 7th Nov., 1884.)

Township of Buckland.

The township of Buckland is extremely well watered everywhere by three considerable streams, their numerous tributaries and several small lakes.

The river Abenaquis, a large tributary of the Etchemin, divides into three more branches and spreads over the north and northwesterly part of the township from the first to the tenth ranges.

This portion of the township contains but very little good land, and the choice timber has nearly all been stripped off; that portion joining Saint Gervais, in particular, is almost wholly an old *brûlé* extending as far as the sixth range, exhibiting little else than rocks covered with moss, everywhere strewn with fallen timber, and covered with young sapin, cherry and decayed timber, utterly useless for any purpose whatever. The south easterly portion of this tract, although much better—and occasional patches of hard and soft wood land are met with—is everywhere very stony and often rocky. In the rear of this, however, a great deal of very fine hard wood swells are found, more particularly in the ninth and tenth ranges, which are wholly such.

The second large stream, also a tributary of the Etchemin, together with Hennison brook, waters all the central and southwesterly portion of the township, from the second to the tenth range. A very great proportion of this tract is hard and mixed wood land, of excellent quality of soil. Although very stony and even rocky in places, it is preferred to less stony but poorer soft wood lands, by new settlers.

The remainder of the township is watered by the south east branch of the river du Sud, and a number of large tributary streams extending

over the twelfth, eleventh, tenth and part of the ninth ranges. By far the greater portion of this tract is of very superior quality, excellent hard or mixed wood land, up to within a few acres of the Standon line, where, however, it is bad throughout. This hard wood land lies in swells of some miles in extent, and in many places free from stones, offering situations for new settlements superior to any lands I have seen in the district, land, with the exception of two or three lots in the tenth range, all susceptible of cultivation and with mill sites abounding here as everywhere else in the township

The great range of high mountains on the northern side seems to form a natural boundary, sloping gradually northwesterly into Buckland, fine hard wood land, and terminating abruptly, mostly on the boundary line offering a precipitous wall of rocks and bad lands to Standon.

The remainder of the township up to the Saint Gervais line, where it is again, on the line only, rugged and precipitous, is generally gradual swells of land offering everywhere facilities for opening level good roads, which is all that is required to effect the immediate settlement of Buckland; one good cart road, indeed, up the centre of the township on the thirty first or the thirty second lot would sufficiently answer that end.

(*A. Ross*, 7th December, 1841.)

The chaining from the division line between the townships of Mail-loux and Buckland, on the oblique line running westward, gave one hundred and forty two chains ninety four links front perpendicular to the great lines of division, which forms thirteen lots of ten chains and one of twelve chains ninety four links, between each of which I planted a picket.

The whole of this block of land is wooded with very fine hard wood, but is, generally speaking, rocky, though for the most part capable of advantageous cultivation. The soil is generally a good yellow clay.

The superficies of the divided portion of the township of Buckland amounts to 16,210, and the portion still undivided to 3,350, acres.

(*O. A. Dubé*, 26th January, 1853).

All the land surveyed here is good and very well adapted for cultivation; the soil is of grayish earth, not rocky, and of excellent quality. The line of the *trait-carré* which separates range A from range XI runs as a general rule along the side of a mountain with a gentle incline, and the rest of the ground is partly undulating and partly level, with very little abrupt declivity, except on the lots situated between lots 7 to 21 on the north east side of the line, where there is a deep ravine cutting across these lots and preventing cultivation through the difficulty, if not the impossibility, of crossing the ravine, which divides the lots into two. Apart from this, I have seen nothing else worth mentioning.

(*P. Fournier*, 12 April 1864).

Township of Daaquam.

Before terminating my report, I may say that, putting together all my observations of the soil and variety of land in the course of my exploration of the township of Daaquam, I found the lands in this township favorable for cultivation and offering to the settler who proposes to clear them a sure guarantee of success.

I am the more confirmed in this opinion by the rare and remarkable fact that this locality is everywhere extremely level and free from rocks, which gives the settlers great facilities for opening public roads. The only difficulties to be encountered in this township arise from the existence of some swamps here and there; but these are trifling compared with those arising from the inequalities of the surface, and I have the hope that at no very distant day a brilliant destiny awaits the valley lying between the river Daaquam and the river Saint John.

(*E. Casgrain*, 1863.)

Township of Roux.

I surveyed the first four ranges of this township, running division lines between the first and second ranges, the second and the third and the third and the fourth as well as one on each side of the Mailloux road, forming two ranges of fifty four chains each in depth.

The surface of this township is higher than that of Mailloux, and the soil is generally good for tillage, although uneven; seldom is rocky or swampy ground met with as an obstacle to cultivation. The hills are of yellowish and grayish earth, and the absence of stones is remarkable. The slope of the second, third and fourth ranges is towards the south, and consequently well suited to the raising of early crops. Settlers have already commenced clearings in the hope that the Government will have the land subdivided; and on the Mailloux road, there has been a settler established for nearly four years past. There have been five or six families living on the sixth range for nearly five years past. Many more from the parish of St. Lazare will join them in the spring. The work of settlement in this direction will before long yield surprising results.

(*Frs. Tétu*, 8th March, 1866.)

In obedience to instructions, I resurveyed and renewed the front lines of the third, fourth, fifth, sixth and seventh ranges, besides renewing the east and west lines of the Mailloux road and the side lines of the third, fourth, fifth and sixth ranges.

The soil of the part resurveyed by me is generally composed of yellowish rocky or of grayish and poor earth with occasional low grounds of gray and black loam. In some places the ground is uneven, but as a general rule it is level or slightly sloping.

The rivers are generally rapid in their course, and, although their beds are cut down to the rock, the banks are not steep.

The lakes are small and very shallow and contain very little fish, trout being about the only kind to be met with.

The timber most plentiful is the white and red spruce, birch, beech and maple in some parts. The few pine trees that I saw on that part of the fifth range are of inferior quality.

The spruce is pretty good and might be worked to advantage by means of the Etchemin, Black, White and Moose rivers.

There are some good mill sites, particularly on the Etchemin river, along the front of lot number thirty three in the second and third ranges, where the river dashing over the rocks between two cliffs is well adapted

to the construction of booms, &c., but unfortunately this site just occurs where the soil and timber are poorest.

There is also a fine mill site on one of the branches of the Black river, a short distance south of the front line of the third and fourth ranges, on the line between lots twenty and twenty one, and this place is near enough for the settlers.

In general, owing to their rapid course, the rivers offer at many points great advantage for the building of mills, and a few saw mills have been already constructed.

Generally speaking, the soil is adapted to tillage, though its broken character along the front line sometimes leaves the impression that it is of inferior quality. This is particularly the case with the last lots of the opened portion of the St. Anselme road, in the third and fourth ranges, where one is astonished to see the work of cultivation carried on upon the shallow soil overlaying the rocky outcrops, which naturally suggests the question why settlers should select such places to begin their clearings. The answer to this question, however, is found in going back from the front line and noting the difference of the land. It must be added, too, that the hard wood lands, which are generally more rocky than those upon which the timber is mixed, hold out to the settler the promise of a prompter return than the latter, though these are preferable and of better quality when cleared.

As noted, clearings have been begun along the front of the St. Anselme road, in the third and fourth ranges, where some fairly good buildings are already erected and the amount of land brought under cultivation is already considerable notwithstanding the recent date at which these lots have been opened.

Clearings have also been commenced in the ranges to the east and west of the Mailloux road, where some lots have been opened and brought under cultivation, especially in the upper part of the sixth range, where the work of development is well advanced and still progressing. This is also the case along the front of the sixth and seventh ranges, where the settlers have the advantage of being favored by a good road.

The opening of a front road between the fourth and fifth ranges would be, I think, the best means to encourage the settlement of the fifth range in which there are some fine lots from number twenty five to number thirty two, so much so, in fact, that some of them were taken up as soon as

I could complete the subdivision. Unfortunately the first lots met in this range on entering it from the west are somewhat swampy, but, to the west of the Etchemin river, there are some good lots, so that this range may be said to be one of the best suited to cultivation, the ground being also a little less rocky. I also think that the opening of a road along the same front line, in the eastern portion or between the third and fourth ranges, would be of great advantage.

The front lines of the third, sixth and seventh ranges, in the western portion, cross the largest mountains. Nevertheless towards the south, starting from the top of the highest mountain on lot number thirty in the seventh range, clearings have been begun. The mountain, where it skirts the front line, extends from lot number twenty nine to lot number thirty seven ; but, beyond the latter, the ground resumes its usual aspect. The hilly part of the frontage of the sixth range is restricted to about the same limits, but it is only between numbers twenty nine and thirty one that the mountain is highest.

Beyond the discharge of the small lake, as far as number thirty seven, the general slope of the ground is towards the north or north east, and the soil is of good quality, being mostly covered with hard woods, mixed with balsam and spruce, &c.

(*P. E. Lavergne*, 6th March, 1883.)

COUNTY OF BERTHIER.

Township of Brassard.

I commenced work at the Brassard road, starting from the posts which divide lots forty six and forty seven.

The part surveyed comprises sixty eight lots of regular shape or of one hundred and five acres each, eighteen lots of irregular form of which eleven contain sixty one acres, one rod and twenty eight perches each, one containing ninety seven acres and five whose superficies is not known, Trout Lake not having been surveyed.

With the exception of a few lots in the tenth range, all the land surveyed is very well fitted for cultivation and about one fourth of the lots are already occupied.

Although I have not inspected the part which remains to be surveyed to the north east of the Brassard road, the reports which I have received as to the quality of the soil are such that I have no doubt that it could be settled rapidly, if surveys were made and colonization roads opened.

While referring to this subject, I must say that it is most unfortunate that the surveys cannot always be made before the roads are opened ; if this could be done, the roads would be better located, and a great deal of squandering would be avoided. This very year, when I received your instructions, the road to Trout Lake had been opened, and work costing about three hundred dollars had been done, most of which is perfectly useless, as the side lines of the lots showing as good a route for a road as the one already opened, it will become necessary to change the location throughout all its length in order to facilitate the settlement of the lots that are now shut off from a road.

(*Jérémie Laporte*, 28th October, 1880.)

Townships of Provost and Brassard.*Outlines.*

Here the soil varies very much ; on the borders of the Mattawin river there is a valley of considerably varying breadth, the soil of which is rich alluvion ; beyond this valley the soil is yellow, more or less sandy, the whole, nevertheless, covered with a pretty thick bed of vegetable detritus. Lastly, there are some lands only middling on account of the sand and rocks.

The land surveyed is slightly broken by valleys, hills and dales ; the other part is more so and by mountains more or less steep.

The large valley or plain which is seen to the south east of Lake Kaikama is a tract of land of about three miles, bare of timber and just as level as the lake itself, in winter the lake seeming to embrace it.

This valley, although low and overflowed during the month of May last, is and will be a great resource to the settlers for a long time as it is there where they make hay, the grass being very plentiful. Every time that the ground is uncovered on the points and the roads, hay grows abundantly.

The different kinds of wood to be found in these two townships are the balsam, spruce, white birch, cedar and alder. There is also some maple and mountain ash, but in small quantities, these last growing only on the banks of the river Mattawin.

I also remarked some good water-powers. I would mention among others the falls formed by the river Mattawin which descends between two rocks to a depth of thirty feet. It is at this point that the Reverend Messrs. Brassard are building a saw and grist mill, upon which they have spent large sums of money, without prospect of remuneration for a long time, but with the object of favoring the settlement of these townships

The points which border the river Mattawin were covered with water, this year during the month of May. This overflow was evidently caused by a dam built near the falls a few years ago, by lumber merchants, which it is proposed to remove to obviate similar trouble in the future.

(*U. Dorval*, March, 1883.)

The general features of the region traversed is good, although, for about nine or ten miles along the line, it is of a barren nature as far as the height of land, where the waters fall each way, on the one side into the Mattawin, and on the other into the Mastigasse ; from the Mattawin towards the height of land south easterly, the land is composed of yellow soil of a rich nature well fitted for the settler ; there exists also a very strange peculiarity about this section ; it is impossible to judge of the nature or quality of the soil from the growth of the timber thereon, it being wooded with spruce, balsam, pine and white birch ; however, it is good soil ; there are also numerous lakes abounding in very fine trout and other fish, which are an inducement to parties to settle near their banks.

With these remarks, I beg to transmit for your consideration and sanction this report, plan and accounts, requesting that you will kindly grant the amount thereof to enable me to continue the aforesaid survey.

(*Carolus Laurier*, 1863.)

Township of Provost.

(*2nd Range*).

This range is bounded to the south west by block B, to the north east by the north east line of the township of Provost, to the south east by the second, third and fourth north east ranges, and to the north west by the river Mattawin.

It is divided into seventeen farm lots, fourteen of which are settled and partly cleared. The four lots to the south west are of alluvial soil and generally very low. The lots fifteen, sixteen and seventeen are hilly, stony and of inferior quality. On lots eleven, twelve, thirteen and fourteen the soil is of yellowish sandy loam with very little stones, and the lots to the north east of number eleven are of excellent soil but more stony than those above described ; they slope towards the west. The most of the range has been burnt over.

Lot No. 5. — Rich yellowish, stony soil, balsam, spruce, white birch. Under settlement, two acres.

No. 6.—The same as the preceding, but hilly. Same settler, house building—under cultivation, three acres.

No. 7.—Less stony, same timber.

No. 8.—The same as above occupied by Thomas Wawanalet, Abénakis Indian ; house, and clearings of almost no value.

No. 9.—Rich yellowish soil, stony, balsam, spruce and white birch.

No. 10.—Same as the preceding with also a few cedar.

No. 11.—Yellowish sandy loam, occupied by Jeremie Laporte. Under cultivation, ten acres.

No. 12.—Same as the preceding, same occupant. Settled, thirty acres ; four chains from the south west post there is a brook of twenty links in width running north west.

No. 13.—Same as the preceding, same occupant. Under cultivation, twenty acres ; house built, twenty five feet by thirty, a barn and stable of forty feet by a hundred and five.

No. 14.—A few burnt rocks, same occupant. Under cultivation, twenty acres.

No. 15.—Same as the preceding, cedar, settled by Onésime Héroux. Under cultivation, two acres.

No. 16.—Undulating burnt ground, cedar, same settler. Under cultivation, five acres.

No. 17.—Shallow, red spruce, cedar, same occupant. Under cultivation, twenty acres : house, twenty feet by twenty two, barn and stable, thirty-six feet by sixty

No. 18.—Very low ground, tamarac, settled by Japhet Ferland. The post between numbers eighteen and nineteen cannot be placed, its position being in the middle of the discharge of lake Saint-Michel, which is fifty-two links in width.

No. 19.—Low. Same occupant.

No. 20.—Low. Same occupant ; five acres under cultivation.

No. 21.—Low. Same occupant. Twenty-five acres under cultivation.

Fourth Range North East.

This range is north east of the third range and bounded to the north west by the second range, south east, and to the north east by Crown lands yet unsurveyed. The soil is generally of rich yellowish clay, but rocky. The nine first lots are covered with standing timber and slope towards the south west and south. These lots are not uneven. The rest of the range is very uneven and has been almost wholly burnt over. The surveyed portion of it is divided into eighteen lots of thirteen chains each ; none of these lots is settled.

Third Range North East.

The land all along this line is uneven in the second and fourth ranges and mountainous in the third range, and for this reason number eighteen of the third range, which is moreover cut through by Front lake, should form part of number seventeen.

Second Range South East.

This line represents the course of the road to be opened for communication between the second range south east and the second and third ranges north east to the range of Trout lake.

Second Range North East.

This line starts from the base of the second range south east, in the centre of lot number fourteen, and ends at the line south east of the lot number seventeen, of the north east range on Trout lake.

It has a length of two hundred and twenty six chains and ninety five links, and is divided into seventeen lots of thirteen chains and thirty five links each, equal to thirteen chains on the north course 45° west.

This range is bounded to the south west by the first range north east, to the north east by the third range and to the north west by the second range south east. This range is almost all high lands, little stony, but generally uneven. At the rear of number three commences a mountain, facing north and finishing at lot number eleven, where it touches the central line making a high land up to number seventeen, that is, to the discharge of Trout lake.

Third Range North East.

This range is to the north east of the second range north east, and bounded to the north west by the second range south east. The divided part comprises eighteen lots of thirteen chains each, equal to thirteen chains and thirty-five links on the central line between the second and third ranges north east.

This range has been all burnt over, the land is high and of good quality, level, and pretty free from stones for the first eight lots, but very uneven, rocky and generally stony, in the south east part.

I scaled and chained the north east line of Provost from the post north east of the line south east of the second range south east to Pine lake. The result of this chaining is as follows :

From the thirteenth mile post to Pine lake, it is generally burnt land and encumbered with fallen trees, blown down by the west wind ; a continual, but easy slope.

To the north east, many settlers are established ; they have run a base line starting from the thirteenth mile post and made the scaling and chaining of the north east line of Provost from the post north east of the base line of the second south east range.

The ground adjoining this line is generally undulating and of good quality, particularly towards the north east.

I began to-day to run the line which is to be the division line between the third and fourth ranges north east. The ground is very even but very much obstructed by fallen trees, blown down by the west wind, the timber being standing to the north east and burnt to the south west.

I continued the line between the third and fourth ranges and chained seventy eight chains to the six lots ; this land is level, but obstructed with fallen trees on the three lots ; after that there is a clear burnt space, but hilly and very uneven.

(*Jeremie Laporte*, 22nd Jan., 1880.)

While transmitting to you the documents concerning the survey of the township of Brassard made by your instructions of the 2nd Oct. 1885 I have the honor to report that the surveyed lands are generally fit for cultivation with the exception of that part which is on the banks of the river des Aunais, from the side line north east to lot number twenty five and which for about twenty chains on each side of the river is too low to be drained.

The part east of the river des Aunais is generally wooded, but nearly all burnt over ; west of the river is also burnt for the greater part, but less wooded.

The south west part of the township is generally covered with standing timber comprising a few maple groves.

(*Jeremie Laporte*, 24th April, 1886)

COUNTY OF BONAVENTURE.

Township of Carleton.

I started the centre line at the lot post thirteen and fourteen, on range two and three as before mentioned, and ran it on a parallel course to the Nouvelle township line to the depth of the third range, or a distance of seventy nine chains and fifty links, where I marked and planted two posts, one marked lot post twenty six and twenty seven, range four on the north, and the other marked lot thirteen and fourteen, range three, on the south face, as per instructions. The forest here and for one mile and one half to the east and same distance to the west is totally burnt, and on arriving about lot thirty nine, where the timber is not burnt, I fell in with old blazes and marks of a former line.

The natural features as far as lot sixteen, third range, are rough and broken and utterly useless for purposes of cultivation, the land and timber being totally burnt, the second growth consisting of white and yellow birch and poplar, very small; the fourth range with the exception of from lot thirty four to lot thirty eight is somewhat better, a little broken, but not so much so as to render it unfit for cultivation; the front is likewise burnt and consists of the above mentioned second growth; the timber is not of very much consequence for lumbering purposes, the growth being too small; the soil in the valleys of the larger rivers is pretty good, the prevailing color being red, and the height of lands where the timber is not burnt is also good and well adapted for cultivation, a little stony in places, but these are small.

Returning, the soil and timber we burnt for some two or three lots to the west of the centre line on the fourth range, but the front and the rear of the third range are totally burnt; on the fourth range the land is rolling and generally level until you reach the height of land at Stewart river, and from that river through to Nouvelle township is very rough, much broken and utterly useless for cultivation, but the timber is good, consisting, although not to say very large, for the most part, of white and black birch, spruce and fir; on the slopes of Stewart river and to the west there is considerable growth of cedar; the soil is of the same reddish hue, of light texture and well adapted for purposes of cultivation, where

the land is not too much broken ; the rocks outcrop on the slopes of Stewart river ; the strata is some 60° slope, the strike being about north east and south west and consisting of gray sandstone.

Finishing this range, I again returned to the centre line, range three and four, and ran it upon a course parallel to the Nouvelle township line. Close to and in the vicinity of the head of the said centre line, the land is rough and broken along the whole course of the line with very little exception. I afterwards started range line four and five, going east from said lot twenty-six and twenty-seven, and on said centre line south 36° 50' east astronomical.

With respect to the natural features of this range from lot twenty one to lot forty three, the land is rolling and pretty level in places ; the remainder is rough and broken with the exception of a few lots to the west and in the vicinity of the Nouvelle township ; the soil is good in places and consists of an intermixture of red and white loam ; the slope of the hill fronting on the Stewart river, west branch, is very rough and broken, the rocks outcropping in a good number of places, and of the same description and formation as before mentioned on the last range ; the timber through the whole of this range is not burnt and consists of white and black birch, spruce and fir ; that in the vicinity of lot thirty two is mostly all spruce and fir, the birch being scarce and a great number of dead and rotten ones ; the timber on the few lots adjoining the Maria township is good and consists of the hard wood varieties above mentioned with the intermixture of a few maples.

The sixth range is not quite so rough or so much broken up by the last mentioned rivers ; toward the east and where the line crosses at lot forty one the head waters of the east branch of Stewart river, the hill at Stewart river west branch at lot twelve to fifteen is very rough and broken and useless for cultivation ; there is a considerable quantity of white and black birch growing on the slopes on both sides, intermixed with some cedars, also the middle of said range from the west branch of Stewart river to the Nouvelle township is considerably broken up by a large brook that runs into the river ; from lot fifteen to lot forty six, the land is rolling and, generally speaking, pretty level, and could be well adapted for cultivation purposes, the soil in most places being not very stony, and the color much the same as in the last mentioned range. I may add that this is the largest tract of land that is good, to be found on the part surveyed ; the remainder of this

range from lot forty seven to Maria township line is broken and useless for farming purposes, but has some good timber, consisting of white and black birch, spruce and fir; the timber contained between lots fifteen and forty six is good, not to say of very large growth, but in most places consisting of white and black birch, spruce and fir; the greatest height of land in this township is, I consider, in the vicinity of lot thirty five, judging by the courses the brooks take.

The seventh range is not quite so rough as the former, with the exception of a few lots in the vicinity of Stewart river, west branch, and from lot number forty three to forty eight which is pretty rough and broken; the remaining portion of the range is pretty level and rolling; the soil in the vicinity of the centre line is not quite so good as usual and consists of a whitish loam of a gravelly nature; the timber which is small in growth consists principally of spruce and fir, the birch not being half so thick as on the last mentioned range.

After finishing this range, I ran up the centre line from range seven to out line of township.

The centre line runs up for its whole distance a small brook that flows north east as far as could be seen; the soil along the valley is not much good; the timber on the height of land and also in the valley is small and of poor growth, consisting for the most part of small spruce and fir intermixed with a great number of dead trees of the same growth. I could only see a few straggling birch here and there and not of any great size.

Taking the township as a whole, it is rough and broken, but part could be chosen where a good number of settlers could be located, especially on the east side and on ranges five and six and part of seven, by continuing the road already run and opened from the front (marked in my plan in red) to its intersection with a branch of Stewart river east branch and continuing the said road along the valley of said river as far as its source, and by opening cross roads on and along the range line five and six to the east and west of said river, which would open out for settlement purposes what I consider to be the best portion of the township; the west branch of Stewart river I consider too rough and the approaches too abrupt for roads. The timber for lumbering purposes in this township is too small, no pine whatever, and the birch is somewhat small.

(*P. Murison*, 31st January, 1874).

I ran the range line from the centre line to lot ten and renewed it from lot ten to the out-line between Carleton and Shoolbred, because all traces of it had disappeared.

I then chained along the seigniorial line between Carleton and Shoolbred at the base of the second range.

The line is skirted and several times crossed by a verbalized road and a brook. The road in question leads to the concessions in the township of Nouvelle.

At eighty-nine chains fifty-one links, the range line was intersected at the base of the second range.

As the point of intersection is a bare rock, from which the trees have been burnt off, I could not plant a range post.

The land traversed from the centre line to Shoolbred is very mountainous, sometimes completely burnt over, generally unfit for cultivation, and frequently inaccessible. The principal forest growth is birch, spruce, white birch and balsam. All these woods, are, generally speaking, only fit for firewood, and even then very hard to get out. Lots five and six are partly fit for cultivation.

One Raphael Levasseur has built a camp on the western part of lot eleven; he has begun to clear the land and got a good crop from it last year; unfortunately, there are only a few acres cultivable.

The whole tract is almost worthless, being inaccessible, exceedingly mountainous all over and unfit for tillage, and the timber on it is very difficult to work, where it is possible to attempt this.

It is my opinion and conviction that the lands of the third range and a great part of those of the second range are unsuited to cultivation and are like an insurmountable barrier, which will retard the settlement of the fourth, fifth and sixth ranges of Carleton.

(C.-L. Lepage, 8th May, 1887).

Township of Causapsca.

(*River Range*).

I must say that the soil of these lots is very rich and very desirable for settlers. In my preceding surveys, I have met with little land so generally good for all kinds of tillage.

My information and observations are to the effect that these lots are as susceptible of cultivation as those of the township of Metapedia.

From number twelve to the river Causapsca, the land is in the highest degree fertile and very level. The prevailing woods are birch, ash and spruce, with some enormous cedars. The fire of 1845 destroyed the bulk of the timber from number twenty-three to the Causapsca river, but since that time, the lots have been visited by lumberers, who, in carrying in hay, let fall the seeds of timothy and clover, with the result that they have propagated themselves to a surprising extent, and it is stated that on some of the lots towards the great elbow, opposite the Metatics brook, three thousand pounds of hay can be cut, which proves that the soil is strong and rich, for it has never been cultivated.

On this second line, I met a very deep valley towards the centre of number thirty-two, at the bottom of which meanders a charming little brook which discharges towards the front of number thirty-four. This valley is the only break in that part of the tract, which everywhere else is level and fertile, with the exception of the hill descending to the river, which, like the others, is pretty steep.

(*E.-H. Legendre*, 22nd April 1862).

Township of Cox.

From Paspébiac, I immediately proceeded with my party to the south eastern angle of the base, taking with us, as far as circumstances permitted, the necessary provisions. Being unable to find any post or trace of the division line between the lake range and the first range of the base, on the line of Hope, because the only wood there are young trees of the third or fourth growth, fire having swept over it several times, I went on to the Pas-

pebiac line, where I found sufficient remains of the base line to trace it to its junction with the east lateral line of Cox. I ascertained that this line runs north $76^{\circ} 4'$ west, magnetic, and, on the same evening, I corrected the magnetic variation, which I found to be $24^{\circ} 16'$ west.

As the line between Cox and Hope at this spot was invisible for the reasons already specified, I proceeded towards the middle of the first range or concession and, having found it there sufficiently distinct, I extended it with much care to its intersection with the base line.

The course of this line is south $9^{\circ} 16'$ west magnetic. I prolonged and chained it to the base of the sixth range, planting midway in each range or at each 52.63 chains a good, duly numbered post.

I could not discover the line or any trace of a line along the whole distance, and, the people of New-Carlisle and Paspebiac assured me that, apart from the line between the lake range and the first range, no other line had ever been run to divide the ranges. This division line of the township was only apparent in a few places; elsewhere no trace of it was perceptible.

The land along the line was generally level, composed of yellow mould, free from rocks and consequently well suited for agricultural purposes. The prevailing woods are birch and maple.

After planting a post numbered 56, I established the division line between these two last ranges, parallel to the base line of the first range, which I prolonged to its intersection with the Robin lot, at a distance of 37 chains from Hope, where I planted a post.

I then returned to my starting point at the post between the lake range and the first range, where I measured off lots of 19 chains and 50 links, as prescribed by my instructions. I extended this line in the first place to the Paspebiac line, a distance of 133 chains, planting at each 19 chains duly numbered posts and giving alignments of three posts to each lot. I then followed up the Paspebiac line, which I found very deteriorated, to its intersection with the Robin block, a distance of 267.27 chains from the base line, planting also at each 52 chains 63 links duly numbered posts. I found the south line of this block opened for a breadth of about 30 feet and very well cleared, (all the lines of this block are so;) I ascertained the course of the south line of the Robin block and found it to be south $80^{\circ} 44'$ east or north 75° east astronomical and forming an angle of $4^{\circ} 40'$ with the base line.

In extending the Paspebiac line, I also prolonged to the east to each concession the lines between ranges 1-2 and 3-4, doing the as I advanced along the Paspebiac line and in order to thus finish this subdivision. Both from the geological and agricultural points of view, the land here is similar to that on the line of Hope.

I finished this part of the subdivision on the evening of the 28th December, and on the 29th I continued the extension of the base line to the centre line, planting posts and running the lines between the lots.

In running the base line, I met the east line of the conceded lot, marked in brown on the accompanying plan, at 2 chains and 50 links on lot No 8. As it was visible, I ascertained its course, which I found to be parallel to the lines of the township, that is to say, N. 15° W. astronomical.

From the post between lots numbers 10 and 11, I ran a line parallel to the preceding, N. 15° W. astronomical, to serve as the centre line and extended it to the base of the 8th range, planting posts at each range of 52. 63 chains, as I had already done on the preceding lines. In going over this line, I met the Cullen brook at 35 chains on the 5th range. This brook, with a varying breadth of 50 to 75 links and a depth of 18 to 20 inches, is, generally speaking, very powerful. It flows between two small hills of 18 to 22 feet in height and is capable of furnishing power to any number of mills.

On the 24th, I continued the prolongation of the base line to No 3, inclusively, this last having a frontage of 32 chains.

I could not find the east lateral line of Hamilton, as it had been completely destroyed by fire, and I was informed that it is no where visible from the range of the Bay to the river Bonaventure.

On the base line, I met the conceded block at 15 chains on No 14, and found that it has a frontage of 43 chains. I measured from the base the side lines of this block running north, after ascertaining the courses, which were parallel to the preceding, the lines being distinct enough. I found the east line to be 28 chains 95 links and that on the west side to be 13 chains 95 links.

Except an elevation extending from lot 17 to lot 22, the surface is generally level along the whole length of the base line. The soil is adapted to culture, and the prevailing woods are birch and maple.

I also met a line between Nos 28 and 29, laid down by Mr McDonald, and intended to divide block Y from the lands of Cox to the east; this, at least, is the opinion generally expressed by the local people, who guide themselves according to this line.

On the 31st, I established the line dividing numbers 25 and 26 and which should also divide block Y from Cox, and extended it to the base of the 8th range.

In prolonging this line, which was only visible at 23 chains and 14 links from the starting point, I met a line running west to meet that laid down by M. McDonald between numbers 28 and 29, and parallel to the base line and recognized by every one as the true line of block Y.

I proceeded to the Paspebiac line to the post between the 1st and 2nd ranges, where I ran a line to separate these two ranges, parallel to the base line running S. $79^{\circ} 40'$ W. astronomical and prolonged it to its intersection with block Y, between numbers 28 and 29. I also met the conceded lot at 250 chains on number 8 and also found it there of the same dimensions as in the preceding range, that is to say, 23 chains front.

The land, along this distance, is the same as the preceding—well suited to culture.

On the 23rd February, I returned to the Paspebiac line to the post already planted between the 3rd and 4th ranges, and from this point I ran a division line between these two ranges running S $79^{\circ} 40'$ W. astronomical and prolonged it to the east line of block Y to the post already planted on that line.

Along this line, as on the preceding, I planted duly numbered posts and ran the lines between each lot.

After this, I went to the post between the 5th and 6th ranges, on the centre line and thence ran the division line between these ranges running N. $79^{\circ} 40'$ east astronomical, parallel to the preceding, prolonging it to the Robin block, a distance of 152 chains from the centre line. And as it was requisite to ascertain by measurements the dimensions of the Robin block, in order to subtract its contents from ranges 5 and 6, I measured from the aforesaid junction, that is to say, on a course south 15° W. astronomical, to the south west angle of the same, an exact distance of 52.63 chains, after which I measured the residue towards the north a distance of 28.47 chains, along the north line of the block, giving the said block a depth of 81.16.

I then returned to the centre line to the post between ranges 5 and 6 and extended that line S. $79^{\circ} 40'$ west astronomical to block Y.

On this line, I met the Cullen brook, which I found to be about of the same dimensions as previously, and the Hall river of a varying width of 70 to 80 links and a heavy water power.

The land along this line is inferior to that in the preceding ranges ; it is almost wholly covered with cedar and the soil is a black loam.

On Wednesday, the 14th March, I proceeded to the Paspebiac line north of the Robin block, which I discovered by clearing off the snow and found it to also run N. 15° W. astronomical. I extended this line to the base of the 8th range, a distance of 48 chains and 26 links.

I next ran the division line between ranges 7 and 8 running N. $79^{\circ}40'$ E. astronomical and prolonged it to No 5 ; after which, I went to the Hope line, to the post between ranges 5 and 6, and prolonged that line to the base of the 8th range ; seeing that there was a small lake in the middle of which the range terminated, I planted the post of the 8th range on the north bank of the lake and then returned to No 5, on the base of the 8th range, to prolong the line to its junction with the east lateral line of Cox, which I did by planting posts and running the lines between the lots.

I then returned to the Paspebiac line to the post between ranges 7 and 8 between Nos 1 E. P. and 10 P. and prolonged it south $79^{\circ}40'$ West astronomical to the post between numbers 25 and 26. The land in this direction is excellent, wooded with birch and maple, and, except where broken by a few hills near the streams, generally level.

From the post between said ranges 7 and 8, Nos 25 and 26, I extended the line between Nos 25 and 26 a distance of 52.63 chains, where I met a line running S. $69^{\circ}40'$ W. astronomical, late down by the late Mr. McDonald, as appears by the report of Neil Campbell, who accompanied Mr. McDonald at the time. I followed this line a distance of 19.50 chains and then came across another line running north and also parallel to the township line N. 15° W. astronomical and prolonged it to the river Duval, a distance of 214.90 chains.....

From the N. E. angle of block Y, I ran a line S. $79^{\circ}40'$ W. astronomical to divide block Z. from the 7th range and prolonged it to the river Bonaventure, a distance of 129.35 chains.

Then returning to the post between ranges 7 and 8, Nos 25 and 26, I prolonged this line S. $79^{\circ} 40'$ W. astronomical to the river Bonaventure, planting posts and dividing the lots as previously.

On the 19th June, I ran the division line between the 6th and 7th ranges S. $79^{\circ} 40'$ astronomical, and prolonged it to the river Bonaventure. And lastly, on the 21st I ran the division line between ranges 7 and 8 running S. $79^{\circ} 40'$ W. astronomical and also prolonged it to the river Bonaventure, where I concluded my operations.

The land everywhere is most fertile, adapted to agriculture and capable of receiving a population of 175 to 200 families.

A very good road runs from the Bay to the Hall river and affords every facility possible to settlers for the transport of their effects. Good roads can be laid out all over the township.

(C.-A. *Bélanger*, 16th August, 1877.)

Township of Mann.

What I have examined of the soil in the portion of the township of Mann, which is known as the region of the river du Loup, shows that it is of superior quality. Those who were in my company, noticing that there were no stunted trees growing there, but good hard wood, were of opinion that the land is very suitable for cultivation. I am happy to say that, from the second range as far as the river Escuminac, I met the same soil everywhere with the exception of the top of a few mountains covered with pine and white birch near the large Busted and Harrison brooks.

I surveyed the other ranges 4 and 5, 5 and 6, and 6 and 7. As I expected, I did not meet the Busted brook on the line between the fourth and fifth ranges, as its source is towards the centre of the fourth range amidst a grove of spruce trees. Then, instead of going up and down the long hills bordering the brook in the preceding ranges, I found the land high but level. On the line dividing the 5th and 6th ranges, I also met Harrison brook, but much reduced in volume to what I saw it in preceding ranges, for the reason that its tributaries are much lower down and that its source is in the sixth range.

In the above ranges, the soil is excellent and very suitable for cultivation ; it is less cut up by the water courses, which are found lower down.

The timber most abundant towards the west and centre is maple and birch and from the centre to the east only maple. It is surprising that on these heights, where there is only hard wood, no rocks are to be found ; for in this district, with the exception of the township of Matapedia, the land which furnishes such hard wood is always stony, whilst in this portion of this township there are absolutely no rocks.

I did not meet the Harrison brook on the line which I ran between the 6th and 5th ranges ; the streams crossed by me have a considerable volume of water, but form only small hills on that line, and the ground which I surveyed is still more level than in the preceding ranges.

(*E. H. Legendre*, 20th May, 1863.)

“ All the land which I have met in prolonging this line is so good and so fit for cultivation that it was taken up by degrees while I was surveying it. I was accompanied by a large number of active young men who did not content themselves merely with marking their lots, but who actually cut down the trees and cleared the land while I was working on the line.

“ This land is perfectly level and covered with very large birch and maple. It extends I know not how far eastward, for the little river, at a distance of from fourteen to fifteen chains to the east of my line, came from the north, and it is on the east side that this level and good land appeared to me then to extend.

“ Having since prolonged the rear line of the east range from river du Loup to the seventh range, I was enabled to ascertain that the land already mentioned extends towards the east. I fell in with it on the north part of the fifth mile and on the sixth, beyond which, if I may judge from appearances, I believe it terminates only at the valley formed by the river Escuminac.

“ All the land which lies between the Busted brook and rear line of the range east of the river du Loup is of the best quality, and, although it is very elevated, it is nevertheless level and of easy access. Great part of the timber is birch, of an enormous size, and sound in quality.

“ The great valley of Busted brook is wooded with pine which appeared to me for the most part sound. This brook only extends, from what I am informed, to the fourth range, where it takes its rise.

“ I proceeded to the post, between the fourth and fifth ranges, on the range east of river du Loup, and prolonged this line to its junction with the west line of the township of Nouvelle. The soil which I met with along this line is still finer than that of the ranges already passed over, and, to give an idea of it, I will say that it may be compared to that of Mata-pedia.

“ The prevailing timber is the same as that lower down, that is to say, birch and maple; and, with the exception of the hill at the point of departure, the land, as far as Harrison brook, is level. This hill is the last in this range. The east branch of the river du Loup and Busted brook take their rise in the middle of the fourth range, in a grove of balsams, and beyond this the mountains disappear.

“ Access to any of the ranges of these townships is made easier by the shanty roads along the different streams, which extend as far as the river Escuminac, and, in one instance, to the head of the above named brooks; nor is there any difference in the roads, the land being the same everywhere.

“ The valley of Harrison brook in this range is wider and more shallow than in the ranges already gone through, and the land in this valley is exceedingly good. The timber is of enormous size; ash trees, for example, are met with as large as pines: the prevailing kinds are elm, ash and birch. This valley appears to me to become larger towards the interior, and I do not doubt that, in the adjacent ranges, it will appear still finer in character not as respects the quality of the soil, for it is impossible to find better, but from its greater extent of level ground. This brook supplies a considerable volume of water, and mills might be put in operation throughout its length.

“ The further I advance into the interior the better I find the soil, and I am informed by credible parties that there is equally good land as far as the river Escuminac in the interior; I judge so, not only from the appearance of that which I found between the sixth and seventh ranges when I prolonged the rear line of river du Loup range east, but also from the opportunity which I had of seeing, from the summit of the mountain between the fifth and fourth ranges, into the interior of the township.

From this point I remarked that a range of mountains extended from the south east towards the north west, at many miles distance, and that the ground sloped gradually from these mountains to the place of observation. From this, I am led to believe that these mountains separate the river Escuminac on the north, and leave a very large extent of ground fit for immediate settlement on this side, towards the south west.

(*E. H. Legendre, 1883.*)

Township of Matapedia.

Pursuant to your instructions, I immediately proceeded to subdivide the first range of the township of Matapedia.

From the surveyed lots of Messrs. Fraser, I continued on a course north thirty degrees west magnetic the opening of a division line, which I prolonged with the greatest possible care to a distance of seven hundred and eighty two chains, where I met with the post which I had planted at the south-west extremity of the second mile of Mill stream, and at each mile I planted good pickets which I duly marked according to my instructions, as more fully appears by my plan. This range will undoubtedly be opened and settled very soon, for many settlers were only waiting for the survey to move to it, and I do not believe that, in the whole province of Quebec, it is possible to find better lands than those not only in these ranges, but in the whole township of Matapedia. This is evident from the size, height and quality of the timber.

Everywhere, even on the steep heights, there are fruit trees of various descriptions, the cherry, apple, and mountain ash being very common.

Ferns and wild hay grow between the tall trees often to over seven feet in height.

Parties who have inspected the interior of this township have assured me that they never saw any better land, with the exception of the spots traversed by large brooks which form deep ravines ; there the soil is not so good and the timber no longer the same.

The lots, which along the front of the Matapedia River are perfectly useless for cultivation on account either of the proximity of the mountain

to the banks of that river, or of their rocky nature, are very cultivable along the front line and I have no doubt that they will be opened in preference to all others. A road opened on this front line would, I am sure, be the key to these settlements, and it is to be hoped that your department will have a line run between the second and third ranges of Matapedia, for those now desiring to locate there will not dare make any improvements, from fear of being disturbed.

(*E. H. Legendre*, 28th July, 1885.)

Pursuant to instructions received, ordering me to continue the subdivision of a portion of the residue of Matapedia township, I have the honor to report :

After correcting the variation of the needle, which I found to be $21^{\circ} 29'$ west, and, starting from post twenty three on the line of the second range, on the Matapedia river, I proceeded to prolong this line to the base of the fifth range, a distance of eighty chains and eighty links.

I met on the above line new settlements as far as number twenty seven inclusively.

These settlements are all under cultivation, and the area of improvements varies between five and ten acres to each lot.

Besides the fertility of the soil, I admired three pretty little lakes forming the source of the south east branch of the Gleaden brook.

These small lakes are full of trout.

The growth of wild hay all around them is very tall, and through it may be seen the tracks left by the moose and caribou which feed there, it seems, during the night.

After the above measurement of eighty chains and eighty links for the depth of the fourth range, I started a perpendicular line south $38^{\circ} 55'$ astronomical, which line, to become the division line between the fourth and fifth ranges of Ristigouche River, I prolonged from number one to number thirty, inclusively, a distance of two hundred and sixty six chains.

From that point, I ran a perpendicular south $51^{\circ} 5'$, which I prolonged as far as the post planted by me at the rear of the third range ; I measured

eighty chains and eighty seven links, which distance I found to be the base of the third and fourth ranges ; and, as I was just preparing to return to the division line of the third range of Matapedia, I fell in with twenty young Acadians, who begged of me to continue a line towards Chainy Rock brook, stating to me that the land there was very superior, (which I knew before), and that it would be quite easy to open a road along the north west branch of Brandy brook, starting from near the terminus of the one already opened between the first and second ranges of the river Ristigouche, and that it would place them in close communication with the church and centre of business and thus favor their settlement.

I acceded to their request, as I knew it would be in the interest of the Government to facilitate as much as possible this young Acadian settlement, which has thus far displayed the greatest energy, industry and perseverance, considering the scanty means its members had at their disposal when they emigrated here and their hard luck since their arrival.

After calculating my position as regarded the outside ranges, and convinced as I was through the accuracy of my previous operations that a perpendicular line coming down from the north-west angle of the fourth range would equal in length seventy eight chains and fifty links on the limit line of the north-west corner of lot twenty of the fourth range towards the north west, so as to obtain for this range a perpendicular of eighty chains and eighty links — from this point, I ran a line parallel to the one dividing the second and third ranges of the river Ristigouche on a course south $63^{\circ} 55'$ west astronomical, which I followed as far as Brandy brook.

All the tract so traversed is composed of most fertile soil, comparatively level, where hard wood predominates, and which will be under tillage next summer, as clearings were commenced along the whole distance immediately after my survey.

I did not deem it advisable to proceed further that Chainy Rock brook, as there were also many applications for surveys beyond the lakes.

I consequently turned back and continued the prolongation of the line of the second range of the Matapedia river to its junction with the Gleaden branch, taking care to plant as heretofore posts numbered, as appears by my plans.

I planted a post at two chains and ten links to the north of the said brook and started a new perpendicular line to divide the fifth and sixth

ranges, which line I prolonged from number one to number twenty, inclusively, a distance of two hundred and sixty-six chains.

With the exception of the hills cut down by another branch of the Gleaden brook, which, however, can be cultivated, it is impossible to meet anywhere a more level and fertile country; the soil is soft, of deep yellow color, covered with enormous hardwood trees, and with no stones at all.

I fell in on number one of this range with the commencement of a settlement and I can certify that it will be followed by many others, for a large immigration from Rustico was to have here joined the Acadians, but I am informed that, being unable to definitely arrange their private affairs this fall, they have decided to remain on Prince Edward Island until next spring.

This line being terminated, I retraced my steps and continued the prolongation of the division line of the second range, Matapedia river, eighty chains and eighty links further, after which I ran a new perpendicular, south $38^{\circ} 55'$ west, to be the division line between the sixth and seventh ranges, which perpendicular I extended like the preceding one from number one to number twenty, inclusively, a distance of one hundred and sixty six chains. I crossed with it the principal branch of Gleaden brook on number six of this range, and followed it on the north west side almost the entire length of this perpendicular.

This branch of the brook is of considerable size and has a strong volume of water; it will be very useful to settlers, in consequence of the advantages it offers, either for running mills, or floating down logs and timber to its junction with the Matapedia river. The banks of this branch are steep; soft wood alone prevails, containing some young pine, but which will soon be fit for lumbering purposes.

Having terminated this division line, I again turned back, and continued the prolongation of the line of the second range of the Matapedia river, eighty chains and eighty links, when I planted another post to mark the north east angle of the seventh range; from this point, I laid down a new perpendicular to be the division line of the seventh range, and which I prolonged like the foregoing from number one to number twenty, inclusively, a distance of two hundred and sixty-six chains. This line is crossed by several brooks, which all empty into the principal branch of the Gleaden river, and consequently the ground there is not so level as in the previous ranges; still this tract, although broken by hills of greater or less size, is composed of land adapted to cultivation.

The soil on these hills is generally of a grayish color and stony, which however, will not be an obstacle to settlement, as, both on this side of and beyond these valleys, the soil is very fertile and covered with hard wood.

As regards the part of the ground, which has not been subdivided, I must say that the portion comprised between the north-east angle of the seventh range running north as far as the north side line of the township on the one part, and the first range or belt of the first range of the Matapedia river on the other, is little, if at all, adapted to cultivation, in consequence of the continuous chains of almost inaccessible mountains bordering the Matapedia river and Mill stream; but, on the other hand, the west part is very favorable for any kind of crops. I believe it is unnecessary to expatiate upon the fertility of the soil and the advantages offered by the lands of the township of Matapedia to settlers; my previous reports have said enough, I think, on the subject already; it is sufficient for the information of the Government to give here the result in detail of the crops raised in 1866 by the Acadian settlers alone; sixty families in the fall of 1866 harvested the following crops:

1,800 barrels of potatoes at.....	\$ 0 80.....	\$1,140
1,400 bushels of barley at.....	0 80.....	1,120
700 " oats at.....	0 50.....	350
1,200 " buckwheat at....	0 80.....	1,000
1,800 barrels of turnips at.....	0 80.....	1,440
80 tons of hay at.....	10 00.....	800
		\$6,150

In addition to the above produce, there are also the garden crops such as cabbages, beets and carrots, which should be valued proportionally with the others.

Then come the cattle, also produce of the farm, so that the harvest of 1866 must have been worth at least seven thousand dollars to the Acadian settlers; and, to prove the rapid increase of products, I may state that, from the month of April to the month of July, 1867, the Acadians, alone, fattened and killed seventeen thousand pounds of pork. They also own horses, working oxen, cows and sheep. Their improvements increase rapidly, as, generally speaking, they devote their attention, exclusively, to the working of their farms.

The number of families has also largely increased within the last three years, and, as it is almost certain that the Intercolonial railway will follow the Robinson route, it is needless to say that the township of Matapeia and neighbouring townships, all so fertile, will be settled before long.

(*E.-H. Legendre*, 20th March, 1868.)

According to the statements of the settlers, the soil of this township is excellent for the culture of wheat, oats, buckwheat and hay; potatoes are an abundant crop and of superior quality. The soil is composed generally of clay and sand, which form a very rich loam.

The ravines formed by Brandy brook, Chainy Rock brook and Gleaden brook are so deep and precipitous that it is almost impossible to make a road from one summit to the other of these gorges; otherwise, the land is generally level and of good quality. These ravines will always be an obstacle to the settlement of the lands between Brandy brook and Chainy Rock brook, which are the finest and richest of this township.

Still, in my humble opinion, there would be a means of facilitating the settlement of these lands, by making a road, starting from the actual front road of range 5, which would go around, to the north and west, the head of Brandy brook, and, once this impediment was overcome, the road might be easily extended downwards to the line between ranges one and two, Ristigouche river, in the part between Brandy brook and Chainy Rock brook. This road would traverse flat and level land, well wooded with maple, balsam, black birch, white birch, &c.

There are actually a small grist mill and a saw mill on Brandy brook in range three, which are only worked at the highest stage of the spring and fall freshets. To reach these mills, the settlers have to go down a very steep and almost impassable hill. I believe that a better site for a grist mill might have been easily found at the falls of Gleaden brook, which would also be more accessible and offer a greater volume of water.

The Gleaden brook crosses nearly all the lots of the sixth range and, by its deep and precipitous descents particularly towards the east, unfits them to a great extent for cultivation.

Settlement is already very advanced in the part between Brandy brook, the river Ristigouche, and the first range, Matapedia river, which is known under the name of Saint Alexis. For some years past there has been no complaint about the frosts, which were so discouraging to the settlers, and all the grains come to perfect maturity, except peas which do not ripen.

The inhabitants of Saint Alexis are actually building a church and presbytery. They have had a resident *curé* for some years, and also three or four elementary schools. The Provincial Government is actually completing a fine bridge, which will place the township of Matapedia in communication with the east side of the Matapedia river and the Intercolonial railway.

(O.-G. Lepage, 3rd June, 1880.)

In conformity with instructions which you were kind enough to address me, dated the second day of July, 1881, authorizing me to survey the township of Matapedia, I have the honor to make the following report :

On the 15th July, 1881, I started with men, baggage and provisions and reached, on the sixteenth, the rear line of range two, Matapedia river, where I camped. On the nineteenth I ran a line between the lots 13 and 14 to establish my starting point, and on the 20th, I ran the line between ranges one and two, Matapedia River, on a north course $53^{\circ} 30'$ west astronomical. From this point to number thirty nine the soil is of good quality and the timber mostly maple and birch.

The south bank of Robitaille brook is a cliff wooded with balsam. From Robitaille brook to lot fifty three, the soil is good and the timber mixed. The brook which runs on lot fifty five at five chains and ninety links and from post fifty four to fifty five, is made up of cascades as for as Mill stream, and would be suitable for mill sites.

On the fifteenth of August, I prolonged the rear line of range two, Matapedia river, on a north west course $53^{\circ} 30'$ astronomical, and planted a post at eighty chains and eighty links. This part of the line is cut through in several places by a brook bordered by steep rocks ; nevertheless, the soil is good on the heights.

I extended this line as far as its intersection with the Milnikek line. The soil of this tract is good and the timber mixed.

On the twenty-first, I ran the line in rear of range seven, on a course south $39^{\circ} 10'$ west astronomical. Along this line the soil is good and the wood mixed. The spruce, which was abundant at the western extremity of this line, has been cut off. I also laid out the south-west line of number twenty from the post six and seven B to its intersection with the rear line of range seven, and continued its verification and chaining to posts four and five, where it terminates.

This line, south of post five and six, passes through a small cedar grove containing some fine trees.

On the fifth of September, I verified the front line of the Portage range which I found ran north $53^{\circ} 50'$ west astronomical. The soil is good and covered with hard wood.

On the ninth, I went to the first range, Ristigouche river, and found that this line had been abandoned at Toad brook. After having extended on a south west course, $55^{\circ} 40'$ astronomical this line to its intersection with Patapedia, I chained from this point going east, as prescribed by my instructions. The lots twenty-seven and thirty-seven, as shown on the old plan, were not to be found or they are lots only of thirteen chains. From post thirty-seven and thirty-eight, I made a chaining for each of the ranges one and two. The soil is of good quality on the heights, and the timber generally maple and birch. On the banks of the brooks, soft wood is in greater abundance.

I found that the line of ranges two and three had not been run beyond number forty seven and was on a north east course $63^{\circ} 20'$ astronomical. From the post of the second and third ranges, I verified the outline of Patapedia, which I found on a north west course $21^{\circ} 25'$ astronomical, and extended it as far as the post of the 4th and 5th ranges. I also extended the line of the 2nd and 3rd ranges, as far as its intersection with the south west line of number twenty, after which I prolonged to the south west line of number twenty the line between ranges three and four, which I found on a north east course $60^{\circ} 30'$ astronomical. This line had been abandoned at number forty eight. Along the whole of this distance, the soil is generally good and covered with hard wood and maple groves.

From the post of the third and fourth ranges I extended towards the south the south west line of number twenty to the first range.

From the post of the 4th and 5th ranges, on the Patapedia line, I established the line between ranges 4 and 5 on a north east course $64^{\circ}45'$ astronomical. From the same post I extended the lateral line of Patapedia up to post six and seven.

I established the line between ranges 5 and 6 on a north course $68^{\circ}55'$ east astronomical. The soil on the three last lines is generally good and the timber mixed.

On the seventeenth of November, I ran the line between ranges six and seven, parallel to the preceding, and extended it to the south west line of number twenty.

From post 6 and 7, I extended the Patapedia side line to the post 7 and 8, where I established the line between ranges 7 and 8 parallel to the preceding and extended it to the rear line of the seventh range.

On the 24th of December, I extended the Patapedia line as far as post eight and nine. From this post, I established the line between the ranges 8 and 9 to its intersection with the rear line of range two, Matapedia river. The soil is good and the timber generally mixed.

On the fifth of January, I extended the Patapedia side line to post nine and ten. From this post I established the line between ranges nine and ten, parallel to the preceding, to the rear line of range two, Matapedia river.

On the twenty ninth, I extended the Patapedia side line to its intersection with the Milnikek line. The soil, in the tenth range of this line, is low, marshy, and covered only with black spruce. The soil in the eleventh range is also inferior and mostly all covered with balsam.

From post ten and eleven, I ran the line between the ranges ten and eleven parallel to the preceding and extended it to its intersection with the rear line of range two, Matapedia river.

On the eighteenth of February, I again ran the outline of Milnikek and extended it as far as the Matapedia river. The soil on this line is inferior and uneven and is unfit for cultivation in the vicinity of Mill stream.

I carried out the survey with all possible diligence. I chose the most durable timber to make my posts and, as much as possible, made them of cedar. The soil generally is good. The part towards the north of line seven and eight and to the west of the east branch of Chainy Rock brook is very

rough and consequently offers less advantage to settlers than the section to the east of the same brook, which is more level; nevertheless, there might be placed with advantage four hundred families in this township.

(C. A. Bélanger, 1882.)

Township of Milnikék.

Remarks.

The south-west half of this township is but an alternating series of mountains and deep abysses which serve as the beds of streams and rivers, without banks, and rushing torrents. No lake has been discovered in it, and the water courses which cut it up are, by the medium of each other, tributaries of the great river Metapedia. The wood which grows on the crest and flanks of these mountains consists of balsam, white spruce, pine, white birch and birch. On the abrupt slopes, whose surface is full of upheavals, the pine and spruce have been worked over several times long since. On the crest of most of these mountains, there still remains much of this timber, but it is only of second quality. The soil is very mediocre, though generally free from rocks; there are, however, some small table lands here and there that might be settled, but their access is, so to say, nearly impracticable.

The north-west half of Milnikék is also mountainous; but the mountains are not so steep; the streams have a leveller bed; rapids and falls are scarcer; and the flanks of the mountains have a much gentler slope. Their crests and table lands are accessible enough and their valleys are larger. The soil, too, is better, being of a less sandy, gravelly, and, consequently, dry nature. In this last half, there is no pine.

At the distance of about eight and a half miles, the rear line of Milnikék falls into a vast *brulé* about 12 miles long and as many broad.

The remarks relative to the north-west half of Milnikék should only be understood as what is said of the depth of this township.

(Hector LeBer, 6th April, 1869).

Township of New Richmond.

The country bordering on the Little Cascapedia is an alluvial deposit forming extremely fertile points along the river. Under the old subdivision, a few lots only, situated in the same course as the river, benefited by these points, while others in rear on the slope of the mountains were almost worthless, with their front to the south, cut up as they were by deep ravines from which issue the streams indicated on the plan.

The valley of the Little Cascapedia, stretching along the front of a pretty level tract, is bounded in rear, at a distance of three-quarters of a mile from the river, by steep mountains extending over several lots which are thus unfitted for culture. Deep gorges run into these hills in several places, especially on the eastern side of the river.

There is a certain quantity of salmon in the river, but trout is abundant, and last year several sportsmen from abroad indulged in fishing at this place.

On the western side, the best timber has been destroyed by fire, but there is still a large quantity of cedar along the brooks. On certain lots there is nothing but small white birch, while on others it is hard to find anything but aspen of six or seven inches in diameter.

On the eastern side, however, in the seventh and eighth ranges, there is still some fine merchantable timber, but the pine completely disappeared, some years back, when it was in great demand for the West Indian trade.

I will add a few observations on each of the ranges and the advantages they offer to settlement.

Range V, lot 13—Adjoining range IV, this lot is divided into two by the Brulé brook, which is bordered by a high bank. The portion between the Cascapedia and the brook is excellent for hay.

Lots 14, 15 and 16—The level land extends for nearly half a mile back from the river. The rear of the lots is formed of low hills, on which the soil is good.

Lot No 17, which skirts the line of range 6, is much less valuable than the others. Nevertheless, application has already been made for it.

Range VI, west side—Lot No 16 has the drawback of being cut into in front by the point of a chain of hills. The remainder of the range, flat in

front, rises gradually towards the rear or to the chain of hills just mentioned, and on the other side of which the land becomes better. As a whole, however, this range, even with its inequalities, is excellent.

East side, lot 20.—The bank of the river is steep, but, on the top of the hill, the land is level for a distance of half a mile after which the surface becomes broken and continues so to the rear line. This lot is occupied; and some improvements have already been made near the line between ranges five and six.

On lot No. 21, there are a building and an extensive clearing at the mouth of the valley which extends to the rear line which it crosses on the preceding lot. The remainder of the range, level in front for a quarter of a mile, contains excellent arable land for another quarter of a mile, after which the hillocks commence and continue for still another quarter of a mile, when they give place to steep hills, whose bare flanks exclude all idea of cultivation. The rear line of the lots in this range is the most mountainous country in the neighborhood and is cut by four or five ravines, one of which, lying most to the north, cannot be ascended, as its flank inclines only 20 degrees from the vertical. On the south side, we were stopped by a perpendicular precipice, 100 feet high, formed by a branch of Brown brook. From the north side of this valley the line traverses for some chains level ground to end at the bottom of another valley as the commencement of the line of the seventh range.

Range VII, west side.—An average of a quarter of a mile of flat ground in front and then a succession of hills and small valleys in which cedar abounds. A little less adapted to settlement than the preceding, except lot 20, which embraces a valley, about 10 chains wide, that penetrates into the interior beyond the rear line.

The east side, as in the sixth range, contains half a mile of good land along the bank of the river, but, as in the other range, the ground becomes mountainous towards the interior. From the top of the second mountain, the view, starting from the sixth range, extends over the surrounding region until it rests on the Shick-Shocks, whose white peaks can be perceived 40 miles away inland. The river, from this height, seems like a brook flowing at a short distance from the foot.

The descent of the mountain towards a branch of Mill stream is steep and difficult. A post, which slipped down from the summit, fell most of the distance through the trees without meeting any obstacle to arrest its progress.

More to the northward, the rear line again traverses deep valleys ; but, in the eighth range, the mountains are replaced by a more level country and one more easily worked. Nevertheless, the rear of lot 22 in range 8 can only be reached by going around a steep hillock on the line between the seventh and eighth ranges. A bush road follows Mill stream at this place.

On the east side, the spruce, cedar and birch still furnish excellent timber to the trade ; but the valley of the river is getting poorer every year and, to find wood of any value now, the heights in rear must be ascended. It will, however, be always a difficult and expensive work to get it down from the heights to the banks of the river.

Range VIII, east side.— Lot No. 18, little level land, but the hills have a fairly gentle slope ; soil in general inferior. In this range, the alluvial deposit begins at the edge of this lot, penetrates into the interior for a quarter of a mile on lot No. 20, and ends at the river beyond the township line. The *brulé* finishes a little above this range, which produces birch, large cedar and merchantable spruce.

On the west side, to the southward, the land is not very rich in any respect ; still, the cedar found on it gives it some value. As for the soil, like everywhere else, with a few exceptions, throughout the township, it is composed of yellow mould, resting on a clay bottom. More to the northward, the last lot, on the east side, contains between the two arms of the river a piece of table land, whose soil is of superior quality, but a little wet.

The east side of this range is certainly the best land I surveyed. Still, in general, none of the lots surveyed would make what is termed a fine farm. The value of these lots consists in the river points, which produce hay in as great abundance as in the parts already under cultivation. This, with the cedar on the land and the salmon in the river, will be the attraction. Moreover, as the land fit for settlement in the environs of New Richmond is nearly all taken up, this part of the township will soon be claimed by settlers, from whom applications have already been received for the purchase of a certain number of lots.

The depth of water in the Little Cascapedia is from 3 to 4 feet and the width of the stream from 2 to 4 chains. Some small rapids, from time to time, break its course ; but there is no obstacle to the getting out of timber, which, by way, will be shortly undertaken on a large scale, as soon as Girouard & Beaudet's limits are worked, a not very remote contingency, if rumor is to be credited.

(*Geo.-P. Roy*, 30th May, 1888).

Township of Patapedia.

This township is unusually extensive (80,000 acres) and has a frontage on two rivers—more than fifteen miles on the Ristigouche, and 16.72 on the Patapedia..... The lands, of which 35,580 acres have been subdivided into three hundred and nine farm lots, are, in the proportion of about three fourths, well adapted for cultivation and, the remainder includes a large extent of very fine lands, easy of access, to the east and west of the centre line.

John Sharps and Benjamin Merrill are actually the only two settlers in this township ; but, along the frontage of the rivers, there is space for forty more, and, in the other ranges, there are elevated places, but which are easy of access by different routes, by following the water courses, ravines or table lands.

(*W. Macdonald*, 25th April, 1862).

Township of Port Daniel.

The land in general is of good quality and fit for agricultural purposes nearly the whole of the part extending west of the western branch of the Port Daniel river is certainly the best for settlement, the ground being level and the soil almost wholly composed of a strong gray, brown and occasionally reddish mould. The prevailing timber is made up of maple, birch, white birch, balsam and spruce ; there are some fine cedars on lots 6, 9 and 10 of the 6th range and lots 6, 12 and 15 of the 7th range.

There is a first class road opened between lots 2 and 3 to the middle of the 7th range, and there is not a hill along its whole length. Nearly all these lots are taken up, but unfortunately they show but little improvements made by the settlers. The lots on which conditions have been fulfilled are indicated on the plan.

The little river Port Daniel, which I followed from the front of the 8th range nearly to the rear line of the west range of the Harbor, pursues a uniform course. Its banks in certain places are very steep and rocky ; there are no falls in that part of the river, but on part of lots 10 and 11 it is hemmed in within a space of a few feet only and is broken by some very heavy rapids.

Between the two branches east and west of the Port Daniel river, the prevailing woods are balsam, birch, white birch, black spruce, a few maples, and the common alder in certain spots.

The land is of good quality, and the soil everywhere met with is a gray and yellow mould, in which clay predominates ; there are splendid natural meadows extending near the mouth of these two rivers and the two winter roads opened by the Messrs. King, on lot 22, and farther east could, with a little repair, become of great use to the settlers, but unfortunately, here as elsewhere in the Gaspé region, fishing takes precedence of everything else, the cultivation of the lands comes second and settlement makes little progress. The 7th and 10th ranges are mountainous and little fitted for agricultural purposes ; nevertheless, lot 19, which is magnificent, with a fine exposure to the south west, should be excepted.

To the east of the eastern branch of the Port Daniel river, the country is level, except a few points along the river of L'Anse à la Barbe and on numbers 27, 28, 29 and 30 on the front line of the 6th range. The land in general is not of as good quality as in the western part of the township ; here the soil is a kind of gray and yellow loam composed mostly of sand with a rocky sub-soil, as on lots 47-46 as far as lot 35 of the 7th range and on 39 and 40 as far as number 45 of the 6th range.

Elsewhere as on lots 46, 47, 48 and 49 it is swamp land where a few black spruces dispute the ground with stunted balsams ; an exception, however, must be made for the lots 30 and 31 as far as number 39 of the 6th range where maple, birch, cedar, spruce, balsam and a kind of red, unctuous soil are met with. The same may be said of the lots 30, 31 as far as 35 of the 7th range where there is about the same kind of wood as on the same lots of the range above ; I saw a number of magnificent spruces on lot 33 and on lot number forty of the 7th range the traces of a hurricane, that swept from north to south, in the shape of several big birch trees uprooted and strewing the ground with their debris.

The third and fourth ranges, traversed by the river of L'Anse à la Barbe, present about the same character as those situated farther north—swampy land in the eastern part from number 16 nearly to the county line ; black spruce is to be seen in abundance mixed with balsams and a few cedars ; farther west there is a kind of brown loam in certain places, gray and yellow on certain lots, sometimes rocky, and in general of mediocre quality ; balsam, birch, white birch, cedar and small spruce abound, but there are only a few maples. The same remarks apply to the first and second ranges, where

the soil is in general a kind of brown and generally rocky loam, but there are no swamps as in the other places. The land is level, and the forest growth the same as in the 3rd and 4th ranges; there are only a few cedars and maples; very little pine was met with in the surveyed part, but there is a considerable quantity in the northern part of the township, judging from the number of logs found in the Barachois. Not the slightest indication of any mineral was noted in the whole township, nor did I hear of any ever having been discovered, if the limestone quarries near the wharf (where they abound) are excepted; these have been worked within a few years only, and the lime is conveyed by schooners to Prince Edward Island, where there is no limestone.

(C.-A. Bourget).

Township of Ristigouche.

In conformity with instructions, ordering me to subdivide into farm lots a range behind the first range, on the Ristigouche river, and also a range behind the range, on the Matapedia river, in the township of Ristigouche, I have the honor to make the following report :

I learned that, owing to the length of time since the original survey, the rear line of the Ristigouche and Matapedia ranges had disappeared, although I was shown a maple tree still standing between the third and fourth ranges of Ristigouche and marking the angle which these ranges form with the front line.

The search I made on Sunday and Monday to discover the line which divides the third and fourth ranges of Ristigouche was unsuccessful, time and fire having completely obliterated this line; consequently, I could not, as required, ascertain its course. On the second, I established the said line, starting from the maple tree above mentioned, on a north west course $38^{\circ} 50'$ magnetical, or north-west $69^{\circ} 40'$ astronomical, which I extended, first, for a distance of one hundred and five chains, where I planted a post to indicate the front line of the fourth range and to commence the subdivision of the lots on the second range, and then to its probable junction with the front line of the Matapedia range, thus laying out lots of thirteen chains and planting pickets duly numbered from east to west between each lot.

The land along this line to the western summit of the hill of Flat Lands brook is very broken, but the soil, being composed of sandy clay, is suited to cultivation, and the timber predominating is hard wood. This part, comprised between the western summit of Flat Lands hill and number sixteen, inclusively, is nearly all settled; the soil is suitable for cultivation and yields abundant crops. The disappearance of the front line has been the cause why several clearings have been made on the first range of Ristigouche.

This part of the front line having been thus established, I ran a line at right angles with the Ristigouche line to separate the second range of Matapedia from the second range of Ristigouche, starting from the post between number sixteen and seventeen, running north west $20^{\circ} 20'$ astronomical, which I extended eighty chains and eighty links, where I planted a post; from this post, I ran a line running north east $60^{\circ} 40'$ astronomical, to be the line of the second Ristigouche range, which I extended a distance of two hundred and thirteen chains to number one corresponding with the first range, the line between the fourth and fifth range having completely disappeared, and no improvements having been made on this range.

The quality of the timber of all kinds and the soil I met along the whole course of this line are beyond all expression very fine, and I am told that they are similar as far as the north outline of the township and even beyond it. I have never seen anything that could rival this part of the second range; the black birch are of enormous size, abundant and very sound; there are magnificent sugaries and spruce trees were met with measuring sixteen inches in diameter and sixty feet high; lastly, the soil, composed of yellow mould, is the richest I have seen. Among the trees just mentioned, grow also enormous cedars which are a sure indication of the good quality of the soil.

Having verified my position as being conformable to the original survey, I continued to run the Matapedia line from the post between number seventeen of the Ristigouche range and number one of the second range of Matapedia to number twenty inclusively, following the same north west course $48^{\circ} 20'$ astronomical, and planting duly numbered posts in conformity with the clearings of the settlers. The most of the lots along the last distance are being cleared and almost all of them are settled; some of the clearings are extensive and improving quickly; but, just like the lots in the second range of Ristigouche, many encroach on the first range, on account of the complete disappearance of the original line.

The logging roads, which were cut over these lots and which communicate with the interior, are used for the time-being as public roads by the settlers, because the inconvenience, in crossing the hills of Guilmor brook, towards or near the front line, would be insurmountable.

Except on these hills, which are long and steep, the land is generally of good quality; the timber predominating is the maple and black birch on the heights, with cedar and spruce on the slopes and low lands, an indispensable advantage to settlers who always need all kinds of timber to favor their improvements.

(*E. H. Legendre*, 26th May, 1876.)

The land in range 2, of the Metapedia river and the Ristigouche river, is of good quality. Ranges 4, 5 and 6, are generally suitable for settlement. Ranges 7 and 8 are of good quality to the east of the centre line; but, to the west of that line, the land is broken and of mediocre quality. The lands in ranges 9 and 10 are little suited to settlement, being very broken. There is a considerable quantity of white birch, which might be advantageously utilized for the manufacture of pulp.

(*C. A. Bélanger*, 1883.)

Township of Assemetquagan

(*River Range*)

I met with some fine agricultural land along this line, and I remarked that the more I approached the river the more fertile it grew. This is indicated by the timber; for example, the bush on the six first miles is mixed wood; then come pines, between which grow an infinity of young balsams, and further on, in the two first ranges of the river Metapedia, birch is the prevailing species. Here the soil is the richest and the best adapted to the growth of cereals..... There is little or no level land along the bank of the river Metapedia; it falls directly to the river; but, on the other lots, settlements might be advantageously made when the want of a large extent of level land is experienced. On the latter a substitute for it can be found on the hills which are accessible and far from steep and where the land, apart from the good quality of the soil, has the advantage of having a multitude of logging roads that cannot fail to be very useful to settlers.

(*E.-H. Legendre*, 22nd April, 1862).

COUNTY OF CHAMPLAIN.

Township of Boucher.

Starting from a point three miles on this side of the river Batiscan, pursuant to instructions, I ascended a small stream that takes its rise near Lac à la Truite. From this lake, following the valley of river à la Truite, I traced the north west outline of the township of Mekinac, and thence proceeded to the post forming the northern angle of that township. From this point, after making the requisite observations, I found the astronomic course of the north west outline of the township of Mekinac and ran the north eastern line of the township of Boucher. After finishing this line and marking it with posts and boundaries, according to instructions, I made a search for the north east line of the seigniory of Bastican, which I found on the right bank of the St. Maurice, but which seemed obliterated and destroyed by fire on the left bank. I chained, along the prolongation of the part of this line which I recognized and retraced, to the depth of the first range of the township of Boucher, and I then ran the subdivision line between the first and second ranges, in rear of the sixteen first lots; also laying out a proof line between Nos. 16 and 17 in the first range.

I next scaled the left bank of the St. Maurice, in front of the first range and subdivided it into lots, according to instructions.

I also made an examination of the lands occupied by squatters and designated on the annexed plan by red lines, besides indicating the blocks by letters. Hereunto annexed is also a detailed statement of these blocks and of the lots and parts of lots composing them.

By this statement, it appears that, actually, eighteen lots of the first range have occupants and are already more or less improved. Vegetables, hay and oats come to perfection and I believe that the generality of the land in this township is well suited to the raising of these products.

It is true there is but little of low flat ground or of natural prairie land as in certain places on the bank of the St. Maurice, but the soil is every where loamy, and of good quality. The most elevated lands are from seven to eight hundred feet above the St. Maurice. They rise gradually to this height on an extent varying from one mile and a half to five miles and upwards.

In a country presenting such steep slopes as this does, it is not surprising that flanks of naked rock are occasionally seen, but it is worthy of remark that at the foot and on the summit of these very rocks there is found a variety of fine timber which only grows on good lands. If the soil is in many places stony, this is still no invincible obstacle to the clearing of the land, for, with the exception of one or two steep or rocky places, we everywhere planted our posts solidly in the earth.

(*J. Barnard*, 19th July, 1874.)

I have the honor to complete the foregoing report to the continuation of the first range of the township of Boucher. As this survey was concluded in summer, I had a better opportunity to judge the nature of the soil and am better warranted in pronouncing it excellent for agriculture. The first range of this township, which is mostly made up of high lands, is rich in a great variety of timber and has also a large proportion of arable land consisting in marsh covered with ash and tamarac; the higher grounds are generally wooded with hard wood mixed with a rich undergrowth of hazel, &c. The little river Batiscan and the river des Prairies, by which are discharged the waters of lakes Dickay and Dawson, offer magnificent water powers. The mean difference of level seemed to me to average 25 feet in the 1000 feet.

(*J. Barnard*, 19th August, 1874.)

Township of Carignan.

I have the honor to enclose for your perusal my report of the surveyed part of the township of Carignan, for the purpose of subdividing into farm lots the first, second and third ranges and range A, fronting on the south east bank of the river St. Maurice.

The land laid out and subdivided so far into ranges and lots, viz, the first range, range A and the third range, is well adapted for settlement, both as regards the quality of the soil as well as the proximity of these ranges to the river St. Maurice, on which they front.

There are here some fine alluvial valleys, covered with a rich brown or yellow soil wooded with elm, ash, hemlock, white birch, spruce and pine. Some of these lots are taken by settlers who are living on them. The timber is generally fine and tall, consisting of the woods above mentioned with the addition of bass wood and white spruce, the latter being the most abundant. There is very little maple. The pine timber, though pretty abundant, has been in some measure diminished by the use that has been made of it on rather a large scale for several years.

The climate is mild and favorable to cultivation, which is proved by the large quantities of hay, grain and vegetables, which I have myself seen harvested on the settlers' fields. I can imagine no better method of developing the resources of this township and of the St. Maurice in general, than by introducing steam navigation from the "Piles" as far as La Tuque, as soon as the railroad to the "Piles" is completed.

There are several settlers in this township along the banks of the St. Maurice.

(*J. C. Deluchetrotière*, 31st March, 1875.)

Township of Langelier and River Croche.

The township of Langelier is bounded in front on the south west partly by the river St. Maurice and partly by the north easterly limit line of the township of Malhiot; on the south east by the exploratory line run by F. Blaiklock, P. L. S.; on the north east, by a line running north 45 west dividing the counties of Champlain and Quebec; and on the north west, by a line running north east and south west (astronomically) from the afore-said county line as far as the river St. Lawrence. The whole of the land which I surveyed and subdivided into farm lots in this township, especially that lying on both sides of the river Croche, is fit for cultivation and settlement. The soil is not composed of alluvion and clay as has been reported, being rather a gray or yellow mould mixed with sand in certain places and covered with some fertilizing substance, which must be very productive if we may judge from the luxuriant growth of timber of every kind with which it is covered.

Elm, ash, alder, &c, abound along the banks of the river Croche: the back of the lots is certainly hilly; some of the lots are shortened by the lay

of the hills which tend towards the river, but the remainder is land of the very best quality. Taking one lot with another there may be from a quarter to half a mile of low lands on each bank, increasing in depth with the windings of the river. Merchantable timber is not found in great abundance within the township. Pine timber at present is rather scarce: however, Mr. Hall cuts timber here every year, and has taken out a considerable number of logs this season. On the high lands the greatest amount of timber appears to consist of white birch, spruce and pine. In the openings between the hills tamarac is found in some quantity. Hemlock does not appear to grow here, as I did not see any. Cedar and maple are rather scarce.

The river Croche is certainly a splendid stream, flowing over a bed of sand, uninterrupted by rock or fall, though in some places it flows very rapidly; it has no great depth and is navigable only for very small boats, it is very appropriately called the "Croche" or (crooked river,) which name was given to it from the earliest time of its discovery. One might imagine that it felt reluctant to leave behind the soft bed over which it flows, going and coming in such different directions that at times it appears inclined to return to its source, lingering among the forests which adorn its sides, and displaying through the valley which it fertilizes the graceful bends of its peaceful and capricious course.

Following its meanderings from point to point, tributary streams flowing from the heights on either side of the valley are frequently met of sufficient magnitude to serve as mill sites, which, considering the water power, might be made available without much expense, and be of great service to the settlers who might be disposed to settle in the township. These tributary streams take their source from the numerous lakes in the vicinity.

The climate which is very favorable to farming (from my own personal inspection,) is most productive in hay, oats and vegetables, which I have seen in great abundance in the barns and outhouses of the settlers residing on the banks of the river Croche. One of the settlers, Mr. Larue, assured me that, from the sowing of forty bushels of oats, he had reaped six hundred.

Remarks.

It is proper to state that the township of Langelier is well adapted for settlement, which is proved by reference to the settlers themselves whose names I have mentioned, as also their labour and improvements. If we

reflect on all the hardships which meet the poor settler who arrives alone in the forest, distant from all companionship for a distance of at least 23 leagues in summer as in the case in Langelier, where he is obliged to prepare with his own hands the timber for the erection of his house, we must conclude that he finds here some advantages which are not found elsewhere.

The total superficies of the land surveyed in the township of Langelier is 25,481 acres, including the river Croche, and the superficies of the ranges is as follows :

East range.....	9,946 acres
West “	14,310 “

(*T.-C. Delachevrotière*, 28th June, 1878.)

Township of Lejeune.

This survey embraces the range line at the end of the seigniory of Grondines-West, which is 3 miles, 27 chains long, and the south west side line of that seigniory, where it touches the township of Lejeune for a distance of 2 miles, 24 chains, which makes 2 miles, 24 chains; and forms a total length of 5 miles 51 chains.

The surface crossed by these lines is generally mountainous, but nevertheless comprises a pretty large extent of arable land composed of alluvion made up of sandy marl or of silex mixed with vegetable debris.

The mountains are formed of huge masses of quartzose gneiss running nearly north and south and have a dip generally of about 23°. These rocks, as already stated in my former report are gray in color, mixed with large reddish spots, and show no indications whatever of minerals.

The soil all over is covered with a vigorous growth of merchantable timber, including spruce, pine, balsam, birch, beech, cedar, elm and various other woods such as maple, ash, cherry, bass-wood, alder, hemlock, white birch, mountain ash, &c.

The range line at the base of the seigniory of Grondines crosses large lake Long, where waters are pure and very deep and whose shores are broken and mountainous to the east and rolling to the west.

(*P.-P.-V. Dutremblay*, 8th January, 1873.)

The tract comprised in the southwestern portion of the township of Lejeune is of pretty level aspect and composed of a rich alluvial soil, well adapted to settlement; but the north eastern part of the township is generally mountainous, the mountains being formed of metamorphic rocks comprising almost exclusively quartzose gneiss. All these lands are covered with a vigorous growth of spruce, birch, maple, elm, ash, balsam, cedar, &c., &c.

The best way to colonize the south western portion of the township of Lejeune, which includes very rich land, would be to continue the survey and the colonization road from the Chicots lakes to the township of Mekinac, prolonging the latter to the river St. Maurice.

(*P.-P.-V. Dutremblay*, 12th February, 1873).

I have concluded the subdivision of the township of Lejeune and have the honor to submit to you in the following report the result of my observations in the course of this survey :

The township of Lejeune, situated in the Laurentides range, north west of the seigniory of St. Ann, and contiguous on the south west to the seigniory of Batiscan, partakes of the character of the formation of the Laurentian system, within which it is comprised. The surface of this township is in general exceedingly rough and broken. It is covered with mountains of slight elevation, and cut up by ravines so close to each other as to give the whole the appearance of a group of isolated hills, each of small extent. In a number of these hills the greater portion appears to be nothing but the primitive rock. In others the surface presents isolated blocks of granite of no importance.

One of these mountains, that which borders lake Croche on the south and east, presents some indications, more or less doubtful, of phosphate of lime. It would have taken a considerable amount of labor to establish the existence of this important mineral, and, not being certain of finding any, I did not consider myself authorized to undertake the work. The indications which I observed are on lots 28 and 29, in ranges two and three, on each side of the line separating these ranges.

On the south west side of the small lake Long, in the fourth range, about fifteen chains from the south east boundary line, there is an immense

rock, which at its base, for a height of two and a half or three yards, presents the appearance of Scotch granite. It is of various colors, grey, red, black, white and orange ; and as it contains no mica it is susceptible of being polished. I do not venture to affirm, but I believe this is only the out-cropping of an extensive quarry of the same granite.

The principal timber is white spruce, of which there is an enormous quantity fit for lumbering purposes, besides maple and birch. The pine is almost all destroyed.

In regard to settlement, the reversed lots of ranges three and four, the first ten lots of the second range, the first six lots of ranges three and four, and all the lots to the south west of the centre line in range four, are generally, one with another, fit for cultivation to the extent of about sixty acres in every hundred. The rest of the subdivided portion is fit for cultivation in the proportion of twenty acres in a hundred, except a few lots scattered here and there, some offering a larger and some a smaller proportion of cultivable land.

The portion of the rest of the township lying between lake Long and the seigniory of Batiscan resembles, with respect to the quality of the land, the south west part of range four, and presents a comparatively even surface. The portion of the said remainder, situated to the north east of lake Long, is more mountainous, containing more hardwood and less good land than the other.

(*H. LeBer*, 28th May, 1881.)

Township of Mailhot.

I have the honor to submit the report of my proceedings and survey work, made in virtue of instructions from your department, dated the 15th of September, 1875, relative to the township of Mailhot, ordering me to make a survey of the outlines of this township and a subdivision into farm lots of a range on the east shore of the river Saint Maurice, on the front of this township.

The township of Mailhot is of irregular form and situated on the north east bank of the Saint Maurice river, in the county of Portneuf. It is bounded towards the south east by the township of Carignan, partly surveyed by me last year, towards the north east by vacant lands of the Crown, to the north

west by the Croche river, and towards the west by the Saint Maurice river, on whose eastern bank my instructions were to make the survey of a range of lots, designated under the name of Saint Maurice range, and which I divided into farm lots in the manner hereinafter mentioned.

The land along the whole of the outlines is more or less broken, though without any very high mountains. The soil, although cut through here and there by rocks, is not less fitted for cultivation.

The timber is generally fine and tall; it is composed of white birch, black birch, spruce, balsam, and, in a few places, cedar.

Pine is not abundant, having been already worked

The low grounds are generally wooded with gray spruce, tamarac, balsam and alder.

Around lake Wayagamack, the soil is formed of good gray and yellow mould. A few rocks jut out into the lake, forming here and there masses of granite. The timber is about the same as hereinbefore described. This lake teems with fish and the trout are of excellent quality; it is very deep, and the whole locality offers every advantage for the opening up of new settlements; it seems to extend without a break to the Saint Maurice river, on the south side of the little river Bostonais. The north side is hilly and only fit to be worked for lumbering purposes, the timber consisting of spruce and pine. With this view, a dam and slide have been constructed at the discharge of the lake.

The Saint Maurice river is approached by a table land of one hundred feet high at least above the river, composed of sand and yellow mould resting on the clay bottom which forms the beach.

The river bottoms, as on lots number forty and forty one cultivated by Mr. William Ritchie, and on lots number two and three of the same range, by Mr. G. B. Hall, who are carrying on lumbering operations, supply the shanties with hay and oats. These farms are carefully kept and the stables show animals of good breeds and magnificent appearance.

The table land above mentioned is covered with a young growth of small cypress, overtopped by a few large red and white pines which the fire has spared. The ravages of fire can be noted in this range from the Great to the Little Bostonais river over a distance of about three miles.

The La Tuque rapids, hemmed in between two cliffs, reduce the width of the river to a few chains, while above and below it measures, in some places, more than a quarter of a mile wide.

These rapids are from ninety to one hundred feet high, and, in the spring floods, have a depth of fifteen to twenty feet of water.

The west bank of the Saint Maurice is steep and hilly and partly ravaged by fire ; but there are still many spots untouched.

Above the rapids, on lots seventeen and nineteen, is the discharge of the Great Bostonais river, which previously winds through a level tract composed of alluvion and clay and covered with elm, ash, willow and alder, and bordered on either side by a chain of mountains along its whole length going towards the north east.

The chain on the north side separates the Croche river from the Bostonais, said Croche river discharging into the Saint Maurice two miles and three quarters higher up and on the same side.

Magnificent lands extend from the Saint Maurice for a certain distance into the interior, making the chain of mountains above mentioned an isolated ridge between the Croche and Bostonais rivers. A great part of this fine land is occupied by Mr. G. B. Hall, who has made clearings around his business posts ; the farm is in a good state of cultivation, and there is a good stock of cattle.

The sole inconvenience arises from the spring floods in the river.

Hemmed in, so to say, by the narrow channel of La Tuque, the mass of water of the upper part of the Saint Maurice rises rapidly, driving back the waters of the Croche and Bostonais rivers, and then spreading over the banks, which they entirely cover.

The Saint Maurice range, of which all the lots are suited to cultivation and settlement, the greater part being high lands, has a large proportion of arable land in excellent river bottoms covered with elm, ash, willow and alder ; hard wood is generally found on the higher grounds.

The Little Bostonais river and Beaune creek, by which the lake of that name discharges its waters, offer some fine water powers near their junction with the Saint Maurice.

Regarding the resources of this township and the best means to develop them, my answer is the same as last year relative to the township of Carignan, that is to say, I do not see any better means of developing the resources and advantages of this township than by the introduction of steam navigation on the St. Maurice river between the Piles and La Tuque.

T.-C. Delachevrotière, 24th April, 1876.

Township of Mekinac.

I have the honor to submit the following report of the survey and verification of a part of the township of Mekinac.

I laid out the ranges and lots specified in your instructions, which were accompanied by a plan of the part of the township I had to survey and verify, forming 301 lots, including the Mekinac village reserve, these 301 lots containing 30,763 acres of land, apart from 3,090 acres of water, or a total superficies of 33,859 acres of land and water, as shown on the plan of my operations accompanying the present report. Each regular lot contains 105 acres and 25 perches in superficies and the irregular lots, indicated on my said plan, number 112, their superficies being marked on the plan in red figures.

The land, in this part of the township of Mekinac, though somewhat mountainous, is well adapted to tillage. A good many settlers visited the ground during my operations, choosing and marking out various lots, making clearings, and taking note of the mill sites which are very numerous on the river à la Truite, the creek à Bouchard, and on all the other discharges of the lakes met on my survey and indicated on my plan. Zéphirin Doucet, with three of his sons, has been working for about three years on lots 14 and 15 of the third range and has begun to prepare the timber for building a saw mill on the river à la Truite which has a falls of about 150 feet in traversing ranges three and four, said mill to be put up on lot 4 of the third range, at the foot of the falls in question, which consists of two cascades.

Ulderic Cloutier is settled with his family on the Mekinac village reserve, having 4 acres under cultivation and lodging visitors during the winter.

The timber of all kinds, except pine which has been nearly all removed by the limit-owners, shows a vigorous growth and consists of maple, birch, ash, white birch, tamarac and white spruce, on the mountains and in the valleys.

Along the lines run by me in the part designated in my instructions and reported in my field book accompanying my report, I consider one third of the superficies already mentioned very good for cultivation, one third as less favorable for the same purpose and the remaining third as only fit for a firewood reserve for the settlers who will establish themselves in this township.

(*H. Legendre*, 12th December, 1881.)

I surveyed the whole of the ranges and lots mentioned in your instructions, the same consisting of five ranges containing twenty eight lots of 105 acres, 20 chains each and forming a total superficies of 14,711 acres including Lake Lafontaine, which represents 105 acres and Lake Caribou, which contains 267 acres of water.

In all the ranges laid out, the land is mountainous and little adapted to cultivation ; moreover, the fires of the summer of 1882 and previously (for in 1869 fire had swept a part of the northwestern line of the township of Mekinac) have withered up the timber on nearly all the lots in this range. The timber thus dried up consists of tamarac, white spruce, mixed hard wood and cedar ; the pine, which was very common, has been cut and removed by the limit-owners, so that this portion of the township of Mekinac is very poor in merchantable timber and much deteriorated by fire.

(*Hilarion Legendre*, 10th April, 1883.)

Township of Polette.

This township is bounded to the south west by the seigniory of Batis-can, and to the south east by the river St Maurice, whose waters also form the northwestern boundary of the township of Boucher, which is opposite. It is bounded to the northeast by the township of Turcotte, and to the west and north by vacant lands of the Crown.

On the 5th November, 1879, I deemed it advisable to suspend my operations, as it was too early to proceed to the scaling of lake Sassamaskin, (which we found on the range lines of the first and second ranges) as well as of the river St. Maurice, which bounds the said township to the south east.

On the 28th of January, we resumed operations by scaling the river and planting posts for the division of the lots.

Along the township, the course of the river St. Maurice is gently meandering; the banks, which in general are of an average height, are sometimes on the water's edge and sometimes removed ten to fifteen chains back from it, offering river bottoms well suited to cultivation. Consequently, several settlers have located themselves on the river and are clearing the land, which already wears a prosperous look. I have indicated the names of these settlers in my notes.

Lake Sassamaskin and its discharge, which we scaled, is encircled by mountains or hills, which present a varied aspect and are in part covered with wood of small growth.

As for building timber, it has been completely cut off and removed. In the part which we traversed, the prevailing woods are balsam and white spruce, with some birch and bouleau; but all these woods, as already stated, are of small growth.

There is no stream worthy of note, if I except the river Wessoneau, which is crossed near the extremity of the line, between the first and second ranges. It has an abundant flow of water and offers great advantages for the construction of mills, besides being much used for getting out timber.

To sum up, the land generally is broken and even rocky in some places, but it is not without river bottoms and valleys well adapted to agriculture.

The surface in the second range is more level than in the first, and the land there is of average quality and would, in my opinion, offer greater advantages for settlement, as communication can always be easily opened up with it.

(*F. Desruisseaux*, 20th March, 1880).

Townships of Turcotte and Polette.

I surveyed the front of the township of Polette and the front of the township of Turcotte, with the ranges A. B. C. one, two, three and four and the outlines and centre line, as shewn on the plans accompanying this report, with which field notes and diary are enclosed.

The front of the township of Polette presents some very fine tracts of land—that part adjoining the St. Maurice consisting of alluvial deposits of different ages arranged in successive steps, varying in height from a few feet to about one hundred, and the higher and older plateaux in all cases shewing the better soil. Seven of these steps or ancient banks of the St. Maurice can be distinctly traced in several places. The soil on these plateaux is sandy, the upper containing more vegetable matter than the lower. The timber is fir, spruce, pine, aspen, white, yellow and black birch, cedar, ash, and in some places bass-wood. Above the hill or bank proper of the river, which in some places is precipitous and rocky, the soil is generally a good brown loam growing black and yellow birch, maple, fir, cedar, ash, beech, pine, tamarac, &c.

The country is generally rolling and not so hilly as the township of Turcotte. There are two farms on the front of this township, shewn on the plan, and belonging to the estate of Mr. Hall, and the other to Mr. Baptist.

The front of the township of Turcotte, comprising the first and part of the second, third and fourth ranges, also presents some fine tracts of land, marked by the same successive plateaux as Polette and growing the same timber. The hill or bank proper here, especially in the second range, is higher than in Polette, being in some places precipitous and rocky, and raising seven or eight hundred feet, and the division of the valley lower, being nearly north and south, there is every facility for getting on to the higher lands, a number of good lumber roads being already made.

There is a large farm at the mouth of Rat river on the second range belonging to Mr. Baptist, on which he raises a large quantity of hay, oats, potatoes, &c. The time of sowing and reaping are the same as in the vicinity of Three Rivers, while the soil is more productive.

The remainder of ranges one, two, three and four is generally hilly and mountainous, in some places broken and rocky, but presents many fine valleys and valuable tracts of land. The soil is generally a rich brown loam or black mould, growing large birch, maple, pine, fir, spruce, aspen, cedar

beechn, tamarac, and in some spots red oak and ironwood. Numerous lumber roads intersect this tract, some of them requiring little or no labour to fit them for waggon roads and all passing through the best valleys; so that although these ranges are more broken than the land on the west side of that river, settlers will have little difficulty in making roads.

Range A, which is laid off into lots on Rat river, as far as the twenty-fourth lot, present to this point the same soil and character as the former ranges though not so broken above this as far as the fork of Cigoncique or Grande Fourche; the front of this range is bounded by precipitous, rocky hills, which rise in some places to upwards of eight hundred feet, leaving, in some cases, level tracts at their bases along Rat river.

The remainder of the lots were laid out along the rear line of this range or centre line, which will be the best locality for a road to the interior of the township as far as lot fifty-two. From lots twenty-four to fifty-six, this range presents a good deal of hilly and rocky country, although at least one half is fit for cultivation, the soil and timber being the same as in the former ranges and even the more hilly parts growing very large hard wood, and mixed timber always available for wood lands.

There are also some fine level tracts growing timber of the largest size. From lot fifty-six to the rear of the township, this range, with the exception of the precipitous and rocky front on Rat river, presents very good land, growing fine timber and having large level or rolling tracts.

Ranges B and C generally present very fine tracts of land except in some places along or near Rat river, where rocky and stony ranges occur. The soil is here also a rich brown loam or black mould growing birch, maple, beech, fir, arpen, ash, cedar, red oak. There are several clearings along Rat river, some belonging to Mr. Baptist, and others which were abandoned by lumbermen after they ceased making pine timber in the vicinity.

The unsurveyed part of this township was explored in several places and presents good tracts of land throughout, not so hilly as that near the St. Maurice or Rat river, having the same or deeper soil, growing large timber and shewing extensive tracts of nearly level or rolling land; the tamarac and black birch especially being of very large size and superior quality.

All the mountains ranges in these townships, as generally throughout the St. Maurice territory, run nearly north and south, presenting valleys

of erosion caused by the great northern drift of the glacial period lying in the same direction. On this account, I would respectfully suggest to your department that future townships in this territory should be laid out with their side lines running east and west, so that the range lines and consequently the range roads might be north and south for the convenience of settlers, as all the inhabitants of a range have or should have constant intercourse with each other. It would also be advisable to adopt this course in subdividing the unsurveyed part of the township of Turcotte, whenever that may become necessary.

The resources of the St. Maurice territory are great. At present the only source of revenue is pine timber, and the quantity made would be very much increased, had the lumberers greater facilities for carrying on their always profitable trade.

The best method of developing the resources of the territory is to build a good waggon road from the settlements in rear of Three Rivers to Rat river, this road there to branch off to the river Vermillion to the north west along the valley of Rat river or its immediate vicinity, and to the vicinity of La Tuque to the north. This should be a colonization road similar to those by which your department has opened up several other parts of the country and especially Upper Canada. This road would be the best means of settling the country on both sides of the St. Maurice, as ferries could be established anywhere below and in many places above La Tuque. The settlers, besides being in themselves of known value to the country and its revenue, would be of great service to the lumberers in providing them with fodder for their cattle which they now have to transport from Three Rivers, and with root crops such as potatoes. The road would also be of immense value to the lumbering interests, as the lumberers could use it at all seasons of the year, whereas now they have but the St. Maurice alone as a summer and a winter road—a summer road for canoes and scows and a winter road for teams. In the fall, before the ice becomes strong enough to bear teams, and in spring, when it is too porous and dangerous to do so, the lumberers for several weeks have no means of transporting supplies to their fields of operation. The value of this road will be appreciated when it is remembered that lumbering operations begin in the fall about September or October, and that the timber gets to the Quebec market in June, July or August only of the following year. Many lumberers cannot send their supplies up the river till navigation is impeded by floating ice and have to send up their drivers on the ice in the spring weeks before they are wanted or can do anything for their high wages.

Some lumberers on the St. Maurice now send up their supplies on the river road in the winter for the next winter's operations, not only running the risk of the provisions deteriorating by being kept all the summer, but paying a year's interest on the large outlay required to furnish a lumber camp in rations and fodder. A road would remedy this state of things and be beneficial to the lumbermen, the settler and the country at large, as it would increase the revenue in a much greater ratio than the outlay required to make it.

If the St. Maurice country were settled, its resources would be not only pine timber, but tamarac and black birch, of which large quantities of a superior quality could be made by the settlers; and when the Piles railway is built, this timber as well as cedar and spruce and even firewood will find its way to Three Rivers and Quebec.

Having, according to instructions, made a few general remarks on the principal geography of the country, its resources and the best mode of developing them, I have only to add that the colonization road I have mentioned could be made without any difficulty as the country is very favorable for roads running north, the valleys, as before mentioned, lying in that direction.

The road could also be made at a comparatively small cost as there are only three rivers of any size to bridge, namely: the Matawin, the Bête Puante and Rat rivers.

The branch road to the Vermillion would be of great use to the lumberers on that well wooded river, as it would enable them to send their supplies direct from Rat river in summer instead of using a great bend of the St. Maurice, through the worst and most dangerous rapids of that river above La Tuque. It would also pass through a country well fitted for settlement, and which would probably be the first part of the upper St. Maurice turned into the permanent homes of civilized men.

(*Alex. Wallace*, 19th November, 1861.)

From the Township of Mekinac to the Island of Lake Edward.

Having given in my annexed report a detailed account of my operations in the Mekinac valley, the Batiscan and the island of Lake Edward, I will state in a few words what I think of that region.

To describe them more particularly, I will take each section separately, commencing with the Mekinac, which is the third section

It extends from the north east angle of the township of Mekinac, going towards the south east, a distance of nine miles. The general aspect of this part of the country is that of a series of very high mountains.

A lake called lake Mekinac, of considerable size, occupies the first miles of this section.

Then comes the Mekinac river which divides in two branches, a few miles above its discharge into lake Mekinac. Within late years there has been a great deal of timber cut on this river ; but now there is but little remaining.

The soil in this section is very rocky, except on nearing the river ; it is a little less in a few places where there are table-lands, but this proportion of good land is not large enough to justify the opening of roads.

4th SECTION.

This section extends ten miles further to the north-east, and ends where the waters of the Batiscan and those of the Mekinac separate.

The country is intersected with mountains generally wooded with white birch, balsam, spruce and a few birch here and there. On the flanks of the mountains, spruce predominates.

The soil is sandy, while on the heights, where there are a few black birch, it is yellow and rich. In general the land is rough, uneven and rocky.

This section only traverses one lake of about one hundred acres and a small river called l'Eau-Morte. A short distance south, the country is intersected with lakes. There were no minerals found.

5th SECTION.

Like the foregoing, it runs towards the east a distance of eight miles and fifteen chains, of which three miles and twenty five chains are on the island of lake Edward. At twenty three miles and fifty eight chains the line crosses one of the tributaries of the river Batiscan, which is one of the discharges of lake Edward and flows towards the south-east until it joins the Batiscan river.

On both sides along the banks of this branch of the river, but in a few places only, the land is fit for cultivation, and the soil is generally composed of yellow clay, rich and free from stones. Generally, the land is rough, uneven and rocky.

This section is also cut up with lakes and mountains, the latter wooded with white birch, balsam, spruce and a few black birch.

Building timber is scarce, lumbering operations having been carried on here already; nevertheless, there remain a few white spruce and tamarac.

6th SECTION.

This last section extends from the twenty eighth mile of the centre line, and runs north, along the length of the island of lake Edward, a distance of fourteen miles, which I explored. It is intersected with steep mountains and lakes of which some are very large; they are generally deep and full of fish.

The white birch is the most plentiful wood on the mountains; in the ravines and valleys, spruce and balsam prevail. The soil is very rocky and barren in many places.

Before concluding this report, I shall give you some information as regards the part of the country which lies seven or eight miles to the south of the centre line and through which I passed in October last, in order to furnish a better idea of the character of this region, which is known under the name of the road of Lac des Isles or the canoe route.

The canoe route — to be more precise — starts from Lac des Chicots, at a distance of five miles from St. Tite, and reaches Lac Long by three portages, forming in all 240 chains. The lake is then used for six miles more.

On leaving the lake, the mountain portage (*portage de la montagne*) has to be crossed, forming a distance of 460 chains and leading on a north east course to lake Masketsi, which is about six miles long. Then comes a portage of 20 chains leading to lake Roberge, which is about the same size as the last, followed by a chain of small lakes connected together by a small river and a few portages, forming in all 376 chains. Next comes little Lac des Isles, which receives the waters of lake Traverse, both forming a total length of 300 chains, followed by another portage of 140 chains, which leads to little Bostonais lake, from which the route continues through a succession of small connected lakes to the little Bostonais river and four portages, forming an approximate length of 295 chains. Great Lac des Isles is 600 chains long, and between this lake and the south west branch of the river Batiscan, there are three lakes and three portages, forming a length of 350 chains. The point at which the river Batiscan is struck is nearly three miles more to the south of the centre line on the fifth section. In exploring this region, I paid particular attention to the quality of the soil. By making a careful examination of the portages, I was enabled to ascertain the general character of the country. This line traverses a rough, broken and generally rocky region. However, an Indian, named Simonas, a school teacher at St. François, but then hunting at lake Masketsi, informed me that, while the country in general is rocky, there is a section of about three miles square of good land on the river à l'Eau Morte, to the north west of this line, and this report was confirmed by a foreman named George Chayer, in the employ of Mr Gouin.

The Honorable Commissioner having expressed the desire that I should make an exploration of the country east of the Batiscan, in the county of Portneuf, as far as the already surveyed townships, when I was coming down with my survey party, I complied with his wish.

On the 9th November last, I left the river Batiscan five miles to the south east of the island of lake Edward, and took a south east course following for two miles a portage road along the river Meguick. I then left this river and followed the river des Aulnes to lake Caribou, a distance of six miles; thence, by keeping a little more towards the east, I made river à Pierre, one of the tributaries of the river Batiscan, which I followed for about four miles, when I left it and proceeded southward to the lake of river Blanche, meeting along the whole route fairly good land, but only in small areas. In order to make them better known, I will describe them separately, beginning with the river Batiscan.

According to information received and to my own observations, I am able to state that on the south west side of the river Batiscan, at a few acres below the forks of that river, there is a strip of good yellow soil, about half a mile wide and four miles long stretching along the river front ; there is also a good sized island on which the land is excellent. Leaving the Batiscan at the mouth of the river Meguick, there is on the north side of the river another strip of a mile wide by three miles long ; on the south side, the strip is only half a mile wide by two miles long.

On both sides of the river des Aulnes, there is a strip of good land two miles wide by four miles long.

Towards river à Pierre, the surface is broken by mountains and the soil rocky. This is about the sum of the good land as far as the surveyed townships. In the township of Montauban, I met with some good land, a part of which is already occupied. The parcels of good land mentioned are marked on the plan in red lines. In this region, the climate is about the same as at Quebec, but so damp that our iron utensils quickly grew rusty, despite all our care, and our clothing, especially the leather of our boots, became mouldy.

Conclusions.

From the sum of my observations, I necessarily reach the conclusion :

1° That the greater part of the territory, which I have explored and now report upon, is little adapted to colonization.

2° That to bring this territory into communication with the actually existing channels would necessitate a very heavy outlay for the opening and maintenance of new roads.

(*E. Casgrain*, 16th August, 1870.)

COUNTY OF CHARLEVOIX.

Township of Calliere

According to the line run by me in this township, I believe it my duty to recommend to the department the division of the lots fronting on river Noire, the division of the two ends of ranges above mentioned and the subdivision of part of the 9th range and part of the 8th, north of the centre line.

The range along the river Noire would have a sufficient depth of good land for settlements. The two ends of ranges in the 4th and 5th ranges adjoining the range of the river Noire would form 40 or 50 lots to settle with advantage, the land being generally level and fit for cultivation.

The part of the 8th and 9th ranges adjoining Duck lake is level and suited to cultivation, and is timbered with a fine growth of hard and soft wood.

Roads can be opened in the above ranges.

All the lakes in this township are well stocked with fish and full of trout.

The most advantageous spot for a village reserve would be at the mouth of the river Noire on the north side.

Good mill sites may be found on all the rivers.

(Gédéon Gagnon, 20th Dec., 1871.)

I should here remark that as the lines scaled along the river Noire to establish the width of the lots of the 10th range, in front of that range, pass through dense groves of alders and much fallen timber, I experienced great difficulty and delay.

The land along the river Noire, as I remarked in my last year's report, has a sufficient depth of good soil for settlements as far as lot 24. The 4th and 5th ranges as far as lot 16 are generally fit for cultivation.

Good mill sites may be found in different places on the river Noire.

(Gédéon Gagnon, 19th June, 1873.)

Township of Chauveau.

The land is wooded with balsam, spruce and white birch along the first part of this line; the west line is of good quality and level for sixty one chains and fifty links, where there is a mountain with an incline only of 23° to 30° to the horizon, which cannot be a serious obstacle to clearings and the cultivation of this part, and continues so for a distance of seventy nine chains on the first mile, when the land becomes level to fall away again by a gentle decline from the commencement of the second mile as far as six chains, and slowly ascend from ten chains up to thirty two and chains fifty links.

At thirty five chains, the land, level and wooded with balsam, spruce and white birch, is of good quality and continues so to the end of this mile. All along this line, notwithstanding some broken ground, the land is of good quality and quite fit for cultivation. Lake Jacob which has a surface, calculated by double longitudes, of forty one acres, two rods and twenty five perches, and the banks of which are of very rich soil and wooded with balsam, spruce and white birch, has on its eastern side wild meadows of several acres in extent.

Starting from the south-west angle of Chauveau township and following the rear line of Mount Murray, as aforesaid, the land is level to the middle of the second lot and timbered with balsam, spruce, white birch and aspen; the soil is of good quality and fit for cultivation. At nine chains on the second lot, the line follows the northern flank of a mountain about 30° to the horizon, and which becomes steeper up to end of the third lot, where the ground becomes level. A short distance from the line towards the north, the slope of the mountain lowers and disappears, and the land, as far as the eye can reach in that direction, becomes comparatively level for the depth of two ranges.

From the end of the third lot to the ninth, inclusively, the land is slightly uneven and a little rocky at intervals, but generally fit for cultivation.

On Wednesday, the twenty ninth of July, having moved my tent to the ninth lot, where I had already camped on arriving in the bush, I continued to run the line, the course of which in this spot is 97° north, and divided five lots. In this space, the line follows a tract wooded with balsam and birch, and the soil, though rocky and slightly uneven, is adapted to cultivation as far as the seventeenth lot.

I have had the honor to give you above the description of the land to the seventeenth lot, inclusively ; from this point eastwards, the character of the land varies little ; it is generally wooded with balsam, birch and spruce, slightly rolling, and the soil, of yellow clay and a little rocky, is fit for cultivation.

Part of the twenty third and twenty fourth lots is broken by an incline, slight at first, but increasing progressively from 25° to 40° , and thence more gently, to die away on the twenty sixth lot in undulating ground, wooded as above, and which continues uniformly, until it reaches lot number thirty six, a distance of twelve chains and thirty links, where the line is intersected by the west branch of river Noire, which flows towards the south-east over a rocky bed.

About two chains to the north the river precipitates itself from a height of about twenty feet, and forms a falls which could be easily turned to profitable account, because towards the east, and beyond river Noire, and for more than four miles to the north, notwithstanding the extensive cutting of timber that has been done here, for many years, there still remains a considerable quantity of white pine and spruce of value to the lumber trade.

At this point, the west branch of river Noire, hemmed in between the rocks, lends a less favorable aspect to the land situated on the east side.

In fact, the line runs from the crossing of the river through a tract rocky and of wretched appearance, for fifteen chains as far as the foot of a steep mountain the angle of whose base varies from 40° to 75° .

This mountain ending at fifty links, distance on lot thirty nine, the land though slightly undulating, then settles down level, and is covered with a good growth of balsam, white birch and spruce, the soil being excellent for cultivation.

From this point a tract of level ground extends to a lake called Grosse Truite, which is almost dry at this season, with the exception of a basin of sixty feet in superficies.

The banks of this lake are flat and wooded as above. The same lake is met at fifty links on lot 49. From this point, white pines are seen here and there and the ground, undulating and rocky at intervals, is still good for tillage as far as river Noire, which runs here slowly between flat banks formed of rich and well wooded soil.

I prolonged the eastern outline for six ranges of eighty chains and eighty six links each. All along this line, the land, which is generally undulating with a slight slope toward the east, abounds with white birch, balsam, spruce, and birch and continues so to the intersection of the middle branch of river Noire at 54 chains, 10 links on the second mile, and whose breadth at this point is 45 links. Rapid and hemmed in here, its current offers a splendid water power. The banks of this stream are not steep, but the rocks with which they are everywhere covered completely unfit them for tillage. At the end of a couple of chains, however, this aspect of the ground changes; the soil grows better and continues so as far as 76 chains on the third mile, when the line crosses the east branch of river Noire, whose breadth at this point is 4 chains 36 links. Ten chains to the east, the remains of a dam are still to be seen, which was used some years ago for getting out the timber, of which there is still a large quantity to be worked.

At the point where the line intersects the river, the land is again good for 14 chains on the fourth mile; but the line then leads us to the foot of a bare mountain, the angle of whose base with the horizon varies from 60° to 20° for 52 chains on the same range. At a height of 150 feet above the level of the river, the land is better wooded, but cut up by deep ravines, at the bottom of which flow small streams of water, making their way to the lake at the base of the mountain on the west side and formed by the river. At 25 chains on the fifth range, the ground becomes more level, and, though still rolling, of better quality, with the same timber as above, as far as 55 chains on the last mile, when it becomes rocky, broken, and altogether unsuited for cultivation to the end of that mile which terminates on the southern slope of a height of 50° to the horizon.

On the 20th and 21st August, the lake already mentioned being extremely flat, I scaled it by following its banks in the water, and then transferred my tent to the post of the first mile of the east outline. The banks of this lake, which I shall call river Noire lake are, in their southeastern part, slightly undulated, but the soil is good and wooded with balsam and spruce; to the north east, there is little timber, but the soil is alluvial, very rich, and covered with natural meadows extending back for some distance from the river which seems to come from the west and to follow a tranquil course between the white birches, spruces and balsams, which border it. The nearest mountains to the northward are not closer than from a mile to two miles, and for that distance the surface appears perfectly level and well adapted to cultivation. The lake runs parallel to

the base of the mountain and the east outline, and the land to the foot and on the flank of this mountain, over a width of a quarter to half a mile, is wooded with spruce, balsam and white birch.

I ran the line between ranges one and two on a course north 97° east, astronomical, parallel to the corresponding part of the rear line of Mount Murray. Wooded with spruce, white birch and white pine, the land, though broken and rolling, is of good quality and suited to cultivation as far as the bank of the river.

I ran the same line on a course south 30° west, astronomical, measuring and dividing the lots as heretofore, from the east outline to No. 36, inclusively, there striking a large lake, which I named Lac au Plongeon. From the east outline to No. 45 aforesaid, the line follows by an easy ascent a tract wooded with balsam, spruce and white birch of fine dimensions.

Lac au Plongeon, whose circumference is over five miles, has a total superficies of 513 acres, 3 roods and 30 perches. Its banks, marked by slight eminences in the north west part, are flatter to the west and wooded with cedar, spruce, balsam and white birch. The land throughout, though somewhat broken by slight undulations, is well suited to tillage.

After several unsuccessful attempts to project the line across the lake with the telescope, I had to transfer my tent on the 12th November to the 17th lot on the rear line of Mount Murray, thence to run a centre line and thus allow me to prolong towards the east the line interrupted on the bank of Lac au Plongeon as aforesaid.

From the point above designated, I ran the said centre line, following a course north west and measured 80 chains 80 links for the length of the first range. Along this part of the centre line, the soil is good, and the land, sloping slightly towards the north in the first part, soon becomes level and so continues to the end of this mile.

I laid out the west part of the line between the first and second ranges following a course south 97° west, astronomical, parallel to the general direction of the corresponding section of the rear line of Mount Murray and corrected on several occasions, as I had the honor to remark at the beginning of the present report. This line being finished, I divided the lots as far as the intersection of the west outline, planting three good squared posts in line, to mark the breadth and indicate the direction of each lot.

In this part, the ground, from the point of departure, is remarkably broken, but, towards the end of the twelfth lot, it grows level and continues so to the commencement of the eighth lot, where it again becomes broken to once more resume a more uniform aspect at ten chains on the sixth lot and to so continue to eight chains on the fourth lot. From this last point, it is rolling and, from six chains on the third lot, the line runs up a mountain whose incline varies from 10° to 40° from the horizon. This mountain, covered with brushwood, balsam, spruce and white birch, is composed of good land and could be cultivated all over. At three chains, on the first lot, the line attains the top of the mountain, whose incline on the opposite flank varies from 10° to 45° and terminates at the upper end of this lot, at the intersection of the west outline.

I continued the line between the first and second ranges following the course north 30° east, astronomical, from the centre line and made the division of twelve lots in the first part to Lac au Plongeon. From the centre line, the line follows a descent of about 15° to the twentieth lot, and then continues over level land of good quality to the aforesaid lot. The timber, which is chiefly white birch, balsam and spruce, is of fine dimensions and appearance and indicates a profitable soil for agriculture.

I continued the centre line to the depth of the second range and divided the line between the second and third ranges, following a course 57° west and north 30° east, astronomical, respectively, parallel to the corresponding part of the line between the first and second ranges. Along the centre line, the land is of good quality, well wooded with balsam, white birch and spruce, and slopes slightly in the same direction as the line as far as the intersection of a river coming from the west at 57 chains 66 links; thence, to the end of the mile, the ground is somewhat more broken, but still cultivable.

I prolonged the western part of the front line to the western outline. In this part, the line follows the base of a mountain which is parallel to it on the north side and which lowers as we advance, the land to the south being more level, well wooded and suited to cultivation.

On the north side and notwithstanding the proximity of the mountain, the land, with a slight slope to the east, is not unfitted for tillage and is covered with a thick growth of fine brushwood.

From the end of the eighth mile, the line ascends the eastern flank of a mountain, whose incline at first gradual and slightly rolling, becomes

steeper with the ascent and the angle of whose base with the horizon varies between 20° and 70° to the commencement of the twelfth lot, where the ground grows level and continues so with slight undulations to the west outline.

I laid out the line for the whole distance between the centre line and the river Noire, besides, in addition, scaling Lac des Islets on the ice.

Starting from the centre line, the south line follows the base of a steep and almost precipitous mountain on the east side, to 10 chains on the nineteenth lot. The line follows the slope of the mountain over steep and rocky ground and descends again with a rapid incline over less rough ground to 5 chains on the twentieth lot. From the point of departure and not more than three chains to the right of the line, the land is level, well wooded and adapted to culture.

From the eighth lot and as the line progresses towards the east, the mountain gradually recedes towards the left, trending nearly north 10° east, astronomical, and the surface as far as Lac au Plongeon, which is again intersected, is remarkably level and well wooded, with a soil well adapted to cultivation.

After crossing the lake, the line passes over ground somewhat more broken, but without any serious obstacle to the head of Lac des Islets, which it follows from lot 35 to 36, to take it up anew after crossing a point a few chains in length to 10 chains 31 links on the 39th. I scaled Lac des Islets on the ice, which was then solid enough to bear us without danger. According to the measurement, the circumference of this lake is equal to 419 chains 36 links, and its superficies to 453 acres, 1 rood and 16 perches. The banks are not high, and are covered with balsam, spruce and white birch, while the soil is slightly rolling and composed of a yellow loam well suited to tillage.

Leaving the lake, the line follows somewhat broken ground, wooded with balsam, spruce and a few white birches, and crosses at 11 chains on the forty-second lot a pond, formed by Lac des Islets, about 5 chains wide and 25 long, with banks wearing about the same appearance as the ground previously described. From this point, the line leads over rolling and cultivable land to the forty-eighth lot, whence it follows the course of the lakes already referred to and which are the source of one of the three largest tributaries of river Noire. It also follows for a distance of two or three chains the middle branch of that river to the fiftieth lot, where it crosses the stream, above a rapid with an incline of at least 20° from the

horizon. At this point, the ground is rocky, little suited to cultivation, and wooded with a stunted growth of balsam and gray spruce. A little further on, it improves as far as the east outline, but thence to the river Noire, which is reached on the fifty-ninth lot, the soil is poor, frequently cut up by deep, precipitous ravines, and altogether unfit for farming purposes. Within the space embraced between the river Noire and its tributary above mentioned, there is still a considerable quantity of pine and spruce among the balsam and white birch with which the surface is wooded. This timber may be serviceable to the trade in the near future and will be a great help to settlers in this new region.

To sum up, it gives me pleasure to state that the portion of the township of Chauveau, which I have just surveyed, without being exceptionally fertile, is nevertheless well suited to cultivation and offers as favorable a field for settlement as any of the new concessions in the adjacent seigniories, which have been opened up for so many years. While I was in the bush, I remarked that the snow did not fall any earlier or heavier than in places situated on the St. Lawrence, which warrants the conclusion that the climate will not be more severe when the work of clearing will have opened ground to the circulation of air and heat.

In fine, I have no doubt that a grant, no matter how small, to promote the opening of a colonization road, next season, would induce a great many young men to take up lots and immediately begin the work of clearing. Already over 50 lots have been marked out, and the parties who have selected them are only waiting for an outlet through the forest to commence work on them.

The opening of a road of this kind, to connect with the Des Marais road already opened by the Government, would be very easy and inexpensive and, for the moment, at least, would meet the necessities of colonization in the new township of Chauveau.

(*J.-C. Demeules*, 1st May, 1869.)

Township of De Sales

From the first line between ranges IV and V, following the north east branch of the river du Gouffre, the soil is equally good for meadow land, and even richer than the first part, because it would be less exposed to inundations.

At the point where the line of lots 28 and 29 intersects the north east branch of the river du Gouffre, at 74 chains from the line between ranges IV and V, the land rises and continues good, the timber on it being balsam, spruce, white birch and cypress. The line, thus prolonged, intersects a colonization road at 84 chains 20 links.

The land, in this part is level and well wooded and the soil of good quality. The line crosses the colonization road above referred to at the commencement of lot 8.

On Wednesday, the 1st December, I laid out the line between lots IX and X to the line between ranges III and II, a distance of 85 chains and 89 links, and, in this space, the ground is level, except in the last part, where it is a little more broken,—the soil, of good quality and wooded with cypress, spruce and balsam, improving and showing better timber from the intersection of the colonization road. I sought for and renewed the rear line, of range II west, whose length, comprised between the lines of ranges X and III, according to the original survey, is only 77 chains. 17 links. In this tract, the land, passably broken, seems good enough, but fire has destroyed every trace of vegetation over a space of sixty chains, and the new growth taking its place seems to promise only cypress in great abundance.

The centre line also intersects a colonization road made some years ago by the Government to facilitate the opening of the lands in this part. Although pretty broken, the land is of good quality, including four or five lots to the west of the centre line on the eleventh and twelfth ranges and all the eastern part of the twelfth range towards Lac Pied des Monts. Owing to the facilities offered to settlers by the opening of this road, these lands will, I hope, be rapidly cleared up, when they will furnish homes at no distant date to forty families, if the obliterated subdivision lines of the original survey were everywhere renewed where needed.

Before shifting my tent further on, I continued the scaling of the river with the intention of using it for dividing the lots, but the ground from

the start seeming unfavorable for settlement. I there suspended my operations, especially as the branch of the river du Gouffre, forming the western boundary of the township of De Sales, had already been scaled, and as it was useless to repeat the same operation when the ground did not permit of the subdivision of the lots.

In the western part of ranges eleven and twelve, the land seeming to me altogether unsuitable for colonization, cut up as it is by high mountains, I only ran the line and effected the subdivision of these two ranges for a distance of four lots, starting from the centre line. In this space, the soil is of good quality and well wooded.

(*J.-C. Demeules*, 18th February, 1876.)

COUNTY OF CHICOUTIMI.

Alma Island.

The surface of the island is not perfectly level ; it is not without a few ups and down, but, nevertheless, I consider it a fine level tract, and apart from a few rocks met with along the rear line of the first range and the rear line of the fifth range, a plough would pass anywhere. The soil in general is a fine loam sometimes mixed with grey marl. In a few instances, the first stratum is vegetable mould, and a few inches below is found clay : the only swamp I met with lies between numbers two and five of the second range and extends for about ten chains to the north. The stratum of black mould on the surface is eight or nine inches in thickness. The timber is generally large and tall. On the north side, it consists of black and white birch, white and grey spruce, fir, brushwood of all descriptions, cedar, ash and alder ; on the south side, a mountain covered with ash is also met ; white birch is not so often seen, but all other sorts are ; black spruce is scarce.

Finally, you will see on examination of my field book that several lots have already been worked upon after they were measured ; not only the richness of the soil encourages, but the climate is very promising, judging from the success of Mr Damase Boulanger, slide-keeper.

(*E.-A. Duberger*, 8th March, 1864.)

Township of l'Anse St. Jean.

Along the course I followed, I found the soil poorly suited to cultivation, except on the road, where it is of pretty good quality, especially from the reserve to No. 35, being nearly everywhere composed of clay and alluvion and, in some spots on the plateaux near the river, of vegetable mould.

The rounded pebbles on the beaches of the river show that they have been carried down by the rapidity of its current during the freshets.

From No. 35 to the outline, the land is not so favorable to vegetation, although of good enough quality ; it is composed of a yellow and black soil and a little rocky.

I made no special examination of the other parts of the township which I did not survey ; but the surface seems mountainous.

The high mountains which border the Saguenay, and which, in separating, form the deep bay called L'Anse St. Jean, extend across the township in a south-western direction for a distance of two and a half leagues, preserving about the same height for a mile and thence diminishing until they disappear altogether. There are also other smaller mountains crossing each other in all directions and forming spurs of the larger range. These mountains are all wooded, with the exception of a few crests completely bare of trees, but covered with other vegetable growths. They are made up of rocks overlaid by a slight bed of turf. These stratified rocks dip generally towards the east and are composed mostly of granite, feldspar and quartz. There is little good land among these mountains, except in a few small valleys on their flanks and in some narrow ravines.

The tract comprised between these mountains forms the valley or settlements of L'Anse St. Jean. This valley is about two miles wide at the foot of the bay, but varies a good deal and is much narrower in some places.

The river St. Jean, which falls into L'Anse St. Jean, winds through the whole length of this valley, and has a width of $2\frac{1}{2}$ chains and a depth of from two to three feet ; but the volume of water is much greater during the freshets. There are three mills on it, one of them a grist mill, and the other two saw mills. The grist mill and one of the saw mills are built on the reserve near the mouth of the river and belong to Mr Simon Boudrault ; the other is on No. 35 and belongs to Mr D. Girard.

The river St. Jean takes its rise in little lake St. Jean, eighteen miles from its mouth. The river du Portage, the river du Moulin and all the other little streams which water the valley of L'Anse St. Jean, are its affluents. It also receives the waters of great Lac des Islets, Lac à la Balle, Lac à l'Ours and Lac Grenouilles, which discharge into little lake St. Jean, as well as of other streams which fall into the same lake. From the

course of the rivers, it can be seen that the great valley in rear of the township of Otis, which extends to L'Anse St. Jean, slopes towards the east.

The growth of timber in the valley of L'Anse St. Jean is much superior to that of the upper Saguenay, as already noted in my report of the survey of the township of Perigny, last spring.

(*J.-O. Tremblay*, May, 1867.)

Township of Bagot.

To comply with my instructions, I began to subdivide the land situate in rear of Grand Bay range, south range, so as to form a double range running in the same direction as the aforesaid.

For that purpose, I ran the range line parallel with the south east outline of the township of Bagot, which is parallel with the rear outline of the Grand Bay south range.

As this line passed through the cultivated farms and did not suit the wants of the settlers, I changed the south west part by laying out two ranges in the direction of the starting line which I subdivided into lots.

These ranges are designated on the plan.

All this part of the township consists of good land, wholly taken up, with the exception of a few lots near the outline where we meet some insignificant hills.

The soil, which is a mixture of black and yellow loam, has been almost entirely burnt over. Very few trees remain and these are either blackened or dried up.

On the range line between the 3rd and 4th ranges, Grand Bay, south range, I subdivided the lots in a manner to suit the wants of the place as well as the work done.

The lots are all taken up and various improvements have been made.

Between lot 1 and lot 16, in the third range, Grand Bay, south range, the soil is of excellent quality, though naturally rocky. It contains black and yellow loam, both being occasionally mixed in the middle lots. A few inches of clay loam lies beneath the yellow in some places.

All this part of the country is covered with very fine-sized growing timber, and, in the fourth range, the soil is as good and the timber as abundant as above ; this remark principally applies to the central portion thereof.

In proceeding along the outline, on the bank of the Saguenay river, I passed through about half a league of barren land. The chain of mountains, forming the banks of the river, varies a great deal and is very extensive here. It is several hundred feet high and consists of bare, treeless rocks as far as the banks of the Saguenay.

I scaled and renewed the marks (blazes) along the south east outline of the township of Bagot throughout its whole extent.

In order to verify the course of the line, drawn by Mr. Jean-Baptiste Duberger, P. L. S., I made several astronomical observations which convinced me that it was correct enough. The few slight deviations, which I noted, were in the south-western part, near the post forming the south-east angle of the township of Bagot. I corrected them.

The post, situated at the extremity of the outline and forming the division line between the townships of Cimon and Bagot, is placed one hundred and thirty chains inside the angle formed by the township of Bagot and shown on the plan accompanying this report.

I also scaled about one and a half mile of the line between the townships of Cimon and Bagot, and thus satisfied myself that it crosses in a diagonal direction range 12. This encroachment on the township of Bagot amounts to about three thousand acres.

Besides the scaling of the Bagot road, I subdivided the land in lots of thirteen chains each. All are perpendicular to the lines of the ranges, except however lots 19 and 20 whose width is less. The land here is somewhat broken ; there are some small mountains but very little growing timber, the latter having been in great part destroyed by fire.

Some of the farms in the vicinity of the river Ha! Ha! are of good quality, and consequently many of the lots are already taken up.

Throughout the 11th and 12th ranges, a good number of lots are already occupied. The soil, however, owing to the great quantity of rock, is not everywhere fit for agricultural purposes. Fire has destroyed much of the timber, so that, with the exception of range 12, upon which there is a considerable space covered with it, none grows but in the neighbourhood of the lakes and in some small valleys.

(*J. O. Tremblay*. April 4th, 1862.)

Township of Boileau.

The land, all along the outline which I surveyed, is of good quality, consisting, in some places, of black, and in others, of rich yellow loam.

There are, however, some places where the ground is rocky, but, in general, it is everywhere fit for agriculture and for settlement. It is covered with hard and soft wood, such as white and black birch, white and red spruce, white and red pine, fir, &c., &c.

Colonization roads could be advantageously opened throughout the whole township.

I will here take the liberty of suggesting that one should be opened between the St. Urbain road and its intersection with the little lake Ha! Ha! Following this on the western side, it might also run along the great lake Ha! Ha! as far as the middle of the township of Boileau, thence to reach the settlements of Grand Brûlé.

This projected road would be a great advantage to settlers in the township of Boileau, and would help to settle the land north-west of it, a great portion of which is well adapted for agricultural purposes.

The climate is also quite suitable for colonization, frosts occurring only very late in the fall.

The best spot for the location of a village would, I think, be near the mouth of the discharge of lake Ha! Ha!

Splendid mill-sites can be found along all the rivers of this township.

The lakes abound with trout.

(*Géd. Gagnon*, April 21st, 1863.)

Township of Bourget.

With the exception of a certain tract of land, shown on my plan as being quite unfit for cultivation, I do not hesitate to say that all the lots which I have divided are favorable to settlement, whether the nature of the soil which is good or its surface which is extremely level be considered. There are, moreover, at each distance of twenty or thirty chains, roads which have rendered great service to the firm of Price Bros., in their lumbering operations.

(*E. A. Duberger*, 1864.)

I have the honor to transmit you a report of my survey of the north east part of the township of Bourget, situated in the county of Chicoutimi.

I wished to take an observation before starting, but the weather prevented me from doing so, and thus two days were lost in unsuccessful waiting. Owing to fog and bad weather, especially at night, during the greater part of November, it took a long while before we could determine the variation of the needle.

Fortunately the line between the second and third ranges, run in 1864 by the late Edmond Duberger, P. L. S., was easy to follow, the posts being everywhere visible and in their original positions.

I laid down my centre line at right angles with the said range line and, in the course of my survey, had no reason to regret having done so. The variation of the magnetic needle was 17° uncorrected.

I prolonged the ninth range for a distance of six miles on a north course $14^{\circ} 45'$ east astronomical, with the variation above mentioned.

The land throughout the first three miles is an uninterrupted succession of small cliffs running from east to west and diminishing in extent from one range to the other.

From the top of these cliffs, at an elevation measuring from one hundred to two hundred feet, the view embraces the beautiful valley of the river des Aulnets to the east and north east and that of the river à l'Ours, the latter extending north east and north west as far as the foot of the mountains, for a distance of twenty to twenty-five miles.

At right angle with the centre line and on a course south $75^{\circ} 15'$ east, I ran the range lines of the third, fourth, fifth, sixth, seventh and eighth ranges of the township of Bourget, east of the centre line, to the western outline of Simard, cutting the valley of the river des Aulnets and that of river à l'Ours throughout their whole width.

With the exception of the rocks on the third and on the fourth range, and of a swamp on the third range, all this land is adapted to farming purposes and would be very favorable to settlers wishing to locate there immediately. The bush-fires, which have destroyed part of the forest, would permit of sowing even next spring with advantage and this several settlers propose to do.

I ran the main division line of the township of Bourget, on a course north $70^{\circ}.15'$ west, extending it to the ninth mile inclusively, and laying

off from the said line the lots of the north range from number one to thirty-eight.

The reason why I made the division of the lots on this line is that it traverses the finest land in the township and the most advantageous for the opening of a road. This division will moreover enable parties intending to take up lots in rear of the Bourget line, to guide themselves by the posts showing the course of the lots of the north range, pending the surveys, which must necessarily be soon made, to promote the settlement of this fine district.

The lots in this range could not be made to front on the river des Aulnets and the river à l'Ours, because the east range was too short, and the two centre ranges too long and because the rocks on the west range, trending from south to north, cut the lots in such a way as to render communication between one part of them and the other impossible.

I terminated the division of the lots at number thirty-eight, because the ground to the west prevented the continuation of this operation, the rocks extending as far as lake Chabot, at the extremity of the eighth mile. I scaled this lake and ascertained that the land on its west side is superior both as regards soil and timber. Splendid pine groves surround this lake, and a dam has been built by the Messrs. Price to facilitate the getting out of logs by the river des Aulnets.

I was unable to scale the river à l'Ours, because the ice was not solid enough and the rapids, which occupy three quarters of the river, were still open water. However, I determined its true position by measurements and careful observations.

There are some splendid mill sites in the seventh range. A dam and slide have been constructed in the eighth range by the Messrs Price, in order to facilitate the descent of their timber. Several lumbering shanties are in operation this winter on the land in rear of the old line and of the west section of the township of Bourget.

The tract or piece of land, comprised between the river des Aulnets and river à l'Ours, in the fifth range, has been, in compliance with your instructions, dated January 11th, reserved for a village site and offers all the advantages that could be desired for the perpose. A piece of land reserved for a chapel, a school-house or for any other public building is always a wise precaution which cannot fail to give good results in the future.

All this section of the township of Bourget, which I subdivided, is deserving in the highest degree of the attention of your department. Except in that part of the west range, where rocks crop up to the surface, and on a few lots in the east range, which is damaged by swamps to a certain extent, the soil is of superior quality, being composed chiefly of grey, black and yellow clay in the valleys and of yellow sandy loam on the heights, the whole well adapted to cultivation.

This tract of land is sufficiently large to form a parish and one of the best situated on the upper Saguenay.

Several settlers commenced clearings last year in the east range, from number eighteen to number thirty-one. Last spring some of them sowed different kinds of grain on these lots in order to test the soil and climate, and were fortunate enough to see the whole come to perfect maturity.

(*P.-H. Dumais*, March 24th, 1870.)

In the part of Bourget, which I have just subdivided, the land is in every respect of the best quality, and the climate leaves nothing to be desired; as the frosts, which were felt in June elsewhere, were not experienced here at all. Two hundred bushels of grain were sown this spring, and the harvest promises a good yield. A road opened by Government through this township would really be the salvation of the poor settlers desirous of locating there.

(*P.-H. Dumais*, August 30th, 1870.)

Township of Chamouchouan.

After completing the chaining of this part of the township of Roberval I proceeded to the seventh range of the township of Ashuapmouchouan, where I traced the central line between lots twenty-four and twenty-five and subdivided the seventh, eighth and ninth ranges.

The soil in this part of the township is generally a yellow mould, with spots of gray and black earth here and there.

The surface is in great part even, with undulations of the same character as in the township of Roberval. There are no mountains, only a few rocky places. The rivers Iroquois and à l'Ours, in wearing their beds down to the rock, have formed deep cuts such as are generally characteristic of the rivers of Lake St. John. There are several good water-powers and mill-sites on these rivers.

All this country is well covered with growing timber of all sorts, such as white spruce, balsam, white birch, cypress, poplar, red spruce, white pine, ash, &c. A few elms and some young maples are also to be seen on the seventh and eighth ranges.

I made the subdivision of the lots of the seventh and eighth ranges on the division line at the rear of the seventh range, giving the alignment of the sides of that line, in order to admit of the establishment of a double range, for which the formation of the land offers certain advantages. Another double range at the rear of the ninth range will facilitate the establishment of the first range in the adjoining township, where there are three more ranges of good land extending in rear of the townships of Ouatichouan and Roberval.

The department is probably aware that the Reverend Father Lacasse, O. M. I., visited these lands last autumn with the view of establishing a new settlement. The account which he gave me of them was very favorable, confirming the information which I had received from other sources and the impression which I had derived from my own observations.

I have the honor to inform you that a number of farmers have already visited this locality to select lots; they are nearly all men who have arrived at Lake St. John since last year. They propose to make clearings next spring.

With the aid of roads, which fortunately may be very easily made, these settlers will form the nucleus of a flourishing parish in these townships. Their names are entered on the specification of lots accompanying my report.

(*P.-J.-C. Dumais*, 4th February, 1880).

Townships of Chamouchouan and Demeules.

From the reports which, from time to time, I have had the honor of addressing you, you probably have remarked the great extent of arable soil in the townships of Ashuapmouchouan and Demeules. As regards the quality of the soil, none can take precedence of the valley of the river Ashuapmouchouan. As in all other parts of the Saguenay, clay predominates. In some places, this clay is overlaid with a layer of sand, three or four inches deep; a precious element in many respects, especially for the growth of wheat, which, in such lands, is never attacked by the fly.

The most striking feature of the Ashuapmouchouan valley is that the land, though exceedingly well watered, is not broken by the deep ravines, steep rocks, &c., so common in other parts of the Saguenay. At least, three good parishes can be formed in the townships of Ashuapmouchouan and Demeules, and I have no doubt that they will be, if the Government only seconds the exertions of the numerous settlers who intend taking that direction. From information obtained from competent persons as well as from a reconnaissance, which I made myself to the north east of the river Ashuapmouchouan, I am inclined to believe that there is a considerable tract of good land in that direction. The best proof of the excellence of the climate is supplied by the success of the settlers actually established in the township of Roberval, adjoining the Indian reserve.

Last fall, for the first time, the thermometer marked as low as zero on the 16th October simultaneously at Roberval, where Reverend Father Bernier, *curé* of the parish, resides, and at the extremity of the sixth range of the township of Ashuapmouchouan, where I was then encamped. The summer temperature is about the same as that of Quebec, with this difference, however, that north east winds are little felt and are almost as mild as those from the south west. The cold in winter is very intense, a circumstance very probably due to the extensive tracts of burnt land situated to the north and north west.

The sole means to develop the resources of this important part of the Saguenay is to open roads firstly between Chicoutimi and the northwestern part of Lake St. John, and later on, if the undertaking be considered practicable, between the Lake and one of the parishes of the county of Quebec.

(P.-A. Tremblay, May 1st, 1862.)

Township of Charlevoix.

After concluding my work in the township of Metabetchouan, I hastened to the township of Charlevoix, of which I was instructed to complete the survey, and arrived there on Wednesday, December 23rd. On Thursday, December 25th, I sought my starting point between lots twenty-four and twenty-five, on the line between the third and fourth ranges, which I laid out for a distance of ten lots and continued on the thirty-first of December and on the second and third of January, 1871, notwithstanding that I had to move my camp to the rear line of Charlevoix, a distance of one hundred and forty-three chains and twenty-eight links from the projected line between the fifth and sixth ranges.

From the fourth of January to the sixteenth of the same month, the weather continuing favorable, I was able, in spite of the great depth of the snow, to complete the survey of the line between the aforesaid ranges four and five, besides dividing forty-three lots to the side line of Metabetchouan, towards the east, and as far as the division line between the townships of Charlevoix and Roberval, towards the west.

Throughout this part, the land is comparatively level, though the rocky and sandy soil seemed to me little suited to settlement, and the information, which I got from persons employed for some years in the lumbering establishments, and who have traversed this region, has moreover confirmed me in this opinion. This information, coupled with what I personally acquired on my survey of the centre line, enabled me to judge that the sixth range hardly possesses any land fit for settlement. Under the circumstances, in the interests as well of colonization, as of the Department, I deemed it advisable to refrain from continuing this survey.

(J.-C. Dumais, 8th April, 1871.)

Townships of Caron and Mésy.

The soil, throughout the fifth and sixth ranges of Caron, east of the centre line, is very favorable to the opening of new settlements, whilst on the west side of the same line, and in the same ranges, it is very broken and rocky; the land, however, is of good quality and the timber splendid.

I extended the centre line on the sixth range, measured eighty chains and eighty links, and ran the rear line in order to divide ranges six and

seven, dividing the lots on each side of the said ranges, intersecting the Quebec road three times on the west side, and crossing the Hebertville branch on the east side. Lot number one measures twenty-three chains and forty links.

The land, to the east, is broken near the centre line; but the soil is excellent along the whole line. On the west side, the neighborhood of the range line is rocky; but, at a little distance from it, the rocks disappear and the soil improves considerably near the Quebec road, where a good part of the lots are marked by small clearings commenced last fall.

I continued the centre line on the seventh range, crossing the Quebec road at right angles at three-fourths of the depth. The soil here is level and consists of yellow, grey and black loam of good quality, covered with fine timber such as grey and red spruce, black and white birch, pine, fir, ash, aspen and some cedar. At a depth of eighty chains and eighty links, I ran the range line across the whole width of the seventh and eighth ranges, scaling Caribou Lake on the west side of the centre line, and finishing number one on the east side, with a width of twenty-six chains. This range is one of the finest in this part of the township of Caron, whether the nature of the soil or the facilities it offers to settlers by the opening of the Quebec road be considered; it will soon be invaded by hardy pioneers.

I next continued the centre line on the eighth range, measuring eighty chains and eighty links. At the end of this line, I ran the range line between the eighth and ninth ranges, dividing the lots along the whole line, scaling lake Saint Jérôme, west of the centre line. This lake, which is well stocked with fish, discharges its waters by a branch of the river Couchepegamish. Lot number one of this range measures twenty-eight chains and fifty links in breadth and lot number forty-six measures twelve chains and twenty-five links.

East of the centre line, the soil is of better quality than on the west side; however, there are splendid river bottoms along the Couchpegamish, which will make fine farms later on.

I completed my operations in the township of Caron, by continuing the centre line as far as the upper range line of this township, which I found at a depth of seventy chains and ninety-five links.

The land is generally level, and consists of yellow and grey mould mixed with rocks and covered with a fine growth of mixed timber. The view extends as far as Lac de la Belle-Rivière, which lies to the south east, at

about three-quarters of a mile from the range line and forms with la Belle-Rivière a large and important valley, well suited for colonization.

I deemed it advisable to extend the grand line between the augmentation of Mésy and Mésy proper, from the post marked number one, on the third range west, and number one of the third range east along the same course as it follows lower down, that is to say, on a magnetic course south by 32° west, (variation 17°) and serving as the centre line for my operations in this township

I continued this line to the depth of the fifth range, running the separating lines to the depth of the third and fourth ranges, dividing them on the west side as far as the centre line of Caron, and on the east as far as number twenty-seven, inclusively.

After exploring all the part east of number twenty-six, I judged it advisable, from the inferior quality of the soil and the mountainous aspect of the country, to not continue my operations any further on that side; but I prolonged the centre line to the sixth range to ascertain the quality of the land in the rear. I found it suitable for cultivation and the formation of a double range along la Belle-Rivière as far as the lake of the same name.

I scaled by chaining lake Camelin near the line of Caron, which is surrounded by fine land and famed for, the size and quality of its trout.

Lots number one of the fourth and of the fifty ranges of Mésy are irregular on account of the inclination of the outline of Caron.

The conclusion to be drawn is that the land which I have just subdivided, though not as rich and as level as that in the first subdivided ranges of this township, is yet of a superior quality for the growth of wheat, barley and potatoes. Timber of all kinds, such as is met in the other parts of the county of Chicoutimi, is found here of unusual size and height, especially in the valley of la Belle-Rivière and along its tributaries. Mill sites are numerous, and timber suitable for building purposes is found everywhere, notwithstanding the lumbering operations of the firm of Price Bros.

The mountains and rocks met with and which will be always barren monopolize about one quarter of the area subdivided; but the timber with which they are covered will more than repay the settler for his trouble, if, profiting by the experience of past years, he exercises more prudence and discernment than others similarly situated have done, by consulting his future interests before destroying the forest forever.

(*P.-H. Dumais*, January 31st, 1871.)

Township of Dalmas.

General Remarks on the Line between Ranges 2 and 3.

From the river Moreau to lot 30 and from lot 47 to the Great Peribonka, the ground is absolutely flat, without rocks, mountains or even undulations. From lot 57 to the Great Peribonka, yellow earth, and strong black loam; large growing timber of all kinds, spruce, balsam, white birch, alder. From lot 30 to the Little Peribonka, a flat and very irregular surface, strong first class clay soil, covered with fine timber, such as large aspen, ash, birch, white birch, spruce and white balsam.

The bush is open. Alders, hazel, currant and gooseberry bushes grow all over. The rivers Little Peribonka and Moreau have no beaches.

From lot 31 to lot 46, the land is a great barren swamp. At a depth of 10 to 15 inches, hard strong loam is found. This swamp is uniformly covered with small gummy spruces.

The first range, a part of the second and a part of the third, on the plan, are of yellow loam or of black loam mixed. All drained by the river Moreau is of strong first class loam.

Remarks on the Centre Line in the Second and First Ranges.

From the swamp to the Great Peribonka, the surface is flat and without a rock; yellow soil, black soil and strong loam; fine growing timber: cypress, spruce, balsam, white birch, &c.

The banks of the river Peribonka are not steep; still they are 35 to 40 feet high.

At the point where the centre line intersects the river, the slope is precipitous and sandy. On this slope, the surface of the soil is perfectly smooth and the land is good without obstacles of any kind except the swamp just mentioned.

The Great Peribonka is a shallow river, with a width of nearly a mile. In some places, it is obstructed by sand banks. This river is navigable by schooners and steamboats as far as the first falls, 16 miles from its mouth.

Remarks on Range 6.

Good strong loam and fine timber, white birch, balsam, spruce, except where there are rock ledges, but these are not extensive; strong loam, level and without a single rock, fine timber, spruce, birch, aspen, &c.

Remarks on the topography of the land traversed by the Centre Line.

Apart from the swamp and the small rock ledges already indicated, in the sixth range, the land is flat and of good quality. Strong or mixed loam. No rocks. The soil is excellent for cultivation. The timber is large and splendid. The rear ranges are better than the front ranges.

The land traversed by the line between ranges 3 and 4, from the centre line to the Great Peribonka, apart from the swamp, is splendid. It is a strong clay loam, with a very level surface. There are no rocks or mountains. The timber is large and tall and still includes some merchantable wood, although nearly all the pine and spruce have been cut off.

The land traversed between ranges 4 and 5, like all the other land traversed from the beginning of the survey, is absolutely flat; there are no hills, undulations or mountains. This range is nearly all strong loam, without a single rock anywhere. This magnificent tract is generally and abundantly covered with large timber, consisting of white spruce, balsam, white birch, birch, ash and aspen.

On the soil, at the foot of these great trees, grow alders and currant bushes in many places. The valley of the river Moreau is really magnificent in every respect.

Remarks on the Line between Ranges 5 and 6.

From the centre line to the little river Peribonka, the ground is flat; yellow loam, black loam and strong loam. This part is not all first class. The growing wood is fine. The remainder of the range from the centre line to the Great Peribonka is composed without distinction of strong loam, very fertile and very flat. I could not find a single rock on it.

General Remarks on the land traversed by the Centre Line between ranges 6 and 7.

In the first place, here, as everywhere else on the survey, there is not a single rock. Strong loam almost without exception, very flat, and consequently very fertile and advantageous. A strong growth of timber of all kinds covers these fine lands. There is still a good deal of merchantable spruce, but the pine has all been cut off by the Messrs Price. There is a great deal of merchantable birch.

This line, like the others already surveyed, traverses an extremely fertile country, whose value is greatly enhanced by its timber.

Remarks on the land traversed by the last Range Line.

In the first place, no rocks. I did not see one anywhere, except on three or four lots. No mountains either. Soil generally black loam; in a few places a little yellow loam. No sand. Surface flat. Prevailing woods are white spruce, tamarac, white birch, balsam, aspen, birch and ash. This rich land is the finest in the Saguenay country.

From the discharge of lake Moreau on lot 24 to the Great Peribonka, the land is generally flat, of good quality, and fit for cultivation; growing timber of all kinds.

(*Geo.-B. du Tremblay*, 28th October, 1888).

Townships of Dalmas and Taillon.

I have the honor to submit the following report touching the lands surveyed by me to the north of Lake St. John, in the townships of Dalmas and Taillon.

The ground surveyed covers a superficies of 39,952 acres and 8 perches and is situated on the average latitude of 48° 45' and 40° 45' longitude.

I am happy to be able to inform you that this tract, together with the surrounding region, is superior to all the arable land previously surveyed by me. I can state that, both in point of richness of soil and extent, it is a marvellous country, superior to all the rest of the Lake St. John district; it

is, perhaps, the most fertile and advantageous section of the whole Province, and from it the Government may look for fine results in the development of colonization.

It would be out of place to here enter into the details of the field book, relative to the quality of the soil, timber, topography, &c., because the surface is uniformly flat, the soil a strong loam, and growing all such large timber as is peculiar to a vegetable or alluvial soil. A small part, however, on the front of the township, as indicated on the plan, is of yellow mould. Here only, on this space of ground, grow cypress and red pine in abundance and to a large size. The other woods, of which the forest is composed everywhere else, are white spruce, tamarac, black spruce, white balsam, which grows in cold, wet land, and another species of balsam (*Pinus Lambertina*) which attains enormous dimensions. White spruce is the commonest wood and frequently reaches 35 inches in diameter. There is a good deal of aspen and Canada poplar, in the neighborhood of the Little Peribonka, which is of fine dimensions.

The hardwood bush is composed of enormous birches, white and red *bouleau*, ash, cherry, soft maple, black willow, &c.

The large trees, of which the forest is composed, are remarkably open but at their feet there is a vigorous growth of currant, gooseberry and other small bushes. Fortunately, in pleasant contrast with other parts of the Saguenay, fire has not yet run through these fine forests.

The merchantable timber, especially the pine, has been cut off. I was surprised to find in the interior and to the north of the township the remains of old lumbering establishments where there never seemed to have been any license granted for cutting the timber.

I never saw a better watered country. There is a multitude of brooks and small rivers flowing over strong clay and in very low beds, but their banks are not steep and they have no beaches. The falls of the large rivers are capable of furnishing extensive hydraulic powers.

This fertile, picturesque and promising tract extends for about 45 miles to the north. I myself saw Lake St. John 14 miles distant from where I stood, and the immense plain extends without a break in all directions as far as the eye can reach. We can count upon having an area of some 600 square miles, to the north of Lake St. John, of perfectly level and fertile arable land, capable of forming fifty parishes.

I do not believe any minerals exist there. Nevertheless, I remarked in the township of Taillon a bed of marl which appeared to me to be valuable for agricultural purposes and as a substitute for plaster. In any case, immediate use can be made of it to whitewash buildings, both inside and outside. I noticed no limestone, but on the banks of the Great Peribonka, there is some fine building stone of a rare and beautiful color. Nearly everywhere also there are sedimentary deposits, which would constitute good brick-making material. At river aux Cochons, there is an abundance of very fine clay and other refractory sediments suitable for the manufacture of a superior brick and common pottery.

The climate is magnificent, the vast surface of Lake St. John playing an important role in modifying the temperature. Another cause which operates in favor of the temperature of this region, from the standpoint of the ripening of cereals, is the length of the days in summer.

The length of the days in summer increases with the latitude in the following proportions :

Latitude	Longest days	Longest nights
45°	15. 6 hours	8. 4 hours
50°	16. 3 "	7. 7 "
55°	16. 3 "	6. 7 "
60°	18. 7 "	5. 3 "

From this table, it will be readily noted that to the north of Lake St. John, in latitude 48° 45', the summer days are longer by about 22 minutes 40 seconds than at Quebec in latitude 46° 48'.

Such is the character of the climate and the fertility of the soil of this vast region of Lake St. John that it should become a great colonization centre, especially with the aid of the new railway and a steamboat performing a regular service on Lake St. John.

(*Geo.-B. du Tremblay*, 25th October, 1887.)

Township of Delisle.

Having given you an account of my proceedings, I will now make a few remarks on the topography of the country, the quality of the soil and the best way to promote colonization in that section of the Saguenay.

From the starting point of the line between the townships of Taché and Delisle, on the north bank of the Grande Décharge, as I have already remarked in detail in my field book and report of progress number one, the surface in general is broken. The great number of streams which I intersected in my way accounts for the unevenness of the surface and for the same reason the soil is remarkably good and arable; I do not think it worth while to take the few rocky sections in that part of my survey into consideration, because they are all detached from each other, few in number and of very small extent, leaving the land throughout in all respects free and easy to cultivate.

This topographical description will answer from the banks of the Grande Décharge to the vicinity of the sixth mile post, after which the soil is poor, being composed of coarse white sand and a few swamps, with the exception of the piece of land in the vicinity of the Rivière au Brochet, the banks of which are wooded with large and tall mixed timber and the soil composed of clay. The merchantable timber which was abundant some years ago has since been cut and removed.

Along the rear line of the township, the country has in general a more even surface, but the land cannot be recommended, with the exception of a few narrow strips, as it has a sandy soil and grows nothing but cypress, black and grey spruce and dwarf white birch.

The surface along the main west line of the township of Delisle is broken up by deep gullies, but the soil is of the richest kind, being composed of fine clay with a slight mixture of marl, which may be termed excellent arable land, except in the vicinity of the north west angle of the township where the soil is completely destitute of all vegetation save on a few spots on which stunted black and white spruce and white pine of inferior quality prevail.

The description of the country along the west line of the township does not vary much; it is generally uneven. The soil is composed of fine clay with a marl sub-soil, the timber consisting of fir, black and white birch, brushwood of all descriptions, including a mountain covered with

ash, merchantable spruce, and white pine particularly on the high spots on each side of the stream which I crossed. I also came across some detached rocks on this line, but they are of very little consequence as they are few in number, scattered, and take up only a very small area of land.

As I approached the Grande Décharge with the line, I crossed certain tracts, which were wooded with nothing but cedar of a large size, but too crooked to be valuable.

The island of Alma is one of the finest parts of the County of Chicoutimi; it is in general low and thickly wooded with large and lofty mixed timber, the soil in general being a rich loam with a slight mixture of clay. It is my firm opinion that there are not two hundred acres of waste land on this island. Yet with all these advantages it will not be inhabited for some years on account of the difficulty of the communications by the Grande Décharge, which is difficult and toilsome, particularly when the water is high, as is generally the case after a couple of days' rain.

As for the topography of the interior of the township of Delisle, it does not differ much from that on the main line.

The country on each side of the line dividing ranges A and one has a rolling surface, except in the vicinity of the Grande Décharge, where there are a few rocks. The country slopes irregularly towards the south west. The soil is composed of loam, and the timber consists of black and white birch, spruce, and fir, all large and lofty. When I surveyed this part of the township, scattered white pines were yet to be seen, but they have since been removed by lumberers.

The country traversed by the line dividing ranges one and two from number one to number fourteen does not differ from that latterly described; it is uneven from number one to number fourteen. The neighborhood of the Grande Décharge explains this unevenness of the surface, but the soil is of a superior quality and suitable for agriculture. The timber is large, lofty and mixed.

The country crossed by the lines of ranges two and three and three and four is of the same description. The surface is generally uneven, particularly in the vicinity of river Mistock and river à la Pipe. The timber is large, lofty and mixed. The soil is loam except at the bottom of gullies where it is blue clay. The western part of ranges one and two from lot number thirty-three to forty-nine crosses a country well suited for agri-

cultural purposes. Many white pines of good quality are to be seen on both sides of the line and the soil does not differ from that already described.

The immediate borders of the north bank of the Grande Décharge are high and rocky from number one to number ten. Briefly, the banks vary in height from number one to forty-nine; in some parts the appearance is poor, but it changes and is of a better quality at some distance to the north of the bank.

The small islands, with the exception of number one and number eight, furnish fine tracts of land and are generally low and wooded with black and white birch, fir, spruce and brushwood; the pine still remaining is of inferior quality. The best mode of disposing of these islands would be to sell one or two to applicants. Island number one, the largest of the small islands, is thickly timbered with cypress, spruce, fir and red pine, besides enough good white pine to make a thousand or more logs. The banks are generally rocky and high. The island itself is of very uneven surface and it is very seldom that it is accessible. Island number eight is utterly worthless, being composed of a poor sandy soil. The island in the south channel or La Petite Décharge at the head of the slide is partly cultivated by Damase Boulanger, slide-keeper; one half of the island is rocky and waste land. The said Damase Boulanger claims as squatter about two lots of land on each side of the prolongation of the line between the townships of Signal and Labarre, upon which he has raised a good crop of barley, peas and hay; the climate after this test can be called favorable for agriculture.

Both the Petite and the Grande Décharge offer a great advantage to settlers by the quantity of fish of different species which abound in their waters, such as pike, ouananiche and pickerel, &c., &c., particularly about the island on the borders of Lake St. John.

(*Edmond Duberger*, 29th April 1861).

The soil of this township is composed of strong yellow mould, with a clay sub-soil, which forms first quality land. There is a spruce grove along the centre line, at the depth of ranges four and five, on a part of range six and on the line of range six. This spruce grove stretches over a dozen lots of range seven, which are swampy. The remainder of the ground is very good and altogether free of rocks. No ash could be found to make boundaries,

and the pieces of crockery are under the posts, at the spots where there should be boundaries, according to instructions.

There are some very heavy gullies along rivers aux Harts, des Chicots and Mistock. The rest of the land is very level.

The soil is wooded with balsam, white birch, spruce, &c., but there is no pine remaining.

The area of the ground surveyed is 17,500 acres.

(*William Tremblay*, 1886.)

Township of Demeules.

I have the honor to submit the following report on the topography of ranges 5, 6 and 7 of the township of Demeules, which I surveyed according to your instructions.

Distant four miles only from the parish church of St Félicien, with an outlet also on two summer roads, these three ranges form one of the most central and advantageous localities.

The central part, however, which includes about one-third of the surveyed area, is almost unfit for agricultural purposes, being stony and rocky.

The first part, shown on the plan, is not what might be called hilly, though very irregular, with a full-growth of small cypress, red birch, wild-cherry and other stunted shrubs. At the best, it could only be classed as wood land.

The second part, shown on the plan as a subdivision of the first, is a burnt tract of land, unfit for colonization and valueless, at least for the present.

The north-east, north-west and south-east parts, being the two-thirds or remainder of the area surveyed, are of a superior and rich clay soil, more especially the north-west portion which is also very level and without any obstructions to colonization, besides being covered with a variety of timber.

White spruce is abundant and can be converted into merchantable timber. Cypress is large and plentiful and can also be advantageously used.

To sum up, the two-thirds of the land surveyed are of good quality and fit for colonization purposes, while the remainder is not.

(G. B. du Tremblay, October 12th, 1885.)

Township of DeQuen.

The part of the township of DeQuen which I surveyed, in rear of the fourth range, between lake Bouchette and the Metabetchouan river, has a superficies of 35,879 acres.

I am happy to inform you that this township of about 100 square miles is as a whole adapted to cultivation, wooded with fine timber, and saleable as farm lots.

Ranges A, B and C, a part of the fifth range in the valley of the Metabetchouan river and a portion of ranges eight, nine, ten, eleven, twelve, thirteen and fourteen, as indicated in yellow on the plan, are extensive tracts of first class strong clay soil, without any hurtful obstruction whatever. There are no rocks, hills or mountains.

The residue of the township, shown in red on the plan, is generally composed of rocky yellow loam, frequently broken by irregularities or small rock ledges; but these only occupy a small space. Nevertheless, I can recommend this part as sufficiently good to be sold advantageously and without loss.

A third part, comprising about a twenty-fifth of the survey, being cut up by a succession of mountains and steep, bare rocks, is consequently unfit for tillage, as the whole appears in detail on the plan.

This township is covered with fine growing timber of all kinds. There are, however, three *brûlés*, which figure on the plan in all their proportions. There is a considerable quantity of large merchantable white spruce in the two valleys of arable land indicated in yellow. I also noticed the presence of all the Saguenay woods, which only grow on the best lands.

The second class of land, represented in red, is wooded with the following timber in the order of their abundance: balsam, white spruce, tamarac,

white and red *bouleau*, birch, ash, common alder, mountain ash, black spruce, red ash, swamp ash, black ash, yellow birch, cherry, Canada poplar, red pine, cypress, soft maple, black willow and aspen.

About 10,000 spruce logs were cut this winter (1885-86) by jobbers inside the outlines of the township, and as much more seems to have been removed in previous years. As these lands are not under license, the wood ranger in charge of the division must have informed you of the fact.

This township is watered by the river Metabetchouan, the river Noire, the river à Prudent, the Noisy river, (*Qui mène du train*), lake St. Paul, and by several splendid brooks. There are several mill sites on the Metabetchouan river. The lakes generally abound in fish. Their waters are pure and they occupy a total superficies of 917 acres, 3 roods and 38 perches.

The squatters who have made some clearings at the depth of the fifteenth range, as well as the settlers on the banks of lake Bouchette, speak favorably of the climate.

This tract, which is actually the most important of the entire valley of Lake St. John, by reason of its position on the line of the railway, will before long be a centre of settlement on account of the railway.

(Geo. B. DuTremblay, 26th June, 1886.)

I have the honor to present the following report as an accompaniment to the final report of the survey of the ranges eight, nine, ten, eleven, twelve and thirteen of the township of DeQuen.

These six ranges are the finest of the township and represent a total superficies of 1,484 acres, including the space occupied by the lakes, which amounts to 1,654 acres.

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TOPOGRAPHY AND SOIL

I am happy to inform you that this part of the township is composed of vegetable soil well suited to tillage and wooded with all the kinds of timber that grow in the Saguenay region.

The greater part of ranges eight, nine, ten, eleven, twelve and thirteen is generally composed of strong loam or other fertile vegetable soils. There

are a few rocks in some places ; but there are no mountains or any other obstruction. The ground is level or rolling.

The rest of the subdivided ground is rocky, with a generally poor soil, composed of yellow mould mixed with sand or gray mould. This part is somewhat obstructed by small rock ledges. The mountains are few and small. I recommend, however, this last part as capable of being advantageously sold to settlers.

A third part, comprising about one sixteenth of the surveyed area, is broken by steep and barren rocks, and seems unfit for tillage.

FOREST AND WATER COURSES.

All this tract is wooded with a rich growth of timber. I noticed some fine white spruce groves, which might supply several lumbering establishments during several winters, especially along the river à Prudent and the Metabetchouan river, where jobbers cut about 10,000 logs last winter, although the land was not under license.

I found two *brûlés*, which, like all the other topographical details, appear on my plan.

The forest fires which rage from season to season cause more destruction and do more damage to the Saguenay country than does the lumbering industry. The frequency of these fires has also for injurious result to destroy the organic matter in the soil.

This part of the township of DeQuen is watered by the river à Prudent, the river *Qui mene du train*, by lakes à la Passe, aux Rats, au Portage, à Morin, à Ouitouche, aux Cariboux, Long and St. Paul and by several brooks which traverse it in all directions. The banks of these lakes and rivers are low.

When these lands are offered for sale, it seems clear that they will be readily taken up by settlers, the qualities of the soil and forest, as well as the position on the line of railway, assuring this result.

(Geo.-B. du Tremblay, 7th August, 1886]

Township of Dolbeau.

The following remarks apply to the resurvey of Point Pérignonka, that is, the latter part comprised between station 51 and station 79.

The banks of the river are everywhere low and consist exclusively of strong loam. They are covered with spruce, fir, elm, ash, aspen, black and white birch, &c. Not a single rock is seen, and the ground, which is flat and level, is of great value for agricultural purposes.

The forest is splendid. In the last mentioned part of my survey, I specially noticed a great quantity of spruce, suitable for logs; also some pine. I saw no mountains.

The following remarks apply to the scaling of the Mistassini river, which is included between the centre line and the township of Racine.

Its banks, generally low except opposite the Grosse Isle, consist of strong loam. The finest forest covers both shores. I saw a great quantity of white pine on the right bank, and one spot, near the centre line, is literally covered with the same.

Spruce is found everywhere, but not in great abundance.

This place, though not quite as good as the township of Dalmas, is very well adapted for colonization.

Neither rocks nor mountains are to be seen.

The following notes apply to the resurvey of ranges 2, 3, 4 and 5 of the townships of Dalmas and Dolbeau.

The banks of the river are low and wholly of strong loam. There is not a single rock, so that, considering the fertility of the soil, this river may be said to traverse one of the finest regions in the world.

The forest is fine and abundant and composed of elm, ash, Canadian aspen, poplar, currant-bushes, large black birch, white birch, &c., &c.

Altogether this is a very picturesque place, and farm lots are greatly in demand at the present time.

(*G. B. du Tremblay*, May 2nd, 1888).

Township of Dufferin.

The land opened up by the rear line is of good quality, generally level and the soil composed of a stiff clay covered here and there by yellow mould. It is also equally good in the 5th, 6th and 7th ranges, to the north west of the central line. The growth of timber, both hard and soft, in these ranges, is from 25 to 30 years old. The old trunks of trees found in different places prove that all these lands were originally richly wooded in hard and soft timber of large dimensions, the same as on the lands traversed by the lines drawn on the opposite side of the central line, where the fires have not reached.

Wild fruit trees are found every where, such as cherry, currant and wine. Roads could be opened through all the ranges profitably.

I would here suggest the immediate opening of a road on the central line, starting from the River Chamouchouan to the rear line, to facilitate the settlement of these ranges; a large number of settlers from here and elsewhere are waiting the opening of the road to settle there; its opening, with the addition of a road along the front of the township, would allow more than 300 families to settle immediately. They could locate themselves on lots, the soil of which is the richest that can be found, level, free from rocks, traversed in all directions by streams, and enjoying a climate superior to that of any locality near Lake St. John.

Lake "Witouche" abounds in fish, such as the "Witouche," white fish and delicious trout. The same remarks apply to the other lakes where trout is more abundant and superior in quality.

Good mill sites are to be found on that part of the river "au Doré" which intersects the reserve.

Throughout the whole course of my survey, I found the land through which I have run lines to be excellent, being every where a good stiff mould often overlying a layer of rich yellow mould over clay, and in some places a layer of coarse sand over clay. Every where the land is level and free from rocks.

I consider this township to be superior to all the others in this territory, as regards soil and climate. The lands are covered with hard and soft wood of good growth, birch, elm, ash, poplar, spruce, fir and some pine, wherever the fire has not passed. Part of the 4th range, between Dameules'

line and the central line, is composed of very rich soil, composed of a layer of sand, lying on clay, covered again by black mould, free from rocks.

The first range and part of the second and third have escaped the fire nearly to their whole depth. Fire has devastated certain parts of the two latter ranges in the vicinity of the Desmeules line, as also some large areas traversed by the line of the 3rd range, from the river Mouka, as far as lake Dufferin.

As I have already stated, the climate of the township of Dufferin is finer than that of all the other townships near Lake St. John, frosts occurring later in the autumn.

That part of the River Chamouchouan, called Pimonka, abounds in fish, of eight different species, viz: salmon, trout, doré, white fish, carp, loach, pike, and perch. The trout especially is of superior quality, abundant and large, measuring from 20 to 30 inches in length; it is called Mingouche by the Abenaki Indians.

The islands in this township marked A, B, C are covered in the spring and when the water is very high, They, as also D and E, are very well adapted for cultivation.

The most favorable site for a village would be on the front of the eleventh range, between ranges 1 and 2."

(*Gédéon Gagnon*. 25th March and 17th July, 1879.)

Township of Ferland

The part of the township of Ferland, which I subdivided into farm lots, has a total superficies of 26,200 acres. This township lies on the shores of Ha! Ha! Bay, at a distance of six miles from the village of Grande Baie and at an elevation of about 500 feet over the level of Ha! Ha! Bay.

Geologically speaking, the land in the township of Ferland has much resemblance to the townships of Bagot and Chicoutimi, that is to say, it is generally very hilly and broken. Numerous rock summits are met with especially along the St. Urbain road. These summits naturally encroach upon the arable land. In my opinion, the proportion of arable or valuable land in this part of the township is about 75 per cent.

The soil, generally, is a heavy yellow loam, of excellent quality and sometimes mixed with yellow and gray sand. As far as I could judge, the subsoil is generally sandy on the heights and clayey in the river valleys.

The ranges east and west of the *bras* Hamel will be the first settled as they are the most favorable. At the time of the survey, from 40 to 50 lots had already been marked out by proprietors at Grande Bay and St. Alphonse. As these demarkations were only the beginnings of clearings, in some instances, or consisted merely of posts or blazed trees in others, and as to make an exact report, it would have been necessary to fraction the lots, I deemed it advisable not to pay any attention to them and this, with the consent of the proprietors, whom I advised to wait and purchase regular lots as soon as they were offered for sale.

An old lumbering road follows the *bras* Hamel; but it has become much deteriorated by time. Nevertheless it furnishes a good commencement for a road which the Government might complete for a relatively trifling sum. This road would connect with the St. Urbain road at about 20 chains from the township of Bagot.

At St. Alphonse and Grande Baie there is a marked movement in favor of settling both sides of the *bras* Hamel, but the settlers are waiting until the Government comes to their aid in opening their road.

All the southern part of the township of Ferland, from the northern line of Boileau to lot No. 41, is wooded with fine growing timber, sound and remarkably long and straight. An inspection alone of this splendid forest gives unmistakable evidence of the fruitfulness of the soil. The prevailing species are bouleau, aspen, balsam, cypress, birch and ash near the rivers. The trees generally measure from 10 to 30 inches in diameter. From lot 40 to the south east line of Bagot, the bush has been burnt over about twenty years ago; the new growth is composed of bouleau, aspen, cypress, cherry, willow, &c.

The firm of Price, Bros. & Co. cut off and removed all the merchantable timber from this ground some years ago; but the young growth can still furnish a quantity such as aspen, bouleau and spruce, and the manufacture of this timber would materially help the settlers.

Mr. Joseph Pilote has on his farm on the St. Urbain road a tenant named François Gauthier, who has erected a steam saw mill to cut the bouleau into spool wood. This mill has been in operation for the last two

years, and Mr. Gauthier is doing a large business. Mr. Gilbert Lavoie is to construct, in the course of the summer, another saw mill on one of the splendid water powers of the *bras* Hamel.

(*Elz. Boivin*, 11th May, 1887.)

Township of Jonquières.

The prevailing characteristics of this region are generally of a favorable kind, with the exception of a few rocky spaces where vegetation was partly destroyed by new and old fires, viz: in rear of the lots between number thirteen and number eighteen, in the eighth range and from the southwest bank of Rivière-aux-Sables, also in the eighth range, to the vicinity of the lakes. The remainder of the land crossed by the range line is good in every respect, although it contains a narrow strip of swamp which could easily be drained.

The timber consists of white birch, white spruce, fir, with some tamarac and brush-wood. There are a few maples, but for, some unknown reason, they are sapless and dried up. All through Saguenay and Chicoutimi, the maples are affected in like manner.

The soil consists of an excellent yellow loam with a rich grey sand on the level parts of the valleys as well as in the neighborhood of streams, whose banks are lined with alders.

The land is rich clayey or marly and very well adapted to farming purposes. The region crossed by the division line, between the eighth and the north ranges, is generally hilly, but the soil and timber are as good as the above. These remarks can also be applied to the south east side of the river, which offers all the advantages capable of rewarding the arduous labors of a courageous settler.

If we can judge from the great numbers of lumbering roads and the prodigious quantities of pine stumps, this region must formerly have been very rich in pine. However, considering the large quantity of inferior pine still remaining, the inhabitants from a far or near, who possess a fair amount of courage and patience, will still be able to procure some, by going from one old lumber shanty to the other, which would be of great assistance to those whose means are limited.

(*Edmond A. Duberger*, 1865.)

Townships of Labarre and Kenogami.

I have the honor to transmit you my report of the survey of the arable part of the residue of the township of Labarre, as well as of the subdivision of a part of the ranges north and south of the township of Kenogami, executed in compliance with your instructions of September 2nd, 1871

At fifty chains from the first mile of the seventh range, the land, which in that part is of good agricultural quality, suddenly changes and presents nothing but denuded and barren rocks, the fire which has ravaged the whole of this region having, at the same time, destroyed all power of vegetation. The desert created by those conflagrations allows the eye to take in several miles presenting everywhere the same appearance of sterility. Convinced that to pursue explorations any further would be a useless outlay for your department, the land being unfit for settlement in this direction, I stopp'd work there, and continued the survey of the line run between lots eighteen and nineteen during the original survey.

Except the three-quarters of the eighth range and some small strips of fertile soil, the central line presents throughtout nothing but land unfit for cultivation, and broken by rocks which the fire has swept of all vegetation.

Disappointed in the hope of finding, on this side, a good space of land sufficient to warrant my survey and the subdivision of the remainder of the township of Labarre, I hastened to terminate the survey of the line between the ranges six and seven as far as the intersection of the range line of the Saguenay range, south east of the Grande Décharge.

On the Saturday and Monday following, I finished the subdivision of this range, commencing at the centre line and going on as far as the Saguenay range.

Starting from number one of the front line, the land is of good agricultural quality, timbered with fir, white birch and spruce, as far as number seventeen, where it become rocky and very broken and altogether unfit for settlement. At the twenty-fifth lot, it again changes. The soil here is of the best quality and covered with a rich vegetation, continuing thus as far as the Saguenay range.

Encouraged by such good land, I pushed on a line of exploration in the direction of the alignments between lots twenty-six and twenty-seven for a mile in depth with the intention of subdividing the arable part on

this side, however small it might prove; but I was not luckier than before, seeing which, I decided to suspend my survey altogether in the township of Labarre.

I engaged a man to show me some traces of the lines between lots nineteen and one of the south range of Kenogami, which was to be my base line for the survey, which I was about to undertake in this part of the township.

In this tract the soil totally devoid of vegetation, in consequence of the fires which have alternately ravaged this part of the country, is rocky, presenting here and there some strips of good farming land, but which are too small.

I scaled lake Kenogami and ran a perpendicular of about one hundred and seventy chains and forty links, calculated for difference of latitude and departure. Having only scaled the Kenogami road, which follows the banks of the lake, and taken a considerable time which the bad quality of the land was far from justifying. I subdivided the lots by following the banks of the lake, placing only a single post to correspond with those put down at the depth of the south range during the original survey. I scaled the lake also on the same day, making at once a partial subdivision of the lots to numbers sixteen and seventeen, where I ran a trial-line as far as the intersection with the old line of the road, at thirty six chains and thirty links from the banks of the lake. The land along this line has no agricultural value whatever and is totally stripped of growing timber, except near the post marked sixteen and seventeen, where the humidity of the soil has protected it against the ravages of the bush-fires.

I subdivided twelve other lots, in the manner above indicated, and then moved camp three miles more to the east, to lot number thirty-seven.

I succeeded in clearing up a trial-line run in the original survey, which I measured for fifty chains and four links as far as the present Kenogami road, as appears by the old division posts and the alignments found on the land at the distance above mentioned.

Along this line, the land is rather of a good quality. Seven chains and fifty links towards the depth and across the whole width of lots 33 and 34 are under cultivation, and the remaining part is timbered in fir, black and white birch, &c.

I continued scaling the lake, as far as the crossing of the trial-line, between lots thirty-four and thirty-five, which I found to correspond exactly with one another.

I ran, moreover, on that day a front line on the banks of the lake in order to ascertain the width and extent of the land cleared. I divided the lots thirty-two, thirty-three and thirty-four, assigning to each of them line posts.

In all this part, excepting lots thirty-two, thirty-three and thirty-four, which are taken up, the farms have no value of any kind, being moreover stripped of timber in consequence of the fires and the lumberers.

I completed the survey and subdivision of this part of the south range, as far as the Jonquières' line, running temporary lines between lots thirty-eight and thirty-nine, forty-four and forty-five, fifty and fifty-one. All the farms are taken up and partly occupied in this part of the township from lot number thirty-two inclusively to the Jonquières' line. Though they are not exceedingly fertile, yet the settlers, who have made some clearings, are sufficiently rewarded for their labor, thanks to the mildness of the climate, which protects their harvests, even late in the season, against the disastrous effects of the autumn frosts, so injurious every where else.

I had dismissed my men when your letter, dated January 6th, instructed me to survey the present Kenogami road.

The road runs through fairly level land, but the soil, on either side, is worth nothing for agricultural purposes. The eye rests only on barren rocks, interrupted here and there by narrow spaces, where the land seems good enough, though alternately sandy and swampy. Except the lots thirty-one, thirty-two, thirty-three and thirty-four, which are taken up and upon which some clearings have been commenced above the river Kaskauia, which crosses them diagonally, I do not think that the north or south range offers any inducements to settlement in this part of the township Kenogami; but, going east, from the said point, as far as the outline of Jonquières, the lots are partly taken up and clearings have been commenced on some of them. Consequently, I surveyed and divided them in compliance with your instructions.

As can be seen from the statement annexed to the present report, or from my field-notes, all or most of the lots, in this last part of the north range as well as in the corresponding part of the south range, are taken up, but, up to the present, none are occupied, except numbers thirty-eight and

fifty; in the north range; the chapel, which serves as a mission and is attended by the parish priest of Rivière-aux-Sables, is built on lot number fifty two, property belonging to the Fabrique of St. Cyriac. The inhabitants, who are now nearly all located on the bank of the lake and retained there by the beauty of the site and climate, as well as by the great advantages it offers for fishing, must certainly, ere long, move nearer to the road, where they can have better facilities for communication and as much, to say the least, as regards the climate and the fertility of the soil.

In fact, the clearings, already commenced along the part of the road now described show that the land is level and well-wooded, and the soil of good quality. Judging from the crops, already obtained by the hardy pioneers who have tried their fortunes here, I have reason to believe that the settlers would soon find suitable compensation for their labors.

If the information received from parties who should be reliable is correct, concerning a certain tract of land situate in rear of this part of the north range, I am sure that, ere long, this part of the township of Kenogami will be invaded by a number of settlers, sufficient to form a parish possessing as many elements of prosperity as a great many other parishes of an older date.

(*J.-C. Demeules*, 15th April, 1872.)

In the township of Kenogami. I subdivided the first five ranges and in the residue of the township of Labarre, I subdivided the last four ranges, forming in all a superficies of 45,000 acres.

A large proportion of the land which I surveyed in these two townships is fit for cultivation and advantageous for colonization. The soil is not generally composed of alluvion. It is rather a mixture of yellow and grey or black earth, often mixed with sand. Such land is sufficiently fertile, and its first preparation for cultivation is not costly, on which account it is often sought for by settlers.

There are, however, some fine alluvial lands on each side of the river Bedard from the seventh to the tenth range inclusive.

The river Dorval also runs in great part through a fine valley of clayey and marley soil, traversing some remarkably beautiful meadows covered with wild hay.

IN THE TOWNSHIP LABARRE.

The 8th range from lot 17 to lot 27, inclusive.
 " 9 " " 14 " 21 "
 " 10 " " 17 " 21 "

IN THE TOWNSHIP KENOGAMI.

The 1st range from lot 12 to lot 33, inclusive.
 Range A " " 41 " 45 "
 Double range " " 24 " 43 "
 4th range " " 29 " 33 "

All this land is rocky and generally cut up by ravines, and is more or less worth clearing. The remaining lots are all susceptible of being advantageously cultivated.

It is to be regretted that the fires which too often occur in the Saguenay region have destroyed a very large proportion of the timber which formerly enriched these lands. The birch, spruce and white pine which were so plentiful in this country are replaced by a new growth of white birch and poplar springing up among innumerable blackened and desolate-looking trunks of the former growth.

The middle part of the first range and part of the third, fourth and fifth ranges have escaped the fires, and nature there appears in all its richness and beauty.

With a view to encouraging the colonization of this territory, it would be necessary to make the proposed road from Jonquieres to the slides across these two townships. The opening of this new means of communication connecting the settlements of the upper Saguenay with those of Chicoutimi would be a great advantage to the colonization of this section.

Several settlers have made here some small attempts at cultivation. Others have made more considerable improvements and sown grain. They appear satisfied with their success and speak highly of the climate.

I laid out a double range between the seventh and eighth ranges of Labarre and between the second and third ranges of Kenogami for the convenience of the roads proposed in the interest of the settlers.

(G. B. DuTremblay, 26th June, 1881.)

Townships of Labrosse and Albert.

During the whole course of my explorations, I noticed that the land, along the lines I ran, is of good quality, consisting in certain places of black or strong loam and in others of rich yellow mould. There are nevertheless some parts where the land is rocky ; but, generally speaking, the whole is fit for cultivation and suitable for settlements. The timber consists of hard and soft wood, such as black and white birch, ash, elm, white and red spruce, white and red pine, fir, &c.

The chain of the Saguenay capes is in great part rocky and unfit for cultivation throughout a distance varying from one mile to fifteen chains from the shore of the river.

The soil is mostly all level and of good strong loam on either side of the river Sainte Marguerite, from the centre line, in the township of Albert, to the north west line of the township of Labrosse, for a distance varying in these two ranges from two miles to fifteen chains in depth.

Along the portage between the river Saguenay and the river Sainte Marguerite intersected by the front lines of the second, third, fourth and fifth ranges, there are several mountains crossing on each side of this valley, from the Saguenay to the river Ste. Marguerite, where the land in several places is not fit for cultivation ; but everywhere else, along the lines I ran, the land is quite well adapted for farming purposes .

Colonization roads could be opened with advantage throughout all the ranges.

I will here take the liberty to suggest that a colonization road should be opened from the Saguenay, along the valley which crosses from l'Anse-du-Portage (Portage Cove) to river Ste. Marguerite, to reach the river settlements by the south side of the latter. This road would be of great advantage to settlers in the township of Albert.

The climate, in both townships, is good for colonization, frosts occurring only late in the fall.

All the lakes of these townships abound with trout.

The most advantageous site for a village reserve would be at the cove, opposite St. Denis.

Good mill sites exist along all the rivers of these townships.

The soil is generally fertile in the township of Labrosse, except in the parts along the river Ste. Marguerite, which are little fitted for farming purposes. I thought, however, that, for the greater accuracy of my lines, I should visit this locality as these barren lands form part of the others.

I must add that most of my survey, having been made at a season of the year when the earth is covered with a thick layer of snow, it was not always very easy for me to ascertain, in a positive manner, the different qualities of the soil.

(*Gédéon Gagnon*, 23rd September, 1864.)

Township of Laterrière.

In the north east part of the 11th range, the timber has been burnt off in different places and is therefore of little value. In the north range, the timber is of the same quality and has also been burnt off in some spots. All the land adapted to tillage has been cleared. Lot No. 19 in range 11 is rocky at its extremities. The mid-section is good and under cultivation.

(*Louis Gosselin*, 3rd August, 1876.)

Township of Métabetchouan.

Some settlers, encouraged by the favorable appearance of the land, commenced clearing ground particularly on lots twenty-eight, twenty-nine, thirty and thirty-one, where some clearings had been previously made in order to sow next season.

After traversing level land of good quality, wooded with white birch, fir and spruce, for twenty-five chains, the line crosses a small swamp running from east to west, meeting at the north-west, a small lake of about ten chains in length, and continuing through rolling ground, as far as forty chains from its starting point. At this point, the soil is of good quality, and the land, as well wooded as hereinbefore stated, becomes level and preserves the same aspect to the end of this mile at the intersection of the line between ranges two and three.

Thence, following a direction south $17^{\circ} 3'$ west, astronomical, as well as that part of the centre line just described, the land is generally level, though sometimes slightly undulating. It consists of good yellow mould fit for cultivation and timbered with fir, spruce, white and red pine and cypress, on a space of seventy-three chains and fifty links, when the line enters a burnt tract (*brulis*) of old date which extends east as far as the Metabetchouan river and beyond it.

The part of the line, between ranges two and three, which I surveyed, as well as the subdivision eastward, consists of slightly rolling land of good quality and wooded with fir, white birch and spruce and some pine of inferior quality; the latter spared when lumbering was carried on in this quarter only on account of its slight value.

The middle part of lot twenty also forms part of a burnt tract (*brulis*) several years old, which extends south and east, along the centre line, to the river Metabetchouan, whose precipitous and rocky banks are of such difficult access, and the course of the river so rapid and so deep, that I thought proper to end my survey here, deeming it impossible to cross to the other side even to regularly extend my line.

From the post situated between lots twenty-eight and twenty-nine, following a course north $72^{\circ} 30'$ west, astronomical, the land, in spite of slight undulations occurring in several places, is nevertheless quite suitable for colonization purposes.

Where bush-fires have not extended, the timber is of fine size and consists generally of white birch, fir and spruce. As for the pine, the lumbering, carried on on a large scale some years ago, has not spared one tree of any value at present.

At seven chains and twenty links on the thirty-second lot, the line is interrupted by a small lake measuring a few rods in superficies, and meets no more obstacles until it strikes the forty-second lot, where it crosses lake Brûlé in an oblique direction. The last mentioned lake measures eleven chains, sixteen links in width and about thirty chains in length, on a north and south course. The banks of this lake seem to be very fertile, and are covered with red and black spruce, white birch and fir, except on the east side which was ravaged by bush fires some years ago.

From this point, the line follows land slightly rolling in some places, and occasionally covered with spruce, balsam, white birch and aspen on the spots where fire had not totally destroyed the trees, and strikes

the line of Metabetchouan and Charlevoix without meeting any other obstacle, at thirteen chains and fifty links south of post number one, situated on lots two and three of Charlevoix township.

From post twenty-eight and twenty-nine, at the intersection of the front line between ranges three and four and the centre line prolonged as aforesaid, the land, near the river, is of good quality over a space of about twenty-six chains. Then it presents nothing but a steep, bare rock, on the west as well as on the east side by which the river is reached at a distance of thirty-eight chains and fifty links. The river's breadth at this point is trigonometrically, six chains and forty-two links and its smooth current broken only by a small island of one acre in extent, can easily be crossed, on rafts.

Starting from number twenty-nine, on a westward course, the land, slightly rolling, is timbered with fir, spruce, white birch and aspen, for nine chains and fifty links, where vegetation was found destroyed by fire; further on again some good land, but rather rocky and covered with growing timber until burnt tracts were again met, with all traces of vegetation obliterated, especially on the heights.

Beginning at the thirty-second lot, the land is generally more level and consists of good vegetable soil. At five chains on the thirty-fifth lot it becomes more rocky and loses all agricultural quality both on account of the rocks and the gullies which cut it in every direction.

However, at the forty-first lot, the land assumes a more level aspect, and though still very rocky improves as we go on. I assured myself, by an exploration line run here, that, at three or more chains in a south east direction, the land is of the best quality, quite suitable for agricultural purposes and moreover covered with white birch, fir and spruce of a fine growth.

From the forty-fifth lot, the land continues through hilly land, which the fire has also ravaged at different periods and which offers few or no attractions to settlement as far as the intersection of the line between Metabetchouan and Charlevoix which I reached on the fifty-seventh lot, at one chain and fifty links south of a post put down during the original survey and marked range three and N.

In the section, comprised between the river, in an eastward direction, and the line situated between lots eighteen and seventeen, which guided me in laying out lots perpendicular to the river, the land is of no value

whatever. We meet nothing but bare rocks and precipices, and moreover the fire has destroyed all trace of vegetation.

Starting from the point where I continued the line, on leaving the river, and proceeding on an eastward course, the land also presents a very poor appearance, being cut up everywhere again by steep rocks and with all vegetation destroyed by fire.

At fifty-two chains from the river the land is less rocky, but the fire has also passed here, extending east and west over several miles, so that the soil is also little adapted to cultivation till we reach a point situated twenty chains west of the sixteenth lot, where it assumes a better appearance. At five chains from this point, the front line enters the bush, which is composed of fir, black and white birch and spruce of lofty growth. The soil, consisting of yellow loam, is of good quality and suitable for settlement. Except for some slight undulations of the ground occasionally met with, the land continues thus as far as the east side line of Metabetchouan, where it strikes at eight chains and fifty links on the lot marked D, after crossing the line of the colonization road between Lake St. John and Quebec, at three chains and thirty links before reaching the aforesaid side line.

From the point of intersection of the line between ranges three and four just described with the line acting as the front line of the lots perpendicular to the river Metabetchouan, and which I will henceforward call "east centre line," following a north course $17^{\circ} 30'$ east, astronomical, the line goes through very hilly and rocky land, quite unfit for cultivation, as far as the river Metabetchouan, which is reached at sixty-six chains, and whose high and abrupt banks are very difficult of access. Coming from the west, this line abruptly changes its course and takes a direction almost parallel to the east centre line which intersects the front line at a distance of eighty chains and eighty links, after ascending the east bank of the river in an oblique direction.

The seventeenth lot, on which the river flows, has no agricultural value whatever; but starting from the sixteenth lot, in an eastward direction, the land, containing very few hills and consisting of a good quality of soil well adapted to farming, is covered with fir, white birch, spruce and white pine; the latter being very scarce to-day, for the reasons already detailed in this report.

Starting from the intersection of the front line with the ranges three and four, above described, and the line serving as a base to the lots perpendi-

cular to the river Metabetchouan, I lengthened it on a north course $17^{\circ}13'$ east between lots 17 and 16, as far as the intersection of the front line between ranges two and three, and, in order to run this line perpendicularly with the other, I had to pass the alignment line through very rocky and rather hilly ground little fit for cultivation as far as the river Metabetchouan, here hemmed in between two rugged mountains which we must descend and ascend for the purpose of arriving at eighty chains, eighty links at the intersection of the aforesaid line with the point dividing lots seventeen and sixteen, and which I extended in a perpendicular direction to the above described line on a south course $72^{\circ}30'$ east, astronomical, dividing regular lots as far as the intersection of the side line, east of Metabetchouan.

I ran a part of the base line at the division of the lots perpendicular to the river, near the line between ranges three and four, as far as the line between ranges four and five, a distance of eighty chains and eighty links, whither I moved my camp on the 16th, in spite of many difficulties occasioned by the numerous hills and windfalls.

Following the line used as a base line for the division of lots perpendicular to the river and styled "east centre line," from the line between ranges three and four, the land is slightly rolling and of inferior quality, especially towards the west side, which the fire has ravaged for six chains on the twentieth lot (of the east centre line), where we enter the growing timber here composed of spruce and fir.

Thenceforward the fire has stayed its ravages. Entering the forest, the line crosses a river, twenty-five links wide, flowing in a south-westerly direction. The nearer we approach the range line, the better the land becomes. It is timbered with fir, white birch, spruce and black birch of a fine growth. The soil is level, of good quality and fit for settlement, in spite of some very hilly tracts which continue so as far as the above mentioned range line, which is reached at sixteen chains and fifty links on the lot marked C, a distance of two chains east of the two branches of the river, the said branches meeting twenty chains lower down in a northern direction. Starting from the post marked ranges four and five, numbers sixteen and seventeen, in a south direction $72^{\circ}30'$ east, the land is level, but soon becomes more rolling, resuming not long after the same aspect as at the point of departure.

Generally speaking, this line presents a soil of good quality quite suitable for agricultural purposes, with alternately level and hilly land,

timbered with white birch, fir and spruce of fine growth. Numerous streams cross it perpendicularly, principally on lots thirteen, twelve, ten, three B. and D.

We only met a few white pines of inferior quality throughout this section, the lumberers having, some years ago, carried on extensive operations here and taken all that could be sold with advantage. The same thing may be said of the whole tract of land which I traversed in the township of Metabetchouan. This region, judging from the numerous pine stumps met with all over, has already contributed an immense quantity of pine timber to exportation and trade and whatever remained of it was totally destroyed by the fires which, at various periods, have swept the country.

Between ranges five and six, going east, the line follows slightly undulated ground, well wooded and, in spite of the snow partly concealing it, appearing of good quality and fit for cultivation, as far as ten chains on lot thirteen, where the alignment line strikes the side of a mountain whose slope, at first gradual, soon increases in abruptness until it forms with the horizon an angle varying between twenty-five and forty-five degrees, and at the foot of which we reach at six chains lot twelve, where the land becomes level and presents a soil of good quality suitable for settlement purposes and extending over a valley stretching south and north.

At seven chains, on the tenth lot, the line of alignment crosses a lake measuring nine chains and twenty links in width, running from north to south, and about forty-four acres in superficies, with flat banks, composed of rich soil, and continuing thus for a pretty good distance both in a north and south direction.

At a distance of eight chains and fifty links on the eighth lot, the land is more broken, though of good quality. The timber consists of white birch, fir and spruce, as far as the third lot, where, at the extremity of lot B, some swampy spots are met with. Thence to the end of the front line, which is reached on the lot marked D at thirteen chains and ninety-four links through an undulating and rocky soil, crossing five chains and twenty links on lot C, a river, twenty links wide, is met, flowing from north to south.

Leaving the post marked twenty-eight and twenty-nine on this last line, between ranges five and six, the land is level and well wooded, and the soil of good quality and suitable for cultivation, but on the thirty-first lot it becomes more broken and frequently cut by deep gullies, whose slopes often form, with the horizon, angles of thirteen to fifteen degrees. In spite, of all this, there is some possibility of forming settlements here.

At fifty links on lot forty-seven, the alignment line passes at the northern extremity of a small lake of seven chains and fifty links in width, at its widest point.

All along this line, the timber is of fine growth and consists principally of white birch, fir, spruce, cypress and red pine in the vicinity of the last mentioned lake, also near another larger one, which is reached at twelve chains on the forty-ninth lot,—total superficies, eighty-five acres.

The banks present nothing remarkable. Towards the north, they are covered with black spruce, a sure sign that the land is better and well wooded.

As far as the eye can take in the rear, the land seems mountainous and little fit for cultivation. Starting from this lake, the land is also hilly and of inferior quality as far as the side line of Metabetchouan and Charlevoix.

In the township of Metabetchouan, where I surveyed three whole ranges, viz: the third, fourth and fifth and that part of the sixth range situated east of the river, the land, without being of the best quality, is sufficiently good for settlement, and will be able to meet the wants of expansion of the present settlers, without, however, offering enough of advantages to colonization to attract emigration from the older centres of population.

The valley of Lake St. John still contains too many good lots in its western part for any one to be tempted to try such as are not of the best quality. However, thanks to its proximity to the Quebec road, which crosses it through all its eastern part, thanks also to the liberality of our Local Government, this township will not be long without seeing people flocking to it from all quarters and settling there in a permanent manner.

Lumbering in this township can promise very little for the future, but, if we can judge by the remains of camps scattered here and there, it has done its share in the past for the trade. There, too, as aforesaid, disastrous fires have, on different occasions, extended their ravages throughout the fourth and fifth ranges. Even the timber of inferior quality became the prey of the destructive element, so that settlers must expect nothing from this source and can only count on spruce and fir as materials for the construction of their farm buildings.

(*J.-C. Demeules*, 8th April, 1871.)

All this section (of ranges A and B and range 1) of the township of Metabetchouan has a slight slope towards the north-east and is one of the most advantageous localities to the south of Lake St. John, in consequence of its rich alluvial formation which consists of aluminum and silica, and, on the shores of the lake, of gravel, sand and mud containing boulders, pebbles, blocks of scattered rocks and numerous organic debris.

I also found on the bank of Lake St. John an ochrous clay or yellow ochre.

Wherever the interior of the soil is exposed either upon the slopes of hills or the shores of the lake, I remarked an immense bed of plastic brick clay, which dips a little towards the south as far as towards the middle of the first range and then changes into masses of grey granite rising gradually one over the other.

I extracted a piece of crystallized quartz, which seemed to me according to all appearance to contain silver. I have the honor to send you a specimen, together with different samples of clay which I believe to be of good quality enough to be advantageously worked.

I would like to have these different substances submitted to the analysis of the Provincial geologist, to whom you will please transmit them.

(*G. B. du Tremblay*, 30th November, 1874).

Townships of Metabetchouan and Charlevoix.

The soil in the sixth and seventh ranges of the township of Metabetchouan is very suitable for cultivation, being a rich yellow loam, and covered with a fine growth of hard and soft woods. In the fifth range, although rocky in some places, the land is susceptible of cultivation.

The residue of Charlevoix, comprising the seventh, sixth and fifth ranges, is equally fit for cultivation, being also a rich yellow earth, and very strong in different places, well timbered with hard and soft woods, and well drained, except along the river Ouiatchouan, in the fifth and fourth ranges, where the land is rocky for some distance. There is, however, about the rear lines, a sufficient extent of good land to induce settlement in these small ranges.

From my own personal knowledge I can say that the climate is as favorable for agriculture here as on the lands around Lake St. John.

The timber has been nearly all destroyed by fire along the river Ouiatchouan in the fourth and fifth ranges over an area of ten to twelve arpents on each side of the river.

The lakes that I met with are all well stocked with fish, chiefly trout.

There are several good mill sites on the river Ouiatchouan, and especially at the rapids marked on the plan, in the sixth range.

It will be necessary to open a road along this river, from the settlements on Lake St. John to the rear line of Charlevoix, and to continue it thence to Commissioners' lake, in order to colonize the lands in the townships of Charlevoix and Dablon and around the last named lake.

The road which was opened last summer in Metabetchouan allowed the new settlers to make considerable clearings in the sixth and seventh ranges, in which nearly all the lots will be sown next spring. It should, therefore, be continued as soon as possible across the township of DeQuen to Commissioners' lake in order to open this township to colonization.

(*Gédéon Gagnon*, 13th April, 1880).

Township of Normandin.

In order to comply exactly with the instructions which I had the honor of receiving, I went without delay to the principal outline of the township of Parent at its intersection with the river Tikouapee, on lot number forty-nine of the eighth range of this township.

The word Tikouapee means Andrew, and was given in memory of an Indian of that name, who, with his family, lived near the mouth of the river.

The scaling of this river, very variable in its course, has been made with the greatest possible care, in order to complete in a correct manner the subdivision of the seventy-six lots of nine chains fifty links forming the width of the township of Normandin.

The numerous turnings and windings of this river did not allow my operations to be carried on as expeditiously as I could have wished. However, I had the satisfaction of completing the subdivision of all the lots, which in the township of Normandin front on the river Tikouapee; this was done before the thaw or breaking up of the ice.

The first water-fall, which interrupts navigation on this river, is situated on lots thirty-nine and forty of the north and south ranges, towards the middle of the township of Normandin. The first mills must necessarily be built here, and this place is certainly destined to be the centre of settlements which will, ere long, cluster around this important point.

The village reserve, whose subdivision I took the liberty of recommending last winter, could not possibly have a more central, more advantageous and more important site than the proximity of this cascade, whose height is thirty feet above the level of the basin, which the water reaches after three successive falls of ten feet each. This basin consists of a beautiful sheet of water, four or five chains across, with a small island at its outlet. A branch of the river coming from the north falls into the Tikouapee on the second chain of lot number forty-nine, north range, by two narrow channels, formed by an islet at its mouth. This branch forks at about a mile from the Tikouapee. There are two valuable mill sites on the east branch at a distance of one mile from each other, without counting the others which must naturally exist on the other or west branch.

The division posts of lots fifty-five and fifty-six, north and south ranges, are planted near the second water fall, whose total collective height is about thirty-six feet. On lot number fifty-six is another small fall twenty feet high. The last cascade, met in the township of Normandin, occurs on the division line between lots fifty-eight and fifty-seven; its height is thirty feet; falling by steps or shelves, it forms an island and a basin.

The river Tikouapee proper taking on lot number seventy a more westerly direction, I continued the scaling of it and the subdivision of the lots along the branch formed here which comes from the north west. This last river, measuring seventy miles, is as large as the first and was more direct to terminate the subdivision of the lots, as far as the seventy-sixth lot, inclusive.

Having completed this part of the work, I moved as far as the post planted last winter at the north-west extremity of the grand line between the townships of Albanel and Normandin.

After extending the range line for two chains, I continued the outline of Normandin from the post planted lately at this extremity, on a southern course, fifty-three degrees west, astronomical.

I prolonged this line as far as the river Tikouapee proper, meeting correctly, on the north branch, the exterior posts of lots number seventy-

five, north and south ranges, on this line of Normandin, thereby giving to these lots their regular width of nine chains fifty links, and proving once more the correctness of the chaining and scaling of the river.

The north branch is at a distance of three hundred and five chains, eighty links from the grand range line and forty-eight chains separate the two branches of the river Tikouapee, as chained along the exterior line of Normandin.

Having terminated this survey, I continued the scaling of the north branch of the Tikouapee river, for a distance of six miles, the variation of the magnetic needle being twenty-four degrees west. This difference undoubtedly depends on the attraction exercised here and there by the rocks which seem impregnated with magnetic iron.

I also explored the land for some distance on each side of the river. I would have pursued my operations on either of the two branches, but a thaw set in, causing the ice to melt under our feet and the water to overflow, thus leaving us no alternative but to get out of the bush as quickly as possible.

I here suspended this exploration, waiting for new orders.

On the last day employed in this exploration, I met three lakes. My survey ended at the first of these through which the river Tikouapee flows on its whole length at the extremity of the sixteenth mile; the two other lakes are situated, one on the right bank of the river, the other on the opposite side.

I think that, in last winter's report, I mentioned that the river Tikouapee was situated near the grand range line between the townships of Albanel and Normandin, at a mile and a half from its western extremity.

The numerous branches, which form this river, and which were then partly unknown to me, gave me a false idea of the general course of the principal branch in the last section of the township of Normandin.

The branch represented on my rough plan of the township of Parent, sent to your department last winter, is really at the designated spot, but it is of such little importance and so difficult of access, choked with alders, and has so many windings and turnings that I thought it neither proper, nor prudent to take this direction for the subdivision of the lots.

A large burnt tract, situated inland and running north and south, ends on the north shore of the river Tikouapee, on number fifty-six, crosses this

river and at a few chains from it continues thus over a width varying from two miles to half a mile as far as a certain part of the township of Parent.

This fire took place two years ago, and its sad memory will be long retained by the poor settlers scattered here and there throughout the three hundred miles which it has laid waste between the upper part of Ashuapmouchouan and Tadousac.

In my last report, I gave you a precise idea of the value and importance of the townships of Albanel and Normandin from an agricultural point of view. The part, situated north west of these townships, and which I explored lately, while scaling the river Tikouapee which crosses this section, consists generally of the same kind of soil as that of the townships above mentioned, viz: a greyish clay loam, &c., with alluvion in the low lands. A few rocks, met here and there, give now and then a hilly appearance to this vast flat of land. The prevailing kinds of timber are spruce, fir, white birch, cypress, aspen and alders in the low lands, with tamarac and a few very large pines.

The cypress generally grows on a sandy and barren soil; here, on the contrary, there is not a grain of sand if I can judge of the soil by the numerous windfalls that disclose its nature at every step. This was a subject of astonishment to my party and for myself. But if the cypress really condescends to grow on poor soil, what would prevent it from doing so on a better kind?.....The trees are of very good height and diameter.

To encourage and facilitate the prompt settlement of the townships of Albanel and Normandin, as well as that of the whole territory fit for cultivation in the north-west, not forgetting the township of Parent in the north east, the opening and immediate termination of a first-class colonization road throughout this territory, one of the finest in the Saguenay, is absolutely necessary, together with some free grants of land in the most distant ranges situated along this road. If thirty miles of road were opened in the Mistassini peninsula, colonization would make rapid strides; each of these miles would cost about six hundred dollars.

The essential, only and infallible means of encouraging the colonization of Crown lands, of awakening the energy and stimulating the ambition of the settlers, who, at least in the Upper Saguenay, are generally poor, is to offer them a plank of salvation, always at hand, to save them from want and starvation, thereby attaching them to existence and encouraging them in their hard labor.

This plank of salvation would be the creation, by and under the control of the Government, of a rallying point of colonization, supported on a scale proportionate to the large or small number of settlements grouped around this beneficent centre.

We often see, in several parts of this country as well as elsewhere, and even in the Saguenay, persons who, having spent a certain sum of money in the clearing and cultivation of lands acquired from the Crown, soon become possessors of fine properties from which they realize profits exceeding their greatest hopes.

It often happens that these lucky people have not worked at all. The men who have turned the primæval forest into beautiful meadows or into rich fields covered with vegetation, who, besides, have made comfortable homes for themselves, belong to the hardy race of pioneers, full of courage, vigor and energy whom we meet every day in new settlements; but the latter have not like the first mentioned that plank of salvation which the capitalist offered them one happy day.

Money is that capital, the plank of salvation not to be found. Here, all the best will in the world, all the energy and spirit of sacrifice, avail nothing to progress; they serve at the utmost to keep the poor settler from dying of starvation.

Through want of money, everything remains dormant and there is no chance for industry or trade.

Here, except the free grants made by Government for the opening of colonization roads, not a cent ever ascends that majestic Saguenay which could so proudly bear all the riches of the world.

Trade and commerce eagerly dispute the grants, while the poor settlers feel quite happy if they can even get a glimpse of that money which they have so bravely earned, and for the possession of which they are willing to work night and day.

If, throughout the entire country, this saddened perspective were the same and the hope of anything better a vain thing, then ambition might die away in the bosom of a great many, and no one would venture to complain of the inevitable and, knowing nothing better than such a position, people would desire nothing more; but the prospect might change with a change of place, and they know it.

The most favored parts of the Province are justly admired in every possible point of view ; some are also able to excite the envy and covetousness of the most indifferent.

Progress and means of communication go fast and, as if by enchantment, ambition in some places is greatly stimulated by success, while fortune gayly smiles on those who court it, and from all these good things proceed most of the welfare and prosperity which they enjoy.

The glimmering of this bright picture, slightly seen on this side of the Laurentides, quite opens the eyes of the poor settler who makes long and sad comparisons. In the distance, he sees the alluring panorama, life and activity surrounding the privileged beings who inhabit more fortunate places and this comfort and happiness make him dream of other skies..... A cruel reality however brings him back to his own home, that poor miserable hut erected with his own hands and which is barely sufficient to shelter his unfortunate family. With sorrow and despair, he views his small patch of land covered with blackened stumps, as if it were a field of mourning, and although longing like others for the legitimate enjoyments of life, he sees himself forever debarred from them, exiled as he feels in this forest which first surrounded him as a protecting wall, but which now presents nothing but gloom and desolation to his saddened eyes.

The zeal of the well-informed friends of colonization naturally abates, their courage falters, when, daring to lift up the veil which hides these unknown miseries, they behold the doleful picture in its heartrending reality.

No wonder that the settler ponders over the question a long time before penetrating into the primeval forest ; the present and the future offer such uncertain prospects !

If the industrious settler be fortunate enough to save a few dollars, then his courage revives, but how is a poor fellow, who has nothing else but his hands to support himself and his family, to find means to lay something aside for the rainy day ? Certainly not from one of those dreadful fires which, in a moment, leave him even poorer than on that unlucky day when he ventured to try his fortune in this wilderness ; not from the frost, which, with the harvests, destroys the labor and hopes of many a day.

In the latter contingency what can the poor settler do, to whom will he apply, who will help him—will he rap next door ? He knows too well that his neighbor is as poor, if not poorer than himself. This awakens him

anew ; elsewhere again he sees success, prosperity. " Let us go, fly, says he, from this land which God has made so beautiful, but which our enfeebled limbs have no longer the strength or the courage to work, let us go elsewhere, in quest of that daily bread which we have vainly sought here."

The model farms which the Government might establish throughout these new townships would, in a great measure, obviate these difficulties, dispelling as if by enchantment the shadows which darken the interesting and patriotic work of colonization and transforming the whole into a pleasant reality.

Since capitalists are wanting, the Government should come to the aid of the settlers by making every year considerable clearings on the Government reserves, employing for that purpose the poor settlers in this work, paying them generously, either with the produce or otherwise, raising the cattle necessary for farming, &c. If the whole were conducted with wisdom, order and economy, the Government would make as much profit as any other capitalist, while proving at the same time a protection and a providence for the surrounding population. If the Government thought proper to make such an experiment, it would soon be repaid by the sale of provisions, &c., and by the consciousness that they would have done such good service to colonization and to the brave pioneers of the forest. If to all this were added facilities of communication wherever the want of such is felt, and if especially a railroad connecting Lake St. John with Quebec were built, then the Saguenay would have nothing to envy other places, being able to vie, in every respect, with no matter what part of the Province for the success and prosperity of its own inhabitants.

(*P.-H. Dumais*, 2nd May, 1872.)

Township of Otis.

I reached the post marking the north west angle of the township of Otis, where I succeeded in establishing the starting point of the division line between the townships of Otis and Casault. I continued my operations along this line until the 14th of September ; at the same time, I also ran the centre line and part of the south east outline as far as the Murray-Bay (Malbaie) road.

As I give the date of each part of the work in my journal, I will refrain from doing so in my report.

The land on the line between the townships of Otis and Casault, on the centre line, and south-easterly outline of Otis is very uneven and uncultivable. On the exterior line I crossed numerous small lakes bordered by hills of various heights, which appear to extend some distance to the westward. The breaks produced by these lakes, and the high grounds surrounding them, by the loss of land they occasion, will always be a serious obstacle to the opening up the good lands which lie around them. The same slope appears to extend considerably to the east, and suggests the same description of land: at the same time, the lakes are less numerous along the road, and the land more level; the high ground is composed of yellow clay, and the valleys of black mould. At the south east end are several mountains which are intersected by the interior lines.

On the Malbaie road, from No. 1 to No. 14, although the land is not level, the lots are taken on both sides, and some of them already cleared. The land is swampy above for some distance, but the swamp only extends over a few chains of the 2nd range, and does not retard the settlement of the lots. With the exception of some rocks near the Lake aux Islets, the rest of the lands along the Malbaie road are of good quality and some of them are taken; they are all watered by numerous streams, some of which are sufficiently large to afford good water powers for a grist or saw mill.

On the third, fourth and fifth ranges, the soil is generally good, except the north west part adjoining the township of Bagot, over an extent varying from one to two miles, where the surface is broken and rocky, and some hills cover a considerable extent of ground. The quality of the wood and soil and general appearance of the land leave no room for doubt as to the speedy settlement of these lots; and I may add that, if the Government opens roads across these lands, the squatters, who have already made some extensive clearings on the borders of lake Otis, will follow the progress of the clearing of the road to settle themselves on it, and those now on the range lines will follow their example.

The extensive valley situate to the south east of the mountains, which border the Saguenay for a distance of many miles, extends as far as the high mountains of Lake St. John, near the limits of the township of Otis, taking an east and west direction, and with the large lake Otis, Lake St. John, the lake des Islets, and the lake à Garth, offers a splendid view, and assures to cultivation a splendid field of operations certain to reimburse the settler for his labor as soon as it shall be opened.

The sixth and seventh ranges do not offer quite the same advantages, as they are more distant from the lines of communication ; but, as soon as the roads asked from the Government are made, they will at once be settled.

The soil is good to the south east of lake Otis, as far as the limit of the township or thereabouts, especially on the heights above the lake ; in high, mountainous localities some lots might be unsuitable. To the north west of the lake, a great amount of land is uncultivable — there are a number of rock ledges and rocky hills. On the banks of the outlet of lake Otis, there is some good land in various places, but it was mostly taken up before the survey ; there is also plenty of maple on the hills in this direction.

The banks of the river Saguenay, at this point, are very high, consisting of lofty mountains, extending over a mile ; this land is all uncultivable, except in the bay formed by the outlet of lake Otis, where settlements may hereafter be made. There is already a saw mill built at this spot.

The valley to the north west of the seventh range, to which I allude in my notes of survey, would also afford a range of good land, and which, if surveyed, would certainly be at once taken up. After a topographical survey of this territory, I have formed an opinion of its value which I subjoin :

From the centre line as far as the limit of the township (range 1 and range A excepted), the land is of good quality and favorable to cultivation ; there is hardly any loss ; all these lots are taken and will be purchased as soon as offered for sale by the Government. In the other part there is some loss, but quite enough is left to form some good settlements ; several of the lots here are taken. The pine wood is not of much value and is very scarce, there are a few red spruce and scattered pines, but in other places wood fit for building is found in large quantities, as well as red spruce, cedar and maple.

(*J.-O. Tremblay*, 1st June, 1863.)

Township of Ouiatchouan.

By starting all my range lines at right angles with the Roberval line, I have succeeded in making them almost correspond with the range lines of the township of Chamouchouan. The lots, on each side of the road, are certainly the best in all the township, and the advantage of the road

will greatly favor the opening of the beautiful lands which border it. From the Government road, by the Roberval line, I chained the depth of the second range, to eighty chains and eighty links, and planted a post and a picket, numbered 21, range 2 and 3, at the end of this depth. The third line passes almost entirely over dry and rolling land, which has been burned about 12 years ago, and is now covered with a new and heavy growth of cypress. The old trees are almost all fallen, which obstructed the progress of my work. This range is in a great measure fit for farming. More than the half of the north-west part of the fourth range, and a much smaller part of the fifth and sixth ranges, are rendered altogether unfit for farming by the great number of rocks, which are found on them. I have divided but eight lots, on the fourth range line and sixteen on the fifth and sixth, but the seventh and eighth have been completely divided and form a splendid tract of land well adapted for farming. The general aspect of the land subdivided into lots differs very little from that of the neighboring townships; it rises gradually from the bank of Lake St. John, up to the chain of rocks, four miles behind, and then slopes gradually and forms a vast stretch of land, level and well wooded, watered by the Ouiatchouanish river and its tributaries and offers to colonization a most fertile field.

The opening of this township to colonization will favor, by settlement of its lands, the progress of the neighboring townships in the highest degree. The delay in the clearing of the Indian reserve has considerably obstructed the start made by the settlers of Beauport and other places in Chamouchouan and Demeules, and the sooner the lands are sold the sooner the obstacle will be removed. I take the liberty to remark that the Indian reserve, such as it is, to-day after the last subdivision, still paralyzes to a certain point the opening of the lands which surround it. The Indians of the lake are not numerous and it is not by cultivating the land that they subsist; hunting is their principal resource and their favorite passion, and they want on their return after their long hunts in the interior but a few feet of land to put up their tents, and some wood to light their fires. When this land reserve was first given them, the Indians hastened to imitate their white neighbors, to make clearings on the shores of the lake and to build houses. Some of them even sowed some grain and potatoes, but the most of it was abandoned and a new growth of trees promises a forest in a few years. Those who take an interest in the settlement of the Saguenay territory are all of the opinion that for the advantage of the Indians, who do no farming worth speaking of, and for the prompt opening of the township of Ouiatchouan, a range should be added to the last

subdivision overlapping 28 acres, on the reserve, which will still leave a space more than sufficient for the Indians who may wish to try their skill in farming. The upper part of the township of Roberval, which is not divided, is probably the best land in the township, apart from the range on the shore of Lake St. John ; the valley of the Ouiatchouanish continues to the foot of the northern slope of the Laurentide mountains and forms a level tract of land and very fit for farming. A road opened on the line between Roberval and Ouiatchouan, to the depth of these townships, will greatly favor the opening of these upper ranges, by giving free access to parties who may wish to settle thereon.

The Ouiatchouanish river furnishes splendid water powers distributed over the whole length of its course ; two grist mills and two saw mills are at this present time in operation on this river, in the neighbourhood of the new township of Ouiatchouan, and as they are of the first necessity to the settlers of Roberval, Chamouchouan and Ouiatchouan, they will be of the greatest advantage.

Colonization makes wonderful progress on the shores of Lake St. John. Fifty miles of the banks of this beautiful lake are occupied already by a courageous and energetic population, whose industry and good will know no bounds, and as soon as the Kenogami road is completed from the Portage des Rochers, up to the Chamouchouan river, we cannot say where their progress will terminate.

The best site for a village reserve in the township of Ouiatchouan is on the Government road between the Ouiatchouanish river and the rock on lot No. 10, of the first range. From this rock, the view is truly magnificent, embracing an area of at least 500 square miles.

The village reserves have given and will always give importance to the townships to which they belong ; the villages of Chicoutimi, Saint Alphonse, Saint Alexis, Hébertville and Metabetchouan are incontestable proofs.

The lots of the first and second ranges, on the Government road, are mostly all marked with the names of new settlers, and the price per acre is one shilling as elsewhere in the Saguenay. They will sell readily when advertised for sale.

The resources of Lake St. John, apart of its timber, being principally the culture of the land, they will be developed by degrees according as the colonization roads, already commenced, will be completed and afford an easy outlet for its surplus productions.

(*P. H. Dumais*, 26th December, 1866).

Township of Parent.

The Tikouapee river is a considerable stream, and its banks offer many advantages to form new settlements, besides that of easy communication, no rapid causing any obstacle as far as the outside of the north west line of the township of Parent. I divided the lots of the fourth range on the south west bank of this river up to the twenty-second lot, inclusively, and divided at the same time those of the north east bank.

The soil of the township of Parent is generally composed of a clay loam, covered in many places with a bed of sandy yellow clay.

Fire has several times ravaged a great part of the tract comprised between the rivers Ashuapmouchouan and Mistassini. A considerable quantity of good farming land appears to extend on each side of the Mistassini river, whose quiet flow seems to offer easy communication with the Lake St. John settlements. At the extremity of the point formed by the rivers Mistassini and Ashuapmouchouan, there are beautiful wild meadows, also on the lots seventy-three and seventy-four of the third range, and on the little islands situated at the mouth of the river Tikouapee. All the land within the limits of the township and outside for a great distance is generally very level; apart from a few rocks that I remarked on the banks of the river, I did not find, on all the land that I surveyed, a pebble as big as a marble. Several settlers are to sow this spring the clearances which they made in the course of last summer. As soon as the opening of the Kenogami road permits, it is certain colonization will make rapid progress in the townships of Ashuapmouchouan, Demeules and Parent, if the Government obliges the owners to work on their lots and fulfill the conditions stipulated in their location tickets.

(*P.-A. Tremblay*, 13th June, 1854.)

The starting point being at the post of lots number thirty-four and thirty-five of the fourth range of Parent, I ran the range line from this post in a southeasterly direction, straightening the pickets for a considerable distance and assuring myself by the intersection of the other lot posts that the base on which I should work was correct, and followed the original course, that is to say, south 37° east, astronomical, the variation uncorrected being 17°

45' west. On this base from the post of lots number thirty-four and thirty-five and at right angles I laid down a perpendicular running north 55° east, astronomical, to serve as a centre line for the part of the township of Parent, which I had to subdivide.

Measuring off eighty chains and eighty links on this line and starting the range line between ranges four and five at right angles therewith, I struck the post of lots number twenty-nine and thirty of the original survey, thus completing the front line of the fourth range; measuring off again eighty chains and eighty links on the centre line, I ran to this depth the line between ranges five and six on the same course and parallel to the base line.

On the north west side I came across the Parent line and found a difference of a few links less in the chaining of lot number forty-nine, and I afterwards ascertained that this slight error was the same through all the upper ranges.

This range line runs mostly through moist soil--wild meadows and swamps--but, at a very short distance on either side, the land is drier, of better quality and supports a better growth of wood near the river Tikouapee. The quality of the land is all that could be desired: wheat land, a clay loam; large and tall timber, composed of spruce, fir, aspen, elm, ash, white birch, tamarac, pine (very few), willow, alders, moose wood and mountain ash.

A great part of the lots of the fifth and sixth ranges is taken up, and some of the settlers have ten, twenty, thirty or forty acres of cleared land; sowings were made last spring on some of these lots. Next spring, there will be resident settlers on the banks of the Tikouapee river.

Continuing the centre line, I crossed the Tikouapee river and ran the boundary between the sixth and seventh ranges on its borders. I ran on each side the division line between the two above mentioned ranges, from the north east side as far as the boundary line of Parent, and from the north west side as far as number seventeen, inclusively, as specified in my instructions.

The ridge, which lies midway between Tikouapee and Mistassini and which forms the height of lands between the two rivers, begins at the depth of the sixth range. Its soil is composed of yellow and grey sand mixed with yellow loam, in some places, and clothed with a forest of tall and close growing cypress, of which a great part has been destroyed by fire

within a few years Wild hay grows abundantly in several places in these burnt tracts.

The centre line, prolonged as far as the eighth range, crosses the ridge above mentioned. The baseline of this range cuts this ridge diagonally and traverses to the north west the valley of the Tikouapee, and to the south east that of the river Mistassini, on the western bank of this river. In these valleys, the land and timber are in all respects magnificent.

Continuing the centre line eighty links more, I placed the division post between the eighth and ninth ranges over the cypress ridge already mentioned. This part of the centre line acts as a front line to the lots on the bank of the Mistassini river, and all the other ranges to the north east, which border the river, have this line for their front line. This is the object for which posts were placed every thirteen chains for the five first lots of each range, and the sixth lot measuring a width of fifteen chains and eighty links thus completes the depth of each range, that is eighty chains and eighty links.

The land in the south west being quite unfit for cultivation, I thought it useless to survey that section. A marsh fifteen miles long extends in that direction ; the Indians call it the *Grand-Raccourci*, because in winter, instead of following the Mistassini river to reach the height of land, they go by the swamp road, which saves two days' march.

I nevertheless continued the centre line, dividing the lots that front on the Mistassini and scaling this river with division of lots and running of lines, as far as the line between the thirteenth and fourteenth ranges.

Here, pursuant to instructions, I ran the centre line for four lots more to the north west and continued it on the same course as the preceding as far as its intersection with the Mistassini river, and in the north west, dividing the lots as far as the line of the seventeenth range.

All the range lines have been run in this part, as well as to the north west as to the south east of the centre line, and the lots have been divided, with the exception of a few in the fifteenth and sixteenth ranges in the neighborhood of the Parent line, where the swampy nature of the land did not allow of any survey.

All the lots fronting the Mistassini river, with the exception of a few in the thirteenth and fourteenth ranges, are adapted to cultivation, and offer many advantages to new settlers from the proximity of the river,

which is navigable from its first falls terminating at number forty-five of the seventeenth range; it is the finest colonization road that we could wish for.

The other part of ranges thirteen, fourteen, fifteen and sixteen is not as advantageous for the present; but, in the near future, the divisions that I have made will have their value.

After having terminated the subdivision into lots of the arable parts of the township of Parent, I went to the north west outline of this township, to the division post between ranges eight and nine.

I verified at this point the township line and the range line, and having found no error, I ran the boundary between the townships of Normandin and Alanel, at right angles with that outline, thus continuing the line of separation between the eighth and ninth ranges of Parent, and verifying my work from time to time for a distance of seven hundred and twenty chains, as prescribed by my instructions.

Before proceeding, I placed a boundary and a strong tamarac post at the intersection of the township and range lines, that is, my starting point. This post is marked Alanel on its north side, Normandin on the west, and Parent on the south, with the year and my name. The course of this grand township line is north 37° west, astronomical, variation uncorrected, $17^{\circ} 45'$ west.

From my starting point, the land does not promise well; a spruce grove having been burnt a few years ago, the land buried under six inches of water, the snow which covered the earth before the heavy frosts having prevented it from freezing as well as the water. The soil, being composed of hard clay and perfectly level, has retained the water abundantly supplied by the fall rains. At the end of the first mile, the timber changes for the better, the soil drains itself easily, and the moss disappears. The land consists of alluvion, loam and clay. A grey loam is seen in the banks of the streams. The land continues thus as far as the fifth mile. From this point, it gradually rises and becomes undulating on the direct course of the line; but this undulation is owing to the stream, which winds through the surrounding lands in a rather shallow bed, but yet sufficiently deep to form rivulets, which drain a great part of the moist lands around.

On the seventh mile, the line cuts at right angles one of the branches of the Tikouapee river. This branch and another on the eighth mile could easily be made navigable for boats, if they were cleared. On the main

branch are two magnificent water powers, a mile or so betw^{en} each other and about a hundred chains to the south west of the line.

I terminated the grand range line at the seven hundred and twentieth chain. I placed at every mile, while scaling this line, a sq^{are} post regularly marked.

I at the same time explored the land on each side of this grand range line, for a distance of about four or five miles. I was agreeably surprised at meeting, in Normandin especially, land of superior quality, as much in the appearance of the soil and timber as in the advantages—it offers to settlers—of perfect drainage and easy cultivation with the hoe.

I came across in this township a vast extent of burnt land where tillage would be so easy that two men could clear every day enough land to keep a plough continually at work.

On one of these burnt tracts, where wild hay grows in abundance (a significant fact, as in the other sections of the Saguenay, wherever there is burnt land, it is either noxious weeds or a new growth of trees that comes up), there is a space of several acres on which wild strawberries grow in profusion and quite undisturbed; the plants are bushy and the fruit is of more than the usual size. The person, who gave me the information, was worthy of belief, and said he crossed this land while exploring last summer in company with a number of others, in a part of the township of Normandin.

The Tikouapee river winds to the south east of the township line at a distance of one or two miles and a half towards the middle of the line, and approaches it on reaching the western end.

Nothing is more charming than the valley of this stream. There is nothing like it in the Saguenay, not to speak of elsewhere. The gentle flow of its dark waters towards Lake St. John, the elms and the willows that shade its banks reflect as if in a mirror their elegant trunks, with their long and waving branches. There is a growth of tall and evergreen hay at the foot of these elms which adds every year to the fertilizing mould. Wild vines creep and twine from tree to tree like ivy and form a continuous shade.

There is nothing more inviting to the settler who sincerely wishes to become a land-clearer than these beautiful forests growing on well drained and slightly rolling land with a rich and fertile soil. He would consider himself rich in owning a few acres of land fronting on the Tikouapee river.

No more anxiety for his horse and cow; a good pasture for summer and excellent forage for winter. It is an important consideration for the new settler to have fodder at hand for the poor animals that are so useful and necessary.

On the ridge which skirts the valley on both sides of the river, the timber, which consists of spruce, birch, fir, aspen and a few pines, is of remarkable height and size; the spruce especially being of sufficient size and quality to furnish to the trade over one hundred thousand saw logs. There are only a few white pine scattered here and there. Hunters have assured me that in the upper parts of the river from forty to sixty miles back from Lake St. John, there are magnificent pine groves which cover a great stretch of land; that the quality of the soil and the timber is everywhere the same—strong loam and mixed timber; that there are no mountains or rocks; and that the whole is nearly level, with an imperceptible slope towards the Lake.

In the township of Albanel, the section that I explored is in all respects like the Normandin land. The swamp of the Grand Raccourci, which I met to the north east and which runs through the township across its whole width, robs it of about a quarter of its area; but the western part is equal to the best lands in the townships of Caron and Signai.

On the river Tikouapee, within the limits of Normandin, there are three important water powers; the first one especially will probably be utilized this spring, if your department gets this fine township subdivided.

In concluding this report, I may add that I am thoroughly convinced that the north western part of the territory of Lake St. John constitutes the largest, the finest, most fertile and most advantageous field in every respect for the development of the patriotic cause of colonization.

With good roads well located in the best parts of the Upper Saguenay, a railroad to connect the fertile valley of Lake St. John with Quebec city, some free grants of land in isolated localities—with these facilities, I say, we would see before twenty years a population of at least one hundred thousand souls, living in comfort around this beautiful Lake and in the fertile valleys of the numerous rivers which flow into it from all sides.

A railway would be the vivifying and colonizing artery which would make the Saguenay district one of the most beautiful as well as the most flourishing and wealthy sections of the Dominion.

(*P.-H. Dumais*, 31st January, 1872)

Township of Perigny.

After having ascertained by a good astronomical observation the variation of my instrument, I ran the north west outline of the township of Perigny, for a distance of a mile. I then, on an astronomical course, ran the south east outline of this township for a distance of 511.68 chains, at the end of which I intersected the Marais road.

With the exception of a few chains from the starting point, the land on this line is very mountainous ; all this tract, properly speaking, consists of a single range of mountains, with a height varying from 500 to 1,200 feet. cut at intervals by deep valleys which follow the slope of the mountains. This chain lies towards the south east and extends for about a league and a half in that direction, forming at its south eastern extremity, with another range of mountains running in an opposite direction, a large valley of good and beautiful land.

The timber on the flanks of the mountains and in the valleys is of fine growth. I noticed that it was of a superior quality to that of the Upper Saguenay.

The brooks and streams which I crossed on this line fall into the river St. John, and are formed by the discharges of the lakes and ponds.

I next proceeded to scale the Marais road and l'Anse St. Jean, taking for the starting point a spot where I intersected the Marais road with the preceding line on which chaining I gave alignments, and placed two boundaries on each side of the road. In scaling the road, I found in general the land of excellent quality, very level and well wooded ; but I may note that the road runs everywhere through a valley bordered on either side by mountains of greater or less height, which come so close together at some points as to leave but little level ground ; nevertheless the flanks of these mountains are in great part composed of good land, which allows of a range being established on each side of the road, except at the part known as the *Passe-de-Roches*, which is situated towards number sixteen of range F. C. for a distance of about sixty chains and which is nearly all unfit for cultivation. The mountains or elevations are rocks (granite) and are so close together that they form a little valley, through which there is only space enough left for the road for a distance of about thirty chains.

As for the continuation of the scaling of the Marais road from its junction with L'Anse St. Jean road to the St. Agnes road, I must say that I did

all I possibly could to find the location represented on the plan which accompanied my instructions, but I could not find the slightest trace of it. I made enquiries on the subject from the oldest inhabitants of the place, but they knew of no other line than the one laid down in my plan. As this road continued in a direction which did not suit for the division of the ranges, I discontinued its scaling at the front line of range A. From this point, there remain about three miles to reach the St. Agnes road.

After scaling the road as aforesaid, I proceeded to run the front lines of ranges A, B, C, D, E, and the lines of verification of the ranges as appears by my field notes.

The land along the range lines is broken, but generally good enough for tillage. I have laid down on the plan all the timber that I met.

The river St. John which I several times met, and which is indicated on the plan, furnishes quite a number of water powers for saw and grist mills. It is in width from one to two chains and its still waters are very deep. It has also a number of rapids.

(*J.-O. Tremblay*, 4th September, 1886.)

Township of Racine.

The township of Racine, lying between Lake St. John and the river Mistassini, forms a peninsula, the surface of which is absolutely level and regular, almost like that of the lake.

In the whole township there is neither mountain nor hill, rock nor boulder.

The whole peninsula, which seems to have been submerged by the waters of Lake St. John, is composed of alluvial sand, lightly covered here and there on the surface by a layer of grey or white sand, an inch or two in thickness.

This land, though not of first quality, is rich enough, and well suited for cultivation. It is the same character throughout the whole of the township.

The vacant land to the east of the exterior line appeared to me to be of better quality, especially along the river Little Peribonka, where several

persons made some clearings last winter in order to make certain of having land there.

The shores of the lake, and especially Point Mis tassini, are low.

A considerable part of this township, as indicated on the plan, is submerged by the high water of Lake St. John; but not every year. Within the limits of the land so submerged, there is a natural meadow, covered every year by a growth of wild hay, which is shown on the plan in its largest extent. This meadow may be utilized for cattle raising.

In the centre of the township is an uncultivable swamp, which I have represented in all its proportions on the plan. This swamp might be drained. It is covered in a few places by a stunted growth of small bushes, but is mostly barren. I found that in several places there was no thickness of turf (*savane*).

The whole township, with the exception of this natural meadow, is covered with large growing timber, consisting of balsam, cypress, spruce of all kinds, white birch, ash and a few oaks, and some plots of alders on the border of the lake. Messrs. Price & Co. have cut large quantities of pine, cypress and spruce logs here.

No test has yet been made of the climate.

There are no settlements or improvements in this township.

(*Arthur du Tremblay*, 6th June, 1883.)

Township of Roberval.

I first ran the centre line in the fourth range, between lots Nos. 20 and 21, and, at a distance of 80 chains 80 links, I ran the range line between the fourth and fifth ranges, and so on for the other ranges to the eighth. The latter range is only 42 chains 10 links deep.

The lots chained in the fifth and sixth ranges are 28 in number, while in the seventh and eighth ranges there are 33.

All these lots are adapted to tillage and it will not be long before they are taken up by settlers on account of the superior advantages which the quality of the soil and the proximity of Lake St. John lend to this locality,

over the new townships to the north west of the lake. The surface is generally level and only slight undulations are met with, but all these favor the drainage of the land. The soil is a grey and yellow alluvial loam, covered by a layer of humus or black mould for a depth of four to eight inches. Except a few rocky spots, where the ground changes its level, there is very little loss on these lots.

The part of the township which I have not subdivided consists of rocky ground that in some places has been several times swept by fire, and does not appear to be susceptible of cultivation or to be worth division into lots except for the merchantable timber to be found on it. Here, as in the part subdivided, the timber is composed of the usual woods observed in the Lake St. John valley, the prevailing species being white spruce and tamarac, fir, white birch and ash.

(*P.-J.-C. Dumais*, 4thh February, 1880.)

Township of Ross.

I have the honor to present the report of my survey of the first four ranges of the township of Ross made according to instructions from your department in date of the 30th May last.

I began my operations at the post planted at the north west angle of Quiatchouan, towards the south east, for a distance equal to the depth of three ranges of 80 chains each. In compliance with my instructions, I planted properly marked posts at the extremity of each range, with stone boundaries and glass underneath. I ascertained the astronomical course of this line to be $S\ 52^{\circ}\ 55'\ 35''\ W$. According to an observation which I made from the pole star at its eastern elongation, on the 20th June last, I found that the variation of the needle at this spot was $15^{\circ}\ W$.

I then proceeded to the south west outline of the township, and, starting from a post planted at the southwestern angle of Roberval, and on the same course as the first, I extended this line for the distance of three ranges of 80.80 chains each, and planted properly marked posts and stone boundaries, &c., at the extremities of their depth. I determined the breadth of Lake Rond trigonometrically and scaled the part of it which is included in the township of Ross, in order to ascertain its superficies.

I next went between ranges one and two, starting from the post planted at 80.80 chains with double alignments, according to instructions, and marking with care the numbered posts of the north west outline towards the south west.

I next proceeded to the centre line, starting from the post between numbers 30 and 31 of the line between ranges one and two, and, on the same astronomical course as the outline, I ran the centre line to the same depths as these lines, that is to say, from the line between the townships of Roberval and Ross; I ran this line towards the south west to the depth of three ranges of 80.80 chains each.

I afterwards ran the lines between ranges two and three, planting numbered posts at every thirteen chains and scaling the lakes intersected by these lines.

In general, all these lands are adapted to cultivation, the soil in several places being a strong black loam.

The forest which covers them includes in many places merchantable timber, such as white spruce fit for making saw logs, tamarac and white birch. On the Ouiatchouaniche and Iroquois rivers, there are also several mill sites, which I have been unable to indicate precisely on my plan. Lastly, the appearance of the country is magnificent, being generally free from mountains and offering great attractions to settlement.

(*Jean Mullais*, 24th December, 1884.)

Township of Signai.

I proceeded to lay out the line between the fifth and sixth ranges, from the post and boundary on the division line between the township of Labarre and the township of Signai, from which post I ran it on a course $74^{\circ}30'$ W., astronomical, as far as the intersection of the rear line of the tenth range.

At the request of the settlers in these two ranges, I divided the lots on each side of the range line, that is to say, in double ranges, thus giving to the inhabitants of the fifth and sixth ranges the advantage of having only to make in common a central road.

Apart from a swamp of about fifty acres in superficies, on the lots in the neighborhood of the centre line, the two ranges which I have just subdivided are certainly magnificent in every respect: soil composed of clay, wheat and alluvial land, timbered with birch, spruce, fir, white birch, pine, elm, ash and cedar, climate favorable on account of the proximity of Lake St. John, whose waters temper and check the early fall frosts, and in proximity to a saw mill, the property of the Messrs. Lindsay, on the Grammont river.

It is very probable that the new parish which is being formed in this township will have its centre at the intersection of the line of the fifth and sixth ranges and that of the tenth range. Joseph Morel, who has already formed the nuclei of three new settlements on the eastern shore of Lake St. John, came and put up his house in mid forest, in the fifth range, and is encouraging others to follow his good example; many have already made considerable clearings and intend to sow next season. The reserve of a certain amount of land at a suitable point for a village site would greatly advance colonization and lend much importance to these settlements.

The township of Signai is rapidly progressing, and, as soon as the island of Alma road is terminated, all the lots will be occupied by the owners of location tickets, who are only waiting to remove thither as soon as the road is finished.

(*P. H. Dumais*, 22nd February, 1869.)

There was no trace left on the line between the first and second ranges to indicate Mr. Jules Tremblay's survey except two pickets in the swamp near the line of Labarre. The land, from number thirty-five as far as number twenty-five, where the centre line runs, is partly cleared for a depth of several acres; but all the buildings were destroyed by the great fire and in the rest, from the centre line as far as Labarre, no clearings have been made on the second range for want of subdivision.

I laid out the centre line to verify the depth of the second range, and found a few stumps, indicating the original survey; the depth was correct,

All this land is of excellent quality and the swamp to the south east could be easily drained.

I ran and cleared the line between the second and third ranges, dividing the lots and planting good posts duly numbered and finding twenty-three lots of best quality land.

Small clearings have been made on the first two lots; on the thirteen others, the settlers have taken the exploring line run by Mr. Duberger, P. L. S., for the range line and have made considerable clearings near the Labarre line. There are also small clearings in the second and third ranges.

This line runs certainly through the most beautiful land of Signai, and deserves to have a colonization road run through it to connect Lake St. John with the Alma and Hebertville roads. The land is level, well drained, and the quality of the soil superior in every respect.

I next went by the line of the second range, as far as the line of the third and fourth ranges, which I chained and cleared, divided and blazed as far as the intersection with the Labarre line, finding from distance to distance a few clearances in the neighborhood of this line. A few posts were found, but without any numbers.

The twenty three lots chained in the fourth range promise to be the site of of a fine settlement at no distant day.

I finished my work with the chaining and division of the line between the fourth and fifth ranges, planting good posts at all the lots, after regularly chaining and carefully blazing the line. This range also includes twenty three lots; on the thirty-fifth there is a deserted clearing of several acres.

This land is not as advantageous to begin settlements as that in the other ranges; consequently the settlers have preferred to clear the fifth range along the line which separates it from the sixth, thus forming a double range.

(*P.-H. Dumais*, 2nd July, 1870).

All this land in general is well suited to tillage; a large extent of it was sown this spring, and the settlers are making new clearings. In approaching the Petite Décharge, however, the lots lose a great deal of their value; rocks crop to the surface, leaving but little land fit for cultivation; nevertheless all the lots are taken up.

(*P.-H. Dumais*, 30th August, 1870).

Townships of Signai, Labarre and Caron.

With the exception of a strip of rocky land which covers part of the sixth range and of the Saguenay range, in Labarre, the three sections which I have surveyed in the townships of Signai, Labarre and Caron contain a considerable extent of land of extraordinary fertility. A great number of farmers have made large clearings at different points.

The situation of the fourth and of the fifth ranges of Labarre will give easier access to the island of Alma and to the other ranges of the township of Signai; but this advantage would be still greater if the line between the fourth and the fifth ranges were continued as far as the line at the depth of the land along the river des Aulnets. The river Bedard offers fine sites for the construction of mills throughout the part of the township of Signai which it crosses; the branches of this river water a considerable extent of the fourth, fifth and sixth ranges of Labarre.

(*P.-A. Tremblay*, 28th November, 1865.)

Township of Saint-Germain.

The soil between lot number one and lot number nineteen inclusive, south of river Sainte-Marguerite, is adapted to cultivation, consisting of rich yellow loam covered with hard and soft wood.

On the section comprised between lot number nineteen and lot fifty-five, north of the same river, to the base of the mountains, a distance varying between twenty and thirty chains in depth, the land would also be well adapted to settlement.

I began to skirt the southern bank of the mountain, along the river Sainte Marguerite range, at the commencement of lot number four, and I followed it to the extremity of the line.

In the ranges south of the base line, the land is suitable for farming, with the exception of some chains of rocks existing principally along the Saguenay river and throughout a great portion of range A.

All the lakes which I met in the course of my survey abound with fish, trout and eels predominating.

There are several good harbors along the shore of the Saguenay river, but the best is l'Anse à Xavier, in front of the village reserve.

All the rivers crossing this township offer splendid mill-sites.

Roads will undoubtedly be opened through this township, principally throughout the part surveyed, and that remaining to be surveyed included between the third range and the river Ste. Marguerite, between Cap Est and Ruisseau Rouge.

The survey of these two last sections is anxiously called for by a large number of settlers who have already commenced work thereon.

I further take upon myself to call the attention of the department to the nature of the soil between the river Ste. Marguerite and the Saguenay, east of the township of St. Germain. Having had occasion to travel throughout the whole of this territory, in every direction, before it was surveyed, I do not hesitate to say that its soil and climate are as good, if not better, than in any other of the already surveyed townships of the Saguenay region.

(Gélon Gagnon, April 3rd, 1862.)

Township of St. Hilaire.

The township of St. Hilaire, situate to the east of the township of DeQuen, and in rear of the townships of Mésy, Caron and Metabetchouan, comprises a superficies of 37,000 acres.

TOPOGRAPHY AND SOIL.—I am happy to say that this township on the whole is suitable for colonization.

The valley of the *Belle Rivière*, the left bank of the Cedar lakes, and the right bank of the river Metabetchouan, in the first and third ranges, with a part of the second and fourth ranges, are considerable tracts of arable lands of the best quality, unobstructed by any rocks or mountains or anything disadvantageous.

The rest of the township is of a much poorer soil, composed generally of grey and black earth, often mixed with sand, and is also rather stony, but I believe it can be sold for farming purposes to the satisfaction of settlers.

A third portion comprising about one-fifth of the land surveyed, being cut up by small mountains and flat rocks, is consequently unfit for cultivation, as shewn on the plan.

TIMBER AND WATER-COURSES.—All this township is under a rich, new growth of green woods, consisting of white spruce, black spruce, fir, bou-leau, alders and aspen. In the valley of the outlet of the lake *à la Carpe* (Sucker lake), there is a considerable quantity of white spruce fit for making logs. There never was any pine in this region.

This land is watered by the lake of *Belle Rivière*, by the Big and Little Cedar lakes, by the Big and Little lake of *Belle Rivière*, by the river Metabetchouan, and by many other streams and discharges running through it in all directions.

There are two magnificent mill-sites on the river Metabetchouan. The first is on lot No. 67 of the first range, and the second on lot No. 33 of the first range of the river Metabetchouan.

These lakes and rivers abound with fish; and their waters are pure and good.

CLIMATE.—The squatters, who occupy the first two miles on each side of the river Metabetchouan, speak favorably of the climate, which, naturally, must be as good as that of St. Jérôme and St. Louis de Metabetchouan.

There are also other improvements in the first range, north of the *Belle Rivière*. Three men named Simeon and Simon Betlamy, and Adolphe Gaudrault live there with their families. These brave pioneers appear to be tolerably comfortable.

This township being in close proximity to the Lake St. John railway, and having the advantage of a good colonization road, should, I think, be soon settled.

(*Arthur du Tremblay*, 11th October, 1884.)

Township of Simard.

I confined myself to the survey of the residue of the township of Simard, in which I laid out four ranges, that is to say, the sixth, seventh, eighth and ninth, into lots.....

This part of the township of Simard, as well as the lower part, except the first range or range fronting on the River Saguenay, is a perfect level, or nearly so, with the exception of the hills and gullies formed by the rivers and water courses; every brook, no matter how small, generally lying in a gully formed by itself, at some depth below the general level, never, even in case of the river Shipshaw, exceeding hundred feet, or very little more, the small brooks, being proportionately nearer the surface;

This part of the country is characterized by a total absence of rocks of any description, not even small stones, except at the level of the river Shipshaw, and in some cases, though very rocky, at the level of the "Rivière aux Vases." The faces of the ravines formed by the water courses, are composed of a light, slippery, whitish clay, from which circumstance "Rivière aux Vases" takes its name; its bed not having yet reached the rock, the water pouring from it into the Saguenay is always muddy, from the wearing of the clay through which it passes.

Considerable masses of rock of the kind called gneiss, a stratified granite, appear on each side of the river Shipshaw near its mouth, in the first range; the same rock is also seen in other parts of the river, but in no other portion of the township, except it be found at the rear outline, where a stray spur of the hills may crop into it, as the land here begins to rise.

The soil overlying the clay above mentioned is various, according to its position, some parts being slightly raised above the general level, others slightly depressed: the higher parts are sandy, such as the sixth and seventh ranges near the river Shipshaw, growing chiefly a species of pine called cypress, with spruce and fir; other parts owing to slight depression in this almost too level country, are swampy, growing black spruce, red spruce and tamarack, such as a portion of the eighth range between the river Shipshaw and the centre line, and near the "Rivière aux Vases" towards the east outline; some parts of the ninth range, especially the rear, are swamps, or "savannes" almost open plains, with very little wood, owing to this part being in the immediate vicinity of the foot of the range of hills bounding this plain to the north, and receiving all the drainage of the

mountains, which cannot filter through the clay of the subsoil, or find access to the rivers from the level nature of these portions of land.

The rest of the township is, for the most part, a good sandy loam, growing birches, black birch, firs, aspen, spruce and poplar, in some places mixed with white maple and maple; cedar is found in many places in large quantities, and ash sometimes appears; in these cases the soil is a black mould; many parts of this township grow red spruce, tamarac of a large size, and parties are now making knees for the purposes of ship building, in the sixth and seventh ranges.

To the west of the river Shipshaw, the soil is a little more sandy, owing to the appearance of pine in considerable quantities; there are lumbermen engaged here in taking out pine timber for Mr. Price, of Chicoutimi; but with the exception of the pine ridges the land has the appearance of being as favorable for settlement as any other part of the township, and the township as a whole, though the soil is not so good as that about the foot of Lake St. John, is as favorable for settlement as any of this part of the Saguenay; on the south side of the Saguenay the soil improves, as you leave Chicoutimi and near Lake St. John, and I have every reason to believe the case to be the same on the north side.

Most of the wood in this township to the east of the river Shipshaw was burnt off, from all appearances, about seventy or eighty years ago, parts of burnt stumps and pieces of large pine trees being still met with, which accounts for the somewhat light nature of the soil in some parts, as originally this must have been the same alluvial deposit as the rest of the plain on both sides of the Saguenay, up to Lake St. John, but at this latter place the fires were not so extensive.

There are some good mill sites on the river Shipshaw with water power sufficient to drive mills of any size, and some sites on the small streams for inferior mills for settlement purposes.

(A. Wallace, 30th March, 1855.)

retraced the lines of the third and fourth ranges on the east side of the river Shipshaw and extended them on the west side. After running the line of the third range, I scaled the river Shipshaw and divided the lots on the west side, planting good posts duly numbered, and so on for the other ranges as far as the sixth.

I deemed it advisable to run the line at the depth of the fourth range in the direction of the post number thirty-seven and thirty-eight of the same range in order to take in nearly all the good land at the depth of these lots and to pass the line on the edge of a marsh.

I terminated this part of my work in the third, fourth and fifth ranges, in order to establish their depth and to run the line between this range and range A.

The part of this township to the east of the river Shipshaw, from the first to the fourth range, has at different times been swept by fire, and in vain did I try to find the line of the second range. As it was impossible for me to discover the old lines of the second range, I went to the third, which I could follow through a swamp on number twenty-two, near the small lake there, as far as the centre line, which I found at eight chains and thirty-five links, to the east of the small branch of the river *aux Vases*.

I cleared the centre line for two depths, that is to say, 110.34 chains, and at this distance I ran the range line and chained the lots of range A and of the first range.

The soil in this part of the township is generally well suited for tillage, especially on the lots of the third and fourth ranges, which are composed of a grey and yellow loam of superior quality, and very well wooded with spruce, fir, white birch, poplar, aspen, young pine, &c. Although most of the merchantable timber has been cut off, there still remains a great deal for building purposes.

The land on the fifth range is drier, but swampy in rear. In range A and the first range, the land is slightly broken and the soil is a grey alluvial earth, except on the lots from number twenty-two to thirty, inclusively, where there is a little loss, on account of rocks. The clearings in the range A are somewhat extensive and are made along the road. The lots are nearly all occupied.

The part of the second range, comprising the lots number twenty-seven to thirty-two, is very broken by bare rocks, and these lots are very unfitted for settlement.

(P.-T.-C. Dumais, 14th June, 1879.)

Townships of Simard, Tremblay and Falardeau.

I have the honor to report that I have completed the chaining of the parts of the townships of Simard, Tremblay and Falardeau which were confided to me.

I am happy to be able to state that I have established the existence of arable land in the greater portion of the tracts which I surveyed. In the reversed lots of range nine of Simard and range ten of Tremblay, the land is very clayey on the surface as far as the centre line of these townships, where the upper layer becomes sandy, and presents a silicious appearance of variable thickness alternating with calcareous and argillaceous schists. The property of these clays, of retaining water at the surface, has produced some plots of cold land covered with a layer of vegetable mould, varying from a few inches in thickness. The same cause is perceptible in the growth and quality of the timber. Red and black spruce are the prevailing kinds.

In the other parts the timber is of a very fine growth, and is chiefly composed of white spruce, white birch and poplar.

In the upper portion, north of the centre line of the township of Simard, and west of the centre line of the township of Falardeau, the intermediate neighborhood of lakes has contributed to the formation of low and moist lands, covered pretty thickly with timber of only middling growth, such as are met with in the second and third ranges on lots 7 to 15, inclusive. Apart from this small space, where the soil is more or less fit for cultivation, and a small mountain on the banks of lake Charles, to the south, all the land which I surveyed in this locality is very good and may be settled upon with advantage. The soil, which is sedimentary, is composed of a black and yellow sandy earth, overlying the calcareous clay which is met with at various depths.

On the central line in the first range to the south and east of lake Charles, there is a fine quarry of limestone covering several lots. The stratified beds of this quarry run from south east to north west. There are also indications of a similar quarry on the exterior westerly line of the township of Falardeau, towards the middle of the third range.

In passing through this tract, one cannot help recognizing how rich the forest has been: the stumps, the cuttings and the *debris* of trees strewn around are so many evidences to attest it. From the ancient appearance of this *debris*, covered as it is with layers of moss of different ages, it is not

difficult to believe that lumbering operations have been carried on in these forests for over thirty years; and this very year there have been over fifteen thousand logs cut in them. To give you an idea of the size of the timber growing here, it will be sufficient to tell you that I measured some cedars of forty-eight inches diameter at the stump.

On the line between the third and fourth ranges, to the north of *Grand Lac Clair*, over an extent of five miles, with the exception of four lots to the east on the southerly slope of a small mountain, the soil is everywhere good, even, level and richly timbered. The prevailing woods are white spruce, white birch and poplar.

(*J.-O. Tremblay*, 15th May, 1883.)

Township of Taché.

This township, situated to the northward of the Saguenay river, between the townships of Delisle and Bourget, has an area of 40,752 square acres, of which at least the seven tenths are composed of arable land suitable for settlement.

The first range, being partly broken up by cliffs, is very little fitted for settlement, but as it is partly occupied by squatters, I thought I was justified in laying it out into lots. On my way to the rear line of the township, I found no mountains or steep hills, or any extent of rocky land.

The ground is perfectly level, the soil clayey and alluvial, inexhaustibly fertile.

Timber of every kind grows here in great abundance. The spruce has been cut into logs, but enough has been left to supply the settlers; there is no pine timber at present, but judging from the stumps and fragments strewn the ground, I conclude it must have existed in large quantities.

There are some water powers which may be useful to the settlers hereafter. The colonization road which it is proposed to run through this township should pass between the third and fourth ranges, where I have laid out a double range for the benefit of the settlers on these two ranges. I have also laid out a double range in front of the second range, and survey at the ranges east and west of the river Gervais, as I was directed, in my supplementary instructions, for the settlers' use."

(*Geo. B. DuTremblay*, 29th November, 1879.)

Townships of Taillon and Delisle.

After having traversed the above mentioned tract No. 1, in every direction for nearly a month, I became firmly convinced that it is, in every respect, most advantageously qualified for colonization. It also offers great facilities for carrying on every branch of industry, by means of the power supplied by the numerous streams, falls, &c.

The tract lying between the mouth of the river *Au Cochon* and that of the Peribonka rivers, as far as the falls on these latter, is so flat that in some places, when the snow melts, the waters remains a long time on the ground, and even, on some few patches of considerable size, retards the growth of the timber. It is on this account that it has been said by some that these lands are swampy, but this idea is erroneous. Notwithstanding the heavy rains which had fallen during the month of July, the water, at the time of my visit to the locality, had completely disappeared, or remained to a depth of only two or three inches in the moss. These lands may even be drained with facility. In these so-called swamps there is an average thickness of only seven to ten inches of turf, overlying excellent alluvial land. I established this fact by examinations at several different places.

Apart from these low grounds, the rest of the tract in question may be easily drained. The soil is entirely alluvium, a rich yellow earth, suitable for any kind of crops. The part near the lake is nine or ten feet above high water-mark, and there is consequently no danger of inundation from that side; while the banks of the rivers Peribonka are from eighteen to twenty-five feet in height. I found here many different species of wood: balsam, spruce, white birch, yellow birch, elm, ash, mountain ash and alder, the white spruce predominating. They are all of very fine growth, indicating a rich soil. Wherever I went throughout the whole tract, I did not find a single rock.

Both the Grand and Little Peribonka rivers are quite navigable up to the first falls.

The lands bordering on them for a distance of ten miles above the falls bear the same general aspect as those above described. The soil there also is in great part alluvium. There are, however, some light elevations, where the soil is richer, though of the same composition. In the same portion adjoining the township of Delisle, these elevations are more marked, and contain a lighter rich yellow soil, upon which pine grew plentifully in

former times. The woods now standing are the same as those mentioned above, the merchantable timber being chiefly spruce. There are no rocks to be seen.

From the rivers *Au Cochon* and *A la Pipe*, going towards the east, the land is still of the same character, except that the elevations are still greater; and while the soil upon them is fit for cultivation, they will always remain an obstacle in the way of farming operations.

It will be readily perceived that this tract offers great advantages to colonization: it is, in my opinion, the finest part of the country around Lake St. John.

(*John Langlois*, 13th November, 1883.)

Township of Taillon.

As settlers had arrived and begun chopping along the canal to the west of lot No. 72 of range I, and as the subdivision of this land, which is of very good quality, involved but a few days' work, I took upon myself the responsibility of dividing the lots in that portion comprised between the lots Nos. 66 and 86 of range I. The parts mentioned, designated as meadow on my official plan, indicate the places overflowed by the waters of Lake St. John during the freshets, and on which natural hay grows in abundance after the water has subsided.

The greater part of the township is composed of a soil of the best quality, notably in the part east of the central line. There are a few rocks on the ranges A, I, II, III, near the exterior line, but they take up very little land. There is also a small swamp in range IV on lots 8, 9, 10.

East of the central line between lots Nos. 40 and 80 of the ranges II and III, I and IV, the land is somewhat swampy, but may be easily drained in this part of the township. There is on the banks of Lake St. John and of the river Peribonka a strip of dry land, varying in depth from twenty to thirty arpents. The soil of Point Peribonka, west of the central line, is of sand on the surface, with a subsoil of white clay at a depth of ten or twelve inches, while the part of the township east of the central line is composed of alluvial soil of the best quality.

The superficies of the land surveyed is 40,727 acres.

I am convinced that this township will soon be colonized, and if the works on the Archambault road were actively pushed on, all the territory north of the Saguenay, or rather of the Grand Discharge, would be soon settled, and in a few years, four or five parishes would be formed in the townships of Taillon, Taché, Delisle and Bourget.

Another road, which would be very useful to colonization if it were opened, is the projected route on the central line of the township of Taillon, to or near the river Peribonka; this route being a very short one to lead from the river Peribonka at the foot of the first falls to Lake St. John.

(*W. Tremblay*, 28th May, 1885.)

COUNTY OF COMPTON.

Township of Chesham.

The township of Chesham is bounded on the north by the township of Marston; on the south by the United States boundary or province line; on the east by the townships of Woburn and Clinton, and on the north east corner by a gore between Marston and Clinton; and on the west by the townships of Emberton and Ditton; and at the north west corner by the gore between Marston and Ditton.

The rivers in Chesham are small streams, being the head waters of the Salmon and Arnold rivers. They are not of sufficient size to be of much use for lumbering purposes, but they furnish several good mill sites for the use of settlers.

The Megantic mountains take up a small portion of the north west corner of Chesham; and the south east quarter is very much broken up with the boundary mountains and ridges of spurs extending from them in various directions.

Very little pine timber, comparatively speaking, is to be found in the township of Chesham, but spruce of an excellent quality is abundant, with maple and birch in large quantities in most parts, except the south west quarter of the township where soft wood principally prevails.

Water power sufficient for the wants of settlers is not lacking; the following is a list of the mill sites that were noticed in making the survey of the township:

N^o 1. Tolerable mill site: lot number four, third range on the west fork of the east branch of Salmon river. This stream probably furnishes others in the same vicinity.

N^o 2. Two or three good mill sites: lots numbers 38, 39 and 40, fourth range, on fork of west branch of Arnold river, heavy rapids and fall.

N^o 3. Good mill site: lot number two, sixth range, on east branch of Salmon river, rapids and fall.

N^o 4. Tolerable mill site: lot number fourteen, eighth range, on fork of south branch of Salmon river.

The western extremity of this range is taken up, to the extent of eight or nine lots, by a portion of the Megantic mountain range, on the easterly slope of which, however, there is some fine settling land: thence easterly to Clinton is a large tract of land generally fit for settlement, with the exception of some small tracts or patches, this tract extending northeasterly into Marston.

A very fine tract of settling land lies on the south east slope of the Megantic mountains in these ranges, and between the fork of the east branch of Salmon river; adjoining to a good tract in the fourth range of Ditton. A belt of soft wood and poor land is found near the east fork and extending north easterly; further to the east the land is high, rolling or undulating ridges, generally well timbered and adapted to settlement throughout to Clinton, except the southerly part of the third range near Clinton.

Good land adjoining Ditton in the fourth range, and generally very good land in the northern part of this range to number thirty-nine where a belt of stony, soft wood land is found extending to Clinton.

The fifth range begins at number twenty-one upon a high ridge of hard wood land adapted to settlement to number thirty-one, thence more broken, with small tracts of excellent high lands to number forty-one, and then high hard wood land generally fit for settlement to Woburn line.

Several good mill sites are found in the fourth range on numbers thirty-eight, thirty-nine and forty, which form a desirable location.

A great portion of this range from Ditton to number twenty-one is most generally poor soft wood land, a small part along Ditton excepted. The easterly part of the range from number twenty-one to Woburn is mostly rough, broken land with good valleys and patches of small extent, not generally favorable to settlement, except a portion of the northern side near Woburn.

Very little land for settlement is found in these ranges; small patches of good lands are to be found in the hilly parts, but the greater portion is rough and broken, or stony, soft wood land unfit for settlement; some well timbered hard wood ridges are met with, but they are generally stony.

In great part poor land and very rough and mountainous to the east to near the province line. A good tract of land extends from number eight to number twenty-four between the two ranges, which is better adapted to settlements than the same extent in any part south of the fifth range.

The southern part of the tenth range runs up to the height of lands which forms the province line, and is in great part rough, broken land.

Undivided tract or gore along Emberton and south of the tenth range. This gore or remnant of land within the boundaries of Chesham is a narrow strip between the province line and the east line of Emberton; it contains about 2,400 acres, and is mostly rough, mountainous land, generally unfit for tillage. Some finely wooded valleys and slopes are to be found within it, but these are mostly very stony.

The township of Chesham does not offer the same advantages for settlement as the township of Ditton; it has no large streams or great water power, while the southern part is generally unfit for settlement.

The northwestern and northern parts, however, along Marston have some very fine settling lands in compact bodies; and here settlements might advantageously be made, when a road of communication will have been opened from the nearest settlements already established in some of the neighboring townships.

The good settling lands in Chesham lying chiefly in a continuous block contiguous to Marston and somewhat separated from the bottoms and settling tracts in Ditton, it becomes worthy of consideration upon the presumption that Marston offers equal or greater inducements for settlements than Chesham, whether it would be advantageous to open a road running north easterly from the Hampden and Arnold river road through the north west quarter of Chesham to Marston line, and thence north easterly through the most desirable land for settlement, so as to intersect the most southerly settlements already formed along lake Megantic upon Victoria bay.

From what acquaintance with the country I have obtained by having surveyed an exploratory line northerly through Marston in 1861, and from the knowledge of the lands in Chesham acquired by the survey of that township during the past season, I should consider this route as a most desirable link in the chain of colonization roads which are intended to open up this quarter of the Eastern Townships.

(*W.-W. O'Dwyer*, 20th March, 1863.)

The amount of public lands contained in the two townships laid open for settlements by this survey may be stated as follows (exclusive of allowance for highways) :

Township of Ditton (S. W. $\frac{1}{4}$ not included).....	47,500 acres
“ Chesham.....	48,400 “
	—————
Total area of survey.....	95,900 acres

From this amount is to be deducted of unsurveyed tracts unfit for tillage or settlements (approximatively) :

Ditton (chiefly in the S. E. quarter).....	5,100 acres
Chesham (mostly in southern part).....	5,200 “
	—————
Approximative area unsurveyed.....	10,300 acres
Leaving approximative area actually subdivided.....	85,600 acres

(*F. W. Blaiklock*, 20th March, 1863.)

As regards the land in the west half of range six, it is poor and stoney, especially at the north end of lots one to thirteen. The houses on both sides of the main road are mostly all vacated by the settlers, who were scarcely able to procure a living from their crops and have emigrated to the States. It is for this reason that I would strongly recommend that all who lay claim to the lots in the west half of range six should have the right of pre-emption to the unimproved lands in the gore adjoining their own lots.

(*Armand Fletcher*, 31st January, 1884.)

Township of Ditton.

The township of Ditton is bounded on the north principally by the township of Hampden, and in part to the north east corner by a small gore or remnant between the south line of Marston and the north line of Ditton ; on the south by the projected township of Emberton and a small portion of the township of Auckland ; on the east by the township of Chesham, and on the west by the township of Newport.

The south west quarter of the township of Ditton was granted by letters patent, in the year 1801, and is not included in the present survey.

The principal rivers of Ditton are the Salmon river, divided into east and south branches, with its tributary, the Ditton river, which is also divided into the Ditton and the Little Ditton. The width of the Salmon river at low water is from fifteen to fifty yards, and that of the Ditton river from eight to twenty yards. Both are subject to sudden rises and falls, and overflow the low lands along their banks to a considerable extent. The Salmon river is large enough for floating large timber to market. It is ascended by fishing boats at the lowest state of the water, and offers a ready medium for transport to settlers along its banks. The Ditton river is obstructed by sand banks and jams of drift wood at low water, but in the event of settlement could be much improved.

The meadow lands along the banks of the Salmon and Ditton rivers are very considerable in extent and though partially subject to overflow in certain localities will form rich lands for settlement.

The Megantic mountains occupy a very large tract in the north east corner of Ditton, the most of which is entirely unfit for settling purposes and in consequence was not subdivided in the present survey. These mountains extend into Chesham, Marston and Hampden: a good quality of granite is found around them and good spruce timber.

Pine lumber in considerable quantities was formerly found, in Ditton; but within a few years past the quarter portion has been taken away, so that but little comparatively remains; a very excellent quality of spruce timber is found in inexhaustible quantities in various parts of the township, with a heavy growth of birch and maple on the higher tracts.

A number of mill sites are to be found in various parts of the township of Ditton, sufficient for the wants of settlers and for manufacturing purposes if required.

The general quality of the soil and timber, whether good or bad, being minutely exhibited upon the plan and in the field book of survey, it will be sufficient herein to give a more comprehensive view of those parts that are best adapted to settlement at the present time, taking the different ranges consecutively."

Some good settling lands along Newport and Hampden; then a vein of poor land, intermixed with some tolerable patches crossing the road line; very good land at the rear of the lots on the east side of the road line

and generally pretty good land to Salmon river. A belt of very poor land on the east side of the river, with a strip of tolerable land adjoining Hampden, near the foot of the Megantic hills, at number thirty nine, thence rough, broken, mountainous land to Chesham may be settled from Newport to Salmon river, more or less.

Fine settling land from Newport about fourteen lots east taking in the road line: this tract extends south easterly nearly eight or nine miles, varying in width, and taken together forms a large and advantageous block for settlement. From number fourteen to Salmon River is generally poor, from Salmon River poor again, some four or five lots on the high lands at the base of the mountains, about number thirty-three, whence there are seven or eight lots fit for settlement; the Megantic hills, from number thirty-eight to forty-three, occupy the remainder of the lands to Chesham; two mill sites are found in this range, viz: on lots number twenty-one and thirty-five.

These ranges are advantageously situated, fronting on the Hampden and Arnold rivers road line, and the greater portion of the land from Newport to Salmon river, a distance of over four miles, is well adapted to settlement, while much of it is of the finest quality; from Salmon river east the land, with the exception of a strip along the river, is not good, except in occasional small patches till reaching number forty-eight, whence commence a tract of good settling land in the fourth range, extending into the fifth, which runs easterly to Chesham.

The fine bottom lands along the Salmon river commence in the third range, increasing in width southerly along the river.

In the vicinity of Newport, this range, more particularly the southern part, is poor and unfit for settlement. At number ten commences the good lands noticed in the third and fourth ranges, which extend easterly to Salmon river over three miles, and are mostly very good arable lands; southerly this tract of good lands extends to the north line of the south west quarter of Ditton, and easterly joins to the meadow lands on Salmon river.

The meadows in the fifth range are more subject to overflow than elsewhere, but nevertheless they form a tract of very good lands, while almost every lot includes more or less of high land.

To the east of Salmon river, and beyond the meadows, the quality of the land is not uniform; good and poor patches occur alternately, ending at Chesham line, and, to the south of the east part of Salmon river, in a ridge of fine high lands.

A good mill site is found in the fifth range on lots numbers fifty-two and fifty-three; the forks of the Ditton and Salmon rivers occur in this range.

This range contains but nineteen lots from the south west quarter of Ditton to number fifty-three, where the sixth range is overlapped by the fifth and seventh ranges. The larger portion is good land, including some of the finest bottoms of the Ditton and Salmon rivers which are but little subject to overflow in comparison their extent.

A good mill site is found in the sixth range on lot number fifty-one.

A fine ridge of land on the south side of the range, and west of the Ditton river. The same ridge bears north between the Ditton and Salmon rivers, and extends on the north side of the range to Chesham line; most of the south side of the range from the Ditton river to Chesham, some twenty lots, is generally poor. In the seventh range are found the best mill sites in Ditton.

The eighth range has some fine lands at the western extremity and on the north side as far as the Ditton river. To the west of the Ditton from number forty-four to Chesham line, at number sixty-three, the greater portion of the land is poor and unfit for settlement, with the exception of a small tract along Chesham line to the south of the south branch of Salmon river.

The eighth range has a very good and advantageously situated mill site on the Ditton river.

Some tolerably good lands along the south west quarter; and some better lands on the south side of the range from number thirty-four to number forty-eight between the Little Ditton and Ditton; poor land east of the Ditton, to within four lots of Chesham where there is a tract of good land

Several good mill sites are found in this range on the Little Ditton.

Good settling land along the south west quarter, and quite a tract of land mostly good on the south side of the range, from number thirty-four to the Ditton, at number forty-nine; this tract of settling land appears to extend into Emberton. There is a strip of good land along the Ditton, and thence mostly poor land to Chesham.

The main portion of the settling land in Ditton lies west of the Salmon river, extending it may be said continuously, in a southeasterly direction, from the western extremity of the second range, and including the meadow lands on the Salmon and Ditton rivers.

Besides this main tract, there are smaller patches and tracts of considerable extent, particularly in the fourth and fifth ranges adjoining Chesham.

From what has been shewn in detail, it may be said that the township of Ditton offers good inducements to settlers throughout a considerable portion of it; and although in the north east and south east quarters there is a great amount of waste land, yet there is much land of a superior quality along the Salmon and Ditton rivers, which being considered in connexion with the abundance of water power there would seem to indicate that there is no natural impediment to this township being opened and settled up as rapidly as any of the neighbouring townships and, perhaps, with greater rapidity.

Should the northern and western parts of the township of Emberton, which is yet unexplored, contain good land for settlement in any considerable amount, the settlement of Ditton would be still further facilitated by the survey and opening to settlement of the adjoining township of Emberton.

(*W. W. O'Dwyer*, 20th March, 1863.)

Township of Emberton.

AREA OF THE SURVEY. — Gross area of Emberton :	
based on the United States boundary as laid down...	18,400 acres
Deduct unsurveyed tracts, unfit for tillage, ranges	
III & IV (approximate).....	1,200 “
Remains approximate area actually subdivided.....	17,200 “

This includes, as a matter of necessity, a good deal of poor land; but none that could be left out of the survey without leaving out, probably, an equal amount of comparatively good land in most cases.

BOUNDARIES. — The township of Emberton is bounded on the north by Ditton, on the east by Chesham, on the west by Auckland, and on the south by the irregular line which forms the boundary between the United States and Canada. It is of a gore like shape, being nine miles and a quarter in length from east to west along the south line of Ditton, with a depth of four and a half miles, very nearly, from north to south along the line

of Chesham ; diminishing to a depth of about fifty chains at a point about one mile and a half from the Auckland line where the depth again became about one mile and a half.

OUTLINES.—The north and west lines were established by the former survey of Ditton and Auckland, respectively ; the east line with Chesham was drawn in 1862, while the southerly outline was fixed by the running of the province line according to the Ashburton treaty of 1842.

SUBDIVISIONS. — The subdivisions of Emberton consist of four ranges, running east and west, and numbered from north to south, which are again divided into lots running north and south, and numbered from east to west.

The regular dimensions of the lots are of the depth of eighty chains and eighty links, which forms also the width of each range, by thirteen chains in width ; giving a content of one hundred acres, with five per cent for highways.

RIVERS AND MOUNTAINS. — The rivers are Ditton river and the Little Ditton.—Both of these are small, and, taking their rise in the boundary heights at a short distance, are subject to sudden rise and fall. The width of the Ditton where it crosses the north line of Emberton is about ten or twelve yards, and that of the Little Ditton from seven to ten yards ; the Ditton divides into three considerable branches. Some good low lands are found on the Ditton, in the first and second ranges ; but no extensive bottoms as in the township of Ditton, on the Ditton and Salmon Rivers.

The mountains of Emberton belong to the height of land which forms the province line. They are most extensive in the south eastern part where they take up a large portion of the fourth range, and are generally rough and broken. To the north west these heights are mostly high, hardwood ridges, sloping gradually towards the low land, without presenting any general impediment to settlement and cultivation. Apart from the elevations belonging to the boundary height of lands, a good portion of Emberton is either level or shows gradual undulations of surface.

The geological character of the rock is generally of the slate formation.

Auriferous deposits have been found during the past summer upon the Little Ditton river, within the township of Ditton ; but no search has yet, as far as I have learned, been made for the same purpose within the limits of Emberton. It is by no means improbable that discoveries of minerals

will be made upon the sources of the Ditton, which will give value to the apparently worthless tracts of the fourth range of Emberton.

LUMBER AND WATER POWERS. — Good spruce timber is plentiful in most parts of the township, but no pine of any consequence is to be found. On the uplands and ridges there is plenty of birch and maple, which in places is of a remarkably heavy growth.

One good mill site was discovered on the east branch of the Ditton (lots number eight and nine, second range), and others may very likely be found. In any case excellent water power is to be had in various parts of the township of Ditton, adjoining Emberton, sufficient for all the wants of settlers in the townships.

ARABLE LANDS.—The general quality of the soil and timber is particularly exhibited upon the plan and in the field notes of survey. In addition to this, it will suffice to give a short comprehensive view of the tracts or parts best adapted for settlement, taking each range or range line separately :

1st Range (along Ditton line) — Commencing at the north east corner of Auckland, the land in the first range is of a very good quality on the average and in some parts superior, without break and interruption to within less than two lots of the Little Ditton, making twenty-three consecutive lots, all more or less fitted for settlement ; another settling tract, not generally equal to the last, though in parts very good, is found from number twenty-nine, with some little interruption about the Ditton, to number eight, making eighteen or twenty lots fit for settlement ; those on the east side of the Ditton are flat and level, with a soil somewhat light and rather dry, but on the whole they are rather above than below average quality.

Settlements nearly continuous could be formed along the whole of this line to within about one mile and a half of the south east corner of Ditton.

2nd Range (along range line I and II)—From Chesham line, westerly, are six lots of generally good land ; then mostly soft timber with some patches of passable land to about number twenty-one, whence there are several lots of very good land to number twenty-six. This tract extends northerly to Ditton line ; then four or five poor lots to number thirty-one ; and then very good land to the boundary at number forty or forty-one. This last tract extending northwesterly to Ditton line, and southeasterly to the third range, which gives a continuous belt, from the north east corner of Auckland to about number sixteen, in the third range, of lands mostly fit

for settlement, being over seven miles in length and averaging from a quarter of a mile to a mile in width. Some parts of this tract are very finely timbered with a growth of heavy maple and birch.

3rd Range (along range line II and III)—Poor land from Chesham line to number sixteen mostly. Then a tract of good settling lands to number thirty-four, connecting to the north west with the good lands in the first and second ranges; beyond this to the west, poor, soft timbered, swampy land to the United States boundary, about number forty. On numbers twenty-one and twenty-two, there is some remarkably fine, level, hard wood land free from stones.

4th Range (along range line III and IV)—From Chesham line three or four tolerable lots; and again five or six tolerable lots to number thirteen; then poor land to number seventeen with low land good for grass, on numbers eighteen, nineteen, twenty, twenty-one and part of twenty-two.

This range line was not prolonged westerly beyond number twenty-two; but from all the appearances the land thence to the boundary on number thirty-four is generally poor and unfit for settlement.

A large portion of the fourth range is entirely occupied by the boundary mountains with the spurs and slopes extending northerly from them; and, on the whole, there is but a small extent, comparatively, of good settling land within the limits of the fourth range.

CONCLUDING REMARKS.—The township of Emberton contains less than one third the area of an ordinary township. Its geographical position, lying along the base of the boundary range of heights, would seem to be unfavourable in respect to soil and settling capacities; notwithstanding this, rather more than half of it is fit for settlement, as nearly as can be estimated, which may be considered a very fair proportion of good land.

Of this, some portions are excellent land; in particular may be noticed the block lying mostly in the first range, and extending from Auckland nearly to the Little Ditton, about four miles without interruption, all of which is more or less adapted to settlement and tillage; while in many parts the soil and timber are of first quality.

There are also other tracts of sufficient extent to form settlements when roads shall have been opened to stimulate and assist the efforts of individual pioneers; and on the whole Emberton will compare very favorably

with any of the adjoining townships in respect to general natural capabilities.

For the better development of these, it may be observed that the opening of a road through Emberton, connecting the settlements in Auckland and the southern part of Newport, with the settlements now forming in the centre of Ditton, on and near the Arnold river road, would be a most desirable work in addition to the colonization road already commenced in this section of the township, and would unquestionably lead to the speedy settlement of the best portions of Emberton.

And further, the continuation of the Arnold river road, easterly through Ditton, Chesham and Woburn to Arnold river, although it does not touch Emberton, may very properly here be mentioned as a leading route already well advanced, the completion of which is much to be recommended, in view of the very material tendency which it must have to accelerate the opening up, not only of the townships through which it passes, but also of the wild lands, generally, for some distance on either side of it, including the township of Emberton, and which will no doubt lead directly to the entire settlement of the extensive meadows and fertile lands of the Arnold river valley, of which it is not too much to say that their capacity for production probably exceeds that of any equal extent of territory within a range of many miles.

(*W.-W. O'Dwyer*, 8th February, 1865.)

Township of Marston.

Centre line 3rd range.—At the post of lot number fourteen and fifteen, on the line between the 3rd and 4th ranges, I carefully established a true meridian, by astronomical observation, (variation 15° 7' west) and retraced the centre line across the 3rd range, the bearing of which I found to be S. 89° 28' E. and depth 81.12 chains.

This line passes over a tract of good hard wood lands timbered with a large growth of maple, birch, spruce and beech; the ground is undulating and high, and the soil a good loam well adapted to agriculture.

1st and 2nd range line.—This line had been started with pickets some distance on either side of the centre line, and by comparing its magnetic

bearing with the observation taken at the 3rd range, I found it to agree very well. I accordingly continued it as started northward to the lake shore, a distance of 107.40 chains, planting posts for the subdivision into lots of 26.00 chains each, numbered from 15 to 19.

The land traversed by this line was undulating, mixed hard wood, the soil generally good but stony, crossed in several places by rocky ledges.

From the centre line I ran due south across the township, a distance of 367.75 chains, planting posts for the subdivision into lots of 26.00 chains each numbered from 14 to 1; this line traverses land generally undulating, somewhat broken by ravines near "Moose Bay" and rocky ridges near the south side of the township. The timber is chiefly mixed hard wood and the soil a black mould on a brown loam; the whole of this range with but little exception is in good settling land.

2nd and 3rd range line.— This line I found had been run in the field from the centre line northward to "Victoria Bay", and southward to lot number ten, but no posts for the subdivision had been placed; I therefore retraced, brushed and chained it, planting posts for the lots of 26.00 chains each; I also continued on to the south outline, completing the subdivision into lots of the required width.

The lands traversed by this line extending from "Victoria Bay" to the south outline was over a partly undulating surface, timbered with a heavy growth of hard wood, well watered by numerous small brooks and springs, the soil generally a black mould, with a good subsoil of brown loam, and well adapted to agricultural purposes.

4th and 5th range line.— This line had been run and posted to number seven, at which point I began and continued it out to the southern boundary of the township, completing the subdivision into lots; upon this line there was considerable broken ground, with rocky ledges and swamps, the soil was in many places good, but in general very strong.

It had been run and subdivided to number eight from which I continued it out to the township line; the first three lots traversed by this line were good, being hard wood and mixed swale land, the soil a good black mould on a rich brown loam, well suited to agriculture; the remaining lots were broken, rocky and strong land, soft timbered and poor light soil, until near the township line, where good hard wood was again met with.

6th and 7th range line.—This line passes over rather an uneven surface, being broken by several small streams; the timber is chiefly mixed wood, the soil being black mould on a brown loam, but very strong.

7th and 8th range line.—This line was run south of the centre line as far as number nine, from which I continued it on to the township line, completing the subdivision into lots; for the first five lots the land was generally undulating, hard wood timber and good soil, but very strong; when near the south boundary, the surface becomes much broken by rocky ridges. Although the timber is all hard wood, and the soil a good black mould on a brown loam, it is almost too strong and rocky for good farm lands.

8th and 9th range line.—Number fifteen on this was good hard wood land and good soil, the next four lots, number sixteen, seventeen, eighteen and nineteen were moist and swampy, the soil poor, strong clay loam, and the timber small and stunted, number twenty is good, mostly hard wood but strong.

From the centre line southward the line was run to the width of one lot likewise, from which I continued it on to the south outline of the township; for two hundred chains, this line passed through wet and stony land, a spruce, cedar and larch swamp, with the ground so level as hardly to give drainage to the waters; the line then entered a tract of hard wood, of a good growth of timber and good soil, but very strong, which continued with but little exception to the township line

This swamp appears to be of great extent, and to occupy nearly the whole of the central portion of the township, extending all round the head waters of the Victoria river.

9th and 10th range line.—The line between the 9th and 10th ranges I retraced for twenty chains north of the centre line where it ended; I continued it on to 152.06 chains to opposite lot number twenty and twenty one, to which distance it had been run from the north side of the township. I joined these two lines by an offset of two hundred and twenty-eight links, and measured the width of number twenty—22.06 chains. The ground undulated very gently.

Number fifteen and half of sixteen were good hard wood, maple, birch, beech, spruce and white woods, and the soil a good brown loam.

The remaining four and a half lots were through low swamps, timbered with fir, cedar, spruce, beech and ash; the soil being black mould on a

cold clay subsoil very stony ; this line crosses two small streams, tributaries of the Victoria river.

South of the centre line it was run only eight chains, from which I continued it 326.88 chains to the township line. The ground traversed was very level, wet and swampy. Fir, cedar, spruce, birch and ash, for eighty chains, it then entered much hard wood, birch, spruce, beech, maple, fir, a good brown loam for 40 chains, it again entered swamps, spruce, fir, white maple, white beech, wet and stony soil to within one and a half lots of the township line, when it rises into good hard wood, birch, spruce, maple, hemlock, fir and white wood to the end.

10th and 11th range line.—This line had only been started north of the centre line ; I therefore ran it to 154.35 chains, opposite the post of numbers twenty and twenty-one run from the township line.

I joined these two lines by an offset to the west of 8.37 chains, leaving the width of number twenty, only 24.56 chains.

The first three lots on this line, number fifteen, sixteen and seventeen, with the exception of a few chains of spruce swamp on number sixteen, were all good hard wood, birch, maple, beech, fir, spruce, basswood ; the soil a good brown loam but very strong.

Lot number eighteen and the S $\frac{1}{2}$ number nineteen are spruce and cedar swamps ; the north part of number nineteen and twenty are good hard wood land, south of the centre line it was likewise only started, I accordingly ran it out to the south boundary of the township, a distance of 327.39 chains ; the ground on this line undulated very quietly all the way, in good and bad land alternately. It crossed two small lakes and several small streams, all waters of the Victoria river.

Lot number fourteen in both ranges is chiefly soft timber, and taken up by the waters of the lake ; from the lake the land ascends very gently through mixed wood, gradually merging into hard wood ; the soil is good but very stony ; on lot number twelve the line enters a spruce and fir swamp, the soil light, wet and stony, and the timber small ; on number eleven it again changes into hard wood, the soil good but very stony ; the south parts of number nine, eight and seven are all swamp ; number six is mixed timber ; on number five the line enters into mixed hard wood which continues on with but little change to the township line, the soil generally being black mould on a brown loam, well watered

with numerous small streams and springs, from the base of Megantic mountain.

11th and 12th range line — This line was only started at the centre line, and I ran it on to 156.07 chains, opposite to the post of number twenty and twenty-one, I joined the two lines by an offset to the west of two hundred and seventy-four links; the first five lots namely number fifteen, sixteen, seventeen, eighteen and nineteen, were all wet and stony, spruce and cedar swamp. At lot number sixteen I crossed a small pond whose waters flow into the other brook. Lot number twenty is good hard wood, well timbered with beech, maple, birch, spruce, basswood and iron wood, with considerable quantities of mascabina, the soil a deep and rich black mould overlaying a good brown loam.

From the centre line southward, I ran the line two hundred and sixty chains, and posted off ten lots when I came to the north east slope of Megantic mountain, where the land was so steep and rocky as to be quite unfit for cultivation; indeed, the last two lots in the twelfth range are nearly all on the mountain; here I ended my line, considering it useless to continue it further, the land being much too steep and rocky for agriculture.

Lots number thirteen and fourteen on this line were in good mixed hard wood, moist and stony soil, black mould in abundance.

Numbers twelve, eleven, ten and nine are soft timber chiefly spruce, light, sandy, moist and very stony soil. On lot number eight, the line ascends into hard wood gradually rising on and closing with the Megantic mountain, the soil being good but stony; all the land round the base of the mountain is rich and good, but in general very stony.

Twelfth and thirteenth range line. — This line I ran from the centre line southward 182.00 chains, laying off lots from fourteen to seven, when I came to the inaccessible part of the Megantic mountain, beyond which the land was not arable. On the first four lots on this line, the land was level, wet and stony, small timber and very close woods; the line then ascends rapidly through good hard wood land up to the end; the soil is very good, but covered with large, loose stones, some of which are of a large size.

North of the centre line I ran 156.00 chains, planting posts for lots from fifteen to twenty; on the last lot the line entered an open bog, in which I made search for the old line, run from the north side, but could find no

traces of it. This swamp and bog extend a considerable distance to the south west and north west round the head waters of the Otter brook, in fact, beyond the limits of the township and into Hampden. It is perfectly level and so low that it is flooded in the spring and fall freshets. It is intersected by canal-like brooks, which are unapproachable in the wet season from the boggy nature of the soil, and I am of opinion that the line from the north side of the township (where I have myself seen it on the field) has never been run beyond the north side of this swamp, for during the spring and fall it is almost impossible to traverse it. With this line, I closed my survey of the residue of the township of Marston, and, after paying and discharging my surveying party, I immediately repaired to Quebec where I arrived on the 12th November last.

Having now given a detailed account of my survey, with a description of the land and soil traversed by the several lines run, I shall conclude with a few general remarks on the township as far as it came under my observation.

The township of Marston fronts and is bounded to the east by lake Megantic, north by the township of Whitton, on the south by Clinton and Chesham, and west by Hampden. It is divided into thirteen ranges of an average depth of 80.00 chains; these again are subdivided into twenty-eight lots of twenty-six chains each, but, owing to some inaccuracies of the survey of the adjoining townships, the north line of Chesham cuts off from Marston the whole of lot number one and a part of number two, throughout eight entire ranges; on the first five ranges from the lake shore the land is nearly all good hard wood, well timbered with a heavy growth of birch, maple, spruce and beech, with occasionally bass wood, iron wood, elm and ash. The soil is black vegetable mould several inches in depth resting on a subsoil of rich brown loam; the surface of the land is rolling, and in places broken into abrupt rocky ridges, particularly on the south side of the township.

This section is well watered by numerous small streams and springs, and on the whole well adapted to settlement.

The Victoria river, a considerable stream emptying its waters into Victoria bay on lake Megantic, traverses nearly its entire length and drains the west, south west and north parts of the township. The land bordering this stream and its tributaries is low, flat and swampy and not at all suited

for settlement ; the ground is not only low and wet, but very strong, rendering it, even if capable of being drained, unfit for cultivation.

On the north and south sides of the township, the land gradually rises into rolling hills, well timbered with a large growth of hard wood, the soil being a rich loam ; but, like all this part of the contry, the ground is thickly covered with loose water-worn granite boulders, many of which are of considerable size, rendering it somewhat difficult of cultivation.

Pine lumber in this township appears to be scarce, and confined to scattered trees along the borders of the main streams, but spruce of large dimensions and the finest quality is very abundant throughout the township, with great facilities for driving saw logs down to the lake by the main streams.

(*F.-W. Blaiklock*, 13th August, 1863.)

Township of Whitton

The land in the southern part of Whitton and northern part of Marston is rolling but not rocky, principally a heavy loam and very suitable for the cultivation of wheat and vegetables.

There is an abundance of spruce, cedar and yellow birch, which sell readily at the different stations of the International Railway. Most of the roads are in very bad order, especially the Victoria road to lake Megantic, and the road along range line eight and nine to the International Railway, this latter road being the principal outlet to the railway for many of the settlers in Marston, who are very desirous of obtaining a Government grant for these roads, which is certainly very necessary.

(*Armand Fletcher*, 26th October, 1882.)

Township of Woburn.

The whole depth of the second range is in good, open hard wood, the timber of a large growth, and the soil a good brown loam ; the land is undulating and lying to the east toward the middle branch of the west fork of Arnold river.

Lots numbers one and two in the third range are good hard wood ; number three has more spruce, the soil being light and the bottom stony ; it is also broken by the middle branch running through it.

In the fourth lot, the line traverses a black spruce swamp, the land quite level, and the soil wet and stony and quite unfit for cultivation. The seventh lot is crossed by the south fork of the west branch ; between these two streams the land is chiefly spruce swamp, poor and stony soil, not fit for agriculture ; crossing the south fork the line ascends gently through good hard wood to the eleventh lot, the soil being good but stony, chiefly surface stones. Lot number eleven is very stony and rocky and a little broken by the small brook. In number twelve the timber is hard wood and the soil a good light loam, but stony ; in the thirteenth, fourteenth and fifteenth the land ascends gradually with an inclination to the west, the timber is large and of a good description, the soil a good brown loam but very stony, and between the thirteenth and fourteenth somewhat broken by rocky ridges.

Lots sixteen and seventeen ascend the hill which is very steep ; the timber is large but very stunted in height with very close underwood, indicating a hard, shallow and rocky subsoil. The land traversed by the west outline is undulating to near the province line, where it ascends a considerable hill, forming the boundary between Canada and the United-States. The soil is a good brown loam covered with several inches of vegetable mould ; the timber varies from pure hard wood to spruce swamp, the former being generally of a heavy growth ; two considerable brooks and also some tributaries of the north branch of the Arnold river were crossed.

At eighty chains and eighty links from the Arnold river road line, I laid off the rear line of the second range astronomically east, which I continued to the main branch of the Arnold river, a distance of five miles, eighteen chains and fifteen links, marking off the third, fourth, fifth, sixth and seventh ranges. I also posted off the rear of the lots in the second range from fifty-two to seventy-three, corresponding with those on the front.

The land traversed by this line is undulating, hard wood, with a light stony soil ; there are also several lots of very excellent land, timbered with a heavy growth of maple, birch, spruce, ash, elm, cedar, &c., the soil being a deep black vegetable mould, on a subsoil of rich brown loam, well watered with numerous springs and small streams.

Lots numbers sixty-three and sixty-four are traversed by a high, steep and rocky hill, which runs in a northeasterly direction all across the second range ; the most part of the lots in this range are well suited for agriculture, the soil being of good quality, although rather strong and, upon approaching the river, somewhat broken by rocky ledges.

From eighty chains and eighty links on the centre line in rear of the second range, I ran a line astronomically south for the division between the third and fourth ranges, laying off twenty-one lots of one hundred and five acres each, and six irregular lots containing a gross area of one thousand, nine hundred and forty-four superficial acres.

Lots one, two, three and four are nearly all good hard wood land, but the ground is very strong ; on the fifth and sixth lots the land ascends a steep hard wood hill, which slopes away to the south branch and extends north easterly towards the second range. From lot number seven to fourteen the land is undulating hard wood, and the soil of much of it is very good, being a vegetable mould overlaying a clay loam subsoil, but generally strong ; from the fifteenth to twenty-first, the land is more broken, the line running along the east slope of the high land forming the province boundary ; the timber is chiefly hard wood, and the soil a rich loam, but very stony, in some places almost too much so to form good arable land.

Beginning from the rear line of the second range, I ran due south to the centre line, laying off lots from one to twenty-one, inclusive ; finding that there remained a sufficient depth of land between the province line and the Arnold river for two tiers of lots, I continued this line sixty-five chains further and laid off five more lots namely to number twenty-six.

On lot number one, the line descends the face of the hill at an angle of 30° to the brook and ascends 25° the opposite side ; the timber is spruce with a few inferior pine, and the ground covered with large masses of loose rock ; lots numbers two, three, four and five undulate along the east side of a hill but not too steep for cultivation, the soil is good but stony, and the timber hard wood mixed with spruce ; numbers six and seven are

level, cedar swamps, black mould on a clay subsoil; numbers eight and nine are a light sandy and stony soil timbered with spruce.

From nine to fifteen, the land is gently undulating, timbered with a heavy growth of birch, maple, beech, and spruce; the soil a good light loam but stony; for the remainder of those ranges, the line passes over mixed wood and spruce swamp, the soil where dry being light and stony, and a cold clay loam where wet.

The fourth range line consists of twenty-six lots and contains an area of two thousand, seven hundred and fifteen superficial acres.

Although this range line passes through considerable swamp land, I have every reason to believe it does not extend far to the west, but that there is good hard wood land lying between the high ground traversed by the third range line and the fourth and fifth, for, upon running up the centre line, I found good hard wood up to the foot of the hill forming the boundary.

I ran this line astronomically south the distance of two hundred and eight chains or sixteen lots, where, being about three chains from the Arnold river, I turned a rectangular offset to the east, and have made lot number seventeen in the fifth range to front upon that stream.

The ground passed over by this line for the first sixteen lots is mixed soft wood and spruce swamp with a light sandy and stony soil in the remaining part of those ranges; the lots front upon and are bounded by the Arnold river, along the banks of which the soil is in many places very good, being an alluvial deposit brought down by the stream.

The fifth range consists of twenty-nine lots and contains an area of two thousand, nine hundred and seventy-six superficial acres.

From the prolongation of the line in rear of the second range, I ran a line due south to the Arnold river, a distance of one hundred and eighty-six chains, and have laid off nine lots in both ranges, and thence continued it between number fifteen in the sixth, and ten in the seventh range down to the river, which it intersected only thirty-two links east of the line on the south side.

The ground traversed was undulating, the timber mixed hard wood and the soil light and stony.

From the centre line, I ran due north between lots number twenty-four in the sixth and number twenty-nine in the seventh range to the Arnold river, a distance of eighty-six chains and thirty-three links, the timber being chiefly spruce, and the soil sandy and stony.

Beginning again at the centre line, I ran due south for one hundred chains toward the summit of a high mountain, laying off lots from thirty to thirty six. On the first four lots the soil is very good, being very level, timbered with birch, spruce, maple, cedar, fir, and ash of a large growth, and the soil black vegetable mould on a good brown loam subsoil; the remaining part of this line ascends the north face of the mountain, timbered with hard wood, but most of it too stony and rocky for cultivation.

This mountain rises near the Arnold river and running in an east by south direction unites with and forms the high land forming the province boundary on the east side of the township, and beyond which I did not consider I was justified in continuing the survey, as, to all appearances, the land southward was much too mountainous and broken to be available for agricultural purposes.

Beginning from the centre line I ran due south for one hundred and twenty chains, laying off lots from thirty to thirty nine. The first lot ascends very steep up the north face of a high hill: in parts the ground rose at an angle of thirty and the rock is all broken up into sharp angular fragments and stream loosely over the surface of the ground, which makes it very difficult to get up and down.

From this hill there is an extensive view of the country to the northward, the Spider lake, Lake Megantic, and all the valley of the Arnold river can be plainly seen; the latter appears to be nearly all of mixed timber, spruce predominating; considerable pine can also be seen scattered through the valley.

Lots numbers thirty-one and thirty-two follow the broken top of the mountain, the timber being spruce and the soil light, stony and rocky; from thirty-two to thirty-seven, the land is good mixed hard wood sloping to the eastward, the soil a good brown loam; numbers thirty-eight and thirty-nine are on the north face of the mountain described in the last range, and the ground is too steep and rocky for cultivation.

From the centre line, I continued this line northwards between number twenty-four in the seventh range and twenty-nine to twenty in the eighth

range, a distance of one hundred and twenty-two chains to the south east fork of the Arnold river. This line, it was supposed, would intersect the main river, but finding it was not likely to do so, I made the south east fork the boundary down to the main river; thence the lots in these ranges will front on the Arnold river down to the Clinton line; and were posted off along its banks accordingly.

The quality of the land along this stream is somewhat varied; in some places the banks approach close to the margin and are precipitous, in others they recede and have a considerable space of alluvial flat where the soil is excellent; there is also a considerable extent of good land lying between the range line and the south east fork, and is continued within lots twenty-nine to twenty, and indeed nearly the whole of the eighth range is of a good quality, in particular in the lower part of the township, where the alluvial flats of the Arnold are of considerable extent; this range, I consider, contains some of the best land in the township.

This line I began at the centre line and ran due south one hundred and forty-three chains to near the summit of the mountain previously mentioned, and laid off lots from thirty to forty-one.

On the first seven lots, the line passes over low, undulating spruce lands, the soil light and stony, but there appeared hard wood at a short distance on either side; the remaining five lots are all on the north slope of the mountain and, although the soil and timber of the lower part are good, the land is too steep and stony for cultivation.

Beginning again at the centre line, I ran due north three hundred and ninety-two chains and eighty-five links and have laid off lots from twenty-nine to one; the excess which is equal to fifteen chains and eighty-five links I have called lot A, and is situate between number one and the Clinton line.

The first five and last five lots on this line are in good undulating hard wood, timbered with a good, thrifty growth of maple, birch, spruce, fir, ash, iron-wood, bass-wood, &c, and the soil a good brown loam.

The remaining part of the line crosses several steep and rocky hills, spurs from the great chain of the province line; these, however, all slope away to the west, leaving a considerable space of arable land between their bases and the Arnold river, timbered with a heavy growth of birch, maple, spruce, beech, cedar and ash. I had occasion to cross this tract at different points and found it such as I have described.

The ninth range being situated near to and forming the high land of the watershed, between the waters of Canada and the United States, is generally too rough, broken and mountainous for agricultural purposes. Although in several places there appeared to be good land, yet there could not be any extensive or continuous settlements made.

Beginning at the fourth and the fifth range line, I ran due west between lots numbers twenty-one and twenty-two, ninety-nine chains and fifty links up to the boundary, which I retraced in a north west direction to the nearest iron monument placed under the Ashburton treaty in 1842; this line rises gently through good, mixed hard wood land, birch, maple, spruce, beech, fir, &c., &c., of a heavy growth to the third range where it ascends very steeply up the hill to the province line.

Again starting from the above mentioned point, I ran due east four hundred and eleven chains and seventy-six links, and again intersected the province line on the east side of the township, which I retraced to the nearest iron monument. For about one mile on either side of the Arnold river, the land is flat, timbered with spruce, the soil being generally a cold clayey loam and very strong; in the seventh range it crosses the north end of two rocky hills, of mixed timber, with some spots of good soil between them; in the eighth the south east fork is crossed; the land then rises gradually in good mixed hard wood until it meets the high mountain, forming the eastern boundary of the township; between the south east fork and this mountain, the soil is in many places very good, being a black mould on a brown loam, but it is all very stony, and, indeed, the whole of this section of country is thickly strewed with a coarse granite boulders, evidently belonging to the drift period, for in no instance was the fixed granite rock met with.

This line I retraced from where it is intersected by the road line run by Mr. O'Dwyer, from lake Megantic to the province line down to the bank of the Arnold river, beyond which no further trace of it could be discovered.

If it had ever been run beyond this point, the line had become lost in the alluvial flats bordering this part of the river; I therefore continued it astronomically east till I reached the province line and scaled the latter to the nearest iron monument.

From the Megantic road line to the Arnold river, the line descends very gently through soft wood land and swamp, the soil being light; it

traverses the river in the alluvion forming its bank and enters a cedar swamp.

Leaving this swamp, the line ascends very gently through an old brulé which is now covered with a small, stunted growth of spruce, larch and poplar.

There appears to have been a long time ago a considerable quantity of pine growing here, as there are many charred stumps of pine trees still standing; this flat extends a long way to the north and east, as far as the Spider lake and lake Megantic, and forms the much talked of intervale and meadow lands of the Arnold river. These meadows are certainly splendid land, producing wild grass enough to feed a thousand head of cattle, but the best and greatest extent of them are situate in the township of Clinton, those in Woburn not extending above one mile up the river and being limited to a few acres in depth on either side.

From the brulé, the township line ascends very gradually through good hard wood land up to the province line.

The Arnold river takes its source in the high lands forming the boundary between Canada and the United-States, and, after running a northerly course for about twenty-five miles, discharges its waters into the Spider river, at about one mile from lake Megantic; for about seven miles from its mouth, it winds its sinuous course with a gentle current through the splendid alluvial flats of the township of Clinton, and is navigable for small boats and canoes only; it then becomes shallow and rapid, rushing with great impetuosity over a bed of large granite boulders.

It is a small stream averaging not more than a hundred links wide, and has but a small volume of water except during spring freshets and heavy rains, when, from the mountainous character of the country in which it has its rise and the rapid fall of its bed, it rushes down from the high grounds with such velocity that the narrow and crooked channel in the low ground cannot discharge the increased volume of water, and the consequence is that it floods the banks to a considerable extent; this would be a great drawback to agricultural improvement of the intervale lands and would likely destroy either root or grain crops sown near the banks. These freshets not only occur in the spring and fall of the year, but also during heavy summer rains; I had several dollars worth of proof of this fact by having my depot of provisions destroyed, although situated at least eight feet above the ordinary level of the stream.

Having now given you a detailed account of my proceedings, and a general description of the land embraced within my surveys, I shall close my report with a few remarks relative to the probability and means of the speedy settlement of the township.

The nearest point from which access may be had to Woburn is either by lake Megantic, the first settlement of which is distant thirteen miles, or from Victoria thirty miles without even a winter road; the first thing necessary therefore to the opening up of this township will be the construction of either the Victoria and Arnold river or the Megantic roads (both of which have been laid out), the latter of which should, in my opinion, be immediately proceeded with as offering greater facilities for settlement along the line and being so much shorter.

The only objection to this line is that it would pass through five miles of conceded land, in the township of Clinton, but this I conceive should not be held as an objection in comparison to opening up a good country for colonization.

Through the township of Marston, the road line passes through the best of land for settlement, and were it opened every lot along it would be immediately taken up. The township of Clinton would likewise soon be settled, as it contains some of the finest land in the country, for its extensive meadows offer greater advantages to the new beginner than any of the adjoining townships, by enabling him to cut hay and keep stock several years in advance of the former on the ordinary uplands. Until one or the other of these roads be opened, but few settlers will, in my opinion, be found to penetrate into Woburn. But few men will be found nowadays to do as was done by the old colonists of the Eastern Townships, namely, to take a back load of provisions and with rifle and axe traverse some forty to fifty miles of unbroken wilderness to make a farm, where for years they remained without the means of communication with the older settlements. Either the present class of settlers have much degenerated, or else the greater facilities of communication throughout the country have unfitted men for such undertakings.

(*F.-W. Blaiklock, 1863.*)

COUNTY OF DORCHESTER.

Township of Langevin.

The township of Langevin is of irregular form, and bounded as follows, viz: towards the north west by the township of Ware erected by letters patent; towards the south west partly by the township of Metgermette; towards the south east by the St. John river, or the boundary line of the province; and towards the north east, partly by the surveyed townships of Daaquam and Bellechasse.

On the seventh of October, 1861, having arrived at the starting point (mentioned in my instructions), to the south of the river Daaquam, namely, at the post planted by me on the line between the first and second ranges of the township of Daaquam, I ran a line south 45° W astronomical, to serve as the range line between the sixth and seventh ranges of the township of Langevin, for a distance of four hundred and sixteen chains, which I divided into lots of thirteen chains front, numbered from the north east to the south west.

I planted a post and a boundary, and, starting from there, I ran the division line between Langevin and Ware, and running north 45° W, I continued it as far as the south east outline of the township of Ware for a distance of four hundred and sixteen chains and forty links, as far as the river Daaquam, which I met at one hundred and eighty-five chains and which is very narrow at this point. I found the land to be of a medium quality, spruce is the most common wood; but on the remainder of the line which runs through a forest of maple, birch, elm, ash and cedar, the soil is of superior quality, comparatively free from rocks, generally level, and the soil of a grey color.

Then returning to the north east line of the township of Langevin, to the post already mentioned between the second and third ranges of the township of Daaquam, I thence ran a line due south west to serve as the range line between the sixth and fifth ranges of the township of Langevin, for a distance of four hundred and sixteen chains, which I divided into lots of thirteen chains in breadth. On the fifth lot, I met a swamp of twenty by fifteen chains; I also encountered another of circular form, measuring

fifteen chains in diameter on the sixteenth lot, as far as which the land is only of middling quality ; but, starting from the eighteenth lot, the line crosses magnificent hard wood bush, consisting of maple, birch, ash and cedar, the soil being of a grey color and clear of rocks.

Having returned to the centre line, I started from the post which I placed at the end of eighty chains and eighty links, and thence ran my base line to serve as the line between the fifth and fourth ranges, which base line I ran four hundred and sixteen chains, twenty-five links, to the north west, as far as the intersection of the line between the townships of Watford and Langevin. On the fifteenth lot, I crossed a little river forty links in width, flowing towards the south. Further on, upon the nineteenth lot, the line passes on the north side of a swamp stretching towards the south east and measuring thirty chains in width by about a hundred in length. There is another little swamp to the south, on the thirty-first lot, having a breadth of ten chains ; on the eighty-first lot, there is a large burnt tract which extends as far as the side line to the north west, and for about a hundred chains towards the south.

The new growth of timber which has started since the fire is composed of cherry, white birch, spruce and cedar ; the quality of the land generally is good, and the soil is not stony. The forty-third lot is crossed by a river of still water of about fifty links in width and four feet in depth. This river swarms with fish. The land along this front line is very level and fit for cultivation.

At the western extremity of my base line runs the division line between the township of Langevin and those of Watford and Metgermette, which line I was obliged to renew, the old one having been destroyed by fire, which made a clean sweep since it was traced. In the first place I ran this line to the north west, a distance of a hundred and thirteen chains, and placed a post and boundary where the old range line should have passed. This line is crossed at fifty chains to the north of the base line by a river of sixty links in width, flowing towards the north west. I caught a glimpse of the old line in this part for a space of ten chains, on a hill which escaped the fire, and I continued the base line as far as the St. John river, a distance of five hundred and seventy eight chains and seventy five links, planting at each range a post and a boundary. And here again I met a river which crosses the fourth range, flowing to the south west, with a width of seventy five links.

This range is all burnt land, as also the third range, and in each of them the land is good and the soil not stony. On the second range, at forty chains, the *brûlis* terminates, and then begin hard wood forests, composed of maple, birch and beech; the soil, there also, is excellent, and the same may be said of the timber and soil of the first range, where the old line is visible. On range A, at eighteen chains, I met the line between the townships of Watford and Metgermette, where I planted a post and a boundary; the old line not having been run further, I extended it as far as the river St. John, finding everywhere hard wood and a soil nearly free of stones. Range B is also excellent; the quality of the land is good, and it is wooded with cedar, fir and spruce. At 194.75 chains, I placed a boundary and a post on the north side of the St. John river, at the point where the line touches this river. The latter's width is seventy-five links.

Having finished my work on the south side of the river Daaquam, I pitched my tent on its banks, and scaled it by rectangular crossings. I also divided the lots of thirteen chains front. This river is generally from three to four feet deep, with an average width of one chain, a tortuous course and a quiet flow; its banks are shaded by trees, and the lands on the north side are of superior quality, as also the hard woods, with which they are abundantly covered. In addition, the river abounds with fish, and affords at several points magnificent water powers. The scaling of this river being finished, I proceeded to the north bank of the river Daaquam, to the south west line of the township of Bellechasse, and I traced and chained that line towards the north west as far as the south east line of the township of Ware, planting at each range good posts and boundaries for a distance of four hundred and eleven chains.

At seventy-seven chains on the eighth range, I met a branch of the river Daaquam, whose width is one chain and fifty links. On the ninth range there is a little river fifty links in width, running north west; there is another of the same width, and running likewise to the north west, at seventy-eight chains, in the eleventh range. The whole of this line passes over land covered with a mixed growth of fir, spruce, birch and cedar, and at one hundred and forty chains on the last range it traverses magnificent hard wood forests of the best quality.

After laying down the outlines of the township of Langevin, I proceeded to the subdivision of the north part of the river Daaquam, and for that purpose I went two chains by the north of the north west branch of that river,

to the post between the eighth and ninth ranges, and ran a line due south west, to serve as a range line, a distance of four hundred and sixteen chains, which I divided into lots of thirteen chains front, meeting everywhere the most beautiful hard wood. The soil is of a grey color and the surface shows few stones. On the twenty-fourth lot, there is a superb site for a church, in a hard wood bush on a slight swell, presenting on all sides a magnificent view, while the surroundings would afford a most convenient site for a village.

Returning to the north east side line, I ran another range line as far as the south west side line, a distance of four hundred and sixteen chains, which I divided into lots of thirteen chains front. This line runs over level land, with few rocks, composed of a greyish loam and wooded generally with maple, birch and beech. On the sixth lot there is a river of sixty links in width flowing southward and carrying a volume of water powerful enough to run a mill. There is another river thirty-five links wide on the fourteenth lot, running also towards the south. Again on the twentieth lot, I met a third stream of thirty links in width, running also towards the south, like the preceding.

Lastly, I proceeded to the north east side line to the post between the tenth and eleventh ranges, and there I ran the last range line as far as the south west side line. This range line passes generally through fine timber and on good soil, with few rocks. The fifth lot is crossed by a river of fifty links in width, running south. The seventh, eighth and ninth lots are covered with hard wood and slope towards the north on an angle of eight to ten degrees. The land, which comes afterwards, is covered with a mixed growth, consisting of fir, spruce, birch and cedar, and is absolutely level as far as the twenty-eighth lot, where it becomes rolling to the twenty-fifth lot, where there is a river twenty-five links wide, flowing to the south east. The remainder of the range line, as far as the central line to the south west, passes through a magnificent hard wood bush.

I have closed the report of my operations, as well as my remarks on the township of Langevin; but before sending them in to the Crown Lands department, I must say that, summing up all my observations on the nature of the soil and its irregularities whilst exploring this township, I found on the whole the land very favorable to cultivation, and offering to the settlers who may locate thereon the best guarantees of success. What tends most to inspire me with this confidence is the remarkable fact that this territory is nearly everywhere extremely level and generally free from rocks or

stones, which permits of the opening of roads with the greatest facility, and let me add to this that splendid rivers and streams cross the lands in every direction.

(*E. Casgrain*, 15th February, 1862.)

On the twentieth of August last, having arrived in the township of Langevin, at the terminus of the centre line, previously run by me between the fourth and fifth ranges, I continued this line southward 45° W., astronomical, for the depth of three ranges, planting at each range, namely, the fourth, third and second ranges, a post to serve as a starting point for the range line to be laid down. This line crosses land which is rather level and adapted to cultivation; the timber is mixed and composed of maple, birch, cedar and fir. The soil is comparatively free from rocks. Returning to the line between the third and fourth ranges, I ran a line going straight north east and straight south west, and extending to the north east for a distance of four hundred and sixteen chains, and to the south west a distance of four hundred and three chains; I then divided this range line into lots of thirteen chains over the whole distance between the north east side line of the township of Langevin, and its south west side line, forming a length of eight hundred and twenty-two chains. Along the course of this range line, there is a great number of streams which water it in all directions. There is one on the sixth lot of the width of thirty links, running towards the south; it is fordable.

On the thirteenth lot, there is another of fifteen links, which also runs towards the south and which is also fordable. A third river of twenty-five links, running in the same direction as the preceding, crosses the twenty-eighth lot; at four chains, to the north of the range line, there is a lake, with an area of thirty-four acres, which contains no fish, although rather deep. On the seventy-first lot is a rather large river of one chain in width abounding in fish; it is generally fordable. Before reaching this last lot, two other rivers are met, one on the fifty-second lot of twenty-five links, running towards the south west, and the other, on the fifty-eighth lot, of forty links, running towards the south. At fifteen chains and twenty-five links, on the sixty-third lot, I reached the south west side line.

Along the whole course from one extremity to the other of this range line, I came across nothing but level and very cultivable land, composed of

good brown loam or black vegetable mould in the low grounds, while on the swells, the soil is a greyish loam, with few rocks. This line also crosses a burnt tract which extends towards the west, so that the timber is at present only a young growth. The cherry, maple, the red maple, birch and white birch have replaced the original growth, which must have been hard woods.

3rd range.—I went to the post between the third and second ranges, whence I ran a range line parallel to the first and of the same length. Like the preceding, this one is watered by many streams. On the eleventh lot, I met one with an average width of fifty links, which is fordable; the twenty-third lot is crossed by another of one chain and fifty links in width which, I believe, is formed by several small brooks and a small stream, that mingle their waters and ultimately discharge into the Saint John river. On the third range, their banks are generally swampy. There is another small fordable river of fifty links, on the fifty-sixth lot. On the forty-second lot, at two chains and eighty links, to the north of the range line, there is a lake of about thirty-five acres which is rather deep, but contains no fish. Its surroundings are arable, the timber is of good quality and composed in part of cedar. The soil is everywhere level and eminently fit for cultivation, throughout the whole of this range, especially in the south west part of the centre line, which is much preferable to the rest. We came across a few maple groves which the fire had spared. The soil is a grey loam on the higher grounds, especially on the fifty-second, fifty-third, fifty-fourth and fifty-fifth lots. The land, on account of its being so perfectly level and of its superior quality, is exceedingly fit for all kinds of tillage. The woods which grow on it are the alder, the choke cherry, and the mountain ash. This range has also been swept by fire, but less than in the fourth, so that in general the forest presents a finer appearance and the timber is of larger size.

From the post between the second and first ranges, I next ran a line parallel to the preceding to serve as a front line to the second range. Here again, as in the lower ranges, the same remark applies as regards the large number of streams: unfortunately, as water powers, all these rivers are of but slight value owing to the lowness of their banks.

On the ninth lot, I came across a river of fifty links, running to the north east. It is fordable. The twenty-third lot is crossed by another of one chain and twenty-five links, which discharges into the river Saint-John. On the thirty-eighth lot, there is a third of seventy-five links, passing through a small swamp which could be easily drained. The forty-third lot is

also crossed by a little river of twenty-five links, running south, while on the forty-ninth lot, there is one of forty links, running to the north east. Lastly, on the fiftieth lot, another river of thirty links flows towards the south. Starting from the fifty-second lot, these last mentioned lots contain ash and some cedar.

The quality of the soil, in this range, is generally good, and mostly everywhere fit for settlement. Exception, however, must be made of about twenty lots which are too stony, and two or three which are swampy. On the other hand, the twenty-ninth, thirtieth, thirty-first and thirty-second lots are magnificent, level everywhere and covered all over with hard wood consisting partly of maple, and partly of birch, elm and ash. The soil is generally a grey loam in the hard woods and a yellow loam in the mixed woods. On the high grounds the surface soil is a yellow loam, and the subsoil clay. The section to the south west of the centre line, in the second range, is rolling in some places and forms a continuous succession of hills and dales, offering to the settler land adapted to the most varied tillage. Timber is in abundance. There is plenty of cedar of considerable size; pine alone is lacking.

(*E. Casgrain*, 17th November, 1862)

With these trifling exceptions, all this portion of Langevin is watered by rivers and brooks falling into the river Daaquam. Its main branch rises in Bellechasse or Mailloux, entering Langevin on the thirteenth range, and leaves the township at the end of the road on the eighth range line, and another large branch also rises west of Langevin, entering that township in the thirteenth range, and, collecting all the small streams at or near the northerly angle, runs south easterly across the township and leaves it in the eighth range; a third considerable affluent rises in the small lakes and streams in the westerly angle of Langevin, collecting all the small streams that cross into that township from Ware on the boundary line in the tenth, eleventh, twelfth and thirteenth ranges of Langevin, runs diagonally across that township, arriving at the Trappists' saw mills and falls into the second large branch of the Daaquam in the ninth range.

As an agricultural district, these townships, particularly Langevin, offer great advantages as to soil, which is generally a sandy loam, resting on sandstone, of easy cultivation and covered with dense forests of large birch,

maple, spruce, sapin, with some larch and ash, but very few pines and less cedar; although there are many rocky hillocks and mountains incapable of cultivation, yet the land is generally less stony than the north part of the other townships in the county; even among the mountains in the northerly angle of Langevin, a great deal of very good land is found. From the light nature of the soil, the windfalls of large trees turned up by the roots and heaped on each other to the height of eight or ten feet, sometimes exceeding a chain in width, are uncommonly numerous, especially in the westerly angle, where two or three interrupted our progress on almost every lot. The ground being covered with snow, I had very few opportunities of observing rocks, contrary to the other portions of the county, where clay slate everywhere predominates. The rock formation in Langevin and part of Ware consists almost solely of stratified sandstone, fine and coarse, excellent for sharpening tools of all descriptions. Clay slate is rarely seen, quartz *in situ* or granite never, nor did I see any indications of valuable metals. Iron, perhaps, to some extent may be found, for I found attraction at several places, particularly at post range twelve and thirteen, rear line of Langevin, where it amounted to a dozen of degrees westerly, with all our precautions.

(*W. Henderson*, 20th November, 1865.)

Township of Metgermette North.

The land, in the first range, to the east of the centre line, is very good. To the west, it is good enough, but swampy in some places. In the second range, it is of average quality. However, towards the west, swamps are met with, as indicated on the plan.

In the third range, the land is very good, except near the river St-John, where it is low and swampy. In the fourth range, near the township of Linière, it is good, but there are swamps all through this range near the centre line.

In this township, there are several mill sites, one of which is situated near the road leading from the sugaries to the Kennebec road. This road is used by the sugar-makers.

Nearly all the merchantable timber has been cut off, and there only remain a few small pines and tamaracs. I see no obstacle to the opening of

colonization roads on all the range lines. I wish to call attention to the splendid sugarics in the third and fourth ranges. The heavy fall of snow which occurred during my survey made it very difficult for me to determine the nature of the soil, which I was compelled to estimate in certain cases from the appearance of the ground and the character of the timber. I found no geological specimen worth sending to the department; but, under this head also, the heavy snow falls prevented me from making the necessary researches.

(*Edmund B. Temple*, 25th January, 1866.)

In range five, the soil is very good. To the east of the centre line, near the river St. John, it is rich and very level, and contains some fine sugarics. Almost all the merchantable timber has already been cut off; only a few small pine and tamarac remain.

I found no geological specimen worth sending to the department. Colonization roads can be easily opened along all the range lines.

(*Edmund B. Temple*, 6th November, 1866.)

I have the honor to transmit to you the report of the survey of the north east part of the township of Metgermette North, situated in the county of Dorchester. I extended the central line, to the south-east line of the township of Watford. In this section, I noticed that there is considerable merchantable timber, consisting in spruce and cedar. All the tract, which extends from the upper part of the fifth range, running towards the north west and passing between the lakes, is covered generally with sugarics. The land or soil is generally level and quite fit for cultivation, although stony. All the part of the township of North Metgermette, which extends from the eighth range, towards the north, is of rich soil and quite fit for cultivation, and is remarkable especially for its timber.

(*P.-A. Proulx*, 10th May, 1870.)

Township of Metgermette South.

I had to subdivide eleven ranges in this township, forming a total superficies of 23,400 acres of land divided into 279 lots, of which 110 are regular and 169 irregular. I have further the honor to observe that the six first ranges of the township of Metgermette South consist wholly of level land and seemingly well adapted to cultivation, as much from the nature of the ground as the excellent quality of the soil. As for the other ranges, they seem little suited to settlement on account of the bad quality of the land, while the lakes and rivers which occur in them, although abounding with fish, do not appear to offer much advantage to settlers, as the whole of the most valuable pine timber has been cut and removed. Generally speaking, the section which I divided is fairly level ground, but it has been stripped of all its best pine and now offers only some spruce of any utility.

(*F. Legendre*, 15th Nov., 1886)

Township of Standon.

The country is mountainous, but well wooded. There are beautiful and good sugaries, on lots twenty-two, twenty-three, and twenty-four of the first range, as well as on the lands still belonging to the Government in the second and third ranges. and in the last one especially, there is excellent merchantable timber. As for the reversed lots, for a distance of five or six acres, from the river Etchemin, in the first range, the land is good, although somewhat stony. The north west part is taken up by a mountain which is unfit for cultivation. but which on the slope on the river side is covered with excellent sugaries and timber. In the second range, the reversed lots contain about twenty or twenty-five acres of good land on the end joining the river, but the rear part is of little value, except for the timber which it contains. The lots of the third range are the shortest, but the land is better than in the second range, and there are good sugaries towards the foot of the mountain.

(*Geo. Roy*, December, 1885.)

Township of Ware.

In ranges 6, 7 and 8, the land is generally poor, but there are some good bottoms along the river. In ranges 9, 10, 11, 12, 13 and 14, the land is good, generally free from stones, and the bush is mostly hard wood. In ranges 10 and 11, there are some fine sugaries. I do not think there are any in ranges 12 and 13 towards the south east of the south eastern outline. The timber has been cut off all along the river, but there still remains a good deal of spruce.

(*E.-D. Henderson*, 14th October, 1873).

Township of Watford.

The part of the township which I surveyed is generally level, with only a few small elevations and free from rocks. I only met one ledge of rocks and it is not high; it occurs on lot 29 of range 7. There are a number of sugaries in this township, all situated on small swells, and taken up. In the low grounds, they are better and the soil is a rich brown mould. Formerly, great fires swept the mixed woodlands of this township, which are formed of a sandy loam and generally free from stones, and destroyed all the timber of any value. The new growth on them to-day is mainly composed of fir, spruce, white birch, &c. This well delay settlement for some time, owing to the want of firewood and building timber.

This township is crossed by several fine streams, with generally deep beds. I only noted one place adapted for a mill site, at a falls of the river Veilleux, which is about 10 feet high and situated on lot 22, in range 7. Along the different rivers, there are a number of bottom lands with a rich alluvial soil covered with a growth of alders. At certain points, some fine pieces of ground are met, which, if cultivated, would make splendid meadows. There is little merchantable timber in the region which I surveyed, as the greater part of the bush has been destroyed by fire. As for the residue, a part of the timber has been cut off and all of value carried away.

(*Andrew Ross*, 7th December, 1869.)

From lot eighteen (ranges 8 and 9) as far as lot forty-four, inclusively, we come across nothing but swamps covered here and there with shrubs and hard wood. The lots as far as number eighteen are covered with mixed timber, and the soil is well adapted to cultivation. I then went to the tenth range, to the centre line, and draw a line between the ninth and tenth ranges. The land in this part, (towards the west) is not fit for cultivation, being nearly all covered with swamps. I renewed the line of the tenth range, and continued thus for a distance of thirty-eight lots.

The soil of the tenth range is stony and covered with different kinds of wood ; it is generally of good quality with the exception of a few marshes.

The land in the ninth range is of good quality, but the eighth is nearly all swampy.

I then extended a trial line towards the south, crossing the tenth range, one part of the land being fit for cultivation and the other swampy ; and, continuing the same line, across the eleventh range, I intersected the outline of the township of Metgermette at a distance of 73.93 chains from the eleventh range. I found the land everywhere of good quality and covered with mixed timber.

I then laid down the line of the eleventh range, taking my starting point from the trial line and running towards the east, and I intersected the outline of the township of Langevin, at a distance of sixteen lots and twenty-four chains. The soil, in this section, is generally level and covered with soft wood ; the land is very advantageous for cultivation.

Having completed this work, I ran the line of the eleventh range, starting from the trial line and going westward towards the central road of range A, township of Cranbourne, and at a distance of twenty lots and four chains I met my centre line, whence I continued the line of the eleventh range, and measured from my centre line thirteen lots and forty-nine chains for the lot G.

The land is covered with different kinds of wood and is generally level ; it is undulating here and there and very good for cultivation, with the exception of one part close to the central line, in the direction of the township of Cranbourne, which is not fit for cultivation and is of little value.

Having finished work in the north east range, according to my instructions, I proceeded to the post between lots numbers twenty-two and

twenty-three, on the south west line of range D, where I took my starting point.

The soil, at the beginning of the lot, has been stripped of its timber by fire, but as we penetrate into the interior the woods are thicker; however, there is nothing but soft woods such as fir, cedar, &c. The land is rolling and of excellent quality. There are a few sugaries.

I next ran the line between the eighth and ninth south west ranges, going first towards the east, and measuring five lots, and 15.41 chains more for lot number seventeen, at the end of which I met the rear line of range B, on the central road of the township of Cranbourne. The land on this course is covered with different kinds of wood, and is quite fit for cultivation; secondly, directing my course towards the west, I chained seven lots. I again continued the said line for a distance of about twenty-five chains further without, however, meeting the outline of the seignior of Aubin Delisle, on account of the woods in this locality having been destroyed by fire.

The land, on the seven lots that I have just mentioned, shows an undulating surface; the timber is generally mixed; nevertheless it contains some fine maple groves.

This township, as far as I can judge from the sections that I went through, is very fertile and presents great attractions for colonization. A great number of our people could, with profit to themselves and advantage to the country, settle easily on these lands, instead of emigrating to the United States.

(A.-J. Duchesnay, 30th March, 1870.)

COUNTY OF GASPÉ.

Townships of Cap Rosier, Gaspé Bay North and Fox.

The soil, especially in the township of Fox, is of superior quality, the lower part of the lots being generally formed of very rich alluvion, and will soon be entirely settled. Thanks to the zeal of the Rev. M. Duret, the *curé* of the place, the fishermen are beginning to take more interest in agriculture. He has succeeded in starting the construction of a grist mill, a thing which was absolutely necessary and which will give a strong impulse to colonization.

In the township of Gaspé Bay North, the land is not quite so good; it is, however, very suitable for agriculture. The soil is rather light, but of good quality. The timber is not so good as in the adjoining township. I have no hesitation in saying that these lots would sell promptly if the Government would grant a small sum yearly to open the road above mentioned.

I returned with my party down the river *au Renard* (Fox river). I traced the line giving the depth of the second range, then ran the rear line of that range, following my instructions with great care. The soil in this part is much superior to that near the front, very level and well timbered with maple and birch. Unfortunately the ash, which is so valuable in this locality for the manufacture of tubs for the exportation of fish, is becoming scarce. These lands will be colonized before long, especially if the Government continue to assist in the opening of roads.

The low price obtained for codfish and the construction of a grist mill are both reasons which will induce the people of Cap Rosier to take up these lands, which are especially suitable for wheat growing.

The survey which I have just made embraces about all the arable land. The chain of mountains passing in rear even takes off a portion of the regular depth from some of the lots in the northern part.

(A.-L. Poudrier, 1880.)

Township of Chloridorme.

The first range of the township of Chloridorme is in general very mountainous, and all brooks and the rivers flow in the bottom of deep gulches. The best soil for culture is very often found on the sea shore, but more especially at the Petite Vallée, at Frigate Point, at Petite Anse, at the Little and Grand Chloridorme and at the Pointe Sèche, and over these points is already distributed a population of two hundred and twenty-five souls.

There are also in the first range, in the section which extends from l'Anse aux Canons, to the western line of this township, a great number of lots capable, as far as the section in the immediate neighborhood of the sea is concerned, of forming agricultural settlements of sufficient extent at least for the fishermen ; but these lots will only be settled when the Maritime road will have been built, as all these lands can never be opened by exclusively agricultural settlers. In order to induce a fisherman to settle here, communication must be made easy with the coast, where he can, at certain seasons of the year, carry on his favorite occupation of fishing. •

In the eastern part of this township, the mountains seem to come down closer to the sea, and form on the shore capes from one hundred to one hundred and fifty feet and more in height. Nevertheless, it is in this section, that the population is most numerous, and the more advanced settlements are found in the bays of the Pointe-Sèche, of Little and Grand Chloridorme, which were the first points inhabited, because they offered the best facilities for fishing.

There is, no doubt, at the depth of this range, and more particularly in the valleys formed by the rivers of the Little and Grand Chloridorme and others, a goodly number of little lakes and tracts of land well adapted to cultivation ; but many years must elapse before the fishermen can be induced to make clearances at a distance of half a mile or more from the sea shore.

(*Ant. Painchaud*, 12th April, 1869.)

Township of Christie,

The soil in general in this township is good, even on the tops of the mountains, where there are to be found plateaux of rather considerable extent, and whose access is easy, if we except perhaps the Sauteux mountains. The land, in the two basins which are formed by the branches of the Martin and Porpoise rivers, is of a fertile nature and formed in part of rich alluvion. Nevertheless, after having crossed these two valleys and examined their extent, I did not find them sufficiently broad to divide them crosswise into farm lots. Besides fir, spruce and the white birch so abundant throughout the whole Gaspé district, a great deal of ash is found in this township, and on the flanks of the mountains maple groves are of sufficient extent to form sugaries, of which many are already being worked. Pine is not very abundant or of superior quality, at least in the ranges in the neighborhood of the sea; it grows generally on the tops of the mountains. Fire has done great damage to these forests, and there are mountains whose entire surface has been swept, leaving only calcined rocks.

(*A. Painchaud*, 4th March, 1871.)

Townships of Christie and Duchesnay.

These two townships are crossed by several little brooks, of which two, the Vallée and the Albour brooks, are of good size, and also by three rivers, the Martin, Porpoise and Claude rivers. These rivers, with the exception of the Porpoise, are formed by the waters which discharge from the north west slope of the Schikshock mountains and receive in their course the contributions of a large number of small tributary brooks. Along the course of these rivers, there are alluvial deposits varying from one to six feet thick and of considerable extent. At the mouth of each, are the homes of brave settlers, who devote themselves to fishing and farming. To my great satisfaction, more attention seems to be paid here to agriculture than to fishing, a disposition which unfortunately is not often noted among the settlers of the county of Gaspé; therefore, the people here live in perfect comfort, anxiously awaiting the opening of the road to see their circle enlarged and their social relations increased.

The shore along the front of the townships of Christie and Duchesnay is generally rocky and rather difficult of access. In this locality, as along

the Gaspé coast in general, the shores are bordered by high bluffs, which give this region a wild and sometimes gloomy aspect. We travel generally here between the sea, which washes at our feet and which often stops our progress, and cliffs of several hundred feet in height, whose summits frown down on us.

As shewn by the plan, the base line, from the south west line of the township of Christie, as far as the second lot, serves as a road line. Here I left the original line, taking in preference a straight line, for on this course there is no obstacle to prevent the construction of a cheap and excellent road. The land is perfectly level, with the exception of a little hill towards the middle of the ninth lot, and the soil is everywhere of yellow loam, easy to work, and without stones.

The lands crossed by the line of the road, in the townships of Christie and Duchesnay, are all, over an area more or less extensive, easy and advantageous to clear. In the south west part of the township of Christie, the road line runs along the height of lands, bordering the river, as far as the fifteenth lot, whence it has a north north east direction and extends through a tract of arable land, slightly sloping towards the north east, as far as the Vallée brook. Between the Vallée brook and the Martin river, the line is close to the river and runs through a tract of land which is also very advantageously situated for colonization. After a gradual rise, starting from the Vallée brook to about midway to the Martin river, we descend by a continuous slope to the mouth of that river. The land has, moreover, a general incline from south east to north west; but all the slopes apart from the rather steep hill bordering the Vallée brook, on the north east side, are gradual and easy, and a great number of lots are of easy access, and could be easily cultivated along their whole length. The soil is everywhere of excellent yellow loam, and the timber, which consists of fir, birch, white birch and spruce, is everywhere of splendid growth.

The alluvial deposits at the mouth of the Martin river are worthy of notice. These lands for a depth of two to three miles have an average width of sixty to seventy chains and a rich growth of hard wood. There is a good number of rather extensive maple groves which are being annually worked as sugaries. At the mouth of this river, there are also a few resident settlers, who live by farming and fishing. As a fishing ground, this place enjoys an excellent reputation.

From the hill bordering the Martin river on the north east side to the division line between the townships of Christie and Duchesnay, the road crosses

land which is perfectly level. These lands, along a frontage of from three to four miles, are all so advantageously situated and so suited to colonization, that there is no doubt that, just as soon as the road is opened, there will be in this section a well settled township. The same may be said of the whole plateau between the Martin and Porpoise rivers. For a depth of three to four miles, the land is everywhere of easy access and the soil, which is generally of rich yellow loam, is of superior quality. The only obstacles met with here are the rather deep ravines of two little brooks known under the name of the Portage brook.

In the township of Duchesnay, the lands crossed by the road line present the same uniformity as those of the township of Christie. The most worthy of notice are those which lie within the alluvial deposits of the Porpoise and Claude rivers. The courses of these rivers are marked by lands of easy and profitable culture for a depth of four to five miles. The Porpoise river, at a distance of about three-quarters of a mile from the shore, divides into two branches, both of which are bordered by good farming land.

Along each of these rivers, there are extensive maple groves, of which some are worked in the spring as sugaries.

The land crossed by the road line from the hill formed by the ravine of the Porpoise river, on the south east side, to the mouth of the Albour brook, are broken for about half their depth, and their cultivation is rendered difficult by the hills and mountains which skirt the sea; nevertheless each of these lots can show an average area of fifty to sixty acres easy and advantageous to cultivate. The soil is in general a yellow and slightly sandy loam.

From the Albour brook to the seigniory of Mont-Louis, the land slopes gently towards the sea-shore, and offers so many advantages that the greater part is already taken up. The lands bordering the Claude river are for a depth of several miles more extensive than those of the Porpoise river. The part adjoining the Gulf is already in an advanced state of cultivation.

As I have had the honor of already remarking, the most important places, along the front of the townships of Christie and Duchesnay, are the the Martin, Porpoise and Claude rivers. These localities on account of their already prosperous agricultural condition are certainly destined to form centres of colonization. At the mouth of each of these rivers are basins, sheltered and protected against the sea by long sand-bars, where, at all stages of the tide, fishing craft seek and find excellent shelter; consequently

these places are frequented by fishermen from Sainte-Anne-des-Monts and elsewhere, who come each year to spend a few months fishing. There is also along the frontage of these two townships a good number of small settlements, of little importance yet, it is true, on account of their youth, but they promise to become rather extensive.

The lands in the second range of these two townships are in all respects equal to those of the first range, and, apart from the advantage which the settlers of the first range enjoy in being close to the river for fishing purposes, it may be said that all the lands of the second range are more advantageous even than those of the first range; the land is everywhere more level, and the soil of better quality. Several lots have been already applied for, but this especially in order to get the benefit of the numerous sugaries which are on the river points and on the slopes of the hills which border them.

The chief kinds of timber in the part of these two townships which I traversed are fir, white birch, spruce, birch and maple. The cedar swamps are few in number and of small extent; in all we met and which are invariably situated in low lands, the cedar is of fine growth and good quality. In some places, we came across some pine, particularly on the banks of the Vallée brook and of the Martin river. This timber, wherever seen, was of good size and seemed to be of superior quality.

(*C.-F. Roy*, 21st October, 1862.)

Township of Denoue.

I am compelled to say that the general aspect of this township is not very favorable for colonization. The land is very mountainous, and the soil is dry and sterile. Moreover, if the Grand Anse be excepted, there is no other cove or river to entice the fishermen to settle there. The western part of the second range is, perhaps, the only one which contains a few tracts of good land fit to be cultivated; but the steep hills that must be climbed to get there, will always be a serious obstacle to their being settled by fishermen settlers, who always need easy communication with the sea. The timber alone indicates a poor and backward vegetation, and very seldom is any hard wood found. Pine only is abundant enough in the interior to lend some value to this township, in which there are yet only two resident settlers.

(*A. Painchaud*, 8th March, 1871.)

Township of Douglas.

The greater part of the tract surveyed is good clay soil, generally mixed with sandstone and clay gravel, except in the direction of the fourth and fifth range line, from lot number two eastward, in both ranges where it changes to a very poor quality of reddish sand, covered with a stratum of greyish white earth, about three inches in depth; many sandstone boulders are also found, particularly on lots twenty-seven and twenty-eight, in the vicinity of the Malbaie line.

As will be seen by the accompanying plan and profile, part of the fourth and fifth ranges, between the York line and lot number six inclusive, is very rough and mountainous, but the land is good; even approaching the very summit of the mountain on lot number five at an elevation of 1,530 feet above sea level, the soil seems to be of excellent quality; a good proof of the same is that, among the brushwood, alder, pembina, hazel, &c., are found in abundance.

There is very little merchantable timber left standing within the limits of the present survey. All the pine has been cut for square timber, and the same may be said of the spruce also. There is an abundance of fir and bouleau, some good yellow and black birch, and hard and soft maple are also found here and there on the side hills.

The whole tract is well watered, being traversed in the centre by the river Anse à Briand; and the tributaries of Seal Cove, Bois Brulé and Malbaie rivers drain it in every other direction.

There is no scarcity of water power for manufacturing purposes.

On the Anse à Briand and Malbaie rivers are found splendid quarries of sandstone, most suitable for grindstones and whetstones and probably for sculptors' use also.

There are extensive beds of these from the coarsest to the finest grain in layers varying in thickness from half an inch to five or six feet lying north by east dip 30° and in the beds of the streams, I also found hones of superior quality. I have transmitted some of them, with other specimens, to your department.

It is surprising that so much good land in such close proximity to the seaboard and so easy of access remains so long unsettled: it is, however, the case, and the reason is obvious.

The people around Douglastown are all good "fishermen," which in other words may be understood as *very poor farmers*.

Just as soon as spring opens, all hands capable of working are off to the sea and don't return until autumn ; and only the women and children are left to attend to the farming.

The introduction of a few good, substantial farmers and pioneer backwoods men into the place would render immense service.

At present there is not a single settler in the third range ; some small patches of clearance are made here and there, but the aggregate area under cultivation in the whole range would not form ten acres. The greater part of the second range is also unsettled, although the land in both of the said ranges appears to be of excellent quality.

There is no doubt that in Douglastown and up the valley of the river St. John, there is room for extensive settlements.

In Douglastown, spring opens a little later than at Quebec, but it is compensated by a longer autumn and is less subject to early frosts ; oats, wheat, and other cereals and root crops of all kinds succeed well there.

(*H. O'Sullivan*, 13th December, 1881.)

Township of Douglastown.

The quality of the soil is at once established by the aspect of the ground. The best pieces of land seem to have been cleared and cultivated long since. As for the remainder, it appears to have been viewed with disfavor by the squatters, probably on account of its stony character. The soil is chiefly a light sandy loam at the neck of the Lagoon near the bridge. There is a mixture of clay in it, and, proceeding westward, an abundant vegetable matter derived from the ferns and other marsh plants entering into its composition. The whole region along the shore of the Lagoon, formed by the mouth of the river St. John, can easily be made productive by the use of seaweed and alluvion. The forest, probably a third growth, is composed of clumps of balsam, double balsam, fir, grey spruce, white birch, a few alders and some elder.

The best lots are those near the landing, where all the business of the place centres. From the post road going westward, the lots are more or less adapted to cultivation. Lots 8, 11, 15 and 18 are especially well constituted to make small farms.

(*G. LeBouthillier*, 3rd December, 1888.)

Township of Duchesnay.

In general the soil, in this township, is not perhaps as good as in the township of Christie. Nevertheless, in the valleys formed by the Porpoise and Claude rivers and in the part of the first range comprised between this last mentioned river and the Rebours brook, there could be made rather extensive settlements. The Porpoise river does not form a valley sufficiently broad to allow the division of lots crosswise, especially in the second range, where this river forks into two branches, and where the mountains come closer together and grow higher. At the Claude river, having found lands which are taken up and cultivated, even in the third range, in a north and south direction, I thought it my duty to continue to divide the first ranges. The land comprised between these two rivers offers few advantages to colonization, the tract comprised between the Rebours brook and the Claude river excepted. The mountains are very high, divided by a host of small brooks, which form deep gulches and discharge into the branches of the Porpoise river and the Rebours brook.

Apart from the wood which is generally found in the Gaspé district, that is, fir, white birch and spruce, pine is found here on the tops of the mountains, which are not always of easy access, on account of the steep cliffs forming the sides of these mountains. Birch and maple are rather in abundance, as also cedar and ash in the valleys of the rivers. On the Claude and Porpoise rivers, there are several sugaries which have already been worked by the settlers located on the banks of these rivers.

As in the neighboring township, fire has committed great destruction in these two first ranges of the township of Duchesnay and has robbed the forest of a considerable part of its value. The valley of the east branch of the Porpoise river has all been swept by fire, which crossed the western branch of the Rebours brook and extended in this valley as far as the sea shore.

(*Ant. Painchaud*, 5th May, 1871.)

Township of Fortin.

These explorations convinced me that it was perfectly useless to seek for land fit for settlement beyond the banks of the Malbaie river, and I at once decided to limit my operations to the laying out of ranges three and four, which are crossed by this river and the different brooks which empty into it. This is why I began the run the division line between the second and third ranges.

But soon the valley of the river began to narrow, leaving no level land between its banks and the foot of the mountains, which grew higher and came closer together, with their bases jutting beyond each other in such a way as to render the course of the river rapid and crooked and forcing it to take a north and south direction, directly contrary to its general course towards the east. I crossed on lot number twenty-one the northern branch of the river, which is hemmed in between two ranges of very high mountains, and I again continued this division line, between the second and third ranges, as far as lot number twenty-eight, when I decided to run the centre line beyond each of the branches of the river, to the north and south, to get a better knowledge of the surrounding country.

If, within the two first miles, or at least as far as the north branch of the river, there is on each bank a stretch of fifteen to twenty chains of level land, which goes on constantly narrowing, it is stony land, covered with moss, and poorly wooded, indicating poor soil and one very little fitted for cultivation. Beyond the forks, there is hardly enough ground on either bank for the construction of a road.

In general, all this country is wooded with fir, spruce, white birch and mountain ash, with a few birch, especially on the summit of the mountains. The timber is not tall and the rocky character of the land prevents it from extending its roots, except on the surface of the ground.

All the merchantable and building timber, which was in the neighborhood of the river, was cut off a number of years ago, and all along this river to a short distance above the forks, there is nothing but stumps and the chips of pines, which have been converted into square timber or into logs that were sawn into deals at a mill erected two or three miles from the mouth of the river.

There are still a few pines to be found on the tops of the mountains, especially to the south of the river ; but they are not sufficiently numerous to

cover the expense of getting them to the river. The main branch of the river, however, does not present any great obstacles to the driving of timber, as the rapids, although numerous, are not of a nature to injure the wood on its way down. It must nevertheless be remarked that, at a distance of four miles within the township of Fortin, the course of this river becomes so tortuous and changes direction so abruptly that the timber would be liable to easily jam in one of these bends and accumulate and form one of those jams, such as are met with on the Saint John river and as are frequently difficult and expensive to break up. As for the north branch of the river, at a distance of a mile or a mile and a half, there is a water-fall of a rather considerable height which offers an insurmountable obstacle to driving timber. In addition, at a very short distance beyond this fall, the river divides into a multitude of little brooks, which form only a continuous series of small falls in the deep ravines of the mountains. The main branch of the river seems to take its rise at no great distance in a group of mountains, which seem to form the watershed of the lands between Gaspé Basin and the Bay des Chaleurs. And as far as the eye can reach towards the south east, there is nothing to be seen but a continuous chain of mountains, having divers directions and separated from each other by ravines in which flow small brooks discharging on one side, to the south, into the Grand and the Pabos rivers, and on the other side, to the north, into the Saint John river.

I was already far enough into the township of Fortin to see at once that I would nowhere find in this direction land fit for colonization, and that, besides the scarcity of lumber, the difficulties of transportation in so mountainous a region should, far from offering any encouragement to those who would care to go into this branch of industry on the small tributaries of the Malbaie river, turn them from it entirely.

(*A. Painchaud*, 21st December, 1869)

Seigniory of Pabos.

Through the whole of the first concession, from the seigniory of Grand River as far as the Grand Pabos river, as also in the second and third concession east of the centre line on Petit Pabos river, indications of a rich and fertile soil are generally found, including certain tracts of low land fit for the production of hay or grass for cattle which now grows wild over

and around a large number of natural meadows and lakes, that dry up during the heat of summer ; on the higher and more cultivable lands, there are no rocks, and everything suggests a very productive soil, particularly on the tract comprised between the seigniory of Grand River and the river Tetu, where the land is level and very well adapted for settlement.

In the peninsula of Pabos, the range St. Hubert and that part of the first concession north of the bay of Pabos, the land is very rocky, and it is only on the banks of the bay, on lakes and in some spots where the rocks do not crop out above the surface of the ground, that a limited amount of cultivable land is found.

In the second concession the lands become more mountainous on approaching the Pabos river, two ranges on each side of which could be settled by taking advantage of certain tracts of level land between the river and the foot of the mountains. The third concession west of the Petit Pabos river is intersected by a branch of that river and a large number of streams which flow into it. These streams flow through deep ravines in the mountains, and if there are fertile spots in these mountains, access to them is very difficult.

This seigniory, there is no doubt, is still rich in merchantable timber of all kinds. It is true that the old Pabos company has taken away a certain amount of pine from the part nearest to the sea, but there still remains enough to afford a supply for several years, (if the wood rangers are to be believed), but it must be remembered that the Grand Pabos river crosses only a part of the seigniory, and "Petit Pabos," does not extend far into the interior. There still exists an abundance, even in the first ranges, of all the other kinds of useful timber such as spruce, balsam, birch, cedar, ash. Cedar is most in demand by the neighbouring settlers, who come here to fell it in large quantities for building their fishing vessels. Birch is abundant, large sized and sound, and will therefore become an important article of trade.

(A. Painchaud, April, 1874.)

Township of Percé.

The only stream deserving of notice in this tract is Brèche à Manon, a river thirty links wide, running in a ravine, which I have estimated at ninety feet from the highest summit, and the valley measuring about seven chains along the base line; with the exception of lots numbers five and six, which are broken by this river, the remainder presents a generally even appearance and a soil well adapted for cultivation, resting, with a good depth, upon a red sandstone and limestone conglomerate formation, from which it derives a fair portion of aluminum, sand and carbonate of lime, undoubted constituents of a fertile soil. This character of the soil will apply generally to the whole of the region forming the subject of the present survey.

Commencing again at the post numbered nine and ten, on range B, I chained lots of thirteen chains in perpendicular breadth, and set posts of the description required by the general instructions with numbers well cut thereon to separate the lots toward the east in this range, that is to say, as far as lot number twenty-two, inclusively. Further more to the western limit of lot number one in range A, on this side of the range, the country maintains generally the same level character, for I cannot but include in this definition lands that are slightly rolling, and also the constituent elements of the soil which produce a light red clay loam of fertile quality, sustaining a healthy growth of white and black spruce, white, yellow and black birch, with fir in abundance, a tree so thriving in these parts and attaining such dimensions as to supply nearly the whole of the planks and boards used for building in this locality and the adjacent townships.

I crossed at this point the west branch of La Petite river, a brook of twelve links, and a branch of the same formed by a dried up brook discharging apparently through an outlet five links in breadth in the high water season, besides the bed of an old brook in which pools of water form at intervals after heavy rains.

Beginning at the post marking the western limit of the base line of range A, I laid off that range.

The soil in this range is undoubtedly richer than in range B, and the timber which is of the same kind is taller and of larger girth. There is in addition white ash, mountain ash, a few scattered sugar maples, and a luxuriant growth of underbrush. There are large tracts of brown and black

loam from which the cedar has been mostly all cut away, and around their trunks the alder grows in luxuriance.

The whole range is composed of a moister soil than range B, and the easy draining thereof would be well repaid by its greater productiveness in comparison with the stonier surface of range B. The river Ansea-Beaufils and its tributary are the only streams worthy of remark in this section; the former of fifty links wide and two links deep, and the latter of fifteen links wide, both with high banks rising at very steep grades.

Having drawn a trial line from the part between lots numbers twenty-two and twenty-three, on the fourth range, astronomically, south $25^{\circ} 30'$ east, to the intersection of the base line of the third range, I thence laid off lots of thirteen chains each, to the eastern limit of the second range from lot number twenty-two to lot number four, inclusive.

The soil is of the same description as in the preceding section or range A, and well deserving of the attention of the agriculturist, but the country is more rolling, especially to the eastward approaching the Mountains of the Falls, so named because they begin on the side of the village of Percé by deep precipices with cliffs amounting to vertical walls in many places, and abruptly terminating the surrounding land.

There will be a rush for the purchase of these the moment they are offered for sale. Although broken in rear by the Mountains of the Falls, their proximity to the village of Percé gives them much value. Their front presents a slight elevation to the north. The soil is the best in the township, and the timber is of a quality to attract the attention of many wood cutters, who call this tract the "Common."

In closing my report, I may extend my remarks to the township itself, and briefly note its physical aspect and resources from the colonization standpoint.

Except the eastern part which is mountainous for some distance inward, there remains in the subdivided ranges of the township, now in a complete state of wilderness, a large and excellent field for colonization. Although the banks of the streams are rounded hills rising steeply from the water's edge on each side, which is often the case in many parts of this province more to the south, arising, no doubt, from the proximity of the sea and the favorable climate resulting therefrom, the soil varies from the light stony to the heavy clay loam, overlaid in many places with rich vegetable mould.

It sustains a thrifly growth of small timber amongst which the most valuable is white cedar, but there is also an abundance of hardwood including frequent groves of maple. Such are the resources that this township in common with the adjacent country offers to the enterprise of intending settlers.

(*G. LeBouthillier*, 3rd December, 1868)

Township of Rameau.

Although the whole of this township is in general very mountainous and intersected by branches of rivers and streams flowing in deep ravines, with the exception of that part nearest the seigniory of Grand River, where the valley of the river is wider and where the land rises gradually towards the first and the fourth ranges, still, in the north-west part, the mountains are of much greater elevation approaching much nearer to the river, in which they bathe their steep sides and present an impassable barrier to reaching their summits, which can only be attained by taking a circuitous route and following some stream, where the opening of a winter road is always practicable.

The north arm, forming of itself a fine river, with but one one considerable fall or rapid, offers perhaps as many advantages as the Grand River itself for those who might wish to get out their winter wood by this route, and it is for this reason that I retraced on the ground the division of the fourth range.

As respects the merchantable timber, I cannot say that the pine is very abundant or of superior quality: it is generally met with on the summit of the mountains and a little on the low lands in the immediate vicinity of the river, where, to make up for this deficiency, cedar is found in large quantities. I remarked some maple trees on the flanks of the mountains, but in too small quantity to form sugaries of any importance. The red birch, which is generally sound and of rather large size, is met with everywhere, mixed with white birch, balsam and spruce, these last being predominant.

Although the part of the township of Rameau which is traversed by Grand River is not rich enough in timber to furnish an abundant article

for exportation, excepting, perhaps, the cedar, nevertheless these lots of land will be always valuable for building wood and fuel for the inhabitants both of the seigniory of Grand River and of the neighbouring townships; and I have no doubt that, as soon as they are offered for sale, they will find numerous purchasers to cultivate and improve them.

(*Ant. Painchaud*, April, 1875.)

Township of Taschereau.

Soil adapted to tillage is not found in this township, except in the coves and valleys formed by the rivers of l'Anse Pleureuse, of Gros-Mâle and of Manche-d'Épée, and also on the sea shore on the fourth or fifth first lots, near to the Little Magdaleine, where the mountains recede somewhat from the shore. The land comprised between these different rivers is thickly wooded, and composed of high mountains on whose summits there are no plateaux of any extent. Between the Gros-Mâle and l'Anse Pleureuse, these mountains are from fifteen hundred to two thousand feet high, and form cliffs and perpendicular rocks on the sea shore at the foot of which, in many places, the sea leaves no passage. In the valley of l'Anse Pleureuse river to the south of the lake, there is a pretty considerable tract of fertile land, although this valley is not more than half a mile wide at its widest point. Around the lake, in the five first lots, there is no land fit for cultivation, as the mountains rise from the very banks of the lake itself. At Gros-Mâle, although the valley between the mountains is narrower, there is nevertheless on the banks of the river a tract of fertile land adapted to the formation of good settlements. The valley of the Manche-d'Épée is, perhaps, a little wider, and contains a fertile soil, particularly on the banks of the north west branch, which will soon be settled, for clearances were already begun as soon as the lots were laid out.

Fir, white birch and spruce, as elsewhere throughout Gaspé, are the prevailing woods in this township. Pine seems to be more abundant in the interior than it is in the first range, where it is not generally of the best quality. Birch and maple occur on the slopes of the mountains, and ash and cedar, principally, on the river banks. On the mountain tops, the wood is short and thin, indicating a dry and arid soil, from which it does not draw

very abundant nutriment ; but below, on the bottoms along the banks of the river, it is taller and shows all the signs of a richer vegetation.

Fire has also committed much damage in this township and has already destroyed a great part of the forest, principally, in the neighborhood of l'Anse-Pleureuse, of Gros-Mâle and of the Manche d'Epée. At this last place, especially, the farmers have greatly suffered, having lost their crops besides several barns and other buildings.

(*Ant. Painchaud*, 6th March, 1871.)

COUNTY OF JOLIETTE.

Township of Joliette.

The whole township is arable and well adapted for settlement and colonization, being well watered with lakes and rivulets of pure water, living springs and streams, except some mountains shown on the accompanying plan and particularly described in my field book now returned.

On the Archambault, McGee and Swaggin rivers, there are beautiful mill sites, well adapted to suit the wants of settlement; speckled trout are numerous in most of the lakes and L'Assomption river abounds with all species of fish. The soil is chiefly dark loam, land rather stony, timber, red and white pine, white birch, cedar, spruce and maple; the white pine has been all culled and the better part taken away for lumbering purposes, except one excellent grove from about Nos. 6 to 12, in the 5th and 6th ranges; there is also an extensive grove of red pine on the N. E. side of L'Assomption river, between that and the N. E. boundary line of Cartier, which has not been much culled.

The bush is plentifully stocked with moose deer, caribou and beaver on the creeks and outlets of lakes, mink, marten and other species of fur-bearing animals, together with partridge, ducks, &c., &c. Upon the whole it is capable of affording tillage land to the *habitant*, hunting, trapping and fishing to the sportsman or hunter and lumber to the lumberer.

(F.-P. Quinn, 3rd September, 1864.)

There is unlimited water power to be found in this township on the Black river, Leprohon river and the river David, which I doubt not will be taken advantage of in time.

The general feature of this township is mountainous, interspersed with lakes, more especially towards the rear.

There is very little timber adapted to lumbering purposes to be met with except spruce, which is generally of a large size and abounds in great quantities.

The best land is to be found in the first and second ranges, and along the valleys of the Black river and the river David.

(*James W. Martin*, November, 1855)

The township of Joliette is situated partly in the county of Joliette and partly in that of Berthier.

It is divided into farm lots and has a breadth of eight miles and a depth of five ranges in its south western part and of six ranges in the north eastern.

The soil, in general, is good and adapted to tillage, being composed of a yellow loam, more or less sandy, stony and rocky ; there is also some black mould, the whole covered with vegetable matter.

Occasionally, the eminences are remarkable works of nature, from which the whole district can be contemplated at a glance until the eye rests upon the horizon.

The different kinds of timber found in this township are the white spruce, cedar, maple, birch, fir, soft maple and beech ; there are also pine and white birch, but in small quantity only. The prevailing timber is the white spruce and cedar, which are being worked by the lumberers since the almost total destruction of the pine.

I noticed several water powers along the course of the river Noire and the river David ; they are now utilized by saw and grist mills.

The settlers find a profitable market for their produce with the lumbermen, who are large consumers of pork, hay and oats.

(*U. Dorval*, 30th January, 1873.)

COUNTY OF KAMOURASKA.

Township of Bungay.

The land is not equally good everywhere ; the sixth, seventh, eighth and ninth ranges are unfit for colonization, on account of their stony soil. The range line in depth of the township is broken by rocky and sterile hills and hillocks, with the exception of the part of the two last miles to the north east, where the land is rather level and fit for cultivation. This good land seemed to me to extend towards the south, and ends at a little distance to the north of the range line.

Along the range line which is drawn between the fifth and sixth ranges, the land is only good at intervals ; we come across stony tracts. Then comes the range line between the fourth and the fifth ranges, where I was rather pleased with the soil. The lower ranges are composed of a good and heavy soil, with the exception of the last lots, adjoining the north east line of the fief Grandville, which are very rocky. The woods in this township have been partly cut over by the lumberers who seem to continue every year to cut and carry off the few good trees remaining and which would be required for the wants of settlers.

(*Vital Desrochers*, 12th May, 1853.)

Township of Pohenegamook.

In the report which I had the honor of giving in to your department, last year, I have already mentioned that the range line between the first and second ranges of this township passes in general over a range of mountains, which runs to the height of lands separating the waters which empty into the Saint-Lawrence from those which flow towards the Saint-John, or the bay of Fundy, so that the land is in general rather unfit for cultivation. On the other hand, in the rest of the township, the land is generally good for all kinds of tillage, being mixed from distance to distance with good sand and clay.

In addition to the range of mountains between the first and second ranges, there are also several lofty hills in the section on the north east side of the St. Francis river, as far as the discharge of the Pohenegamook ; still between these mountains, there are valleys in which the land is very good, and the same is the case on each side of the lake. Although the land rises gradually to a certain height, it is generally of the best quality. To the south west of the lake, at a distance of about one mile and a half, there is also a high mountain, but it is composed of arable land. I consider that at least seventy-five per cent of this township is good land fit for all kinds of tillage.

I have already made a report on the importance of this township as a centre for trade, on account of its fine lake and the communication by water from this lake to the St. John and the St. Francis rivers, and by the roads to River de Loup, St. Andrew's and other places.

The forest of this township consists of all the different kinds of wood which grow elsewhere in this part of the country. The pine has been cut off some years back ; but there is a great deal of spruce good for boards and deals, maple, cedar and birch, which will make good sugaries hereafter.

The township is crossed in every direction by streams, the largest being the St. Francis river which discharges into Pohenegamook lake, and continues its course as far as the St. John river ; this river is navigable for canoes from the outlet of the lake for about two miles. For a distance of about a mile, more or less, its banks are high, but, on the tract between these banks and its course, the land is generally of the best.

(*C.-F. Fournier*, 3rd May, 1854).

COUNTY OF LISLET

Township of Arago.

The land, which I crossed in the course of my survey, is in general undulating, rising sometimes on an average from 40 to 100 feet in height. The soil, with the exception of the 7th range, is generally quite fit for cultivation, although stony; it is composed of yellow loam and a greyish clay, and covered with mixed timber, including fir, birch, spruce, cedar and a few maples. Merchantable timber, that is to say, the white spruce, is in abundance, excepting in the seventh range, where fire made a sweep last summer. As for pine, it is so scarce that it is not worth mentioning, the few trees that were formerly scattered in this township having been cut off and taken away; those which remain are dry and in small quantities.

In the interior of this township, there is on the height of lands a number of small lakes, discharging partly to the south and partly to the north; they are in general not very deep, contain no fish, and are very muddy. Among these lakes, is the lake formerly known as Lac de l'Est, but now called the Swamp lake; it could be easily drained and at slight cost. These lakes are the sources of a number of unimportant streams which wind through this township. Of all these streams, there is, properly speaking, but the Rateval river, which is deserving of mention; it is about one chain in width on the 5th range and supplies the motive power to a saw-mill, built by Mr. A. Leclerc, towards the centre of the 5th range. There is also another site for a small saw-mill on lot 26 of the 7th range.

(*P.-R.-A. Bélanger*, 5th April. 1881.)

Township of Ashford.

As regards the quality of the soil and timber, I will not be lengthy, as it would be a repetition of what you already know, and consequently would only annoy you. The lumbering operations which are prosecuted with great activity, in this locality, are one of the great causes which have

led to the disappearance of the best timber ; there was a great deal of pine, and there still remains some, but of poor quality. At intervals, maples are met with ; but they are in such small numbers that it is unnecessary to mention them. The prevailing woods in this township are the fir, cedar, birch and spruce. The land is generally rich, level and free from stones, especially in the second and third ranges ; about six feet of snow now covers the ground, and prevents me from judging its quality ; but my opinion is that it is not very favorable as settlement land.

(*T.-N. Dugal*, 1st April, 1873.)

The land is level in all this part of the township of Ashford, except to the north east of the river Ouelle, where there are some hills, with a slight elevation and a gentle slope. The timber comprises generally cedar, spruce, fir, birch, white birch and maple, in certain sections. There was a great deal of pine at one time, but a most of it has been cut off and taken away long since, so that there is but little remaining now. Nevertheless, lumbering is being still carried on on river Ouelle this winter. There is a considerable quantity of spruce fit for export in this part of the township.

(*C.-F. Fournier*, 13th May, 1864.)

Township of Beaubien.

In this township, I subdivided all the third and fourth ranges, enclosing an area of five thousand and eighty-two acres. In the ranges five and six, I subdivided but three lots in each, forming an area of six hundred acres. There is a little loss at the depth of one of the sections of the third range, to the north east, as far as the end of the range, caused by *brulis*, rocks, and the continuation of the Lessard bad land, as far as a depth of five to six chains to the south east of the range line, north west of Beaubien. The remainder of the range, although not of the best, is passably good. To the south west of the central line, we find mixed wood, birch, maple, spruce, cedar and ash ; to the north east side, spruce predominates. The fourth range is somewhat better than the third ; the hard wood is more

common to the south west, and the spruce is richer to the north east. A swampy and black spruce land begins to appear on the height of this range, towards number fifteen, and extends as far as the township of Arago, running towards the south west, and making the rest of the two last ranges uncultivable. The lots one, two and three, in the ranges five and six, are tolerably good, those of the sixth range being covered with birch, maple and spruce; beyond these lots, going to the north east, the land is not worth much, or, properly speaking, is worth nothing.

(*Thomas Breen*, 25th February, 1869).

Township of Fournier.

The soil of the land surveyed by me is in general sandy and wooded with fir, spruce, birch and white birch. It is in general a dry sand, more or less stony, but nevertheless very cultivable for the greater part. The range line between the eighth and ninth ranges is an exception to the general rule for all the north east side of the central line and the greater part of the south west, cross sandy land, it is true, but rich and without rocks for the most part, wooded with hard woods, mixed with spruce. The large sized timber met with proves the fertility of the soil. The land traversed throughout the survey, except on the range line above mentioned, greatly resembles the soil along the Elgin road, which, as we know, is not despised by settlers. There are, nevertheless, a few swamps, mostly all near the lakes which, as everywhere else, would be an obstacle to settlement, especially as regards roads. The surface is in general level, except a few slight undulations; no mountains or hills are met with, and, on all the lines which I ran, roads can be easily opened.

(*C.-A. Verreault*, 11th October, 1862.)

Townships of Garneau, Casgrain and Lafontaine.

The five last ranges of the township of Garneau, now surveyed, give a superficies of twenty-two thousand acres of land, in part well adapted for colonization, offering a surface generally level and covered for the most

part with mixed hardwood ; it is more rocky than the township of Casgrain.

Description of the lands surveyed in the township of Casgrain :

The five last ranges of the township of Casgrain, which form a superficies of 20,226 acres, are in general less stony than those of the township of Garneau ; they are partly covered with maple, presenting a soil generally sandy and of good quality ; this township is traversed in every direction by important and numerous rivers, on which mills of every kind might easily be constructed.

Description of the lands surveyed in the township of Lafontaine :

There are found, in different parts of this tract, meadows made by beavers many years ago, which will be of great advantage to the settlers, from the facility the latter will have of procuring hay, which, although of a rather inferior quality, will be not less useful in helping them to winter their cattle, during the first years of their occupancy, and until they can cut better hay from their own lots. There are also on some lots maple groves, many of which are already occupied by persons who have made sugar there for the last two or three years ; these maple groves will also be of advantage to those holding these lots by enabling them to gain some money by sugar-making for market, at a season when it would be impossible for them to do anything in advancing their farm work.

One of the principal reasons, and one which has certainly delayed their settlement, has been the unfavorable reports made by hunters, for some reason or other, of these lands, saying that they were nothing but barren swamps and rocks, wholly unfit for settlement—reports which were apparently confirmed by a strip of land, a mile or a mile and a half in width, in rear of the seigniories, which is precisely as the hunters have represented the remainder to be.

(*Frs. Tétu*, 1863.)

Township of Lessard.

In this township I subdivided all that I thought fit for colonization, consisting of twenty-four lots, of which twelve in the third range and twelve in the fourth range, forming an area of two thousand four hundred and twenty acres.

Although the land is somewhat stony, it is nevertheless level, if not superior to what we come across in the lower ranges of Lessard and St. Cyrille. A good yellow loam and a mixed timber of fir, spruce and white birch, predominate mostly everywhere, especially in the third range. The land is lower and fresher, on the fourth range, where cedar is much more common. And even this consideration of wood is sufficient to give a real value to these lots, for cedar and hard woods become rarer from day to day, in the concessions of our older parishes, and we must go back into the interior to procure the necessary fire wood.

A visit to and close exploration of the north east section, from the central line going as far as the south west range line of the township of Fournier, having indicated that it was worth absolutely nothing for colonization and that not even the sale of the timber would defray the expenses of subdividing, I left this tract of vacant land, without subdividing it.

(*Thomas Breen*, 25th February, 1869.)

Townships of Lessard and Beaubien.

I began my operations, on the exterior north line of the first range of the township of Lessard. In this range as well as in the second, there are several settlers in a prosperous condition. The soil is generally good, though rocky. The predominant varieties of timber are spruce, balsam, birch and cedar. I found only five posts properly marked on the whole of this line, and it was much encumbered and almost invisible in many places.

The exterior north line of the third range never having been run, I had to do the whole work anew. I also thought it well to continue the subdivision of this range as far as the township of Fournier, the soil being of better quality than in the other ranges and a little less rocky. The predominant varieties of wood are birch, maple, beech and white birch; the remainder consists of spruce, balsam and cedar. The land is generally lower and colder in the fourth range, where the cedar prevails. I gave up the subdivision of this range between lots 12 and 13, the rest appearing to be burnt over and the soil of inferior quality. Ranges A and B are inferior to the rest of the township; the soil is more rocky, and the timber of little value, part having been cut and part destroyed by fire.

The part of the township of Beaubien which I verified is generally well suited for cultivation, except the north part of ranges 1, 2 and 3, which is very rocky, especially in ranges 1 and 3, where I could not place any posts for the first four lots. The soil in this township, as well as in the township of Lessard, is undulating and in some places tolerably level, well watered by a number of streams, among which are the *Bras d'apic*, *Bras de l'est*, *Bras du N. Est*, *Fourche des plaines*, &c.

The timber has been cut or burnt. There is none left worth mentioning.

These two townships being easy of access, near the St. Lawrence, and traversed by the Arago road, present great advantages for colonization. Nevertheless, unless the Government finds a remedy for the emigration fever which is spreading among our population with alarming rapidity, I fear they will long remain in a state of forest.

(P.-R.-A. Bélanger, 25th April, 1883).

Township of Leverrier.

On the second and third ranges, the land is more unlevel than elsewhere.

The highest mountain is at the commencement of the sixth range. The general surface of this township, although broken, is all good for cultivation; very few lots are bad, on account of the lakes and swamps which are scarce and very small.

A third of the forest is composed of hard woods with a gravelly soil and yellow loam; the remainder is of mixed wood, covering the best land. A great many brooks and a rather big river cross this township in all its width, giving on each side good lands, very level, and a great deal more valuable than they are, at a little distance from the Taché road. In the greater part of the township, with the exception of pine, which has been all cut off, the timber varies with the qualities of the soil as elsewhere throughout this region.

It may be remarked that the climate in these sections is milder than it is along the St. Lawrence, for the reason probably that they are sheltered from the cold north easterly winds by the high mountains to the north.

(Frs. Tétu, 29th April, 1864.)

COUNTY OF MASKINONGÉ

Township of Chapleau

All the land in this township and in the ranges surrounding the lake *aux Ecorces*, with the exception of a mountain which passes to the south east of the lake and which bears nearly south west to where it meets the river *aux Ecorces*, presents the best advantages to colonization and the clearing of lots. The land is generally even and level, or sloping slightly towards the lake. The soil is composed of good yellow earth and in some places of a greyish loam, not stony; the subsoil appearing to be of clay in the lower levels.

There are no settlements yet in the township, nor any squatters living in it, but a number of lots are taken or pre-empted, and on most of the lots bordering the lake *aux Ecorces* on the south west, north east and north west, choppings have been made in order to mark the lots chosen by parties who wish to secure them by purchase as soon as they are open for sale. I have no doubt they will do so, as a number of such parties even offered me payment for the lots so chosen by them in order to induce me to continue my survey further on, because, they say, there are not enough lots laid out to meet the demand. The timber is generally fine and long, birch and spruce being the most common; the latter is in sufficient quantity for lumbering. Maple is also to be found in the second, third and fourth ranges. There is hardly any pine left, this having been all taken by the lumberers, who have left, so to speak, nothing but the stumps. The lakes are well stocked with fish; I took some excellent trout in the lake *aux Ecorces*.

The total superficies of land surveyed and subdivided into farm lots is 7,567 acres.

(*T.-C. de La Chevrotière*, 12th February, 1880.)

Most of the farm lots, surveyed and subdivided in this township, are favorably adapted to settlement, especially in the north east section of the township, which comprises the first, second, third and fourth ranges. The land is generally level and the soil composed of a sandy yellow loam on the heights, and in some places, in the low grounds, of greyish loam, which seems to be of excellent quality. This section is wooded with fine, tall timber, consisting of maple, birch, white birch, spruce and of fir, with ash, birch and alders in the bottoms.

The part of the township containing the ranges B, C, D, 2nd and 3rd ranges south west, which border the river aux Ecorces, is not so advantageous for tillage, being mountainous and stony ; but the proximity of this river, which has some beautiful bottoms, offers certain advantages. The 2nd, 3rd and 4th south west ranges are in great part wooded with white birch. This timber is now in great demand by spool manufacturers, who have already established two factories at Saint Alexis, a parish adjoining the township of Chapleau. It will not be long before they will transfer their machinery here, because the white birch is nearly all used up in their neighborhood.

There are a great many water powers, notably those of the river aux Ecorces, of the South West river, and the discharges of the numerous lakes and brooks. On all these rivers, outlets and brooks, I remarked falls or rapids which are used to run mills or factories.

Pine is not abundant, having been already worked in the past ; but some fit for export can still be found in this township, especially in the north east 2nd and 3rd ranges.

(*T.-C. de La Chevrotiere*, 31st May, 1881.)

Township of Decalannes.

The soil of the arable lands of Decalannes, and especially those which border the rivers du Loup, Saccacomie and aux Ecorces, and also those which border the south eastern environs of lake Saccacomie, is mostly a yellow sandy loam. The timber in general throughout this township is everywhere of fine growth and is composed of all kinds of wood, especially birch, maple, white spruce, hemlock and pine.

The land which I traversed in the course of my operations is mountainous, rocky, very much broken, and in consequence interspersed with many lakes ; apart from the surveys already made, and those which I recommend to be made, I do not think there remains much land, in Decalounnes, fit for cultivation, suited to colonization, and worth surveying.

The pine has been partly cut off in range A, by the Hunterstown Company and, probably, the same may be said of the remainder of the township

In addition to what I have just said relative to the nature of the soil and the physical features of the township, I may mention that I came across some magnificent water powers, firstly on the river du Loup at a fall of that river in the first range, at the point at which it is cut by the central line ; this falls is known by the name of Brulée fall ; there is another at the outlet of the Clear Water lake, on lot number two of the second range, a little higher than the place where this outlet discharges into the river du Loup.

The resources that this township can offer consist in its timber and in the advancement of colonization.

(*T.-C. de La Chevrotière*, 4th February, 1870.)

The surface of the seventh and eighth ranges of Decalounnes, with the exception of the section of the seventh range, situated to the north east side of the river aux Écorces, from lot number six to lot number twenty, is composed of large mountains of granite rock ; elsewhere the soil is of a superior quality ; all these lots are taken up or preempted. The timber which predominates in the interior of the eighth range is maple and birch ; near the banks of the river, the basswood, the elm and fir.

The soil of the different sections which I surveyed and explored in range A of the township of Decalounnes is a superior quality. The quality and the richness of the timber prove that the soil is of great fertility.

T.-C. de la Chevrotière, 28th November, 1870.)

The third range of the township of Decalounes is broken and mountainous ; the soil, in general, is rocky, with the exception of the low lands, where there is grey loam, which appears to be fertile. This range is wooded with a fine growth of mixed hard wood ; the most common woods are the maple, birch, white birch, spruce and fir. In the low lands the ash, willow and birch predominate. On the higher mountains, there is some oak. Pine is not in great quantity now, most of it having been cut off some years ago.

The proximity of this third range to the river du Loup and the opening of a road would be a great help to the sale of the lots ; a part of these are already taken up or pre-empted, and the other will not be long before it is taken. In this third range there are also water powers, which can be utilized in the future for mills or other industrial purposes.

(*T.-C. de la Chevrotière. 31st May, 1881*)

Township of Houde.

The land is rocky and dotted with lakes, but, nevertheless, susceptible of tillage in many places, principally on both sides of the river aux Ecorces, in the township of Houde, where a double range could be run parallel to the north east line of Peterborough. To the east of this double range, there is a bare rock, about a mile and a half in superficies, unfitted for cultivation. Around the great lake Saccacomie, the land, as well on the top of its banks as in the flats formed by its bays, seems very favorable for settlement. A visit to the interior satisfied me that the soil there was of better quality and a great deal less mountainous than in the township of Caxton, running very nearly along the summit of the Laurentides, of which the slopes should slightly decrease towards the valley of the Mattawan, which is not very far from the north line of the projected township,

(*Léon-Z. Arcand, March, 1864.*)

Township of Masson.

The land just surveyed by me in this township is generally flat and level ; two thirds of it, at least, are in *brulis* and, in several spots, the fire has made such a clean sweep of everything that the settler will have little labor to bring it into cultivation. The soil, which is composed of a strong yellow loam, though rocky in places, seemed to be of excellent quality for grain growing. The grain which I saw growing on the lots occupied by settlers on the banks of the river Mattawan, in this township, looked splendid, thus attesting the fertility of the soil.

As this township and a large part of the region adjoining the Mattawan have been ravaged by fire, the timber now on it is only a second growth, mostly composed on the high grounds of small bouleau and poplar, and in the bottoms of small cypress. The original woods, which were commonest, were the cedar, white spruce and tamarac on the flats, and bouleau, birch and pine on the heights as indicated by the *debris* which encumber the ground. Here and there, however, a few green clumps of the old timber can be seen like islands, which have been spared by the fire.

(T.-C. de la Chevrotière, 10th April, 1886.)

Township of Peterborough.

The quality of the land is about as follows : starting from Peterborough, the land is bad, rocky and mountainous for about three miles, and then, though there are mountains, the land is in general of excellent quality, along the whole length of the district line on the north-west line of Brassard, the land is excellent, although mountainous along the whole length of the line along the south west line of Brassard and Prevost, the land is excellent in Brassard, and for about three miles to the south east of Cypress and Mattawan rivers, followed by intervals of good land and of mountains, rocks, &c. Along the south east line of Provost, the land is bad to nearly the Government road, but afterwards, it is passable ; but in general it is excellent ; sand being rarely found and the soil being a kind of yellow loam, extremely rich and promising.

(Carolus Laurier, 6th July, 1864.)

I next ran the line between the first and second ranges which, of course, passes through the settlements of the River Mastigoche ; the land may be said to be in general pretty good along the whole of this line. I next ran the north eastern lateral line of the township, in the course of which I found the land to be susceptible of settlement and much superior in quality to what it is in the interior or central part of the township.

The general aspect of the township is hilly and interspersed with lakes ; it cannot be said to abound over much with timber adapted to lumbering purposes ; the best lands are found along the valley of the Mastigoche, and in the neighborhood of the several branches or tributaries of that river.

(*J. Martin*, February, 1854).

COUNTY OF MEGANTIC.

Township of Coleraine.

The land which I traversed, with the exception of a belt along the western side of the Cold Stream river is generally mountainous, and the quality and size of the trees, spruce, fir and white birch, indicate poor soil, not very fitted for tillage. Moreover, as fire has swept over all this tract, the timber is of little value. The asbestos mines of Thetford, being only seven or eight miles distant, and the configuration and appearance of the land being very much alike, it may be that works of the same nature here would be profitable.

(*G.-S. Taschereau*, 5th April, 1888.)

Township of Thetford.

The lands in the township of Thetford, from the fourth to the eleventh ranges inclusively, for about ten lots in breadth, are for the most part uncultivable, only fit for forest and mining lands, and the same may be said of the north-east section of Coleraine, adjoining Thetford.

The lots numbered 19, 20, 21, 22, 23 and 24, ninth and tenth ranges, are good land, and the greater part of them are occupied. The lots numbered 25 and 26, in the same ranges, are uncultivable, being only fit for wood and mining purposes. I subdivided the sixth range, from the fifteenth lot to the township of Coleraine, running south west, and also the lots numbers twenty seven and twenty eight, fifth and sixth ranges, in order to settle several difficulties relating to places for mill sites and to mining locations.

(*J.-B.-V. Legendre*, 26th March, 1878.)

COUNTY OF MONTCALM.**Township of Archambault.**

I commenced operations at the point indicated in my instructions and ran the line dividing the 11th and 12th ranges to its point of intersection with the north west boundary line of the township, and found that a great portion of this range is fit for settlement, although the greater part is rolling surface, heavily timbered with maple and birch, soil, loam, and well watered; several large streams passing through the east and centre, branches of the Devil's river, with two minor streams, and all containing mill sites of great power.

I then ran a centre line from lots thirty-one and thirty-two to the depth of the 12th range, from which point I operated each way from the centre line, until the other line dividing the 12th and 13th ranges was completed; this range is already nearly all taken up; in the 12th and 13th ranges to the centre line, rather few improvements are to be seen. I then continued the centre line through to the depth of 13th range, and operated the same way as before, until the whole line was completed. This line runs through a long area of good arable land fit for settlement. I then proceeded to run out the first and second ranges at lots twenty and twenty-one, passing through some good lands, but the greater part is rough and rocky. It also passes through Black Mountain lake, which is a lake of considerable size and abounding with trout I proceeded then to run out the second and third ranges from lots twenty and twenty-one, running south west up to the thirteenth range passing along the foot of Black Mountain, which is of enormous height with perpendicular walls of rock; the summit can be reached only by three or four different routes; the whole mountain takes up an area of six or seven square miles and is totally unfit for settlement. I then ran the lines of the third and fourth and the fourth and fifth ranges, commencing each at the thirteenth range, and ran into the foot of the Black Mountain, as being the only portion of either ranges that can be cultivated.

(*N.-C. Mathieu*, 24th March, 1881.)

Very little of the fifth concession is fit for colonization. The other concessions, viz: the sixth, seventh, eighth, ninth and tenth ranges are for the most part fit for culture, and mostly level. The soil is good, though light and sandy in some places. The river *Au Moulin* flows through a part of this township and its tributaries possess first class water powers which will soon be used.

(*N.-C. Mathieu*, 27th September, 1881.)

Townships of Archambault and Lussier.

The fourth and fifth ranges, sixteen lots broad each, are rather undulating, except where the river Michel empties into said lake, along the banks of which it is overflowed as aforesaid for the breadth of about four lots; the high land is rather stony, but good soil and well timbered with heavy maple, birch and spruce; the sixth and seventh ranges, for the same breadth, are almost level and well timbered as aforesaid; there are extensive sugaries on this land: it is also arable and well calculated for the purposes of settlement and colonization, being well watered with rivers, living streams and a portion by lake Archambault.

In the portion of Lussier, on which I have the honor to report, from the rear of Chilton, on both sides of the river and lake Ouareau, to number forty-seven, inclusive, the land is good and level, and many of the lots improved and well built upon, and the residence of actual settlers in the second and third ranges and in the fourth range north west of the outlet of lake Feu.

This part of the fourth range is high and rather mountainous and also north west of lakes Archambault and Feu, undulating, but well timbered with maple, birch and spruce. Block A in the first range is high and covered with hard wood, mostly maple.

The piece of land between the line of separation between said townships and lake Archambault is also high and mountainous and covered with maple. All the tract of land situated between lakes Ouareau and Archambault is level and of a good quality, well adapted for settlement, and all taken up, and in conclusion I beg leave to state that the Messrs. Coutu have constructed a grist and saw-mill on the outlet of lake Feu, and also a chapel on lot number thirty-five, in the fourth range. These together with the roads already made are of the greatest utility and encouragement towards settlements and colonization. I have been credibly informed that

as many as fifty families intend settling in this locality this winter, and the competition amongst them for choice lots is extreme.

The magnificent lakes of pure water are abundantly stocked with speckled trout, and amphibious animals are numerous around the lakes and inlets and furnish valuable furs.

(*F. P. Quinn*, 8th January, 1876.)

Township of Doncaster.

The general features of this side of the township are as follows: chiefly, hard wood on the hills and soft wood on the low lands; it is well watered by numerous lakes and small streams crossing the lands at convenient distances.

(*Robert Gilman*, 28th January, 1868.)

The land, in general, is good, being of the same quality as that of Beresford. There is a considerable number of lakes and streams. The lands have excellent natural drainage. The lakes are generally deep, clear and limpid, and their aspect is altogether agreeable, so that once this region has been cleared, it will present a charming sight. A good wide road is opened to the 8th range. This road skirts a portion of lake Brulé. The land in this 8th range is almost absolutely level from one end to the other, and the soil seems good enough.

(*F. J. V. Regnaud*, 13th July, 1860.)

Township of Lussier.

There is no improvement in the part included in the present survey, but the whole is arable, and well adapted for settlement and purposes of colonization, along the first mentioned outline; the third range is level to river Ouareau, timbered with soft wood; the fourth range, north east side of said river, is ascending and mountainous, the fifth undulating, all mostly timbered with hard wood, the sixth descending through a beautiful maple

grove, seventh undulating and mixed timber. The line between the fifth and sixth ranges runs descending through a grove of good maple for about eight lots, both sides; the remainder level and mixed timber. A tier of lakes runs across about the centre of the sixth range the north east banks of which are mountainous, the remainder of the sixth and seventh mixed with some undulating land, the remainder level and mostly timbered with maple, which is sound and well calculated for sugar making, and there is easy access and a level tract for roads to communicate therewith.

(*F.-P. Quinn*, 1st May, 1877.)

I have the honor to report that I have closed the survey of the section of the township of Lussier, mentioned in my instructions, and that I found a large part of this township level and the soil good and suitable for agriculture, and a considerable number of squatters settled upon the south west part of the section surveyed by F.-P. Quinn, P.L.S.

The portion of this township situated to the south east of Mr. Quinn's survey is nearly all level and the soil good. The river Ouareau crosses part of the township, furnishing plenty of water for mills or other purposes. The timber merchants and lumberers have built a dam at the outlet of lake Ouareau which can be utilized for mills without obstructing the passage of logs or square timber. There are also other water courses and mill sites in other parts of the township. In the eighth, ninth and tenth ranges there are large plateaux of land, which, though rough in some places, are well watered and timbered.

There is a number of lakes in different parts of said township, several of which required scaling and occupying considerable delay, which caused me to take somewhat longer time with my survey than I would otherwise have had to take. In concluding this my report, I will add that if a road was opened in this township passing through Chilton on the south east side of lake Ouareau, the said township of Lussier in a few years would be more thickly populated than any other part of the county of Montcalm.

(*N.-C. Mathieu*, 20th May, 1880.)

COUNTY OF MONTMAGNY

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Township of Ashburton.

It is well that you ordered this retracing. This part of the township is well fit for cultivation, and must become a fine parish within a few years.

The soil is generally a strong yellow earth of good quality. There are numbers of boulders and a good deal of limestone on or near the surface in certain places, but the quantity is not enough to hinder cultivation. There is but one small mountain—Maple mountain. Some considerable elevations of land give the country an undulating appearance.

(*John Langlois*, 7th August, 1884.)

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The surveyed and subdivided land just mentioned is fit for cultivation, with the exception of lots twenty-one and twenty-two of the eighth and ninth ranges. The soil is generally a yellow loam and grey sand. The predominating woods are the spruce, fir, birch and maple; this last prevails on the lots number one to seven of the seventh range, and the lots number sixteen, seventeen and eighteen of range nine, also on the lots thirty-seven, thirty-eight and thirty-nine of the south west line of the township.

(*Elzéar Laberge*, 25th June, 1888.)

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Township of Bourdages.

In the two ranges which I divided, the soil is mostly of a greyish color. The hard woods occupy the high lands. The soil is generally sandy and well adapted to cultivation and settlement. The timber is of good size. There is still a great deal of merchantable spruce, although there has been some cut by *William Price, Esq.*

(*Frs. Tétu*, 4th February, 1867.)

The soil seems to be the same everywhere; the township is composed of yellow and grey loam, mixed in some parts with gravel, and generally a little stony; the land is somewhat easy to clear and yields good crops.

On a part of the 6th, 7th and 8th ranges, the soil is generally advantageous for settlement. There are a great many lots taken in the 10th range for sugaries. The lots No. 28 and 29, of the 10th range, each show about 30 acres under cultivation and produce for their owner, Mr. Elzéar Méthot, about ten thousand bundles of hay. This township is generally wooded with mixed timber. Merchantable lumber, especially spruce, is abundant. Pine is very scarce.

The Saint Nicholas branch crosses this township diagonally. Two of its tributaries, one called the *Source à Cloutier*, and the other *Méchant Pouce*, discharge on opposite sides into this branch; and all of them can be used to drive timber.

The Saint Nicholas branch offers water powers in this township, which can be utilized in the future.

(E. Casgrain, 31st March, 1882.)

Townships of Rolette and Panet.

The first and second ranges of the townships of Rolette are more mountainous than any of the other ranges. The soil is good, although a little hard to till, especially in the south west section of the two ranges. The land above these two ranges slopes gradually, and with the exception of a few steep inclines is all cultivable; two mountains occupy the extent of several lots, and render them rather unfit for cultivation. These lots will not for that reason remain unproductive, as they are covered with rich maple groves. All the area of this surveyed land is cut up by rivers and brooks, and in them has an abundant supply of water and drainage.

The third range is composed of good yellow and grey loam resting on a clay subsoil; the north east section is all covered with maple groves, which were formerly worked by Englishmen, when the provincial boundary was being run. We find fewer maples in the south west section, but more good grey loam and the surface is level. The fourth range is in all respects similar to the preceding, only there are more maples, which cover

a soil well adapted to grain growing. The north east section of the fifth range is in part composed of yellow loam somewhat rocky, and is consequently of less value than the preceding; the south west part is very much the same, only soft wood prevails. The north east section of the sixth range, although cut up by swamps and cedar groves, is not less fit for cultivation; these swamps are all covered with a slight layer of vegetable mould, underlaid by a rich clay subsoil, and they can be all easily drained.

It is the same with all the swamps which are in these two townships. Besides a few rocky lots, the remainder is excellent, although not presenting such great facilities to poor settlers, who in preference cut down the hard woods. The rivers and brooks, which run through this part of this township, are not very rapid, flowing on a pebbly bottom (quartz) and presenting no falls fit for milling purposes. The seventh range is composed of good yellow and grey loam, partly covered with hard and soft wood.

The first, second and third ranges of the township of Panet are partly composed of good yellow and grey loam overlaying clay, and free from stones on the surface, and consequently eminently fit for cultivation. To the south of these three ranges, we scarcely find any maple or birch; the land, being lower, is covered with cedar and spruce and is generally swampy.

The fourth, fifth and sixth ranges of this township comprise the richest land in all this survey, which land extends to the south as far as the boundary line: black and grey loam, very little yellow loam, clay subsoil, low land everywhere. The swamps which cover this part of the township could all easily be drained, and fire would bring to the surface the finest soil which could be desired for tillage.

Finally, these two townships are excellent for cultivation, and will before long be in great part settled up. In the spring, settlers will flock into the third range of the township of Rolette, in the north east section.

(*Frs. Tétu*, 21st April, 1862.)

What first strikes the observer in these townships is the good quality of the land, which is everywhere so prevalent: vast plains extend beyond the limits of sight, interrupted only by rocks here and there, serving as a relief to their immense extent.

The river Daaquam, which traverses the township of Panet throughout its whole breadth, waters the two most fertile of its ranges. On approaching the frontier, the land becomes of middling quality, owing to the presence of swamps, which, though of no great extent, are pretty numerous; still, when colonization shall have reached thus far in the county, means will easily be found to drain them, and make them as productive as the best parts of the township, for, as the subsoil of these swamps is composed of clay, covered with a thick coating of vegetable matter, it will not fail to become extremely fertile as soon as the work of cropping has begun. The labor will be very much facilitated by the streams which flow in all directions and empty themselves, some into the Daaquam and others to the south of the frontier line.

In general, the soil of these two townships is mixed with sand and gravel, though much clayey land is to be found, fit for cultivation, Yellow mould also exists, also grey and black loam, but in smaller quantities, although of good quality, and all well adapted for cultivation.

The timber is generally as fine as may be expected to be found on land of such fertility and which requires but a little labor to make it cultivable. The prevailing kinds are maple, balsam, pine, cedar and birch, all of excellent quality.

I am firmly convinced that as soon as the subdivision of this township is terminated, settlers will be found to go into it in great numbers. There is already a good shanty road leading to it: it is commonly known by the name of the Englishmen's road; it is quite good enough for the cartage of provisions during the summer. It traverses a part of Rolette and cuts the province line a little to the east of the north east line of the township of Panet.

They made use of it during the shanty season; but since the lumber business ceased in these parts, the road has been but little travelled, and latterly has been altogether given up. A very small outlay would put it in good condition. It is only necessary to remove the trees which have fallen across it, and to straighten it a little, though, in general, it is straight enough. Very little money would make it one of the finest colonization roads and one of the most travelled. This part of the country is much like the land of the townships to the west and fully as good.

(*F. Tétu*, 1863.)

Township of Talon.

The total area of the six ranges of the township of Talon is 32,321 acres. From this total, if the area of the lakes, rivers and swamps, and five per cent for roads be deducted, there remains an area of 29,114 acres. All the surveyed section of the township of Talon is not made up of the best land for cultivation; but about fifty per cent of it may be safely set down as of superior quality and quite fit for cultivation, covered with hard wood, cedar and alders, the remainder being very rocky, covered with hard woods, spruce and a few pines, and in many places swampy. Apart from a few scattered mountains which adjoin the central line and a number of hills which are met here and there, the land in general is rather level, or slightly undulating, over considerable areas, and presents advantageous lots, which would be easy to cultivate.

Before concluding this report, I may remark that, in the unsurveyed section of the township of Talon, there is an extensive tract of about two or three miles in width, stretching across mostly the whole length of the township, and consisting of a soil which is almost level and of excellent quality, covered with fine hard woods, principally maple and birch; the rear line of the sixth range runs along the northern limit of this belt of hard wood.

I also sent to Sir William Logan, geologist, a box containing a few specimens of local rocks, which I broke off from the rocks which most attracted my attention and notably a few pieces of iron ore which I took, from a large mass of the same on a mountain situated at the beginning of the sixth range, on the numbers eleven, twelve and thirteen.

(*Frédéric Bélanger*, 30th April, 1862.)

All the section of the township of Talon, which extends from the sixth range towards the south as far as the boundary line, is undoubtedly the best in this locality, both as regards the streams which flow in every direction and the quality of the soil, which is everywhere superior. Hard wood predominates and is everywhere of fine growth; half of the subsoil is of clay and vegetable mould. Yellow gravelly loam and black loam form the other half. There are no stones or large swamps; those which exist can be drained

at small cost. There is but one mountain near Frontier lake ; it is composed, however of good land and covered with magnificent maple groves. The same timber also exists at its base mixed with cedar and ash.

This great lake which empties into the river Quam, by a large outlet, is filled with fish called " touladi," trout, white fish and others, and will be of great help to the settlers who may locate on its banks. At the beginning of the seventh range, on the outlet, which has a width of two chains, there is a magnificent water fall of about twelve feet which could be used to run several mills ; its low banks are formed of grey earth, very rich, well wooded, and could be profitably settled.

(*Frs. Tétu*, 29th April, 1864.)

COUNTY OF OTTAWA.

Township of Addington.

With respect to the nature and quality of the soil in Addington for agricultural purposes, I beg leave to state that the prevailing timber is hard wood and the soil in general a sandy loam, which is easily cultivated, and that not less than three fourths of the area of the township are arable land and fit for settlement. Comparatively speaking, the land is superior in quality to that found in the adjacent townships of Ripon and Hartwell which are now nearly all occupied by settlers.

I believe the recent reduction in the price of land by the Crown Lands Department will give a renewed impetus to settlement in this locality.

Pine timber is far from being plentiful, but, as is usual in all places where found growing among hardwood, what little there is is of excellent quality.

Lumbering operations are, however, carried on to a considerable extent on the North Nation and its tributaries by Messrs. J. A. Cameron & Co., and J. K. Ward, Esqr., of Three Rivers, has commenced the past winter to make saw logs on the Maskinongé river. This will create a demand for labor and afford a convenient market for the surplus produce of the settlers.

(James McArthur, 7th June, 1870.)

Townships of Addington and Labelle.

There is a good portion of land broken by numerous lakes and the mountain tracts which lie chiefly in the fifth and part of the sixth ranges of Addington, and in ranges A. B. and C., adjoining the Maskinongé lake in Labelle, which together are estimated by me at about fifty per cent. The remaining portion through which my operations extended is well adapted for agricultural purposes. The land appears to be of the same nature throughout, viz: yellow and grey loam, and in some places inclined to be sandy

and stony ; but the excellent timber which it produces viz : large yellow birch, hemlock, spruce and basswood are sure indications of its fertility, which I believe will favorably compare with the other rear townships of the Ottawa valley. The best quality of the pine timber has been cut and taken away, but there yet remains an ample supply for building purposes.

(*G.-E. McMartin*, 3rd July, 1880.)

Township of Amherst.

The soil appears to be of the same nature throughout the entire township, it being a yellow and grey loam, and in parts slightly mixed with sand and gravel, very easily cleared and producing good returns. Several of the settlers who had commenced operations the previous spring appeared highly satisfied with their crops. Lot number twenty-two in range B, having about two acres cleared, changed hands for the sum of one hundred and fifty dollars, and several others at smaller prices. The country is exceedingly well timbered, good hard and soft wood in abundance, very suitable for building, fencing, &c., &c. There is no doubt that in course of time this section will furnish an abundant supply of cordwood for our markets.

The mountainous portions appear ferruginous, which accounts for the great amount of local attraction I experienced. There are several good mill sites on the river Maskinongé, furnishing abundance of water power. The streams and lakes abound with fish and the country with game. I beg to call your attention to the large amount of game destroyed out of season.

(*G.-E. McMartin*, 27th June, 1879)

Township of Aumond.

The land in the sixth and seventh ranges is without exception fit for settlement, being level and composed of sandy loam, covered with hard wood, beech, maple, birch and pine. Only part of the eighth range is fit for settlement, say, the six tenths, the remaining four tenths being bold,

rocky hills covered with thin, shallow soil, and hard wood growing thereon of smaller size than on the sixth and seventh ranges Trout or Quinn's lake and the Castor lake abound in excellent fish.

(*B. Magrath*, 21st April, 1874.)

Township of Baskatong.

The land embraced in this survey is generally level; some flats cover as much as four hundred acres. The soil is a light loam, occasionally sandy, and stony on the ridges. The western part of this township is hilly, but contains the best land, as far as can be judged from the growth of the timber. Balsam and white birch are to be met all over the township; there are some spruce and tamarac, but too small for lumbering purposes; cedar grows to a great size on some of the flats; a few groves of small pine remain along the river.

About three hundred acres of land are cultivated on the river lots of range seventh by Gilmour & Co., Hamilton Bros., David Gagnier, Jos. David, and five or six others. These lands give excellent crops of hay, oats and especially roots; some good wheat has been raised, but is not much cultivated owing to the nearest grist mill being twenty-five miles distant.

(*J.-E. Woods*, 18th March, 1887.)

Township of Blake.

As will be seen by my field book and notes and plan, there is a considerable number of inhabitants on the last range in Blake, and there is abundance of good land in that locality for agricultural purposes. I have no doubt that the land in the last two ranges will soon be taken up.

Mr. McBean's mills are within one hour's sail of the centre line of Blake, and there are various waggon roads from Blake out to the Gatineau river, which certainly is of benefit to the colonization of the country. I have travelled over a great deal of the wild lands in Blake, and found some good tracts of land where settlers may make good farms and comfortable homes for themselves and children in their old age.

In reference to the waters in Blake, they are, as in the other lakes in that country, well stocked with plenty of good fish, more especially, the beautiful Thirty-One Mile lake, which contains the finest fresh water trout I have ever seen.

On the range lines that I have surveyed, I have also met hills containing abundance of phosphate of lime, and the day may not be far distant, when the geologist may find valuable employment in practising his profession on the mountains in Blake.

(James Rowley, 10th December, 1877.)

I then proceeded to produce the centre line due west, and ranges one, two, three and four in their order, finding very few traces of the primitive survey of the range lines, and none at all of the centre line. As regards that portion of the township surveyed by me for agricultural purposes, I consider the proportion of land comparatively small, not from the lack of good soil, but more from the hilly and broken character of the township; along the front of the township there are some good tracts of land and good soil. There is quite an extent of this good level land situated to the west of lake Davie, in the third range, extending from the foot of the mountain, at the head of the lake, I might say, as far as the township of Hincks, and in breadth from a quarter to half a mile. There are from three to four hundred acres on the south west of Little Whitefish lake, which seem to be level and good land. There is also quite a large tract of very good land extending from lots seventeen to twenty-two, in the second range, bordering on a large bay in Great Whitefish lake and extending back from the lake about three quarters of a mile or more in some places; it is beautifully timbered with large hard wood and good cedar.

This land is very level and rich for about a half or three quarters of a mile back. In the second range fronting on Lac des Sables to the northern township line, there are only occasional good lots.

Although as I have before stated that the township is so rough, the soil is good, as the large size of the timber shows, and, if cleared and seeded down to pasture lands, it would grow rich grass for cattle and sheep, and there are small valleys throughout, which could be cultivated.

I saw very little good merchantable pine, as it has been all culled over in past years. There were quite a number of small jobbers getting out saw logs last winter, but what I saw of these logs seemed to be small and of inferior quality; the rest of the timber in the first three ranges is chiefly very large hard wood, maple and black birch predominant, with occasional ash swales, and a large quantity of cedar intermixed throughout. On the rear of the third range and well into the fourth, there is a great deal of burnt timber and rocky land that may be called a *brulé*. The rocks are very steep and broken, and generally gneissoid with veins of quartz and pyroxene and highly indicative of rich mineral wealth. I would strongly recommend an expert to make a good geological inspection of this section of the country.

(*John Johnston*, 28th October, 1886.)

Township of Bouchette.

The base line between the townships of Bouchette and Church runs for some thirty-six lots from the beginning or top of a hardwood, rolling hill, but, for the remaining thirty lots, the country is much superior and the land of a more fertile nature. There is, within a short distance of this line towards the east, a large tract of fertile land extending northwards and crossing once with the township of Church, about lot forty, and now where the base line is posted; I trust that this large tract of fertile land will soon be taken up and settled upon. The remainder of the township which I have surveyed is of an ordinary nature for farming purposes, and the land on the range line, between the third and fourth ranges, of a superior quality, more especially that towards the south of the centre line, which is not inferior to any of the land in the county, for agricultural pursuits. There are many leading roads through this township, more especially one from the Egan farm to the Desert Village, being roads that are travelled all days of the year.

(*James Roney*, 15th October, 1875.)

I have completed all the work for which I had instructions, viz : the retracing, verification and repositing of the centre line, the northern and southern outlines through the fifth, sixth, seventh, eighth, ninth and tenth ranges across the breadth of the township and the necessary scalings of the lakes which are large and numerous.

The portion of this township covered by my survey I consider above the average, having a great many natural advantages, and about one half the land a good quality of farming land ; there are several good roads, good markets for all kinds of produce, the lakes teeming with fish, immense quantities of which are caught every winter by the settlers, a large amount of merchantable cedar, which is being manufactured principally into railway ties and exported to the United States, and I believe there are inexhaustible quantities of valuable minerals, although I was unable to judge for myself owing to the depth of snow.

The exploratory line of the Gatineau Valley Railway passes somewhere in the vicinity of the line between the third and fourth ranges of this township.

The general features are rolling and hilly, with intervening valleys or flats. There is a mountainous tract crossing the centre line in ranges seven and eight and continuing in the direction of lake des Isles ; there is a very fine tract of land adjoining the line between ranges nine and ten, on which a number of new settlers intended commencing improvements this summer. The soil is generally a good quality of sandy loam, with a rich deposit of vegetable mould in many places.

(*E.-J. Rainboth*, 31st May, 1883.)

Township of Bouthillier.

The land in the township of Bouthillier, fronting on the river du Lièvre, is well suited for agricultural purposes ; more than one third of said lots are already occupied by the lumbering establishments of Messrs. James McLaren & Co. and Thompson & Co., who have large farms in an excellent state of cultivation thereon ; said establishments afford a convenient and profitable market for the sale of the surplus produce of the settlers who reside in the vicinity of the lumbering operations.

The banks of the river are for the most part level and the soil is fertile, being composed of clay and sandy loam which are easily cultivated ; the timber is chiefly hard wood, consisting of ash, elm, birch, beech, maple. Pine timber does not appear to be in abundance, neither is it of good quality, although saw log chantiers belonging to Messrs. Thompson & Co. are in active operation within the township this winter. There are numerous beaver meadows which produce a large quantity of wild hay. There are also numerous creeks and lakes which abound in excellent fish that are taken in large numbers by the Indians and settlers.

(*James McArthur*, February, 1866.)

Township of Cameron.

The general character of the country in the south half of Cameron, between the second range and Big lake is rough.

I may particularize the east part of the fifth and sixth ranges as very rough.

The land from the centre line to lot number twenty-one in the sixth range is very poor also; the timber is chiefly of second growth; from twenty-one to lot seventeen the land is level and the soil a light sandy loam.

The timber is mixed from lot seventeen to lot number thirteen, composed of small spruce and tamarac; a thick growth of timber from lot thirteen to lot seven; here the ground is very rough; the timber in this place is large and composed of black birch and hemlock. From lot number seven to the boundary line, the land is exceedingly rough.

The centre line from the fourth range line is covered with rough timber, small red pine, poplar and white birch of second growth. Between Round lake and Big lake, there is some good red pine: the south outline from lake number two is very rough, particularly so, near Big lake. The timber is composed of some hard wood with hemlock and pine; soil very poor.

(*Samuel-B. Lucas*, 11th July, 1870.)

There is a very fine tract of land along the river front, and it extends back to Rat lake, thence south to lot number fourteen and thence back to the Grand lake. There is also a good tract along the upper township line as well as small flats in other localities through the township. I estimate about one third of this township as arable, the remainder being rocky, with indications of apatite, plumbago and iron, but no merchantable timber of any value, it having either been manufactured or destroyed by fire. There is a beautiful stretch of lakes on Post creek extending from the Gatineau river to the Grand lake, and they are teeming with fish of the finest variety, such as trout, white fish, bass, pike, &c., and a large business is transacted in the winter season in fish, not only by the settlers themselves, but by a great number from other localities, a number coming from about Ottawa city, for the winter fishing. There are three good mill sites situated on Post creek, one of which is situated at the discharge of Round lake, where formerly there had been a mill, but it was destroyed by fire and was never rebuilt. There is a small saw mill situated in the centre of the fourth range either on lot fifteen or sixteen.

(*E.-J. Rainboth*, 9th June, 1881.)

Township of Campbell.

Having completed the survey in the township of Robertson, I ran the centre line of Campbell through the first and second ranges; also these ranges as shown on the accompanying plan and the upper and the lower outlines from these range lines west to the river du Lièvre.

The character of the country, soil and timber is very similar to that of Robertson, the part along the upper township line being exceptionally fine; the soil varies from a rich clay to a mellow sandy loam with a generally mixed bush.

The only hills met with are on the centre line near the river, and another near the lake at the rear of the second range line.

The country along the front of range two, south of the long narrow lake intersected by it, is low and somewhat swampy, and along the other lines generally undulating. This township is a very fine one, and is rapidly filling up with settlers whose names I enter in an appendix to the field notes, although there is a number of names not included of those who had only marked their locations and left to obtain supplies and help.

(*E.-J. Rainboth*, 26th January, 1886.)

Township of Clyde.

This line starts from a given point at Morles creek. I ran due south until I intersected the southern boundary line of Clyde and northern outline of Amherst. This line varies considerably in its features; as you pass over it from one outline to the other, it is now level with a good soil, now undulating or rolling surface, and sometimes fearfully rough and rocky and absolutely worthless unless for fire wood; whenever a mountain is met with, it is of great height and rocky but chiefly covered with pine. In one instance, I have noticed red pine, but generally of stunted growth; the soil not being adapted for that kind of wood. The principal kinds of wood are white pine, spruce, birch, maple and basswood, although in some places elm and ash are found and are of enormous growth, from the south boundary line up to Morles creek. There are a few very good lots, but not sufficient to make a settlement, it being an utter impossibility to build a road along the centre line, without which the summer ingress or egress would be impossible; but I have no doubt that these lots will be taken by those having lots in the adjoining concession north of Morles creek; as far as the foot of Sugar Loaf mountain, the land is level and the soil of first quality, being a rich yellow loam. The farm owned by Messrs. Hamilton Brothers has been cultivated for forty years and produces as heavy crops now as when just opened; a portion of the line north of Morles passes through the valley of the fourth range, consequently leaving very few lots in the fourth concession, namely, from thirty-one to forty-two; north of Sugar Loaf mountain or the northern section is absolutely worthless unless for lumbering purposes and even then it would be with great difficulty the lumber could be obtained. The northern section of the fourth concession is timbered with small spruce and white pine; what should be soil is rock covered with yellow moss.

Lakes are numerous and abound with trout, some of very large size, which I regret to say are being ruthlessly slaughtered without regard to fish or game laws. The settlers repair to the lakes during the spawning season, with nets, spears, night lines and all the paraphernalia of warfare at their command and wage a ruthless war against the unoffending trout during the spawning season.

(N.-C. Mathieu, 17th July, 1878.)

Townships of Dudley and Kiamika.

The soil of Dudley and Kiamika is pretty much of the same quality, a sandy loam capable of bearing good crops and well adapted for cultivation. Along the river du Lièvre and as far back as the fifth range in Kiamika and along the river du Cerf in Dudley, there is considerable clay sand. Clay known as blue joint is abundant along the banks of the river du Lièvre in both townships, and is now a source of profit to the settlers who are engaged in the manufacture of saw logs in that vicinity. As an indication of the fertility of the soil in the region of my survey, I may mention that, on a farm in the township of Wobassee, opposite Kiamika, of which the soil resembles that generally prevailing in the two townships, owned by Messrs. McLaren & Co., were raised in the year 1864 :

106 tons of hay @	\$20.00....	\$2120.00
900 bushels of oats @	0.60.....	540.00
900 " potatoes @	0.50.....	450.00
90 " peas @	1.00.....	90 00
20 " beans @	1.50.....	30.00
Besides turnips and other		
vegetables worth	50.00.....	50.00
And pasturage for fifty horses and cattle....		\$ 250.00
		\$3530.00
		\$3530.00

This large crop was sown, cultivated and harvested by thirteen men in five and half months at an average cost per man for board and wages of \$20 per month : \$1,430.00, and I may add that the land in Kiamika and Dudley is on the whole not inferior to that in the vicinity of this farm. In short, hay, oats, potatoes, peas, beans and turnips can be as profitably raised in either of these townships as in the older townships lower down.

With regard to timber, the two townships are alike. The best white pine has been taken away. There remains, however, yet abundant white pine scattered through the hard wood, from which saw logs which are now considered second quality could be manufactured. Maple and birch, and in some places basswood, and on the flats ash, elm, cedar and tamarac are abundant. The rivers and the lakes abound with excellent fish, trout, pike, perch, bass, pickerel and chub, a soft watery fish averaging from four to six pounds in weight, trout predominating in the lakes, in fact, monopolizing the most of them, and chub predominating in the rivers.

As far as I went in Kiamika to the fifth range, and all except the south western portion of Dudley as far as surveyed, the surface of the land is generally free from large or abrupt hills. In the south western portion, the township of Dudley is hilly, but not so much so as to render any considerable portion of the land unfit for cultivation.

(*Samuel Allen, 1864.*)

Township of Egan.

This township is naturally divided into two sections, which may be designated the eastern and western, by the river Desert, which intersects it from north to south. The eastern, the largest section, comprises the peninsula formed by the rivers Desert and Gatineau; it is likewise the most fertile portion of the township; the land with few exceptions is well adapted for agricultural purposes, and embraces very few lots unfit for settlement. It is clothed with a thick growth of wood, varying in species and quality, according to the quality of the soil and situation, hard wood and pine predominating where the soil consists of gravel or mixed clay, sand and gravel, and soft wood predominating where the soil is exclusively clay and the country champaign. Here are to be found flourishing nearly all varieties of Canadian timber, which may be classified in the order of their preponderance as follows: balsam, spruce, birch, maple, basswood, elm, ash, oak, tamarac, white birch, poplar, pine and cedar; hemlock is rarely found and only in barren situations, dwarfish and stunted. There is very little pine except adjacent to the river Gatineau, and that of an inferior order, all the good quality being already manufactured. The surface is for the most part level or slightly undulating, without any ranges of mountains, and, with the exception of one instance, east of Balsam lake, the hillo-cks to be met with are mere undulations.

The soil on both sides of the river Desert is chiefly clay in many places covered with loam. In the interior, between the Gatineau and Desert rivers, it is a mixture of clay and gravel, and therefore the most available for the indigent settler. Along the Gatineau there are considerable tracts of rich alluvial deposits. Limestone is frequently met with along the rivers Gatineau and Desert, I think it is not the crystalline, but rather belongs to the class called primozoic.

The western section comprises that portion west of the river Desert. Along the river Desert, varying from one half to two miles, the land partakes of the character of the east side and is equally well fit for settlement; westward, the surface is more broken and the land inferior, culminating in barrenness towards the county line and south of the base line along the Eagle river ranges. This portion has but a few limited patches of good land. The good land on the north of the base line is more frequent and of greater extent, and though, in many places rugged and rocky, it contains a considerable portion of good land. The soil in this portion consists chiefly of gravel and sand, the surface is broken and rocky, irregular hillocks alternating with marshes and lakes. Taken as a whole, the township is well adapted for settlement at least as far back as the eighth range.

From the continued and almost unvarying sterility of the rear of the township, I was constrained to desist from its further subdivision.

(*J.-P.-P. O'Hanly*, 26th May, 1863)

Township of Hincks.

The surface of the soil in this township is uneven and stony and dotted over with a large number of lakes; not more than 40 per cent can be estimated as arable; but, on the other hand, this is very fertile and the crops are excellent. In some places, the land is abundantly strewn with rocks; the fixed rocks are of hypozoic formation, comprising granite, gneiss, &c., primitive limestone, in irregular masses, streaked with veins of phosphate, mica and plumbago, which may become valuable when the projected railway from Ottawa will have facilitated communication.

The different kinds of timber met with are the maple, white birch, iron wood and ash, of fine growth and good quality. The pine has been nearly all removed, but it never existed except scattered through the other timber and not as groves.

The line between ranges 8 and 9 runs along the line dividing the waters of the Lièvre and the Gatineau, thus separating the township of Hincks into two distinct parts. The part watered by the Lièvre is very difficult of access, communication with it either in winter or summer being impossible except by Great Whitefish lake. Unfortunately, high winds are common on this lake, and the ice is not safe for vehicles before the 15th January in each year.

(*Jas. McArthur*, 1888.)

Township of Joly.

This township is very much broken up by mountains and lakes, and a large portion of it will never be fit for cultivation. Along the River Rouge a strip of land varying in depth, but generally about three quarters of a mile to a mile on each side, is suitable for cultivation. The soil seems to be a light sandy loam, becoming better in the low grounds of the valley. East of this there seems to be little, if any, farming land, with the exception, perhaps, of a strip along the Cachecache and an occasional isolated spot; the western side of the range is more promising, especially in the vicinity of lake Maskinongé, but much of it is very hilly and quite unfit for cultivation. The southern, eastern and northern boundaries and the centre line cross a succession of mountains, and it is very rare indeed that any land on them is seen which can be cultivated. These mountains are generally composed of quartz and granite, and very frequently there is no soil whatever, merely a lowering of mass. The western boundary, although hilly and in some parts very rough, is much better, and some pretty good farms will be found along it.

(*William Crawford*, 27th May, 1879.)

Township of Kensington.

I further beg leave to report that the soil of this township is generally of a very good quality and well adapted for the purposes of agriculture, and in certain parts, the soil is, in fact, of a very superior quality, more especially towards the southern extremity of the township and in the immediate vicinity of Greves lake. The Messrs. Gilmour & Co. occupy a very large farm in the fifth range, comprising a portion of six lots as represented on my plan of the survey. The improvements, which they have made on it consist of about one hundred and fifty acres in a good state of cultivation, a large barn and stables, and a good house in course of erection.

The township is accessible by several tolerably good roads; besides, there are several chantier roads through the portion which I have surveyed, which could very easily be rendered passable; this will no doubt be a slight inducement for settlers to establish themselves there. It is also generally of a level nature and, as my accompanying plan will indicate, well watered by several beautiful lakes and their small tributary streams.

The Reverend Fathers of the Oblat order have already two mills in course of operation within a short distance from the township line between the townships of Kensington and Aumond, and situated on the Joseph river, which is at present a great boon to the settlers in that vicinity, and which, I have no doubt, will be a strong incentive to the rapid settlement of the surrounding country.

In conclusion, I beg leave to state that the front or part of the township which has been surveyed for some time past is well settled, and I have no doubt that, as soon as some other portion of the township has been surveyed, a new settlement will rapidly spring up, for I believe that its heretofore unsurveyed state has been the only obstacle to its settlement.

(*James Roney, 26th January, 1865.*)

Township of Kiamika.

From the centre line to the northern boundary of this township, the lots on each side of this line are in general very rough and rocky, but very rich in mixed timber, such as hemlock, elm, spruce, ash, cedar, bass wood, pine, birch, fir and maple; the soil is good. The lots starting from the centre line and running direct south are very rough and rocky. On each side of said line, the prevailing timber is soft wood; soil good.

The lots situated on both sides of the river Kiamika are first class as regards the quality of the soil and timber. The prevailing wood is ash, elm and maple, and the lots are nearly all level. Mr. Dufort, of Montreal, has lately built a saw and grist mill on the fine water power on lots numbers 13 and 14. This mill will, doubtless, be a great help to settlement.

(*N.-C. Mathieu, 1888.*)

Township of Labelle.

The land is good, being well timbered with cedar, maple, birch and other valuable woods. All across the said township line to the division line of La Minerve, it is also well watered and altogether well adapted for farming purposes, being level and good soil on the line and rough at a small distance east of it. Returning to range C, I ran the line to its junction with the rear line; in some places there are good flats and hill sides that are well fit for cultivation; as will appear on plan, there are two angles in the central line at A and C, caused by the occurrence of mountains and cliffs.

The eleventh range is principally hard wood, maple, birch and bass-wood; rolling, although rough, indifferent soil on each side of the line. The tenth range is also fit for settlement nearly all through, rather rough, similar timber and soil as the preceding one. The ninth range is also nearly all fit for settlement although somewhat cut up by lakes. The seventh and eighth are principally all lakes and mountains; the lakes, some of which are very large, contained within rough and rocky shores. The sixth range is good land nearly all through. The fifth range also contains some good land although containing some small lakes. Along lake Maskinongé, the land is rough and rocky and of very little account.

On account of the number of mountains and lakes therein found, this township will be quite useless for cultivation unless good roads are previously made by Government. The township is rich in timber.

(V.-C. Mathieu, 30th May, 1882.)

Township of Lathbury.

The part of Lathbury, best adapted for settlement, is between the west boundary and the centre line, but there is a strip varying in width of on an average about two miles wide to the east of the centre line, of good quality. To the east of this strip, the surface of the country is rough and rocky, and, in places, so cut up by precipitous hills as to be, at present, unfit for use. Much of the land in the township is very good, the soil being a good sandy loam and well timbered. The ordinary varieties of hard wood, such as maple, birch, beech and iron wood abound; white pine of an excel-

lent quality is found in sufficient quantities to supply the requirements of the settler. The country is well watered, being traversed by numerous small streams and two of considerable size: Blanche river, which may be said to take its rise in the lake on lots forty-three, forty-four and forty-five, ranges five and six; and Seryer creek at the eastern end of the township; both of these streams have water of sufficient depth to float timber. Numerous ponds and lakes occur; none of them, however, are of any great size; the largest is called Bark lake. The township is well adapted for settlement, the chief and in fact only hindrance being the want of a road leading into it.

(*John Johnston, May, 1867.*)

Township of Lesage.

The land in the township of Lesage is generally broken, especially in the section adjoining the south west outline, where mountains of several hundred feet in height occur, presenting in some places precipitous cliffs devoid of all vegetation. However, in the central and northern sections, there are plateaux of considerable extent, with a very rich soil, judging from the size of the timber. The sections containing the best land are in the third and fourth ranges, to the north of the centre line in the fifth and sixth ranges and in the northern part of the seventh and eighth ranges. The prevailing woods are maple, beech, birch, bass wood and a few elms on the high grounds and spruce, cedar, birch and ash in the low lands. Pine, which existed abundantly in some places, has been cut off nearly everywhere. Still a few remain here and there, especially in the southern and north western sections of the township. Spruce is more common, not having been yet sought after so much.

The township of Lesage contains several lakes of considerable size with splendid sites on their banks for the homes of future settlers.

The water powers, which occur not far from Lake Rognoa, can be advantageously used for saw and grist mills.

(*J. A. Martin, 8th August 1884.*)

Township of Loranger.

The land, in the first and second ranges of the township of Loranger is slightly rolling and in general very well adapted to cultivation. The part of the third, fourth and fifth ranges, south of little lake Nomingue, is more broken, without being very mountainous. The remainder is nearly everywhere level or slightly sloping.

The land, along the north outline, except ranges 1, 2 and 3, is mountainous and rocky, showing over extensive tracts nothing but dry trees and windfalls. There is fine land along the west outline from the north west angle to Big Bay lake. The south side of this lake, however, is mountainous for about two miles. The soil of this township is generally a good yellow loam, usually free from rocks, except near the large lakes and some places south of little lake Nomingue, which are rocky. The prevailing timber is spruce, fir, cedar and birch; on the higher grounds, maple and other hardwoods predominate. The pine, which seems to have been pretty common in certain places, has nearly all disappeared under the lumberer's axe, and what remains is of inferior quality.

(*J.-A. Martin*, 23rd August, 1881.)

I found in this place a splendid valley extending through the fifth, sixth and seventh ranges for a mile and a half to two miles on each side of the centre line and almost without undulations. The remainder of the township, though more uneven and rocky, offers nevertheless a very rich soil, covered with a splendid forest, in which hardwood predominates; I noticed in several places magnificent maple groves, which seem to be profitably worked for sugar.

(*J. A. Martin*, 1882).

Township of Lytton.

With respect to the physical characteristics of Lytton, I beg leave to state that the land is of very good quality and extremely level; there are very few elevations of any considerable extent; at least ninety five per cent of the whole is arable and fit for cultivation. There is a continual succession of hard wood ridges, with balsam, cedar and tamarac swamps intervening; the soil on the hard wood ridges is excellent, but in the swamps it is light and sandy. There is not much white and red pine in the township; occasionally small groves are to be met with of large growth and of apparently good quality, but not in sufficient quantity to induce extensive lumbering operations. There are no settlers in Lytton, nor is there any probability of its being settled soon, as it is so difficult of access at all seasons of the year.

In no other part of the Ottawa country is there so large a tract of really good and fertile land as in the townships of Maniwaki, Egan, Aumond, Sicotte, and Lytton, but in order to render said land available it is absolutely necessary that roads should be immediately constructed or laid out throughout said townships.

(*James McArthur, 21st June, 1862.*)

Township of Marchand.

This township is on the whole a very fair agricultural country, the best portion being between the head of the long rapid and the bend of the river. The soil is generally very sandy and though to a stranger it might seem poor, yet the middle farm has been worked for a number of years without any manuring and is still good. A good proof is that two practical farmers, W. McGuire and Varin, who had charge of the middle and upper farms for a number of years, are about to take up lots in the township. A large extent of country in the north west part of the township has been so badly burnt over that apparently the soil is even destroyed. The lower part of the township does not appear to be very good, more especially east of the range, which looked so broken up by mountains and swamps that it was not considered worth running the rear line at present. The south west portion of the township seems mountainous, but some lots have been taken up and are spoken well of. In the unsurveyed parts there seems to be good

lands in the central part of the township both east and west, but more limited in extent in the former. The country is generally well watered and plenty of good timber both hard and soft is to be found, although large districts are thickly covered with a second growth of poplar.

(*William Crawford*, 26th August, 1880.)

The portion of this township which I traversed offers a fine field for settlement. The mountains, which are pretty steep, especially in the northern section, nevertheless show fine plateaux of arable land on their summits and splendid valleys between, often of considerable extent, with a very rich yellow soil free from stones.

The section to the south of the Chapleau road, although more broken and rocky in many places, still offers a good number of lots which might be profitably worked.

The timber is of fine growth. The higher plateaux are generally covered with maple, beech, bass wood and birch, and spruce, cedar, birch, ash and fir are found in the valleys and low grounds. Wherever pine occurred, it has been cut off; only a few trees remain here and there and they are of inferior quality.

(*J.-A. Martin*, 1882.)

I subdivided into lots this part of the township of Marchand under the name of the north range of the rivet Macaya and the south bank of that river.

With the exception of some slightly hilly lots, the surface is level enough; soil very sandy; the prevailing timber is soft wood. I found several water powers on this and other rivers, and among others, a splendid one between lots No. 6, called the great Macaya falls. The lots along the river are nearly all taken up by squatters.

(*N.-C. Mathieu*, 20th March, 1884.)

Township of McGill.

Ranges two and three are comparatively level, the soil varying from sandy loam and covered almost entirely by "brûlés." The northern part of ranges four and five is mountainous and rocky, and unfit for settlement, whereas the southern ends bordering on the Serpent creek are well adapted for settlement, the soil consisting of a sandy loam with a growth of mixed timber. There is a strip of brûlé running diagonally across range four. The Messrs. Elie Bros. have a fine saw mill situated on the Serpent Creek in this range, as well as blacksmith and general carpenter and furniture shops, and they intend erecting a good grist mill adjoining the saw mill, next season. Parts of ranges six and seven are well adapted for settlement, especially along the Serpent creek, although there is some very rough country along the line dividing them; the soil varying from sandy to a sandy loam with a good growth of mixed timber. The country along the centre line is very rough, mountainous and rocky, and on the lower outline it is level and the soil principally a good sandy loam. There is no pine of any value, but abundance of valuable cedar. There are valuable deposits of apatite or phosphate of lime in this and the adjoining townships.

(*E.-J. Rainboth, 1887.*)

Township of Mulgrave.

The character of the tract surveyed is generally uneven and hilly and in some places broken. The valleys are without exception arable, and many of the hills are fit for agricultural purposes. It is heavily timbered with hardwood; maple and black birch predominating, with cedar and ash in the lower parts. There is also a great deal of hemlock, red oak, balsam, &c. In many places the hardwood is mixed with a quantity of cedar and scattered pine on the high lands. Some considerable tracts are covered with pine, which does not appear to be of a very large growth. The character of the soil through these pineries, with the exception of a narrow belt of about half a mile in breadth and extending northward along the eastern extremity of the township as far as the line between the seventh and eighth ranges, which is very rocky, is a good sandy loam. Most of the pine is in the eastern part of the township; at present there is no means of taking square timber out of the township by water, as none of the rivers are sufficiently navigable to the Ottawa.

There are two branches of the river Blanche running through the township of Mulgrave, upon which there are several reserve dams constructed for the purposes of the Blanche mills, in the township of Lochaber. These branches of the river empty their waters into a large lake on the south boundary of this township, called the Blanche lake, and which contains a large body of very clear water. This river affords some very good mill sites in the township of Mulgrave, where grist or saw mills might be erected and have a supply of water sufficient to drive them during the driest season. The next river is the Sinsie which receives its supply of water from numerous lakes and brooks of clear water. Saw logs have been driven only through the lower part of this stream. This stream also affords some excellent mill sites in the township of Mulgrave. I have also to add that the valley of this stream which is of considerable width in some places is generally composed of a good dark soil with some traces of blue clay and small gravel and offers every invitation to the agriculturist.

All the lakes in this township abound in salmon trout, some of which are of a very large size. There seems to be no other species of fish in these lakes, except Gull lake, where perch are caught in great abundance.

The part surveyed by me when taken upon the whole is well adapted for settlement, and, with the exception of some comparatively small portions, is well adapted for tillage, and as a grazing country it is equal to any that I have yet seen, owing to the numerous springs and creeks, which are so necessary. And the swamps in this township are of the richest quality of soil. As to the geological character of the township, I need hardly say much as I have procured some specimens of the principal rocks which I intend sending to Sir W. Logan, for examination. The general character of the rocks is granitic with a large proportion of quartz; some large tracts are chiefly gneiss and some very fine specimens of trapdikes are also seen; upon the whole the geological character is highly indicative of valuable minerals. The mining operations in the rear of Lochaber are reported to be of a more than commonly successful character.

(*John Johnston*. 14th June, 1865.)

Township of Ponsonby.

The physical features of the part of Ponsonby surveyed by me are very remarkable. The land for the most part is covered with hard wood of the largest growth, including maple, yellow birch, beech; I found basswood,

and in some places oak, and as yet it has been uninjured by fire. Pine timber is very scarce; the few trees that were originally scattered about have mostly all been cut; what has been left still standing will not be half sufficient to furnish building timber for the settlers; but as cedar of good quality and of large size are in abundance, they will in a great measure supply the deficiency. There are a few cedar and tamarac swamps of small extent, which being in general open and dry will not retard the settlement of the township. The fixed rocks are of primary formation, principally granite and gneiss; there are indications of the existence of iron to be met with in many places. The soil is generally a sandy loam, in many places overlaid with vegetable mould and alluvial deposit. The surface of the land is for the most part undulating, occasionally rising into round hills varying from fifty to two hundred feet in height; these hills are to be found in greater number on the centre line than any other part of the township; they present a uniform appearance, their south western slopes being steep and barren, while the remaining sides are covered with a heavy growth of mixed timber and descend gradually from the summit. The part of ranges four, five, six and seven, lying west of the centre line, is well suited for successful settlement; the land being level, well watered and of good quality. That portion situated east of the centre line is not so favorable for settlement as hills similar in appearance to those already described are frequently to be met with; there are, however, fertile valleys intervening, and I believe that about fifty per cent of it is arable and fit for agricultural purposes; about ninety per cent of the land on the western side is arable.

The Maskilonge or Maskinongé is a very beautiful stream and is navigable for canoes from the south east corner of Ponsonby as far as lot number twenty-three, in the fourth range, and, through the whole extent of the township, there is little obstruction to canoe navigation; there are, however, sufficient water powers available at the first, second and third chutes for grist mills, saw mills, factories.

As the land is suitable for purposes of settlement and is so easy of access at all seasons of the year, it is difficult to account for the indifference manifested to this section by intending settlers.

(James McArthur, 26th December, 1868.)

The lines run in the township of Ponsonby pass through a rough, mountainous and rocky country as a general rule and unless the land is very much better in the middle of the lots, of which no indications could be seen, it does not seem likely that the lower part of Ponsonby will ever be a very prosperous farming country. Of course, there are some lots better than the others and a few very fair farms will be found, but these will be the exception not the rule.

The portion of the township of Suffolk runs through land which although hilly seems to be a better farming country and the class of settlers more likely to make the most of it. In both townships a very fair start at clearing the land has been made as is shown on the plan. The names of the land owners are given on the plan as correctly as could be ascertained.

(*William Crawford*, 7th June, 1880.)

The country in proximity to the lines surveyed by me is rough and rocky, with many lakes and streams. About one third of the sixth and seventh ranges is fit for agricultural purposes, the soil being principally suitable to the cultivation of grain, of which some good crops have already been raised by the settlers.

There is an abundance of yellow birch, spruce and maple, with some small scattered white pine towards the north west part of the township. On the Maskinongé river there are several excellent chutes for mills, the want of which is being at present badly felt by the settlers.

I may remark before closing that a desire was expressed by many of the settlers that the lakes in this township, which are numerous and of considerable size, should be correctly fixed in position as they were erroneously shown on the latest official plans.

(*Ormond Fletcher*, 31st March, 1882.)

The general aspect of the township of Ponsonby, although in many parts rough and mountainous, yet affords several fine tracts of loamy soil, well adapted for farming purposes, especially in the western part of ranges second, third and fourth and the north east part of range five. The various kinds of grains and vegetables are raised in abundance.

(*Ormond Fletcher*, 17th May, 1883.)

Township of Pope.

This is a very fine township, level country, first class sandy loam, soil covered with a growth of good mixed timber and very suitable for settlement. The finest farm on the river is situated in the north east corner of this township, being Messrs. Jas. McLaren & Co's mountain farm, on which they have about four hundred acres under cultivation. The Devil's mountains commence in the northern part of this township about five miles back from the river and run in a northerly direction as far as the eye can see. The fine tract of country of which this township forms part will not be settled properly or rapidly until there is a colonization road built either up the river du Lièvre or from the Gatineau roads.

There is no fine timber of any merchantable value in this township, and the only water power is at the Turtle rapids, on the river front near the south east corner. The country above this township still continues good and well adapted for settlements.

(*P. Griffin*, 11th February, 1881.)

Township of Portland.

Concerning the topographical features of the tract of land, comprising the verification survey of Portland East, I beg to remark that it is traversed by three different water courses: the river du Lièvre, Clay creek and Castor creek, with their tributary lakes and creeks, which form as many valleys of different extent and fertility, and which are separated from each other by three mountain ranges, of which the most westerly one has the greatest elevation above the level of the river du Lièvre. The course of these mountain ranges as well as the valleys is from north to south, all running nearly parallel to the river du Lièvre. The valley of that river has the least extent, and its soil possesses the least fertility, being composed of plastic blue clay. There are only three clearings of an area of one hundred and seventy acres to be met with. The valley of Blue creek is of greater extent, and its soil more valuable for agricultural purposes and particularly the northern portion of it, which is composed of black clay and vegetable earth. The central part exhibits rather too much of the plastic clay alluded to before, to be employed to great advantage for farming purposes. The

southern portion is a fertile plain composed of rich alluvial soil. There is only one settler in this valley, whose clearing is about seventy acres large. The most easterly valley comprises that fertile tract of land lying round Tamo lake, commonly called Tamo lake settlement, and the valley of Castor creek. Its fertility is very great; the soil being composed of a rich marshy soil yields great crops of grain and hay. There were nineteen settlers at the time the survey was being carried out, with an aggregate amount of clearings of two hundred and eighty-three acres.

Having neglected to speak about the quality of timber which grows on the verified portion of the township of Portland, I consider it my duty to make this addition to my report. I beg to state that hemlock is the timber most abundantly found all over the tract especially mentioned herein, and that next to it in abundance, but mixed with the hemlock, are all the different kinds of hard wood, with the exception of oak, which is of rare occurrence. Of extensive pineries none are to be met with. The green shade exhibited on my diagram, showing the timber divisions, which accompanies this report, indicates those places or tracts where pine is the most predominant timber, but not the only one growing. I beg to mention here those places especially for your convenience sake. In the fifth range from lot number one to six; in the seventh, eighth, ninth and tenth ranges from lot number one to six. Again west of lake Tamo, in the sixth range on lots numbers nine and ten, and in the eighth range on lots seven, eight, nine and ten.

(*R. Rauscher, 1864.*)

Township of Portland-East.

I may say in reference to the country I have gone over in this re-survey, that there are certainly a number of very good flats of land available for colonization, but the largest proportion is hilly, broken and rocky; it is nevertheless all heavily timbered with very few burnt districts; the principal timber being hemlock, birch, maple, cedar, balsam, spruce and a small quantity of bass-wood; there is very little pine timber; doubtless, it has been very rich at one time with pine, judging by the traces of old timber works. I might add that the best agricultural land is to be found along the valley of the river du Lièvre.

(*G. Rainboth, 4th December, 1875.*)

Township of Portland-West.

Concerning the topographical features of the tract of land comprising my verification survey of Portland West, I beg to state that it is traversed, besides the river du Lièvre, by three distinct water courses, firstly, by Priest creek, which flows in a south easterly course through a very fertile tract of land along its whole length to its confluence with the river du Lièvre, which occurs in the fourth range of the township of Portland, the tributary lakes and creeks of said creek are very numerous: secondly, the south of the former, by the chain of lakes being situate on the second, third and fourth ranges and emptying into the river du Lièvre in the third range of the township. The general course of these lakes and connecting creeks is from north west to south east. The country surrounding these water courses is, with the exception of the lakes in the third and fourth ranges, not very suitable for agricultural purposes on account of its mountainous nature. The third water course situate in the south west part of the township is formed by the tributary lakes and connecting creeks of the river Blanche which empties into the Ottawa river. The land surrounding these lakes and connecting creeks is of a hilly nature, yet affords good farming land. The height of land separating the said second from the third water course referred to before is not suitable for agricultural purposes on account of its mountainous nature.

Concerning the timber which grows on the tract of land comprising the verification survey of the township of Portland West, I beg to say that almost all the level parts of township which I have traversed are covered with hardwood; and evergreens and particularly white pine are prevalent. Valuable pineries are no longer in existence, for the axe of the lumbermen has years ago cut down what good timber could be obtained for the market; only timber of inferior quality is met with on the tracts I have just been describing; and should it happen that a solitary veteran pine tree be seen in these regions, the cause of it might be assigned either to its sequestered place of growth or to its wood not being sound.

(*R. Rauscher, 1865.*)

Township of Preston.

I ran the west line of this township on a north course, variation, $8^{\circ}54'$. Along this line, the land is slightly mountainous and rocky, but the soil is good and wooded with maple, birch, hemlock and spruce.

From the north western angle of the township to Long lake along the north line, the surface is rough and rocky, the prevailing wood being the maple; but on the east side of the lake it is altogether uncultivable, being exceedingly mountainous and rocky; it is, however, rich in small pine and spruce.

The ground is mountainous and rocky on each side of the line between the first and second ranges from lots No 1 to No 8, inclusively. These lots are timbered with hard woods. From No 9 to No 18, inclusively, the surface is slightly broken, the soil light and the timber mixed. From No 19 to Whitefish lake, the land is very hilly and rocky, the soil good and the timber mixed.

From No 1 to No 10, inclusively, along the line between the 2nd and 3rd ranges, the land is mountainous and rocky, the soil light, and the timber mixed. From No 11 to No 16, inclusively, the surface is very broken and covered with hard wood. From No 17 to No 22, inclusively, it is very level, the soil light and the timber mixed. From No 23 to the centre line it is mountainous and rocky, but rich in mixed timber.

From No 13 on the north side of lake Barrière or Simon to No 16, inclusively, on the line between the 3rd and 4th ranges, the land is flat and the soil very sandy. On numbers 13, 14 and 15 in the 4th range, forming part of Mr. Edward's farm, there are about 150 acres under cultivation and the buildings are erected at a short distance from lake Barrière. From No 17 to No 32, inclusively, the ground is mountainous and rocky, the soil good and the timber mixed. From No 32 to No 35, inclusively, the surface is broken and rocky and the soil light. From No 35 to No 44, it is very mountainous and rocky, the soil light and the timber mixed.

The lots on both sides of the line between the 4th and 5th ranges are in general very broken, mountainous and rocky even, and the soil sandy. Hard wood predominates.

From No. 28 to Long lake, on the line between the 5th and 6th ranges, the surface is very mountainous and rocky. The soil is sandy and the timber is soft wood.

From No. 55 to No. 48, on the line between the 6th and 7th ranges, inclusively, the land is very mountainous and rocky, but the soil is good and rich in hard woods.

Along the whole length of the centre line, the ground is mountainous and rocky. There are several mountains covered with pine and spruce, chiefly on the west side of Little Whitefish lake.

(*N.-C. Mathieu*, 24th March, 1884.)

Township of Ripon.

I found great difficulty in surveying the residue of this township on account of its mountainous character, but I am glad to be able to state, on account of the future settlement of the country, that the range lines and west boundary traversed the very roughest parts of the township, leaving between many fertile valleys and some large tracts of good rolling land, well adapted for agricultural purposes. Some few settlers have already found their way into the part surveyed by me, and are making great progress in their agricultural pursuits.

Considering the time they have been there, they have made large clearances and grow fine crops of different kinds of grains and roots, such as wheat, oats, rye, barley, buckwheat, Indian corn, flax, and the latter is raised invariably by them all and woven by them into a fair quality of linen. They appear to succeed remarkably well in the growing of wheat, as the land in many of the valleys seems to be well adapted for its culture, it being a mixture of blue clay and dark rich loam, which together form a very enduring soil for the culture of exhausting cereals.

The general character of the soil where it is in any quantity on the rolling lands is a dark sandy loam, and in many places a blue clay subsoil. The valleys are generally arable and much of the rolling land is well adapted for the purposes of settlement.

There are some good localities for roads through the part surveyed by me; although they may not lie in very direct routes, yet they might be made to answer all the purposes of the settlers.

The timber throughout the part surveyed by me is generally of a very large growth and is chiefly hard wood mixed with a large quantity of good merchantable pine and hemlock, maple and black birch, predominating.

The only notable streams in the part surveyed by me is a small part of Seryer creek running along the north boundary of the township, upon which one John Hughes has erected a grist mill within the seventh concession of this township, and I believe soon intends erecting a saw mill near the same place. The other is a portion of the Sinsic creek, the general breadth of which is about seventy-five links, and which runs through the south west part of the township forming a junction of the two branches near the south west corner. This stream is at present sufficiently navigable to drive saw logs and might with a little labour be made sufficiently navigable for square timber. Owing to some unaccountable cause the line between the eighth and ninth ranges did not intersect the north boundary at the full depth of the eighth range, but has left that range narrower than was intended, although the line is carefully traced with pickets all the way ; however, it divides the good lands in the north end of the township much better than it could otherwise have done had it intersected in its proper place. I would have corrected it back only on that account. There is also a small part of the same line at the south end of the township that I could not run on account of the extreme roughness of that part of the country.

(*John Johnston*, 2nd July, 1866.)

Township of Robertson.

Proceeding northwards, the country is uniformly very good, mostly level, with a fine quality of soil and bush, principally hard wood.

After completing the front of the fourth range, across the township, I proceeded to survey the northern outline, from the corner of the townships of Sicotte and Aumond, along which the country is generally undulating with a growth of spruce, balsam and mixed hard wood, the soil being a sandy loam, more or less strong, with a few flats of swampy land, up to two miles from the said corner ; thence the country has a marked descent to the creek or lake au Sable, a tributary of the river Baskotong, one of the principal ones of the Gatineau river, and is timbered with a very fine growth of hard wood, mostly maple and birch, with a good sandy loam soil and well fitted for agriculture ; thence to the river du Lièvre, the topography of the country is very similar, being undulating without any marked descent until within a short distance of the Lièvre. The only mountain visible in

this part of the country is the Devil's mountain, lying to the north about ten miles, and visible from several points along this line. The pine timber appears to be almost completely exhausted; a good road could be built across through this township for a trifling cost to connect with the waggon road leading to the Desert village and the "Priests' Mill" on the Joseph creek.

There is a fine mill site at l'Original chute, also another at the Turtle rapid.

The tract of country in this vicinity, comprising this and the adjacent townships, is one of the finest in the county, and is destined to become at no distant date a large thriving settlement; at the present, owing to the absence of roads, settlers are all establishing themselves along the river, which is the great natural outlet and highway for the country. Game in great variety is very plentiful throughout this section of country and furnishes the pioneers or early settlers with their main food supply.

(*E.-J. Rainboth*, 26th January, 1886.)

Township of Suffolk.

The general features of the land in that portion of the township of Suffolk surveyed by me, are high mountains with fertile valleys intervening. The level flats of land worthy of particular mention are firstly that portion of the sixth and seventh ranges lying east of the centre line, and adjacent to the township of Ponsonby. Also that portion of the fourth, fifth, sixth and seventh ranges through which Leduc's exploratory road passes.

(*H.-C. Symmes*, 20th November, 1866.)

The surface is generally undulating and the soil a good quality of sandy loam and is well timbered with yellow and black birch, hemlock, maple, beech, elm, ash, bass-wood, cedar, spruce and balsam: all the merchantable pine having been cut for market years ago. On the whole, I consider this township as above the average and possessing a good class of settlers who are rapidly developing all its resources.

(*E.-J. Rainboth*, 19th December, 1881.)

Townships of Suffolk and Ponsonby.

Respecting the fitness of this township for settlement, I have to state that the eastern part of it is well watered with springs and generally well timbered with a mixture of hard and soft wood, chiefly maple, birch, balsam and beech, fir and cedar in wet and moist places; the soil is a sandy loam and well adapted in parts for cultivation; of this extent twenty per cent may be deducted for stony, swampy and broken land, leaving nearly eighty lots of one hundred acres each fit for settlement; with respect to the western part of the township, the surface is hilly, often broken, rough and stony, well watered with springs and brooks; the prevailing timber is hard wood mixed with white and red pine; the soil is a good sandy loam; of this extent thirty per cent may be deducted for stony, swampy and broken ground, leaving about seventy lots of one hundred acres each fit for settlement. I have also to state that the surrounding country is thickly settled.

I have also examined the geological features of the country and am prepared to state limestone will be found in the township sufficient for building and agricultural purposes.

(*P. Griffin*, 1857.)

Townships of Wakefield and Templeton.

The line A. B. passes over a very rough tract of land with hardly a chain of level land excepting near the point A, the soil of a good deep hazel loam, on the high land and of a clayey nature in the low flat land. The timber is chiefly beech, maple, birch and hemlock, with a mixture of white spruce, balsam and cedar. It is very precipitous and rocky; in fact, the appearance of the country is broken, rugged and stony and almost unfit for cultivation.

The land along the line B. C. is much superior, there being more land fit for cultivation, which has been settled within the last two or three years; it is nevertheless very rocky and barren on the high lands. On the line C. D. E. there is quite a fair tract of land favorable for cultivation, a good deal of which is under tillage.

The predominating rock is gneiss. I met with but one water power, which is on lot number twenty-eight, in the thirteenth range of Templeton,

where a fall of thirty feet could be obtained and a constant flow of very clear water. The lake I crossed on the line A. B. is very deep and its waters are very clear and cold ; the banks are very steep and rocky. It contains trout, chubb and perch. Lake Wakefield is a magnificent sheet of clear water surrounded with a tract of undulating land ; its banks are not so precipitous as the lake before described, but slope gradually to the water.

I would also briefly remark that I met with no parts excepting these marked on the B. C. line and on the south outline of Portland line of which note has been taken in the field notes.

The country about the vicinity of lake Wakefield is being rapidly settled chiefly by French Canadians and promises to be a rich agricultural country, using the valleys for grain and the uplands for sheep pasture ; there appears to be an ice tract yet undivided marked as a gore on my plan, having a depth of one hundred and twenty-one chains and thirty-six links from C to D, and running eastward to the western line of Buckingham ; the said tract might be advantageously subdivided by running a line through the centre of the gore from west to east, so as to make a double range, in which case it would only require to continue the line B. C. eastward to Buckingham and run the centre line above mentioned.

(*George-F. Austin*, 24th September, 1861.)

Township of Wells.

The land through which I have surveyed, from about lot number thirty-four, southward, to the O'Dwyer outline is generally of ordinary good nature, but that from lot number thirty-four to the northern outline between Wells and McGill is generally of a hilly description. These hills extend along on each of the six ranges that I have surveyed, all running with the parallels of longitude and in some places of a considerable height, They are, however, separated by some good arable valleys, which are well adapted for hay and other crops. The hills, although in some places rough and stony, contain good loamy soil, and, as they are well watered with pure springs and brooks, will be found to make good pasturage for stock, if required, in future days. On this north side of the township, I found a large tract of land, well wooded with maple trees ; in fact, it is the largest and best sugar bush I have ever surveyed through, and I have no doubt, that it may yet become a valuable maple sugary for settlers.

Along the northern outline the land was generally very rough and of no real value for farming purposes. From lot number thirty-four throughout the southern portion of the township to the outline between Wells and Villeneuve, the land is generally well adapted for farming, and now when the range lines are well opened out, and the lot posts properly planted, it affords a good opportunity for settlers to make homes for themselves. There is towards the centre of Wells, from the sixth range westwards, a level tract of heavy land, the soil in some places being rocky, and in other places black and yellow loam, interspersed here and there with an occasional beaver meadow. This land is certainly very rich, and I have no doubt, may yet become of great value to this section of the country. Although there are not many lakes, worthy of much notice, where I have surveyed, still the township is well watered with pure springs and running brooks and small rivers, all of which contain good healthy water, and are generally to be found in all directions.

(*James Roney, 23rd April, 1870.*)

Township of Wobassee.

I beg to make a few remarks concerning the topographical features of this township as far as they have come to my cognizance. Besides the river du Lièvre, there are four water courses which traverse the township in a southern and southeastern direction; the most southern of them is Gatineau creek which takes its rises on the height of land between the rivers Gatineau and du Lièvre, near the centre line of the said township of Wobassee west, averaging about sixty links in breadth. It traverses in its lower course an almost level country of sandy and loamy soil. It has a good mill site at the confluence with lake des Sables. The second water course is that of Bobish creek, which empties in to the river du Lièvre, half a mile above Bobish creek rapids. The upper course of said creek is very rapid, forming cascades and sets of rapids in close succession. It rises on the height of land between the waters of the Gatineau and du Lièvre, where it forms two lakes of considerable extent; it averages in breadth fifty links. Near the mouth, it forms a valley with marshy bottom. The third water course is that of Carp creek which takes its rise in the township of Bouthillier, near the south outline. It drains a considerable extent of country, which is comparatively level and contains good clay soil; it averages about fifty links in

breadth, and has a good mill site near its confluence with the river du Lièvre. The largest and most northern water course is that of Pearce's creek which takes its rise near the north outline of the township of Bouthillier, about twenty-two miles from its confluence with the said river du Lièvre. About a mile from its mouth it forms a basin of considerable extent, commonly called lake des Camps, which is nearly five hundred acres large. The average breadth of said creek, above lake des Camps, is about one chain and below it two chains. It traverses nearly the whole length of its course a level country well adapted for agricultural purposes. Around the western portion of said lake des Camps and on both banks of the creek below the lake, the country is all taken up by settlers, who grow a considerable quantity of grain and hay. Concerning the river du Lièvre, I beg to state that its course is throughout very rapid and often interrupted by sets of rapids of which the Bobish, Devil's, Long, Lambert's and Grenier's rapids are the most prominent ones. The country on both banks of the river is undulating almost level, now and then intersected by narrow ridges while the mountain chains from the interior shoal towards the river.

The land along its western and northern shores from lake des Sables to the upper Lacoen consists of good farming land and is capable of accommodating a number of settlers with good farm sites. The country intersected by the line between the second and third ranges of the western portion of the township as far as surveyed is level and consists of sand and clay. The line between the first and second ranges of said western portion passes through a country which is much cut up by mountain chains, running in a north western direction; and about two thirds of the land is unfit for the rising of grain, but would afford good pasturage.

The northern portion of the township is more adapted to farming purposes, on account of its less mountainous nature. The soil consists of clay and loam and is more accessible from the river du Lièvre.

Of valuable timber, such as pine, and tamarac, none is left near the banks of the river, but west of lake des Camps, in the western and northern portion of the township, some of it is to be met with, not to say of the best quality, yet such as would realize a fair price when brought to market.....

(*R. Rauscher*, 25th February, 1867.)

COUNTY OF PONTIAC.

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Township of Aberford.

I have delineated the natural features of the country on the plan herewith, such as mountains, swamps, burned lands, and the roads. The best part of the land is situated on the south side of the west branch of the Du Moine and at the north west corner of the township, but there is rather better land out of the township around Sucker lake than there is in it. From Sucker lake, south westward, across Bear river towards the Deux Rivières, there are very nice parcels of hardwood with what lumbermen would call scattering large white pine.

(*Duncan Sinclair*, 7th March, 1861.)

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Township of Aldfield.

The land is chiefly a sandy loam ; the township on the whole is very hilly and in some places very rocky ; it is well wooded and watered. The settlers make maple sugar in large quantities.

The best fishing lakes in this part of the province are in Aldfield and Cawood.

I am confident that phosphate deposits will be found in Aldfield as the rocks associated with that economic mineral crop out in several places.

(*B. McGrath*, 2nd May, 1878.)

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Township of Alleyn.

The land throughout the township of Alleyn is chiefly all fit for agricultural purposes, the soil being generally a heavy loam, timbered chiefly with hard wood ; any merchantable pine timber that is or has been in the said township is along the Cazabazua creek, Grave creek, and from lot

number twenty-seven, on the sixth, seventh and eighth ranges, to lot number eighteen on said sixth, seventh and eighth ranges, the pine being in all cases mixed with hard wood.

There is no place in said township where pine timber has been or is now growing but has been culled and worked through. I consider that there is not sufficient timber left in said township to furnish materials for building purposes for the settlement of the township.

There is no difficulty in having roads in any part of said township as it is comparatively level and very free from swales or swamps.

(*John Holmes*, 17th March, 1862.)

Township of Boisclair.

The area surveyed amounts to 8,702 acres. The north bank of the Ottawa river which bounds this township to the south is bordered by a mountain whose height varies between 50 and 200 feet, and whose surface is stony and uncultivable, except in the Ottawa river range, in which the ground is flat and good and may be advantageously tilled.

From the centre line to the eastern extremity of the township, the soil, though rolling, is first class and very favorable to cultivation. This part of the township is well wooded. The principal merchantable timber consists of yellow pine, hemlock and oak; maple prevails in some spots; bass wood, elm, birch, white pine and cedar are also met with. A considerable amount of pine was cut this winter.

From the centre line to the western limit of the township, the surface is very mountainous and unfavorable to settlement, but going north, the land is more level and the soil better. In this part of the township and more to the north and west, fire, some years ago, destroyed all the timber; the new growth is composed of aspen, white birch, oak and pine from 2 to 6 inches in diameter.

(*J.-L. Michaud*, 14th April, 1838.)

Township of Church.

The quality of the soil to a great extent is loam, and the timber mixed hard wood, with in some places a few pines. Towards the north west corner of the township the land is inferior, but in other parts the land is of a good ordinary nature for agricultural pursuits.

(*James Roney, 1876.*)

Township of Clapham.

The land through which I have surveyed is of a good ordinary nature, and there being many good roads leading through the township. I have no doubt but ere long it will become a good settlement. In the vicinity of lake Helen and lake Kandikaginaw, the land is of a superior quality, and I think that, if it were the pleasure of the Government to order the completion of the survey of the township, it certainly would prove a boon to colonization

(*James Roney, 8th March, 1869.*)

Township of Duhamel.

Petite Riviere, where I began this survey, runs through a very large tract of the best of farming lands, and there are immense valleys of level land in all directions. I am informed that the land lying in the rear of that surveyed in Duhamel is superior to that included within the range line I have already run, and last year several settlers have gone in and erected houses and are making farms for themselves in that tract of land, which is of an enormous extent I am told.

Along the line in rear of the third range the land in general is of a level description, and the subsoil clay with loam on the top. Along the line between the second and third ranges there are large valleys, in which the land is of a superior description, and many of the lots are already taken up; the land that I passed over on the line between the first and second ranges, is pretty good for farming; there are some stony hills, that will yet be required for building purposes by settlers; but in other places there are very

good valleys well adapted for settlement. The few lots in the first range on the point south of centre line is very rough, hilly and rocky, and will hardly ever be of any use only in some places for pasturage.

The next place we came to worthy of remarking is the mining claim of E. Wright and Mr. Leckie. I paid great attention to the survey of these mines, and it entirely corresponded with the local survey that those parties had heretofore performed. The outline between Guigues and Duhamel comes out in a bay in the mining location of Mr. Leckie, this outline passes through a very fine tract, and the land is well adapted for settlements on both sides of it.

A great part of the township of Duhamel is very easily cleared, and the fire has passed over it and left the land almost ready for the plough. This is of great benefit to the early settler, and saves him a large amount of labor that he would otherwise have to perform.

(James Roney, 7th June, 1884.)

All the land which I surveyed in this township was burnt over sixteen or eighteen years ago. The new growth is poplar, white birch, willow and cherry. A few small clumps of green wood are seen in moist places, near the streams, rivers and lakes. The burnt timber which is still standing, especially the cedar, of which there is a considerable quantity, may be used in the construction of the first houses of the settlers, and for firewood; but there will always be difficulty in procuring timber for saw-logs and building purposes.

The *Lac des Quinze* road, which crosses the township from east to west, is an old lumber road and is of great use to the settlers. It is practicable for wheeled vehicles. The Paradis road is passable only in winter.

Water-power can be obtained on the Otter river, and on the north branch of the Little White Fish river by building dams at the head of the small rapids.

Moose Island, which contains a superficies of eighteen hundred acres, is covered with growing timber. Young red pine predominates, and cedar, balsam, spruce and white birch are abundant. I found that it had been burnt over about fifty or sixty years ago; and that the largest timber did not exceed eighteen inches in diameter at the stump.

I beg leave to suggest that this island be reserved as a source from which timber may be procured for the future requirements of colonization ; and I have no doubt that it would be in good hands if granted to the Lake Temiscamingue Colonization Society for this purpose. The soil on the island is very rich, being composed of grey and yellow clayey earth, covered with a layer of mould from four to ten inches in thickness.

The silver mine, situated at the north west angle of the township of Duhamel, is in operation since last spring. Crushing engines and steam drills have been set up. Several tons of mineral have been got out during the summer. Mr. Wright, the proprietor, is about to go and set up a smelting furnace.

(*P.-T.-C. Dumais*, 8th March, 1886.)

Township of Dorion.

This tract is naturally divided into four grand divisions, which, for convenience, I shall designate the north eastern, the south eastern, the middle and the western, and each having distinct and well defined peculiarities, claims and especial notice.

Firstly, the north eastern division comprises that portion extending from the Kandikagamaw lake on the west, to Cherry creek on the east, and from the Pikanock river on the south to an unknown distance northward. This is an elevated plateau slightly undulating and in parallelism to the Kandikagamaw lake, in general gradually descending to its frontier waters. The soil is of a light gravelly nature, being composed of a mixture of clay, sand and gravel, and occasionally small boulders or surface stones.

The prevailing timber is hard wood, chiefly consisting of maple, beech, birch, poplar, iron wood, and in some places bass wood, oak, elm and ash ; soft wood is rarely to be met with, except in the immediate vicinity of lakes or streams. A considerable proportion is small, apparently of recent growth, leading to the belief that, at no very remote period, this locality has been visited by destructive fires. Very little water is to be met with in traversing this district ; the numerous rills met in the spring are only temporary and are for the most extent dry in summer. This section is well fit for settlement.

Secondly, the south eastern division comprises that portion extending from Otter lake and the Pikanock river, on the north and west, to the Danford lake and Kazabazua river on the east and south. I know less of this section except from report than any of the others, describing what I have observed and the analogy between it and the remainder. This tract, with the exception of a range of flat hills extending along Otter lake and the Pikanock river a little beyond where it is intersected by the line formerly between Stanhope and Clapham, is a low flat country interspersed with flat, conical hillocks, somewhat resembling shocks of hay on a meadow. The soil is various, consisting here of clay, there of sand, and again a mixture of both. There are very few lakes, but a goodly number of wild meadows. The timber is mixed wood, soft wood predominating in the low lands; pine is abundant and of excellent quality; and a great quantity of saw logs is annually made here by Gilmour & Co. From what I have seen and heard this section is well adapted for settlement.

Thirdly, the middle division comprises that portion between the Pikanock River, Otter lake and lake Dumont. In respect of quality of soil, this division may be divided into two sections the northern and the southern; the northern section comprises that portion descending toward the waters of lake Dumont, extending for the greater part south of the north outline of Clapham; this, though somewhat broken and irregular, contains much good land, covered with a splendid growth of maple, beech, birch, bass wood, and is partly set down as very eligible land for settlement. The southern section comprises the remainder; the surface of this portion is very much broken, irregular hills, mural precipices and strewn with myriads of boulders of all shapes and dimensions, weighing from many tons to a single pound, some angular, others well rounded, and in such profusion that it would seem as if they were showered upon it from the heavens like a hail storm in a heavy wind. Many isolated spots of good land are here and there to be found, but too limited to be recommended as available for settlement. The hills on the south and west sides are generally covered with pine, and on the north and east with hard wood. A great quantity of saw logs have been made here. I have observed through this section a curious geological phenomenon. It is a well established fact that during the diluvial formation, the glacial drift moved from a north eastern direction towards the south, leaving in a broken country the north eastern slopes bare and mural, depositing the debris on the south western limbs, filling their crevices and fissures and forming gradual slopes with a southern aspect. Here the case is reversed and the current seems to have proceeded from the oppo-

site course, for the south western slopes are bare and precipitous, and the north eastern gradual, covered with these diluvial stones to which I have already referred. To account satisfactorily for this seeming contradiction in science, it appears to me that the freighted wave, shortly after passing, here met a contrary and stronger current from the south, forcing the glacial one back, and the southern wave being warmer speedily dissolved the berg, dropping in piles innumerable its luckless, unwieldy burden. From the foregoing it is manifest that this may be classed amongst those districts unfit for settlement.

Fourthly, the western division comprises the portion west of Pikanock river. It may be subdivided into two sections, the north eastern and the south western. The north eastern section comprises the belt extending from the Pikanock river to Moore's lake, thence along a chain of lakes to Hickey's lake, and northward beyond Squaw lake, an unascertained distance. This contains some of the best land in this survey, particularly that on the north of Squaw lake to the river. The soil generally is a rich black mould on a substratum of clay. The surface is a little broken and the hills arable to their summits, and covered with a heavy growth of mixed large timber. There is much maple, birch, bass wood, beech, pine and balsam. Great quantities of pine are annually manufactured in the east side of this section. It is well fit for settlement. The south western comprises the remainder of this division, remarkable for its elevation, sterility and the extent of its pineries. Much square timber has been manufactured here; it is a forbidding locality for the agriculturist.

From the preceding imperfect sketches, you will perceive that in my opinion all Stanhope and the unsurveyed lands immediately north of it, are a fit and desirable locality for colonization, as well as that portion of Clapham east of the Kaudikagiwaw lake, and south and east of the Pikanock river and Otter lake, and that as soon as convenient, it should be made available to the settler. Also all the country surrounding lake Dumont, that portion of Clapham west of the river Pikanock, Huddersfield, northward of a line joining Moore and Hickey's lakes, and the lands immediately north of it are all well fit for colonization.

(*J.-L.-P. O'Hanly*, 29th October, 1860.)

The land in the southern, western and middle portions of the township of Dorion is comparatively level and well suited for successful cultivation ; the prevailing timber is hard wood, and the soil is for the most part a sandy loam, and in some places a clay loam. There is a continual succession of hard wood ridges with cedar, tamarac or balsam swamps intervening ; these swamps are of limited extent and will be rather an advantage to the settler than otherwise as they contain a rich alluvial soil, washed down from the adjacent hills, and serve to furnish him with fence timber and sometimes with wild hay and water for his horses and cattle.

The ninth range and the seventh and eighth ranges east of the centre line are not so well situated for agriculture as the residue of the township ; the land is more uneven and rocky ; pine and balsam are the prevailing timber, there are however occasional spots of good hard wood land to be found even here ; there is a considerable quantity of merchantable white pine timber, and some red pine in this portion of the township, and it is easily transported to the Gatineau river, by three different routes.

I have found it extremely difficult to draw a line of division between the different descriptions of timber growing upon the land, as in most cases hard wood and pine are to be found in the township of Dorion intermixed together. I have, however, endeavoured to follow the spirit of the instructions which I have received from the Crown Lands Department in that respect ; the opinion advanced by interested parties that pine timber only grows upon soil of inferior quality is merely a popular fallacy, which the experience of every practical farmer and lumberer on the Ottawa, proves to be incorrect, for it is a fact that cannot be disputed that the best quality of white pine timber is usually found growing among hard wood ; and that the most productive farms in this section of the province were in their primitive state, covered by a very considerable porportion of pine timber.

In my opinion, the township of Dorion offers many advantages to the settler ; the soil is good, and it is accessible at all seasons of the year ; waggon roads lead to the eastern boundary, and one made in August leads through the third range to the Ronde Raggem lake ; there is also a good winter road to the north end of said lake ; it is also at a comparatively convenient distance from saw mills, grist mills, churches, stores, post-offices, and besides the manufacture of saw logs is carried on to a considerable extent in the vicinity, and will afford a profitable market to the settlers for their surplus produce, and give constant employment to themselves and their teams during the winter.

(*James McArthur*, 27th October, 1864.)

Townships of Duhamel, Laverlochere and Guigues.

The soil throughout these townships is an excellent marl, varied occasionally by a lighter black, loamy soil. There can be no doubt of the excellence of the quality of this soil as witnessed by its producing qualities. The only point about it at all open to question is, as to the suitability of the climate, where late frosts in the spring and early frosts in the autumn prevail.

It is of importance to the solution of this question, to have the evidence of a resident who has cultivated his land for twenty-three (23) years past ; and who assured me that, with the exception of the season of 1885, he had always secured his crops in excellent time and condition, having taken the necessary precaution of the early sowing of his grain. Of this season's growth, I can speak from personal observation, and I must say that the wheat, barley, rye and oats were well headed and fully matured ; this, together with the appearance of the harvested fields, promised a very heavy yield per acre. I am of opinion, however, that as a cattle raising country, it has no superior with a similar climate ; here, timothy could be seen from three and one-half to four feet high ; and the aftergrowth in the meadows presented a mass of matted vegetation, in which the clover leaves had assumed the largest dimensions. The certainty of crops maturing before the autumn frosts will be ensured when the area of cultivated land is largely increased, and, above all, when each farmer adopts some system of drainage, whereby, owing to the clayey nature of the soil, much of its superfluous moisture will be drained off, instead of undergoing the present slow process of absorption and evaporation. As it is, owing to this excess of moisture, the crops continue growing into that season when they should be ripening.

The country is one eminently suited to settlement, both on account of the nature of the soil and the present easy means of access to it. In addition, the larger portion is so thoroughly burnt over, that a very limited amount of labor will prepare it for the plough. A youth of nineteen prepared twelve acres of land in the autumn of one year for the following spring ploughing. In many places, with the exception of an occasional bluff of balm of gilead and aspen (some as large as two feet in diameter), nothing remains of the original forest but here and there a solitary enduring pine, with the last traces of its fellows disappearing from the ground about it.

Lumbering operations are being carried on within twenty miles of lake Temiscamingue, so that employment can be very easily had during the winter months. The enormous numbers of men and teams thus employed afford, and will afford for years, a most advantageous market for all produce. This autumn one farmer sold forty tons of hay at \$40 a ton, whilst oats were worth 60c. to 75c. a bushel; thus, a settler is certain of more than a fair remuneration for his labor.

The sub-divided portion of the township of Duhamel is much encroached on by isolated ridges of bare rocks, leaving, however eighty per cent of available land, I should estimate. The VI range contains nearly 100 per cent of land, whilst, in range VII these ridges become more numerous towards the southern portion.

Ranges I, II and III of the township of Laverlochere have the value of their southern portions from the centre line much interfered with by these ridges: this is also the case with the undivided portion of this township, leaving the land in rear of range III, on the north side of the centre line, as that which is best suited for further sub-division. A reference to the accompanying plan will show, approximately, what the nature of the timber is. I am therefore of opinion that the north half, from the centre line, of ranges III, IV and V only, could be sub-divided without interfering with the lumbering interests, as there the growth is almost entirely aspen and balm of gilead.

The township of Guigues has very few rocky ridges in it; a border along the shores of lake Temiscamingue, and a very few in the interior, leave a very large proportion of land available for cultivation. Ranges V to IX might be sub-divided without getting into the actual pine lands; as, with the exception of scattered trees, the growth, where not burnt over, is balm of gilead and aspen, with a few spruce.

There is a large proportion of the Isle du College covered with red and white pine; the land on these ridges is rocky and stony, leaving a few limited valleys of land fit for cultivation between them. All the shores are rocky, and pine-covered as well; and in my opinion the opening of this island to settlement would be an injustice to the owner of the timber on it.

Isle Brûlé, lying just to the north of Isle du College, and of about the same size, is an island entirely destitute of timber, but on which there is excellent soil. At present, there are several settlers on it, who are much inconvenienced by the want of bounds, and each others' consequent encroachments.

(*W.-A. Ashe, 1887.*)

Township of Fabre.

The physical aspect of this township is not the most inviting at first sight from lake Témiscamingue, as the few mountains or rather high grounds forming its shore for about half its breadth are rocky and barren, giving the impression that the rear country can possess no facilities for colonization. However, by going back a little from the shore on the east side, one is astonished and delighted to find there immense flats of fine, slightly rolling land, with an excellent soil for the most difficult grain growing. The soil is composed of a strong, grey clay loam, covered to a depth of 8 inches with vegetable mould. The mountains only occur in the first and second ranges, where they occupy about a quarter of those two ranges and are from 150 to 400 feet high. The remainder of the ground, as well as in the third and fourth ranges (although cut here and there by small rocks) may be considered first class land for colonization.

About two thirds of this township have been ravaged by fire, in the northern part, since some 18 or 20 years, and in the southern at a later period (some 7 or 8 years). The new growth in these brulés consists of aspen, white birch, poplar, willow and cherry. The third centre is covered with fine growing timber of all kinds, such as white spruce, cedar, fir, white birch, tamarac, red pine, cypress, white pine, maple, mountain ash, willow and hazel. The largest trees vary from 10 to 30 inches in diameter, but nearly the whole of the merchantable pine has been cut off by the limit owners and the proof of this is found in the fact that no more lumbering has been carried on for some years.

The land is well watered by the small rivers "Young," "Lavallée" and "Grier", and also by numerous brooks whose banks are not very high in many places, and offer an incomparable soil for hay-growing. On the first of these rivers, much work was done for a distance of 12 to 15 miles to facilitate the descent of saw logs, and the same remark applies to the second but only for a distance of 4 to 5 miles.

On each of these rivers, it will be easy to obtain water powers by constructing dams on the little rapids. These powers would not be very great, but they would be enough to run saw and grist mills for the use of the future settlers.

The limit owners, who get out timber at 12 or 15 miles to the east of the lake have cut two roads which traverse the surveyed part from east to

west ; these roads are very practicable, especially the one which passes in the neighborhood of " Young Creek " and crosses it on the third range by means of a bridge which cost from \$200 to \$250, and which was constructed last summer to replace another that had fallen into ruin. The other road which starts from lot 18 of the second range is not so much used, but it is in passable state and will be of great utility to the new sttlers.

(*P.-T.-C. Dumais*, 12th May, 1888.)

Township of Guigues.

In the township of Guigues, the land along lake Temiscamingue, up to the north of the river Abbaka, is rough and hilly, but from that river upwards it is of a more level description. In rear of the first range from centre line down to outline, over southern part of the township, the fire, I think, has burnt about one half of the wood and a good part of the land will be easily cleared and made ready for crop. There are beautiful valleys through this tract of land, and the soil is very good. All of the woods north of the centre line are a heavy green bush, and in general well timbered with good hard wood of a sound nature. Along the second, third and fourth range line, the land in general is pretty level, and exceedingly well adapted for agricultural pursuits. Around the large bay from the mouth of Ottetail river, up to Grand Depot, the land is very low, and the high water in the spring floods the shore for quite a distance. I found very little sandy land in either the townships of Guigues or Duhamel, the soil being chiefly loam, and the subsoil clay of the very best farming descriptions. I found those two townships well watered with abundance of springs, brooks and rivers, all of which contained the very best of drinking water.

(*James Roney*, 7th June, 1884.)

The physical character of this township, is well suited to the progress of colonization. The land in general is slightly rolling, not to say level. The soil, which is composed of a greyish clayey earth, mixed in many places with black mould, is admirably suited to the growth of cereals. On the tops of the small hills, the soil is yellow, sometimes rich and occasionally sandy.

The southern half of this township has been ravaged by fire. Nevertheless in the 7th, 8th and 9th ranges, wherever the ground is low and very level, there are strips of several hundred acres each, which have escaped the fire and on which the primæval forest still stands. The young growth in the brûlés is the same as in Fabre, but there are more spaces varying from 5 to 10 acres, which are real meadows and on which wild hay grows in abundance.

The northern part is still covered with fine growing timber such as white spruce, cedar, fir, red and white pine, white birch, aspen and yellow birch, ranging from 10 to 35 inches in diameter. Along the streams, there is also a good deal of alder.

In the northern part and especially in the vicinity of the river des Quinze, there is still a certain quantity of merchantable white and red pine.

The Otter river, which waters the southwestern portion of the township, is a stream with an average breadth of 100 feet, navigable without interruption for a distance of 9 to 10 miles from its mouth, when the level of the lake is not very low. It is used as a means of communication by the new settlers. There are no mountains in this township; there are only a few rocks, of small extent, on the first four lots of the 6th and 7th ranges, near the southern outline and on the ten or twelve last lots of the 8th and 9th ranges near the river des Quinze.

This last river, which forms the northern boundary of the township, is the continuation of the river Ottawa; its breadth over the still waters is from 8 to 15 chains. There are two falls on the fourth range, and four on the fifth range, capable of supplying very important water powers. On the eighth and ninth ranges, there are several rapids and cascades which wind between several islands.

On the sixth and seventh ranges, there are three little lakes in which pike abound. Lake Sassaganigou, situated at the depth of the ninth range, seemed to me pretty large (4 or 5 miles long,) and possesses bays and islands. Pike, trout, white fish and pickerel are plentiful in its waters. The banks of this lake are high in some places and in others there are fine sand beaches. Dams have been erected at its discharge to back up the water and facilitate the descent of saw logs to the Otter river.

To sum up, this township offers all the advantages that could be desired for settlement. The soil is very fertile and easy to clear. There are no stones; in fact, I had in certain places to have some carried a distance of

over two miles for my boundaries. I do not hesitate to add that it is one of the finest townships in the Province of Quebec, for settlement purposes. And now that we have easy and direct communication with the trade centres, it will not fail to be settled up rapidly, judging especially from the progress and advancement of its neighbor, Duhamel.

(*P.-T.-C. Dumais*, 12th May, 1888.)

Township of Huddersfield.

Respecting the fitness of this township for settlement, I have to state that it is well watered with springs and brooks, and generally well timbered with a mixture of hard and soft wood, chiefly maple, birch and beech, while pine, balsam, fir and cedar prevail in wet and moist places. The soil is loamy, in parts strong, but well adapted in parts for cultivation, with beautiful flats easily cleared for agricultural purposes. Of this extent twenty per cent may be deducted for strong swampy and broken land, leaving about one hundred and sixty-six lots, of one hundred acres each, fit for settlement; with respect to the northerly and westerly part of the township, the land is of a superior quality, the surface not so much broken as the part already described, well watered with springs and brooks, and the prevailing timber chiefly hard wood. The westerly part of the township not being so much mixed with soft wood as the part already described. The soil is good and loamy with beautiful flats, well adapted for cultivation. The ground being covered with snow prevented me from examining the geological features of the country as much as I could wish. I am, however, prepared to state that limestone will be found in the township sufficient for building and agricultural purposes.

(*P. Griffin*, 1870.)

The land, as is usual after leaving the valley of the Ottawa, is rough and mountainous, but there are some tracts quite equal to the settled portion of Pontefract; on the whole, I don't think it falls far short of Pontefract as a field for colonization; there are a considerable deposits of pine which still yield large profits to the lumberer, although they have been worked for

twenty years; there are large tracts of hardwood also generally growing on strong soil. Many years will not elapse before hardwood from the Coulonge and Black rivers will be generating steam on the Ottawa or on its shores and affording immediate remuneration to the farmer for clearing the land.

(*S.-L. Brabazon, 1872.*)

Townships of Leslie and Cawood.

On passing the corner post between Clapham and Alleyn, I found it was obliterated; therefore I renewed it by planting a good large square post in its place, and blazed around it as witnesses.

Owing to the great fires that have heretofore taken place in this locality, the original posts and lines are nearly all burnt away, and in order to find the place of the northerly post between Leslie and Cawood, I was compelled to trace and blaze anew the outline between those two townships from Grave Creek lake, to the point of intersection with the Clapham southerly outline.

After having found this point, I planted a good large post square and duly marked on north side Clapham, on east side Cawood, and on west side Leslie, lot number one.

From this post, I continued due west to open up, blaze anew, cut out, and plant pickets on the original outline, between Clapham and Leslie, planting lot posts at the perpendicular breadth of each thirteen chains for Leslie, until I intersected the centre line between lots numbers twenty-six and twenty-seven, which I blazed anew.

Although in some places the country on the northerly outline is somewhat rough, still the land is productive and yields goods crops, more especially of fine hay, and the generality of those occupying land have good houses, and are pretty well off.

This country is very well supplied with springs, brooks, rivers and lakes, of which the waters are pure and very healthy. Some of the lakes are of a good size, and very plentifully supplied with choice fish, and lovers of trout come from a distance to feast from those lakes. The Kazabazua river runs through a large portion of this survey; it is a nice stream; the banks in places being low, and affording the best of pasturage for cattle. There are many mill sites on this river.

Geological research has not much been followed in the county of Pontiac, up to the present period, although I am led to believe that there are minerals in abundance in this locality. During this survey, I found indications of minerals on the lots adjacent to Cawood and Leslie division line. I also considered that I found indications of minerals on the outline approaching to Moore's lake, situated at the western part of this survey. This lake is almost surrounded by a range of hills, and although I had not time to make a diligent search, still I think there are minerals to be found in this vicinity.

(*James Roney*, 9th April, 1881.)

Township of Lorrain.

The soil on the portion surveyed is very suitable for cultivation, being composed of black, grey and yellow earth, of excellent quality. About two-thirds of the land were burnt over at the same time as that of the township of Duhamel; the rest is covered with mixed green wood, such as balsam, spruce, yellow birch, white birch and poplar. White pine is very scarce and of no importance for commerce.

(*P.-T.-C. Dumais*, 1886.)

Township of Mansfield.

The land on the east side of the Coulonge is generally good farming land and will, in all probability, soon be all taken up. The land for the first mile and a half, on the west of the Coulonge, has been in great measure stripped of timber by fire; it is rather poor soil, but it will also be in a great measure soon taken up; beyond that to the centre line, the land is very rough on the fifth range; on the sixth range it is not quite of such a mountainous character, but it is pretty rough. Here are large tracts covered with sugar maple, which will lead to a great deal of the land being taken up for sugar bush, being comparatively worthless for anything else.

The centre line throughout is about the roughest line of the same extent I ever saw; there are three precipices considerably over two hundred feet high that cross it nearly at right angles.

The portion of the fifth range south of the large lake is fit for settlement, but is rather isolated ; the portion of the sixth range north of the large lake, say, from lot number thirty-eight, is quite worthless, except a small valley that runs from the west end of this lake towards Waltham.

(S.-S. *Brabazon*, 19th May, 1866.)

Township of Sheen.

Finding the land very rough, rocky and apparently useless (for agricultural purposes) in the vicinity of the upper or north western boundary. on the eighth and ninth range line, I thought it better to discontinue the latter lines which I did at the post between the lots forty-nine and fifty.

The peninsula at the eastern extremity of the eleventh range, I thought best not to subdivide into lots.

From the peculiar shape of that portion of the eleventh range, which is bounded by lake McGillivray, and the generally poor quality of the land composing it, I did not think it advisable to lay out any lots in the eleventh range to front on that lake.

This section of country, though hilly, is not after the first mountain range is crossed so much so as might be expected. It is far less so than either Chichester or Waltham, in which latter township, especially, the mountains extend far into the interior, along Black river. Still, Sheen is far from being a level tract, particularly along the south eastern boundary and the north western so far as observed from the end of the eighth and ninth range line, where it is very hilly. There are some pretty extensive valleys, and the soil which, in most places, consists of a sandy loam, is good and productive, yielding quick and abundant returns for the trifling amount of labor which it requires. It is also easily cleared, excepting in the districts where pine much predominates.

The snow covering the ground prevented my observing the nature of the soil as often as I desired, and rendered it particularly difficult to say where it was stony and where the reverse. I observed it to be thin in many places and consider that a considerable portion of it is strong, but quite available for pasture land, if not, in every instance, for raising cereals. Good wheat and oats are continually grown by the squatters occupying

the cleared lands there ; and one of them, James Tallen, informed me that he had sold a considerable quantity of flour last year, after supplying the wants of a numerous families, which many farmers in the oldest settlements cannot assert.

White pine is so generally mixed with the other woods throughout this region, that it is difficult to say where it predominates ; it is least abundant towards the northern angle of the district in question, and most plentiful in the vicinity of the large lakes. The marketable quality of pine has been greatly thinned out and is likely to be completely cut away. During the coming winter a great scarcity of red pine is observable, it only having been met with in any quantity in the vicinity of lake McGillivray. On the eleventh and twelfth range line, another peculiarity which I observed is the unusual scarcity of cedar, even on the shores of the lakes, where generally in other localities it is to be found.

This portion of Sheen is essentially a hardwood country, and, as will be observed from the plan, is well watered, the water in most of the brooks and lakes being very good. Fish abound in all the large lakes. The varieties consists of pike, pickerel, bass and trout, chiefly, but I could not ascertain that fishing was pursued to any great extent by the settlers.

There is a fine tract of hardwood land extending from the rear of the township, northwards towards the Sayer and Black rivers, and if this road were prolonged so as to strike one or the other of those streams, the good, that it would effect in opening up an extensive tract of country and developing its resources, is well worthy of your consideration.

In addition to the remarks contained in the foregoing report, I may mention that we met with no burnt country, excepting in the vicinity of westerly end of the eighth and ninth ranges line, where the ravages of the fire appeared to be very limited in extent and partial in degree. The streams empty in the Ottawa river by the Oiseau on the west, and into the Black river by the McGillivray brook in the east. None of the waters north of the seventh and eighth range line appear to discharge directly into the Ottawa, excepting those of the Oiseau brook. The section now surveyed comprises therefore a portion of the height of land between the Ottawa and Black rivers and consequently contains few streams of any size.

(S.-T.-A. Evans, 25th May, 1867.)

The country comprised within the limits of this survey is generally hilly; it is well watered by small streams, springs and lakes. The soil is generally good and abundant, consisting of various kinds of loam, such as, where cultivated as in other parts of the township, yield highly remunerative crops of wheat, oats and hay. The timber on the eastern portion consists chiefly of hard wood, maple, beech, yellow birch and iron wood with a few patches of white birch and iron wood; in one or two places, towards the western end, white pine predominates, and is of good quality, and seemingly sound, cedar was noticed only in two localities, and there only within very circumscribed limits, red pine and hemlock are almost absent, some on the mountain near the eastern extremity of the northern boundary and as usual, in this section of country, white spruce and balsam are found almost everywhere. The rock exposures, where observed, consist of granite and gneiss, the primitive formation.

I am pleased to have to report that the easterly portion, more than half of the above mentioned section of Sheen is a good agricultural country, the part near Ether, in the eighth and ninth ranges is very unpromising, but in the tenth, eleventh and twelfth ranges, the land seems equally good throughout. The country is hilly, but the soil consists of a good and productive loam.

(*S.-T.-A. Evans*, 19th January, 1876.)

Township of Thorne.

The land across the front of Thorne, from the Litchfield outline to lot number forty-four, is in some places rough and strong, and although many of the lots are occupied and improved upon, still, I hope that they may be found to be more adapted for mining operations, than they are for agricultural pursuits. The land from lot number fortyfour, south easterly to the gore of Thorne outline, is the same as the land in general throughout this township; the soil is of an ordinarily good description, and although the features of the country are hilly, the hills in general are covered with rich loamy soil, and having known the township of Thorne for the past 30 years, I consider the land on the hills equally as good for farming purposes as that in the valleys, and the settlers in general are very comfortable in this township.

From the south west corner post of the gore of Thorne, the land along the outline up to Philip's lake, is all cleared, and in summer some of it is cropped, and a portion of it is kept in meadowing for hay, and the remainder for pasturage. The soil is very light, although the farmers occupying some of the land and living proximate to this outline, have very good buildings and very good, large stocks of cattle, and they live well. The land on the south east side of Philip's lake, I believe, is almost all located, and, although it is somewhat rough and stony on the hills adjacent to the lake. I found the remainder of the soil heavier and better up to the Aldfield outline than that I surveyed on the north west side of the lake.

There is a large range of mountains running along the north side of Philip's lake, which I am of opinion contains iron ore and perhaps other minerals. Those mountains are of gigantic size, and should they be found to contain iron ore in abundance, may, in a future day, prove of value to the country. The land along the northern outline of Onslow is good for farming, and the lots are principally all taken up. The soil is chiefly of a heavy, loamy nature, and the country is high and dry. The landscape on the north west side of Wolfe lake offers every advantage whereon to build a village, and, as this is a good farming country, perhaps, the time is not far distant when they may succeed in their intention. Towards the north east end of this outline, I found a large portion of the land in Onslow well cleared and valuable.

The townships along these outlines that I have surveyed are the most superior for agricultural pursuits that we have in this country, many of the farmers being rich, and the mechanics in general very comfortable. There is a large amount of produce, and of horses, cows, sheep, pigs and poultry exported from those townships, and the dealers in butter and eggs find a large field for their line of business in this locality. The country is well supplied with springs, brooks, rivers and lakes, all of which contain pure, healthy water.

(*James Roney, 24th May, 1881.*)

The soil in the gore of Thorne is in general of a loamy nature, and, although the country is in some parts stony, still the land is productive and well adapted for agricultural pursuits. The greater part of the lots that I have surveyed are taken up, some by settlers living in Bristol and

Clarendon, and a large portion by settlers living on them. Those living on the land have good buildings and a good stock of all kinds of cattle, and speak very highly of the country. There is a good main road leading through the gore of Thorne.

The township of Thorne is a large and prosperous settlement, which has been for the last thirty years rapidly settling, and although in places it is somewhat mountainous, still in general the soil is of that quality of loam which is very productive, enabling the settlers to live comfortably. In early years, this was one of the best townships for pine timber that we have had in this country.

The mineral resources of this township have received very little attention from any geologist up to the present date, although I have found a large amount of local attraction in various places, more especially on the outline between Thorne and the gore of Thorne. From the geological features of this country, I believe this local attraction to arise from the existence of iron ore, which I found on the third range on the outline I have already mentioned.

The Quiyo river take its rise in two branches, well up towards the north west end of this township. It offers many valuable mill privileges, and its waters are pure and healthy to drink. It runs over many miles of country and empties its waters into the Ottawa river at the Quiyo village. During olden times this river has been famed for pine timber in the lumber markets of our country, and at the present moment it is considered a great boon by the many farmers that graze their cattle along its banks. There are also numerous springs, brooks and lakes which abound with trout in this township, and it is as well watered as any other township we have in the Ottawa valley.

(*James Roney*, 28th January, 1882.)

Township of Waltham.

I commenced operations by starting the line which forms the rear or western boundary of range C ; as will be seen by my plan, the contour of this line with some few exceptions is very uneven, and the adjoining lots, generally speaking, very uninviting for settlement; the last or ninth range,

however, is superior to any of the others ; the country lying between this line and the Black river is very much broken ; there are a few good flats, though not very extensive, particularly on the north side, extending from the river to the foot of the range of hills which lie along on each side. The best and, in fact, speaking as a whole, the available part of the township is embodied in the seventh, eighth and ninth ranges ; that portion of the township included between the line dividing the sixth and seventh ranges and the third range line is a rough, rocky and for the most part a dry, burnt country. There are certainly some spots that are fit for cultivation, but no large tracts in block. For this reason, I concluded not to run the line dividing the fifth and sixth ranges, as it would only incur a useless expenditure ; it can never be made available for settlement.

(*Joseph White*, 6th December, 1866.)

COUNTY OF PORTNEUF.

Township of Bois.

The portions of the first two ranges of this township, which have been subdivided into farm lots, on each side of the river à Pierre, are quite suitable for cultivation and settlement, although the soil is stony and sandy. The land near the river is undulating and even for a sufficiently large space to allow the settlers to clear their lots, erect houses and make roads. These lots are for the most part timbered with white spruce, balsam and yellow and white birch, generally of good growth, giving reason to infer that the soil is fertile.

The part of the third range between lots 8 and 21 appeared to me also as suitable for cultivation and settlement as the two ranges just described. I cannot, however, say as much for the ranges which I surveyed and subdivided on the south side of the river Batiscan, where the greater part of the land appeared to me to be unsuitable for cultivation or settlement, owing to the steepness of the mountains and their proximity to the river. With the exception of some thirty lots on which a few chains in width of alluvial land may be found, this tract is quite unfit for farming operations.

The north side of the river Batiscan did not appear to me be any better than the south side. The only thing which might induce a settler to establish himself there is the proximity of the railway. The timber of the ranges which I surveyed has been in great part exhausted by the lumbering operations which have been carried on there for many years; there is still, however, a considerable quantity of spruce remaining. There is no great quantity of pine; more stumps are to be seen than standing trees. There are no maple groves, or very few; the hard woods consist of yellow and white birch. Cedar and spruce do not appear to thrive in this township. Apart from a few stunted cedars, which I saw along the river Batiscan, I do not remember meeting with any others. This township is well watered by a number of lakes and streams, the latter affording water power suitable for running mills. The water is pure and wholesome. Some of the lakes contain fish, among others the lakes *Vert* and *Padoue*.

(T.-C. de la Chevrotière, 30th April, 1883.)

I proceeded to the post planted on the centre line in the 2nd range, ten links northwest of the river à Pierre ; from there I chained and scaled the said river, going north west, as far as the north west line of the said township. From the post planted on the said centre line, inscribed 2nd and 3rd ranges, I ran a line astronomically north 45° east, which I prolonged and chained towards the north east to its intersection by the north east line of the township, subdividing it into farm lots, by planting division and alignment posts at every distance of thirteen chains. I then went to the post on the centre line inscribed 3rd and 4th ranges, and from that point ran a line between the 3rd and 4th ranges to the north east line of the township, subdividing as I went along into farm lots, by planting division and alignment posts at each distance of thirteen chains.

The lands so surveyed and laid out are not really so advantageous for colonization as those which I surveyed in the same township last year. Nevertheless, they are sufficiently fit for cultivation to be sold before long, on account of their proximity to the railway. The soil, chiefly composed of yellow and grey earth, is stony, and in some places very rocky. The aspect of the township is generally mountainous, and about two-thirds of the lots bordering on the river à Pierre will be sufficiently advantageous, especially those in the north east part of the township. The timber is throughout of good quality, the prevailing kinds being yellow birch, white spruce, balsam, and white birch ; some maple is also to be found on the third and fourth ranges.

The river à Pierre is a rapid stream, with a rocky bed, and, passing frequently over abrupt declivities, presents some fine falls, suitable for milling or manufacturing purposes.

(*T.-C. de la Chevrotière*, 13th November, 1884)

Township of Chavigny.

Besides by the Batiscan river, this township is crossed by two other fine rivers fit to drive timber : 1st The Propre river, which issues from lake au Sable, passes through the Paran lake, and then discharges into the Batiscan river, in the seigniory of Grondines ; 2nd The river Towachiche, which crosses the western corner of the township of Chavigny and discharges also into the Batiscan river. This last river (the Batiscan) forms in

different places beautiful falls, especially those at the eighth and ninth portages, which are capable of running the most powerful mills at all times of the year. The timber in general is fine and large; birch, maple, spruce and fir being the most common. I also met with fine pine, but not in very large quantities; I saw more stumps of this wood than standing timber; merchantable spruce, however, is still in great abundance. There are maple groves in rather great quantities, especially at the depths of the first range, to the north east of the centre line. They are all sound, contrary to what we see to the south of the St. Lawrence, opposite this township, where they are all dead and dry.

All the surveyed section of the township is generally fit for cultivation and advantageous for colonization. The finest lots occur on both sides of the Batiscan river, starting from the eighth portage, going to the north east to lot number ten of the first range, to the point T, as also to the south and south west sides of the lake au Sable. I had orders to survey the fourth and fifth ranges of Chavigny, to the south west of the centre line, but I found this section too mountainous and everywhere unfit for cultivation; the wood is, however, of as fine growth as elsewhere. The soil is in general broken in the surveyed section of the township of Chavigny; we also come across in some places stony, granite sections, but not in sufficiently large numbers to be an obstacle to colonization. In general, a layer of yellow loam predominates; the subsoil seems to be of clay; it is a continuation of the soil of the township of Montauban, and I can say that it is fertile; I have seen it this year produce magnificent crops.

(*T.-C. de la Chevrotière*, 7th November, 1864.)

Township of Colbert.

After having surveyed the centre line from the lots 26 and 27, of the fourth and fifth ranges, as far as the line which separates this township from the township of Ossonane, I ran the range lines between the 7th and 8th, 8th and 9th, 9th and 10th, 10th and 11th, 11th and 12th ranges, and between each lot, I ran an alignment. In this part of the township I met the Black river and Petit Pioni, a branch of the Black river, and, the south branch, as also many lakes which feed these rivers. I noticed excellent mill sites in different places, offering every facility to erect dams.

I scaled the branch of the Black river from the centre line, as far as lot No. 43. I also prolonged the alignment of each of these lots as far as the front between the 8th and 9th ranges. The geographical character of the land traversed presents no remarkable feature ; it is generally undulating and, without being alluvial, is of good quality. There are neither swamps, nor meadows, and, though mountainous, it would be well suited to cultivation. The 7th, 8th, 9th, 10th, 11th and 12th ranges are covered with a rich growth of every kind of wood, and include magnificent maple groves. The unsubdivided part to the north east of the centre line possesses a rich, well wooded soil and could be easily surveyed.

(*John Langlois*, 26th July, 1881.)

Townships of Colbert and Ossonane.

The general features of the country are very mountainous and rocky, and very poorly fit for settlement ; but, along the bank of the river, the land is generally flat and good, well fitted for settlement, and settlement is already commenced on the north side of the lakes, where the railroad crosses, as the lands around these lakes are flat and good, and a large settlement will immediately spring up as soon as the railroad is in operation, as the soil is sandy and loamy. The township is well watered with brooks, creeks, rivers and lakes.

The prevailing merchantable timber is white and black birch, tamarac, balsam and spruce, which are in considerable abundance ; yet a great deal of the spruce has been taken off or cut by the firm of Benson Bennett & Co and others.

(*P. Griffin*, 11th February 1881)

Townships of Colbert and Rocmont.

I went to the posts placed on the south west borders of the lake (du Coin), at the line or boundary which marks the north west angle of the township of Rocmont and the north east angle of Colbert. I verified the course of the north west line of the townships of Rocmont and Colbert, as

also the one which divides these two townships, then I prolonged this last one in ascending on a course north 45° west, astronomically, for a distance of 727 chains and 20 links, at 9 miles from the starting point.

From the starting point as far as the depths of the 7th mile, I did not find any land fit for cultivation; the 8th and 9th miles are very fit for tillage, forming a belt with a width of about two miles to two miles and one half, and continuing as far as lake Colbert, a length of about four miles. The soil is composed of a layer of very fine white sand, covering grey and red sand. A part of this section has been burnt, which has destroyed all the timber. At the distance of 727 chains and 20 links, I scaled at right angles to my base a perpendicular going towards the east, which I prolonged for a distance of eight hundred and eight chains, or ten miles from my base. In prolonging this line, I scarcely came across any land fit for cultivation, with the exception of four small pieces. The first is 45 chains in length, and forms part of the tracts spoken of above. The second piece is cut up by the little river Miguick. This river furnishes very fine, but very small bottoms. The third piece forms part of the third and fourth miles.

The soil seemed to be rather fertile. The wood is partly burnt. I remarked that the top of the hills and mountains have been spared by the fire. Another piece very fit for cultivation lies between the Clair lake and Pauvre lake. It is about a mile and one half in length, with a width varying from one to two miles, according to the position of the little mountains which surround this land. The timber is mixed and the soil is very fertile. The eighth and ninth miles are also in great part fit for cultivation. I explored the little river which is the tributary of the Pauvre lake. This river gives fine bottoms of about a quarter of a mile in width. The boundary of the tenth mile is on the top of a mountain of hard wood. The land is stony. While exploring this section, I ascertained that the river à Pierre, known to the hunters by the name of the second White river, is about a mile and one half to the south of the boundary of the tenth mile to the extremity of my line. I returned to the boundary of the 9th mile, whence I started to continue the prolongation of my line, which runs up to the Batiscan river. I prolonged this line, as far as the intersection of the Batiscan river, for a distance of fourteen miles and 35 chains from the starting point. This line strikes the Batiscan river at the place called the Three Rocks rapid. This last distance of five miles and 35 chains is fit for cultivation from the range which I mentioned above. This section of arable land is cut by the Bellevue lake and by little mountains to the

east and west of the lake ; this piece of land forms about 100 lots, apart from the tract which I mentioned in running the range line, going towards the east of lake Clair. I then scaled the Batiscan river, following with precaution and chaining with care all the different bends and sinuosities of this river, as far as the confluence which the two branches form in uniting at the foot of the island of lake Edward, known under the name of river à Jeannotte ; and thence as far as the boundary placed by Messrs. Legendre and E. Casgrain, on the Jeannotte river, at a distance of 639 chains and 69 links. Having finished this first part of my operations, I explored on my way up the south shore of the south branch of the Batiscan river, as far as the point or about the point, where I struck this river with my exploring line of 1855. The soil along this river is very fit for cultivation, with the exception of about one mile in length, where the north slopes of two mountains terminate at the river. This land may have a depth of one mile or one mile and one half. The section which lies between the rivers for this distance offers no land fit for cultivation, because the mountains which border the two streams lie in close proximity to one another, according as the two rivers come together, and practically form together but one and the same mountain.

I then explored the land starting from the Miguick river, going towards the east, which I found very fit for cultivation for a distance of four miles. The depth of this land is one mile and a half. The valley of the Miguick river gives very good land. At Mr. Barette's shanties adjoining the Miguick river, there are about ten acres of clearing, of which four acres or about are being cultivated. I then explored the section which is to the south west of my line, along the Batiscan river. I came across in this section a great deal of land fit for cultivation. I am almost convinced that along the south bank of this river, from the intersection point with my line, as far as the north east line of the seigniory of Perthuis, the land is fit for cultivation, with the exception of very small spaces, which are rocky near the river, the area of one to two miles, in depth. There is a winter road, which runs across this land and which leaves the Batiscan river at different places, for a distance of about a mile and one half. I am of opinion that this road was made in the best locality. I then went down along the river in the seigniory of Perthuis ; it is my opinion that it is impossible to make a road along the Batiscan river, going down as far as the mouth of the river à Pierre. On arriving at this section, a road can be made with facility on the banks of this river. The valley of the river à Pierre offers

no advantages for colonization and no land fit for cultivation; this river passes between two large mountains, which border it as far as its confluence with the Batiscan river, and the land is stony.

(*Ignace Déry*, 22nd October, 1870.)

Townships of Gosford and Rocmont.

The fifth range of Gosford is totally settled, with the exception of lots 26 and 28. In the section of the 6th which I surveyed, the lands are very fit for cultivation, excepting the lots which are on both sides of the Tallegard river, which are not fit for cultivation, but rich in spruce lumber. Five lots are already applied for. The two-thirds of the 7th, 8th and 9th ranges of Gosford, in this section of the township, are fit for cultivation, although somewhat stony, and are very good lands; the south west half of number 17 of the eighth range is occupied; there is a saw mill.

The quality of the soil, in the section of Rocmont which I have surveyed lately, is about the same as in Gosford.

There is a great deal of merchantable spruce. Mr. Methot, who has a timber limit in Gosford, has three or four chantiers in operation. There is little pine which is not of the best quality. This pine is along the lakes and rivers.

(*Ignace-P. Dery*, 26th November, 1867.)

Township of LaSalle.

In anticipation of my more detailed report on the nature of the soil, I can assure the department that apart from a few lots in the valley of the river à la Truite and at the confluence of the Batiscan and the Miguick, about fifty altogether, the township of LaSalle is a very poor country for colonization, being very mountainous and rocky, so much so that we very often had great difficulty in planting our posts.

(*H.-H. Robertson*, 24th March, 1881.)

Apart from a portion of ranges A and B, and the portion of range C north of the river Miguick, the township of LaSalle is quite unsuitable for colonization, if not uncultivable. It is covered with mountains which cross and interlace with each other in all directions, most of them being very steep, especially on the south side. The soil of ranges A and B is an alluvial sand of medium quality. The rest of the township is covered with boulders wherever the bare rock does not appear. The banks of the river Batiscan are very mountainous, except a few chains in length and width of alluvium. There are several lakes in this township, among others, lake Belleau, which is well stocked with fish, and lake Clair. These two lakes are enclosed in the mountains where even balsam and white birch will hardly grow. The timber has been burnt in the ranges A and B. Part of the merchantable timber, spruce and a little pine, has been cut; what remains is of little value at present. White birch is very plentiful, especially in the east part of the township.

At the confluence of the Miguick with the Batiscan, one may have a magnificent view of the valley of the river Miguick and of that of the river à la Truite, but this fine-looking country is cut up by crooked bays of the same width as the river, reaching to great distances, and forming a real labyrinth. All these points of land are covered with alders and dwarf willows.

This portion of the island of lake Edward which I had heard spoken of as a garden did not give me any such impression; it is simply a collection of inaccessible mountains, and there is no great difference in its appearance from one side of the river Batiscan or from the other.

(*H.-H. Robertson*, 24th March, 1881.)

Townships of LaSalle and Larue.

I went to the north angle of the township of LaSalle, and I prolonged the eastern line of this township, going towards the north as far as the right bank of the Batiscan river. I prolonged the said line going towards the north for 80 chains and 80 links, from the boundary of the north angle of the township of LaSalle. This line will divide two new townships, designed for the present by the letters A and B, this last to the east. As for the land and wood, on this last line, for 30 chains from the beginning,

the land is passably good, although somewhat stony ; we then find a very steep mountain, of which the southern slope is nothing but stones and moss, as may be seen by the plan and field books. The wood is mixed and of medium size ; white birch, tamarac, grey spruce and fir. The little tamarac, which was there, has been cut off and taken away to make railroad sleepers ; at the end of this line, I placed a picket. From the last boundary thus placed, I scaled a line at right angles with the cross lines between the lots going towards the east, on which I measured six lots of land, of thirteen chains of width each. These lots are of very uneven land, meeting on number two a lake of good size ; the wood consists of white birch, spruce and the fir is of middling quality ; sandy soil, mossy and rocky.

I then went to the boundary of the starting point, that is to say, to the boundary, at the end of the depth of the north range of the river, on the line dividing the townships A and B, on which I scaled a line at right angles, going towards the west, on which I chained nine lots of land of thirteen chains in width each. These lands are like the preceding, very uneven and rocky, white birch, spruce and medium fir. The railroad passes near the boundary 58 and 59. At the boundary which marks the north west angle with number 55, I placed a picket, from which I prolonged a line running to the south as far as the Batiscan river, a distance of 109 chains and 96 links, meeting at 11 chains and 45 links a lake, and at 71 chains and 73 links, the top of the mountain which borders the above river, and of which the southern slope is inaccessible.

These lands are stony, and occasionally there is little space between the mountains and the river, which will be a great drawback for cultivation. The wood is mixed and of medium size, white birch, spruce and fir.

I then went to the north shore for the prolongation of the east line of LaSalle, at seven chains and forty links, to the north of the boundary placed near the said river. When I scaled at right angles to the said line, going towards the east, on which I measured six lots of land of thirteen chains each, beginning by Nos. 1, 2, 3, &c.

These lands like the preceding are rocky and not very easy to cultivate, owing to the little space which the mountains leave on the banks of the river. These six lots of land are situated in the township B.

I think it my duty to remark that the soil in general is stony ; the mountains are in close proximity to one another, with steep slopes, composed very often of moss and boulders. There is, nevertheless, on the banks of the river a few lots, such as those which are occupied and a few others, of

which certain sections will be cultivable ; they are flat bottom lands which receive the washings of the mountains, that render the soil fertile and productive, as may be seen from the first clearings ; but the depths are not of a size to compensate the loss caused by the mountains.

(*N.-F. Lefrançois*, 8th November, 1887.)

Township of Mountauban.

The soil in general seemed very fit for cultivation. The timber has been partly cut down, with the exception of what little the shanties have been cutting this winter.

(*Ignace-P. Déry*, 20th February, 1879.)

Township of Tonti.

I worked on hoping to discover some fine valley ; but, after having divided and crossed the greater part of the township, I came to the conclusion that all this township is traversed only by cliffs, rocks, lakes and very steep mountains. I did not see any good timber ; the most common woods are fir, spruce and white birch, and a few birch, and the land is very sandy. I see no way of turning this township to any profitable account.

(*F. Pagé*, 2nd February, 1882.)

COUNTY OF RIMOUSKI.

Township of Awantjish.

With the exception of the lots one, two, eight, nine, ten, eleven, twelve, thirteen, fourteen and fifteen, the front of which is in spruce and swampy, land of very little value, the remainder of this range is very fine ; a good yellow sandy loam, free from stones or at least having very few, and a surface everywhere level, makes this range quite fit for settlement. The timber is everywhere very fine, large and mixed : very large birch and maple, long and very fine cedars, tall white birch and spruce. In the sections where cedar predominates, the soil is a very rich clay mixed with sand, beneath a rich layer of vegetable mould.

The south east outline of Cabot, which forms the front of the first range of Awantjish, passes mostly along the top of a hill running north east and south west, which forms a slope more or less rapid to the north west, and extending to the south east with slight undulations or apparent irregularities, as far as the fifth range of Awantjish, where it strikes a rather large mountain, which crosses the township over all its width in an apparent direction from east to west ; this mountain seems to be partly of earth and fairly wooded.

As for lots 1, 2, 8, 9, &c., above mentioned, at a certain distance from the front, the soil improves a little, according to the undulations of the land, and becomes somewhat better, at the upper extremity, without, however, bearing comparison with the remainder of the range.

Having had occasion to traverse the bush, from one range to the other, I personally ascertained that the good land is continuous, and that the loss caused by the bad land, when it happens, does not amount to much.

In short, if we deduct for the inferior land the ten lots above named, 822 acres, and add about 600 acres of good land not yet divided to the north east extremity, and the 3,282 acres in the 34 surveyed lots, we get a total of 3,882 acres of very good land fit for colonization in the first range.

Second range.—In this range from number one as far as ten, the land is the same as in the lower range, of medium quality, but gradually increas-

ing in value, as we go to the north east. The remarks on the soil, and the timber of the first range are equally applicable to this range. However, to the south west of the centre line, the wood is smaller, and, from the general appearance of the place, the timber has evidently been destroyed some years ago, either by fire or by some other cause, and the actual wood is a second growth, a thick forest of small firs, cedars, white birch and spruce, scarcely half grown, covering a width of ten to twelve lots along the front. The soil is a good yellow loam, mixed with good sand and, when placing the posts, very few stones were noticed.

All the northeastern section of the centre line and to the south east of the front range line, as far as it was possible to see, is very good, and is the continuation of the same kind of land as in the first range.

Deducting the ten first lots and adding to the forty-three surveyed lots about 500 acres of good land not yet subdivided in the north east end, and we get for this range a total of 5000 acres of very good land, in the second range, making about 8,282 acres of arable land in the two ranges.

As for the cedar and black spruce swamps on the centre line of ranges two and three, and on the rear line of the lots on the Kempt road, they are not considerable, and are formed by low lands, gulches and the neighborhood of brooks and rivers, and have no considerable extent.

Compared with the other sections of the Matapedia road, from St Flavie, to the south east of the Matapedia lake, the township of Awantjish is remarkably level, which, added to the fertility of the soil, and the neighborhood of the Intercolonial Railroad, will soon make that section an important centre of colonization.

(*Thomas Breen*, 1st March, 1869.)

We can apply to this township all the remarks relative to Nemtayé; we can say to the advantage of Awantjish, that it presents in valley a much larger surface than Nemtayé. The lakes of this township are more numerous and generally larger than those of Nemtayé. I may also remark that at the end of the ninth chain of the third mile at the rear line of this township, there is a low and swampy cedar grove, where the needle deviates four degrees from its ordinary direction; I tried to get a sample of earth from this place, but the thickness of the moss which covers the soil, its frozen condition, the water which covers it, and the depth of snow prevented me.

(*Hector LeBer*, 6th April, 1869.)

Township of Bedard.

I may sum up the notes of my survey by stating that the lands which are crossed by the Taché road are very fit for farming purposes, as are also those adjoining the rear line. The timber is large and of good quality. The lands from the line, between ranges three and four, are generally bad, swampy in the south west section and stony in the north east part of the central line as far as lot thirteen. Thence, to the township of Chesnier, the lands are rather good.

The township of Bédard is generally mountainous, especially the north eastern section ; there are, however, but two large mountains ; the others are small, but often steep, in crossing them from the north west to the south east.

Birch and spruce are the only timber worth cutting, and are in large quantities. The pine has been mostly all cut off by jobbers from Madawaska, who used the little Saint John river for driving it, and another little tributary river of which I ignore the name.

(*L.-J. D'Auteuil*, 17th April, 1871.)

The soil of the above mentioned township, certain heights excepted, is in general rich and of a yellow and grey color, but somewhat stony.

The low sections are for the most part alluvions, especially in the neighborhood of the river Boisbouscache, where they are very rich. To the north east of the central line, the 7th and 8th ranges are in general mountainous, but nevertheless there are magnificent valleys between the mountains. The timber is of a fine growth. The predominating kinds are spruce, of the best quality, birch, maple, white birch, fir and cedar, especially white cedar. There is still a good quantity of pine, especially in the section adjoining the township of Chesnier. The 9th range to the north east of the central line offers great advantages to colonization. Magnificent and rather level soil ; good hard and soft wood.

The 7th, 8th, 9th and 10th ranges to the south west of the central line present rather good lands, although the surface is somewhat broken, the quality of the soil is good, but stony.

The different kinds of wood prevailing are spruce, birch, white birch, maple, elm, ash and fir, on the high lands ; on the low lands, there are fine cedar and ash trees, and very fine tamarac and black spruce around the lakes.

(*L.-J. Garon*, 10th March, 1884.)

Township of Biencourt.

In going through the different sections of this township, I came across the Saint John river, in which there is a little, swift rapid, strong enough to run a mill. I also came across the Eagle river, which is still water, and which offers no remarkable feature. The finest river, I saw is the Touladi. This magnificent river is wide and the banks are high nearly along its whole course; there is on this river a good mill site, but it is outside the township of Biencourt, just beyond the north east outline, where there is a small rapid, nearly opposite the fourth and fifth ranges. I also came across three lakes, of which one may be about four miles in length, with a width varying between eleven and sixty chains. Its banks are not very high. There is another small lake of oblong form, situated on the front, between the townships of Bedard and Biencourt; lastly, a small lake on the seventh and eighth ranges near the north east outline.

The lands of this township are generally good, although for the most part rolling, especially in the north east section of the central line, as far as the Touladi river, where they grow more level, in the unsurveyed sections. The wood is mixed in nearly all the sections of the township; merchantable spruce is very common, but good pine is scarce.

(*L.-A. Doucet*, 5th May, 1875.)

Township of Chesnier.

The wood of most consequence in this township is the cedar and white birch which are in large quantities; I remarked a great deal of cedar on the high lands. I measured one tree whose diameter was six feet; white birch is generally of small size, and of a very mediocre quality; poplar is

also very abundant, but it is young, fire having already swept over this township. I noticed some tall and fine black spruce, which would not be despised by ship builders, if it were close to hand ; there is very little tamarac, I only noticed a few ; there are also very fine and very large birch, but good pine is scarce, on account of the lumbering operations which were carried on in this township.

The soil is generally sandy and of a greyish color ; it is a little stony ; the mountains are mostly all covered with soil, but they are very often so steep as to discourage settlers who would like to take up these lands. Still these obstacles can only delay the progress of colonization, but they will not check it forever : witness, the parish of St-Fabien, which is situated opposite the township of Chesnier, and in which the mountains can rival those of Chesnier ; nevertheless, the work of cultivation is as advanced there as elsewhere ; these mountains start from the shore, and continue as far as the depth of the township ; their general trend is east and west. Colonization in these places would be greatly stimulated by the completion of the Government road of St-Simon to the Taché road, which should not be neglected. The part of this road which is opened is only practicable for vehicles loaded with about 350 lbs. There is a powerful river along the central line, which could run a grist mill all through the year ; the brooks in this township are rather numerous. Maple groves are very scarce ; I only met one which was worthy of the name.

(*J.-N. Duval*, 26th February, 1870.)

Township of Dalibaire.

The land I surveyed in Dalibaire is generally quite fit for the growth of wheat, peas, barley, oats, potatoes and hay ; yellow soil, sometimes grey, and somewhat moist. Vegetables would grow well in it ; white birch of superior quality abounds, and the facilities for getting out timber are very easy ; fir and spruce of rather good quality are plentiful, and the cedar is of all desirable sizes. The Grand Mechins and Grand Capucins, as also " La Vapeur " brook and several other brooks, offer to whomsoever would wish to try them an easy and inexpensive way to float down timber to the St. Lawrence river.

The ranges which I surveyed are crossed at their depths by the Mechins and Capucins rivers and also by the "La Vapeur" brook, and a few smaller ones which form ravines of difficult passage, across which roads could not be made unless by following the small streams which discharge into them.

(*C.-S. Lepage*, 8th May, 1883.)

The land is generally somewhat moist. The soil is of superior quality, fit for the growth of hay, oats, barley and of all cereals generally. The soil is composed of mixed grey earth. Sometimes yellow loam mixed with clay. The most noteworthy timber is the fir, white birch, spruce, cedar and elm. Fir is generally long and hard. It is very difficult to make front and side roads in each of the ranges.

(*C.-S. Lepage*, 20th December, 1883.)

Township of Duquesne.

This part of the township although rather mountainous is very fit for colonization, the soil being generally very good.

The finest place for a village reserve would undoubtedly be in the seventh range, opposite the centre line, in the neighborhood of the Taché road. The soil of this latter range is of superior quality, and would offer a clear field to colonization, when the Taché road will have been opened through. In all this section of surveyed land, the timber has been entirely removed by lumbermen. In ranges nine and ten, there are sugaries which are being worked.

(*G. Garon*, 22nd June, 1877.)

I then went to the boundary between ranges B and I, and ran the line between the ranges, and chained all the lots running towards the south west. In this range the land is very good, with the exception of the lots which adjoin the Rimouski river, that is, from number one as far as number twelve.

The land adjoining the Macpés lake, and in the neighborhood of the river, is very fit for settlement. The soil is of rather good quality on the lots in the south west section ; in the north east section, there are some good lots.

(*G. Garon*, 17th September, 1881.)

Township of Flynn.

This township possesses one of the richest soils of the county of Rimouski, and will be ere long a magnificent agricultural centre. The surface is less wooded than that of the township of Macpés ; the land slopes generally to the south east. All the section which is watered by the river Caribou or the north east branch of the Rimouski river, the Black river and the Beaver river, is low. The soil is a kind of alluvion ; on the higher grounds it is composed in great part of yellow and grey loam mixed with clay. The different kinds of wood are in general the same as in Macpés, but I may state that soft wood predominates. I may also remark that from the third range of Flynn, for at least about fifteen miles, to the north east, if not more, all the unsurveyed region is without exception one of the richest of the province. All the valley of the eastern branch, without doubt, will become in the near future a great agricultural centre.

The centre section surveyed by me is, as you can see by examining the above plan, well watered ; it is crossed by many streams, and dotted with lakes in great number, of which the largest and most important is lake Taché, which is very deep and abounds with fish. The other lakes are also well stocked with fish, among others lakes Lunette and Depot in Macpés, and lake Pierre in Flynn, which last one empties into the river Neigette, which in turn discharges into the river Métis.

(*L.-J. Garon*, 30th October, 1880.)

Township of Humqui.

The surface of this township is comparatively level, as far as I could judge when running the line which separates it from the township of Nemtaye and by what I could observe from the tops of the mountains in

Nemtayé ; it contains no pine, as in Milnikek, but there is as much, if not more, merchantable spruce. Cedar is also very abundant ; the other kinds of timber are fir, white birch and birch. The soil is more moist and of good quality. This township is altogether fit for colonization.

(*Hector LeBer*, 6th April, 1869.)

This township has a frontage of 777 chains and the section subdivided to date into farm lots comprises an area of 33,263 acres divided into 328 lots.

Nearly the seven eighths of this area are fit for tillage and could be probably settled ; the land, without being absolutely level, offers nevertheless no serious obstacle either to the facility of communication or to cultivation.

The soil in general is of good quality, although somewhat stony in certain places. It is a mixture of yellow loam and grey clay. The layer of vegetable mould, which covers it, does not exceed any where 10 to 15 inches in thickness, and it is only in very low and damp places like the neighborhood of several lakes, where it is so thick ; in most cases it is only from three to five inches.

In the interior of the township of Humqui, there is a number of small lakes generally abounding with fish. These lakes are the source of a number of brooks which flow through the township in every direction. The most of these small brooks will be of great utility, especially for cattle, when this important part of the country is settled up and the fine lands of the Matapedia valley shall have been cleared and turned into pasturage.

But of all the streams which cross the township of Humqui, there are a few which are important from another point of view than the watering of the soil. On many of them are a number of good mill sites, and notably on Indian Brook and the Humqui river.

Apart from the Matapedia river, which I may class among the finest rivers of the province of Quebec, and on which I noted an important power on the 43rd lot of range three. The Humqui river is by far the most important of the entire valley in which it is situated, and it has very properly given its name to the township which it crosses.

The quantity of water which it carries into the Matapedia river, of which it is a tributary, seems considerable, even in the summer droughts, the only time I had the opportunity of seeing it.

I am told that this river is fit for driving along part of its course. Formerly considerable lumbering operations were carried on along this river, but now that the lumber trade is not so profitable, operations are decreasing gradually from year to year. Moreover, merchantable timber has become scarce in all the Matapedia valley, owing to the ravages of fire which has ruined the fine forests that formally covered these lands.

I have already observed in one of my preceding reports that the chief causes of trouble and hardship for the future settlers of the Matapedia valley will be, in the first place, the improvement of the soil in certain places impoverished by a number of successive fires, and next the absence of lumber.

I do not exaggerate when I state that to the south and west of Matapedia lake, and on the course of the river which bears the same name, there is an area of at least a thousand miles of forest totally devastated, this devastation dating back a few years; for the new growth of all kinds, which to-day replaces the original forest, has not yet attained an average height of more than eight to ten feet. It is difficult to form a correct estimate of the immense quantity of important timber of all kinds, which has been destroyed in this region, spruce, birch, maple, &c.; the cedar is still in abundance on the few spots that the fire did not touch.

The average diameter of the fallen trees, which in immense quantities still encumber the soil, is from 15 to 20 inches. I have even come across a few of these trees with a diameter of thirty to forty inches.

I draw attention to these facts because they attest the quality of the soil which has grown such timber; at the same time they give an idea of the great loss which the province has sustained by the fires which annually make such extensive sweeps through our forests.

That the Matapedia valley has a future as an agricultural region cannot be doubted; it is sufficient to once travel the fine road, which leads from St. Flavie to the Baie des Chaleurs, to be assured of the fact that no where else can settlers find so many advantages as in this valley. Level land, good soil, easy communications as well by the waggon road as by the Intercolonial Railroad, which will cross this valley at its broadest point,

such are the advantages on which we are warranted in basing our hopes with regard to the future of colonization in this part of the country.

And I may add, from the seigniory of Métis to the Ristigouche river, there is not a single township better situated or which promises to be more quickly settled than the township of Humqui.

(*C.-F. Roy*, 24th February, 1870.)

Township of Lepage.

The township of Lepage is well fitted for settlement. The soil is generally a yellow loam of good quality with scarcely any rocks; we come across tracts of grey and yellow loam near the river. The most extensive are on lots sixty-three, sixty-four and sixty-five, in the first range.

The land is not so broken, as it might be supposed to be from merely following the river by the Matapedia road; as, from the centre line of the township to about a half mile from the river, there is a mountain which skirts the river at that distance, trending towards the north west as far as the 67th lot. This would be a rather serious obstacle to some of the settlers of the first range, who could not communicate with the eastern extremities of their lands, without going round by their neighbors. This inconvenience is all the more to be regretted that the lands, on the mountain tops, are very fine, and even more level, and of a better soil than those which border the Matapedia river. This mountain has an average height of 250 feet, and in two places it must attain four or five hundred feet. The tract comprised between Salmon lake and the mountain is very stony and little adapted to tillage. On ranges A, II and III, the land is almost level and very good, but the fires which have often swept over this township, have destroyed a great deal of the wood in the southern part, from lot 30 of the first range, running east to a little distance from the Causapscull river. In these brulés, the settlers will have but very little work to do to fit their land for the plough. This will certainly be a great advantage for those who have some means; but those who have not will probably grumble; this slight drawback to some will be greatly compensated by advantage to others.

From the head of Salmon lake to the north west outline of Lepage, the brulés continue on an average depth of half a mile as far as the top of the mountain. Merchantable spruce abounds everywhere the fire has

not swept ; birch and pine are very scarce, the little there was having been cut down by jobbers from Bonaventure and New-Brunswick, but especially from the latter. Cedar is generally thinly scattered, and I scarcely met two acres of cedar groves on all the lines which I ran. The township is watered by several brooks, of which a few offer second class water powers. The Matapedia river offers also several water powers, of which one will be utilized this summer by one Terriault, who is going to erect a grist mill opposite the Fournier mountain, on lot 73 ; this mill will be in working order by next fall.

The Matapedia valley will be rapidly settled, if the railroad passes through it, for, besides the advantages which this enterprise would offer, the soil is generally as good as on any of the Crown lands that I have visited.

The direction of the prevailing winds is mostly always from the north west, sometimes from the south east ; the climate is about the same as in Quebec. Winter begins generally towards the end of November, and sowing can be nearly always begun in the first days of May. Less snow fell this winter in this section than on the shores of the St. Lawrence between Quebec and Matane.

(*Louis D'Auteuil*, 15th March, 1867.)

Township of Macpés.

The township of Macpés, which has long been considered as poorly fitted for settlement, is on the contrary the most advantageous which I surveyed in this district.

In the first place its soil is generally excellent and little broken, judging from the centre line, along which no hills of any size occur from the first range to the depth of the sixth range ; so much so that the superintendent of the road, intended to connect with the Taché road, adopted the centre line as the most advantageous for the prolongation of the road in question. Ranges four, five and six are remarkable in many respects. The land is very level, the soil is fertile and the bush very clear. The predominating wood in these ranges is the maple, used for sugaries on a large scale by the settlers of the township and the farmers of the neighboring parishes. There are already over fifty sugar shanties erected on the ranges

above mentioned, and I know some proprietors of sugar shanties who make upwards of one thousand pounds of sugar each every year.

The merchantable timber has generally been removed by lumberers ; but spruce is still in abundance, so that the settler will not want for wood to make a roof to shelter him from the winter frosts and to house his crops. The streams are numerous and offer in their course very good and advantageous mill sites.

One of the branches of the Grande Neigette called Little Neigette crosses this township which it waters and fertilizes. Along this river which is rather powerful, since it can be used for driving logs, there are immense tracts on which the soil cannot be surpassed for excellence, and a considerable number of persons propose to enter upon them to make clearings next spring and settle there permanently with their families. Not one man of my staff could resist the temptation to imitate Jean Rivard and to choose a lot, which they intend settling as soon as possible.

If the land in the south west part of the township is sometimes undulating, it is not stony, so that its tillage will not be difficult or expensive.

The seventh range which is crossed by the Taché road is certainly not of the best quality, and I am astonished that they ran a line in this section, for the river Ferrée on the north side offers dry and stony land, sometimes clay and, in some parts, mountainous as may be seen by the plan already mentioned.

The finest bottom lands, which I saw (clay and wheat lands) are found to the south of the river Ferrée, which slope gradually to the Shickshock mountains at the depth of the eighth range.

In the ninth and tenth ranges, there is also some of the finest land ; maple is in such abundance that it is impossible to notice other kinds of wood, in the ninth range particularly ; as for the tenth range the timber is mixed : birch, maple, spruce, fir and ash ; in fact, the soil is rich and splendid, I have never come across more fertile, judging from appearances.

(*J.-A. Bradley*, 15th February, 1865.)

I must say that the lands in the eighth range are in general of superior quality; we must nevertheless except the mountainous section, that is to say, the south east half of lot twelve as far as the twenty-eighth, which is very mountainous, but which is nevertheless in great part fit for tillage; this range is well wooded; maple, birch and hard wood of the same kinds predominate; in the neighborhood of the river Ferrée and the lakes, the predominating woods are the cedar, spruce, fir and white birch. The ninth range is less mountainous, and in general more level, the predominating woods being maple, birch, white birch, cedar, spruce and fir. The same remark applies to the tenth range of Macpés. The soil of these three ranges is in general a yellow and grey loam alternating and very rich; in some places around the lakes and rivers, there are very rich cedar groves, which later will make fine land for meadows and pastures. The timber is of fine growth, especially the hard woods, maple, birch and also the cedar. As for the merchantable timber, such as pine and spruce, I must remark that very little remains, the lumbermen having mercilessly cut down all before them here as elsewhere. Your lumbermen, that is, the limit holders, are never scrupulous. They cut down everything, pine and spruce, large and small, that they come across in their limits. I know, as I have seen the thing for myself, that they have cut down pine and spruce less than twelve inches in diameter. This is not only an abuse, but clearly a theft. Let me explain. The lumbermen get their sub-contractors to give them two logs of eleven inches for a standard log as they commonly call it, although the standard measure is thirteen inches, and they pay to the Government only for the cutting of one log, that is to say, on one thousand logs of eleven inches or twelve inches, delivered by a jobber, the lumberman pays only five cents for stumpage dues, but not on the thousand. This is a fraud on the revenue and at the same time a ruin to the forest.

(*L.-J. Garon*, 30th October, 1880.)

Township of Massé.

All the section surveyed by me, in western Massé, including an area of 42,000 acres, is level and of good soil, and except the crossing of the rivers Michigoneche and Mercier, which have high and steep banks in certain places, it would be impossible to find a tract of land more level or more valuable, both as regards timber and soil, and the section which is not

surveyed to the south west is just as fine, if not preferable. I cannot, however, say as much for the northeastern part, where the land is inferior and more broken, on account of its proximity to the chain of the Notre Dame mountains, at the northern base of which passes the outline of Massé.

In this section, the swamps and low lands are more frequent, which contrasts with the south western section where the soil is everywhere good, dry and covered with birch, spruce, mountain ash, cedar, &c.

(*L.-S.-E. Groudin*, 26th February, 1874.)

The greater part of this range line crosses dry and stony land, so that range one of Massé, to the north east of the centre line, with an area of 4102 acres, is little adapted to cultivation, at least in the vicinity of the range line.

(*L.-S.-E. Groudin*, 16th March, 1875.)

Township of Matalek.

The land in ranges A and B is rather good, although composed of gravely yellow loam ; the last lots near the river are not so good on account of the heights.

On the range line between ranges 1 and 2, the land is everywhere broken and not very fitted for tillage, except the four or five first lots, starting from the lateral line between Matalek and Humqui. We come across everywhere very elevated land, intersected with deep ravines, at the bottom of which flow small brooks that discharge into the Matapedia river. The eight or nine last lots, near the township line, are more level and certainly all fit for cultivation.

Range 3 presents a broken surface, but less than the lower range. In it occur more deep ravines, but in less number. However, they do not extend far to the west of the range line, leaving the land more fitted for tillage.

Range 4 is everywhere composed of level land, well fitted for colonization. All the section from the north lateral line as far as the centre line, can be considered as a bottom, except when nearing the centre where we come across a rather deep ravine, having on both sides very accessible elevations ; from the centre line, running north as far as the township line, there is a gradual elevation of about 200 feet, just at the starting point of the centre line ; the remainder being an elevated and level plateau.

Range 5 is everywhere rather level, and mostly covered with hard wood ; it contains only one deep ravine. The centre line runs through a very level section, only the part situated along the river being difficult of access.

As for the lots which border the river, they are everywhere of inferior quality, except the eight or nine lots at the mouth of the Matalek brook, and lots 34, 35, 36 and 37, which are of superior quality.

In short, everywhere the soil is dry, composed of yellow clay, mostly granulated and almost free from rocks, except in the range, which borders the river, and which is of difficult access on account of the irregularities of the land.

(*L.-S.-E. Grondin*, April, 1869.)

Township of Matane.

The quality of the soil at the rear of the four first ranges, being even superior to the first, from the fifth range especially, as far as the eighth, or even as far as the river Petcheditz which discharges into the Matane river, on the ninth range, I think it my duty to again insist on the importance of such an improvement.

The Matane river offers immense tracts whose fertility cannot be surpassed, extending into the interior for almost eight to ten leagues, with a depth varying from eleven to twenty and even as much as thirty arpents. On these tracts, elm, ash, birch, alder and spruce grow, and Indians have assured me that these fine lands extend as far as the "Trout" river which discharges into the Grand Matane, at about fifteen leagues from the sea following the bends of the river, and that, at the confluence of the river Touladi, these flat lands are proportionately still more extensive. At the

rear of these flat lands come the hard wood lands ; these are the banks of the Matane river having a slope which is slight enough for tillage.

From the nature of this region it is evident that several hundreds of settlers could settle there without much expense for the opening of roads, having in this case but their front road to make. A road is actually opened on the south west side of the river, to the depth of the ninth range, and fifteen settlers are already located along this road, with clearances on their respective lots, varying from five to thirty acres, who are awaiting with anxiety the decision of the Government to this effect. The lands are magnificent in the rear of the seigniory of Matane, and in a very short time they would all be taken up if they were accessible by means of a road.

(*J.-A. Bradley*, 1st August, 1862.)

In general, the land which I had to survey is undulating, broken and sometimes mountainous ; nevertheless there are tracts of considerable extent, with a soil of superior quality.

There is a great number of lakes whose banks are, for the most part, wooded with black spruce. I scaled all these which exceeded twenty-five acres. I also scaled the part of the river Matane, included in this township. In addition, there is the river Petcheditz, which forks into two branches. During the course of last winter, a considerable quantity of spruce logs were made on this river, and also on the Matane river, by *Elie Généreux*, esquire ; spruce is the only timber to be cut.

The land rises gradually following the centre line, from the ninth range to the rear line of the township, where the chain of mountains is reached which borders the Matapedia river. On both sides of the centre line, the waters separate, to the north east into the river Matane, and to the south west into the White river, and partly into lake Matapedia.

The banks of the Matane river are everywhere of very difficult access, and render the most of the adjoining land uncultivable. They rise to about fifteen hundred feet above the level of the river ; the flats are of excellent land, fit for the growth of hay, but unfortunately they are of small extent. On a great many of these flats, hay is cut by non residents, but who all have houses and barns there.

The land adjoining the lakes to the north east of the centre line is generally stony and broken and little suited to cultivation. The land in the neighborhood of the lakes, to the south west of the centre line, is much preferable and altogether arable.

The land to the north east of the river Matane is, apart from its flats, valuable for its timber, though a great quantity has been removed, and though another part was destroyed by fire a few years ago.

I assert that the valleys of the Matane river, and of the Petcheditz and the Little Matane river, would offer a natural, and very easy route for a railroad, which would pass by Matane, and would join the Intercolonial to the south of lake Matapedia ; I am surprised that there was nobody in all Matane to ask for an exploratory survey in that direction at the time of the construction of the Intercolonial. It is true the length of the railway would have been increased from ten to twelve miles at the most, but a hundred thousand dollars would have been saved and the parishes of N. D. de McNider, of St. Ulric, and of St. Jérôme of Matane, would have secured the advantages of a railroad. Ignorance cannot be pretended, as there has been for upwards of thirty years a portage road between lake Matapedia and the Matane river.

The eleventh range is of medium quality in mostly all its north east part on account of its numerous and steep rocks ; the soil is a yellow loam and is wooded with fir, spruce, white birch and birch, with a good deal of cedar in the low lands. Towards the depths of this range, the lands become better. The south west part of this same range is better fitted tillage being less broken and more free from stones.

The twelfth and thirteenth ranges are of superior quality in nearly all their length. They are wooded with maple, white birch, birch, fir, spruce, cedar, &c. The soil is yellow and somewhat clayey. It is rather level, but it would be very difficult to make a road in a straight line which would connect the Matane river, with lake Matapedia. Hay and grain would grow on it very well.

The fourteenth range is also of good quality, but there are here and there some hills, which would render the settlement of the lands of this range difficult. The timber is fir, cedar, birch, white birch and maple, &c.

The surveyed section is generally good land, wooded with spruce, cedar, birch, $\frac{1}{2}$ white birch, maple, fir, &c.

The quality of the soil is a yellow sand, mixed with clay sometimes, and generally moist. Wheat, oats and hay could be grown with success. There are, in the centre of the township, different places very advantageous to build a grist mill or saw mill, either on the Petcheditz river or the Lafrance brook.

A certain part of ranges nine and ten is very broken and stony to the right and left of the centre line. This part is unfit for cultivation; the value of the land being diminished by steep hills.

Front and by-roads can be easily opened everywhere, except in the eighth range, of which the upper part is crossed in all its greatest length, by the river Petcheditz, whose banks are nearly inaccessible, and are only good for their timber, which is in great abundance; I am told that Mr. E. Genereux has made all the necessary preparations to carry on considerable lumbering operations here next winter.

(*C.-S. Lepage*, 29th October, 1881.)

Township of Milnikek.

The natural features, taking that part of the township surveyed as a whole, are rough and rolling, but not so much so as to discourage settlers or render the land unfit for cultivation; the whole extent of land in that part of ranges A, one, two, three and four to the north east side of Milnikek brook, with very few exceptions, is rolling and undulating soil, good for cultivation, consisting principally of red and white loam and in places stony, but unfortunately the top soil is all burnt, also the standing timber, the second growth consisting of white and yellow birch, fir, poplar, wild cherry spruce and fir. Ranges two, three and four on the south east side of the Milnikek brook up to lot fifty-three in each of the ranges are, with the exception of front half of range two, good and especially adapted for intending settlers, should they locate themselves in the vicinity of the centre line; fine, gradual, sloping land on the head waters of the Malts brook and the two Connor's brooks, a good standing growth of yellow and black birch, a few maples and a thick undergrowth of spruce and fir. The soil mostly red and stony, but the stones not of any great size, neither soil nor timber being burnt. I consider it as the most valuable part of the portion of the township surveyed, and with the exception of from lots fifty-eight to sixty-six in

ranges one, two and three (which is of the same quality of land as above mentioned), the remaining part or portion is rough, hilly and broken, and may be considered as generally unfit for settlement. All the merchantable timber of any consequence has been cut away, which was pine of the first quality, but there are a good number of birch that will be at some future time brought into use for shipping and other purposes.

On the question of roads, I should consider that a colonization road could be easily made up the valley of Connor's gulch until it intersects the second and third ranges; then follow up north and along the said range, till it meets the centre line; thence up the centre line for the depth of one range, on and along the range line three and four continued both north and south for say two miles; either way would open the finest and richest part of the township. The soil and timber being all burnt on the north east side of the Milnikek brook renders it almost, but not altogether, unfit for settlement and consequently of not so much value as the lands on the opposite side of the brook.

I consider that the whole of this township rests upon a clay slate formation from the general appearance and nature of the loose stones lying on the surface, but, towards the Matapedia township line, it commences to rest upon a limestone bed of good quality. The height of land in the township lies between the Milnikek brook and Mill Stream, the mountains falling gradually on either side of the aforesaid rivers.

(*P. Murison*, 23rd January, 1870.)

Township of Neigette.

In all this section the soil is level and covered with wood of the very best growth, such as maple, birch, ash, elm and cedar, nourished by a soil composed of a calcareous earth very fit for tillage. When once the Taché road is opened and joined by the road already begun, the proximity of the Rimouski harbor, added to the good qualities of the soil, will assure the prompt settlement of this township.

(*L.-S.-E. Grondin*, 31st December, 1864.)

The sixth range, in the south west section of the township of Neigette, is well wooded ; the soil in general, although mountainous in the valley of the Grand Neigette river, is of rather good quality. The predominating woods are the maple, birch, white birch, spruce and cedar. There still remains a rather large quantity of merchantable spruce. The cedar is magnificent.

The ninth range, in the south west part of this township, is in general composed of very good land and well wooded. The wood is the same as in the sixth range. In the north east part, I noticed several stony places, especially the numbers 18, 17 and 16, inclusively. More to the east, the soil is preferable, being well wooded with hard wood.

(*L.-J. Garon*, 19th October, 1883.)

Township of Nemtayé.

This township is mountainous, but the mountains, although very high, are surrounded with large, beautiful valleys ; these mountains, which follow a very crooked trend, present generally towards the middle of their length a cape or a point, more or less steep. Apart from these capes, whose base is small, and which never occur to the number of two on the same mountain or on the same chain of mountains, the slopes are gentle and are like the table lands of easy access. There is no merchantable timber in this township, except the fir and cedar which abound, birch and white birch ; we come across in some places a great deal of maple and ash, especially on the frontage which adjoins the seigniory of lake Matapedia and the township of Awantjish.

Besides several small lakes, there are sufficient streams for farming purposes. The soil is generally very good, and the settlements flourishing.

(*Hector LeBer*, 6th April, 1869.)

Having finished my work, I have the pleasure to inform you that, in the tract of land which I surveyed, there are no uncultivable swamps ; all this land, although not of superior quality, is very fit for colonization.

(*F.-L. Poudrier*, 28th September, 1869.)

Township of Ouimet.

All the section surveyed in the township of Ouimet, with an area of 19,980 acres, is certainly a very fine tract of land, being level and possessing a soil of excellent quality, covered with different kinds of wood of very fine growth and good quality. It would be rather difficult to find a finer tract of land and more advantageous for colonization, the soil being of a superior quality, even preferable to that of Massé, because it is not so high.

(*L.-S.-E. Grondin*, February, 1875.)

Township of Robitaille.

I came across three lakes which were not very deep, but which all abound with fish. The soil, although somewhat rocky, is generally good everywhere, except on the chain of mountains to the north of the Touladi river. But on the top of the mountains and at their foot, the land is very good, especially on the banks of the Touladi river, which are excellent elm and ash bottoms that would soon be taken up, if the Government would have by-roads made, particularly on the line between the counties of Rimouski and Temiscouata, where the land is very fit for the purpose.

(*G.-A. Doucet*, 19th May, 1882.)

Township of Romieu.

In the first place I took several days to explore this township, and I concluded that the greater part (the N. E. part) is uncultivable. The Cap-Chatte river, with its two branches, the Cassette brook and several other brooks, form cliffs and precipices of all kinds, which render this region a kind of an abyss. The south west section of the ranges V, VI, VII and VIII is wooded with white birch, spruce, cedar, fir; birch, maple, and the other hard woods are found in very small quantities. In the part of the township of Romieu, which lies between the south west lateral line of the township and the Cassette brook, the land is much superior to that of the township of Dalibaire. Unfortunately to the north east of this brook, there is, rightly speaking, no more arable land.

The land, which would have been crossed by the centre line between lots twenty-four and twenty-five, being altogether uncultivable, almost impassable, and useless, on account of the difficulty and expensiveness of running a line there, I thought it better not to run it: this is why I proceeded to the arable section of the township of Romieu, viz, the south west section, starting from the range posts on the line between Dalibaire and Romieu, running towards the north east for the ranges V, VI, VII and VIII.

(*C.-S. Lepage*, 8th May, 1883.)

Township of Romieu and Dalibaire.

Apart from the precipices, long slopes and steep rocks, formed by the Grand Mechins river in crossing the fifth and sixth ranges, and also apart from a small ravine formed by the Grand Capucins river in the same ranges, and two or three rather deep gullies formed by brooks emptying into the latter, the land is level and uniform, and I think it continues thus as far as the rear line of the township. The soil is generally somewhat wet, but of superior quality and fit for the growth of hay, oats, barley and other cereals. It is composed of mixed grey earth; we sometimes find yellow loam mixed with clay. The timber is composed of fir, white birch, spruce, cedar, ash and moosewood. The fir is generally long and hard. It is very easy to make front and by-roads in each of these ranges.

(*C.-S. Lepage*, 20th December, 1883.)

Township of Saint Denis.

The land, in general, is rather level. The only hills that occur are on the Little Matane and several brooks which discharge into it.

All the land traversed is arable, and the north east part of the centre line, especially, is very much so. The soil is excellent, and vegetation is very vigorous over all my survey. The merchantable timber is nearly exhausted, owing to the limits having been worked for a long time by lumber merchants.

(*John Hill*, 7th July, 1880.)

Township of Tessier.

All the section situated to the south east of the Little Matane river, a branch of the Grand Matane river, is broken by mountains and very deep ravines which render it almost unfit for cultivation. On nearing the Matane river, the soil is generally bad for some lots, except a few flats on the bank of the river, on which the alluvial soil is extremely rich and fertile. Everywhere else, the land is level and covered with wood of the finest growth, such as maple, elm, ash, white birch, spruce, nourished by a soil, composed of a calcareous loam, rather rich in the south west section of the central line. As for the north east section, the most of it is composed of alluvial soil fit for settlement.

(*L.-S.-E. Groulin*, 25th August, 1863.)

The land which I surveyed is for the greater part of superior quality. The south west range of the Matane river, of which the banks on this side are in general very high, is for this reason little adapted to tillage. Nevertheless the land is of first quality and wooded with birch, maple, &c., but the north east range, being in great part formed by the points of rivers and the banks of this side being a great deal less steep, are decidedly arable, the soil being of superior quality. The remainder of the township, that is, the ranges 9, 10, 11, 12, 13 and 14, is a well wooded tract with a soil in general of the best quality. The surveyed land being on the limits of the firm of Price Bros. pine and spruce are scarce.

(*John Hill*, 21st February, 1888.)

The country all through this survey is pretty mountainous. The ridges on the north west slope towards the river, and therefore the land over which the range lines happened to run is much more advantageous than that of the rear line of the range north east of river Matane or the centre line or the St-Denis line, where they have to go across the gully and mountain ridge.

The principal kinds of timber are fir, spruce, silver birch (bouleau), red birch, cedar and some maple. I took notice of very fine cedars, as can be seen by my field notes. In some places this timber is of the largest and the finest quality that I have ever seen in this country, and the means of transporting it being easy from where it stands, it should in the near future become very valuable on account of the scarcity of such a good quality and the increasing demand for it.

A great deal of this land, although mountainous and more or less stony, is nevertheless good and well adapted for agricultural purposes, and I have no doubt but that the part along the river will be taken up and settled on before very long.

(*J.-G. Bignell*, 19th May, 1888.)

Township of Tourelle.

The first part of my survey consisted in the subdivision of a part of the ranges 5, 6, 7, 8 and 9 along the south west limit of the township. In this section the timber is very tall, and in general of middling size and is composed of fir, white spruce, white birch and birch on the ranges 5, 6 and 7; and of fir, white spruce and white birch on the ranges 8 and 9. The land is generally everywhere fit for tillage, but preferable in the ranges 6 and 7. The ranges 5 and 6 are cut by the little Saint-Ann river and the Potato brook, which are bordered by hills from two to three hundred feet in height, but, being very long, the slope is generally rather gentle. On the ranges 8 and 9, there are several black spruce swamps, but of little extent.

The second section consisted in the subdivision of the Castor brook range. The lands in this range are very good, especially those of the lots one to twenty. The timber, which is very large and long, is composed of white spruce, fir and white birch. The Castor brook, which is very large on lot one, suddenly diminishes on lots 8 and 9, owing to the hills jutting out as far as the brook on lot one, and then suddenly receding.

L'Islet lake discharges into the great St. Ann river, towards the south west, and does not form part of the Castor brook. I ran a line from its extremity to the l'Islet lake, to establish the front of the range on l'Islet lake, and its outlet. There are a few trout in the lake, but they are very

small. Along the lake, the land is low, and about twenty chains to the west of the lake, a small chain of heights begins and continues towards the south in the same direction as the line. Between the lots 16 and 17 the land is very level.

I explored the unsurveyed section between the Castor brook range and the section which I divided to the west of the township, and found it fit for cultivation were it not for the Potato brook, which it crosses, and of which the banks, as already stated, are very high. It is the finest section of the township, on the south west side of the brook.

(*E.-A. LeBoutillier*, 18th July, 1887.)

COUNTY OF SAGUENAY.

—
Township of Albert.

With respect to the physical characteristics of the land surveyed, I am glad to be able to say that this part of the township of Albert offers a fine field for colonization. In this township, as in all the townships of the Saguenay district, the land is uneven and broken ; that is to say, there are no wide valleys, nor large plateaux, but the settler can cultivate to the base of all the mountains, and the soil is of excellent quality.

The mountains bordering the Saguenay river are generally high and contain magnificent quarries of granite similar in all respects to those of Ha! Ha! Bay.

The outlines of this part of the township of Albert run through a broken and hilly country, but traversed here and there by valleys of fine land.

The lots specified by letters at Cape à la Boule are mountainous and useless for agricultural purposes.

The line between ranges II and III, Saguenay, from lot No. 1, as far as lot No. 10, traverses a level tract of excellent land. From lot No. 10 to the outline the land is rough, but may be cultivated. On the line between ranges I and II the land is even and of excellent quality from lot No. 10 to No. 14. From the latter to the outline, the land is hilly, but fit for colonization.

The soil, generally speaking, is a mixture of yellow and grey earth. In certain places, as in the south part of lots 10, 11, 12 and 13 of range II, Saguenay, there is a bed of black earth over a clayey subsoil.

This township is admirably well timbered. Almost every variety of timber growing in the district is to be found in it. A part of the logs have been cut, but there are still quantities of building timber left.

Lake à la Boule is remarkable for its sinuous contour, the unequal depth of its waters, and especially for the trout and salmon which abound in it.

The water is pure and limpid, and in certain places is as much as thirty feet in depth, while in the middle of the lake there are some banks of sand, where there is hardly four feet of water.

The fish breeding establishment at Tadousac has had gates placed at the discharge of the lake and has stocked it with sea-trout and California salmon. The fish have multiplied with great rapidity. The trout measure from 22 to 25 inches in length.

The survey of this part of the township of Albert was waited for with much impatience by parties who wished to settle there, and nearly all the lots will be bought up as soon as they are offered for sale.

I consulted the mayor and some citizens of Tadousac with regard to the location of a colonization road, and they agreed with me that it would be opportune to suggest the opening of a road which would follow the line between ranges II and III, Saguenay, and come out on the Albert road. The settlers themselves could open a road to lead from Anse de la Grosse-Roche, and another from Anse à Passe-Pierre to the Albert road passing over lot No. 4.

Township of Bergeronnes.

In this locality, there is very little good land susceptible of tillage. Bald and rocky mountains cover three fourths of the surface of the surveyed ground. However, there is a small valley immediately on the banks of the river, along its whole length, which, together with a certain quantity of timber on the mountain sides, imparts to these lots some value for settlers.

I take the liberty of calling attention to the irregularity of the scaling of the Little Bergeronnes river and lake aux Sables, at its head.

The best piece of land in this region occurs in range C and part of block D. It would be useful for the Department to get it surveyed, as it is alluvial land, well wooded, and well known to the settlers in the neighborhood. But I do not believe there will be ever any large settlements there. As for the lots I surveyed on the Little Bergeronnes river, I desire to call special attention to the fact that they are mostly uncultivable and to suggest that they be sold at a reduced price. I next proceeded to survey the east and west range on both sides of the Great Bergeronnes river, from the 2nd

range to the 40th lot, through the finest land in the world as regards the quality of its soil and the richness of its timber. There are no mountains in this section, except to the west of lake à Beaulieu.

The soil of all the land surveyed by me on the Great Bergeronnes river is a very rich alluvion, promising great fertility. The timber is distributed in equal abundance all over. The prevailing kinds are merchantable white pine, spruce and birch. In fact, I recommend this fine tract, so rich by reason of its soil and timber. The land adjoining to the west and north is also rich, and I would suggest that it be surveyed as soon as possible.

I scaled the river Bas de Soie for a distance of three miles, less a few chains, from the prolongation of the trial line between lots eight and nine in the west range, to the intersection of the second range line. There is a pretty large falls at the point where this river intersects the line in rear of the second range. The waters of this river are very pure. There is a fine tract of land to the west and on the right bank of the river, nearly all occupied by some ten settlers, and I would recommend that it be surveyed. Above and adjacent to the 24th lot, there is a large block of arable land unsurveyed, on which some 20 families are settled. The land stretches unbroken to the side line of the township of Tadousac towards the north, extending to the east a distance of 2 miles to river à Baude and to the west to the bare and barren mountains which form the western watershed of the river à Baude aforesaid to the township of Albert. The tract last mentioned should be surveyed so that the Department may get payment.

The land on both sides of the river à Baude are obstructed by its enormous banks, which constitute a series of precipices on both sides of the river.

Bare, steep and barren mountains take up nearly the whole of the east range and a notable part of the west range, as detailed in my notes of survey and indicated on the plan.

(*Geo.-B. du Tremblay*, 6th May, 1878.)

With regard to the topography and the character of the township of Bergeronnes in general, I have to say in the first place that the land is hilly and mountainous, and it would be difficult for any one who had had only

a general view of the township to admit that it contains any land fit for settlement. There are, however, some fine valleys. This township is covered by a fine and luxuriant forest, comprising all kinds of timber: spruce, balsam, white birch, cedar, ash, pine, yellow birch, cypress, poplar, &c. Quantities of pine and spruce logs may still be made here.

In the third range to the south west of the river Bas de Soie, apart from the lots or blocks which are occupied, there is nothing but naked rock of no value whatever.

The lots in the south west range are generally fine, although cut across near the middle by rocks. Mr. Julien Bouchard and his two brothers and Mr. Elie Lavoie have been living on their respective lots for several years. They appear to be comfortably off.

The south line of lot No. 9, on the west side of the river Bas de Soie, runs up a mountain about twelve hundred feet about the level of the river. This height of land seems to begin near the Maritime road, at the river Petite Bergeronnes, and runs in a northerly direction. The line between ranges VI and VII crosses a rough and mountainous tract, well wooded, but of no value except for lumbering. To the east of the river Bas de Soie the land is more level. The line between ranges West and VI, and its prolongation between ranges V and VI, runs through a comparatively fine valley, traversed here and there by mountains. The soil is generally a rich yellow earth, and the subsoil in some places clayey. The line between ranges V and West passes through a fine valley of level land, timbered with spruce, cypress, balsam and white birch. As this same valley continues to the north of lot 40, I prolonged the lines between ranges V and VI, and V and West, in order to complete the subdivision of the good land.

A swamp, shown on the annexed plan of the township of Bergeronnes, covers a part of ranges II and III. The soil in this swamp is composed of yellow and grey sand, covered with a thin layer of mould. There are only a few scattered clumps of trees to be seen growing upon it, resembling small islets in a large lake.

The soil in range IV and a part of range III is composed of yellow earth and sand, fit for cultivation. In the range N. E. the land is generally level, and the soil the same as in the preceding range. At the same time that I scaled a part of the river Bas de Soie, I also scaled lake Raymond and lake à la Truite. Lake Raymond is only a widening cut of the river Bas de Soie. The land on the north side is low, and a certain extent of it is inundated

when the waters are high. The water is good and not over twelve or fifteen feet in depth. The water of lake à la Truite is also pure and wholesome. This lake is of angular shape and surrounded by low hills. As its name indicates, it swarms with trout. The discharge, after passing through a series of small ponds, loses itself in lake Raymond.

The total superficies of the land comprised in this survey is 16,224 acres.

As the Government is now opening a colonization road known by the name of the lake à Beaulieu road (chemin du lac à Beaulieu) within the limits of the township of Bergeronnes, I take the liberty of suggesting that this road might advantageously follow more or less closely the direction indicated on the annexed plan by a dotted line, then turn at right angles on the line between the townships of Bergeronnes and Escoumains as far as the middle of range II of Escoumains, where it would join the road now used and known as the Boissonneau concession road (chemin de la concession de Boissonneau). A colonization road following the line between range V and West and joining the lake à Beaulieu road would be very easy to make and would open a fine valley to colonization.

(*Etz. Boivin*, 21st March, 1883.)

Township of Escoumains.

As your Department is already in possession of reports of survey of this part of the township of Escoumains, it will, perhaps, suffice here to make but a few general remarks on the appearance and nature of the land.

The line between ranges I and III traverses an elevated and very uneven tract. It passes over a chain of hills reaching a height of between seven and eight hundred feet above the St. Lawrence, intersected here and there by water-courses. The timber on these hills is of very little value, and in many places there is none at all; but, north west and south east of this line, the land is of a different character. Range III and range I are both well timbered. A portion of the logs have been cut.

From lot 42, as far as the river Petite Escoumains, about the middle of range I, there are some very fine growths of cedar.

The lots of ranges I and II are nearly all occupied; clearings and improvements have been begun on the Maritime road.

From lot 19 to the township of Iberville, the soil is generally composed of yellow earth and grey and yellow sand. Lots Nos. 27, 28 and 29 contain some flat lands, the soil of which is clayey. The same soil is also met with on the borders of the Bay des Escoumains, on the lots of range II, and those of range S. W. from the line between ranges II and III to lot No. 8.

In range A and range I, south west of the river Escoumains, the soil, composed of yellow and grey sand, is poor; a large part being nothing more than a bare expanse of land, and the rest covered with cypress and white birch.

The village of Escoumains is one of the finest and most prosperous in the county of Saguenay. The saw mills of Mr. Lamontagne employ daily between 150 to 200 men. A good deal is said about the early construction of a wharf at the mouth of the Bay des Escoumains.

In conclusion, I may say that, at Escoumains as at many other places in the county of Saguenay, there is in proportion to the population a large amount of industry and activity, but too few engage in the cultivation of the soil. This vigorous population show no ambition for any other life than that of the lumber-camp, the saw-mill, or the sea.

(*Elzéar Boivin*, 14th May, 1883.)

Township of Iberville.

After having surveyed the seigniorial line and the centre line from the river to the front of the 9th range, I ran the front lines of the fifth, sixth, seventh, eighth and ninth ranges, and laid off between each respective lot an offset or direction line. In the survey of this part of the township, I met the river Sault au Mouton, the banks of which are composed of metamorphic rocks and are so steep as to be almost inaccessible. Its course is very rapid, but there is no suitable place for establishing a mill except at the mouth where there is now one in operation.

The geographical features of the land present nothing worthy of remark. The surface is undulating and the soil though not alluvial is of

good quality. There is neither marsh nor meadow, and the hills are so low as to offer no inconveniences to cultivation. The ninth, eighth and part of the seventh ranges are covered with a rich growth of timber of every kind. The sixth and fifth ranges have been burnt and are in many places covered with rocks. The unsubdivided part, lying to the north east of the centre line, is composed of a rich soil, well wooded, and might be advantageously surveyed. The whole area of the land I have surveyed is eleven thousand nine hundred and sixty-six acres (11,966).

(*Geo.-B. du Tremblay*, 13th May, 1879.)

Township of Manicouagan.

The township of Manicouagan, situated on the left bank of the St. Lawrence, surrounded by the rivers aux Outardes and Manicouagan, forms a peninsula of very agreeable aspect. On landing on this peninsula, I remarked the presence of a turf, four or five feet in depth, in a section of part of the first range. From the starting point A, I beheld an immense swamp (*savane*) extending out of sight on all sides. This swamp was dry when I saw it. It is generally covered with turf and tamarac.

The south portion, or about one-half of the township of Manicouagan, is partly swampy and unfit for cultivation, while the dry parts are generally composed of very poor yellow soil. All the northern part of the township, on the other hand, is composed of black earth, a very rich arable land. The whole surface of this peninsula is so even and regular that it almost blends with the water line. In the whole course of my survey, I found no hill or hollow of any consequence, or any other obstacle, except in the immediate vicinity of the river aux Outardes, in the fourth range, and of the river Manicouagan, in a part of the seventh range. There is also a rocky bluff on lots 22, 23 and 24 in the 6th range, as shown on the plan. The south and east sides of the peninsula are from thirty to sixty feet high and almost vertical. The west side is low and covered with growing timber.

The south part of the peninsula is covered with a thick growth of stunted black spruce, cypress and tamarac. All the rest, generally, outside of the swamp, is covered with large timber of great height, consisting of

spruce, balsam, white pine, white birch, and alders. Several thousand pine and spruce logs might be cut here

The squatters, occupying the Point aux Outardes and Point Manicouagan, speak favorably of the climate, which is apparently not affected by the swamp. Early frosts are never felt there, and last fall I saw some vegetables and cereals which attested the excellence of the climate.

The settlers in this locality are occupied during a great part of the summer in cutting and piling up in immense stacks the wild hay which grows abundantly on the beaches shown on my plan. It is needless to say that these grass-bearing flats are of great value to the settlers. They also grow large quantities of potatoes. One of them gathered and sold six hundred bushels last year to Messrs Girouard & Beaudet at Betsiamits. The celebrated beaches or shoals of Manicouagan are immense. By calculation I found that the lightship stationed off there by the Department of Marine is three miles and fifty-seven chains from the shore of the St. Lawrence. The position of this lightship is more fully detailed at the end of the field book.

During my stay I had an opportunity of seeing on these beaches the myriads of birds which frequent the river. Seals abound on these shoals, and one of the inhabitants of the locality killed two hundred last year opposite Point à Paradis. The Montagnais also kill great numbers, chiefly at the foot of the falls of the rivers Manicouagan and aux Outardes.

On each of these two rivers there is a sort of natural wharf where a vessel of the size of a schooner may safely make fast at high water. The positions of both are indicated on my plan.

At the bottom of Paint Bay (Anse à la Peinture), there is a remarkable deposit of ferruginous ochre. This ochre is generally yellow or reddish. There are also quantities of brown color. This latter brings a high price in the market, under the name of sienna.

Ferruginous water generally oozes from these ochres and forms sloughs more or less deep in the hollows.

(*G.-B. du Tremblay*, 4th April, 1883.)

COUNTY OF ST. MAURICE.

—
Township of Belleau.

The region in which the three first ranges of the township of Belleau are situated, from the line of lots number seven or eight, is elevated, cut in some places by small hills, with a stony soil; but this will not be an obstacle to the settlement of nearly all these ranges, of which the soil, in general, is similar to that of the township of Decalounes, which is of yellow and brown loam and appeared to me to be fit for agricultural purposes. There are no swamps, marshes or steep mountains. Two settlers, named Narcisse St. Germain and Israël Peltier, are settled in the second range of Belleau, and frequently expressed to me their satisfaction at having located there, and their crops, which I had occasion to see, presented a vigorous growth, unsurpassed in any other locality, proving that the township of Belleau is favored with a fertile soil.

The surroundings of the Clear Water lake, situated for the greater part in the township of Caxton, are extremely mountainous and stony and mostly everywhere unfit for cultivation.

The chief timber in these three ranges of the township of Belleau consists of birch, maple, cedar, spruce and fir. Everywhere the wood is of fine growth and size. The amount of pine remaining is small here as everywhere else; it has been recklessly cut down by the lumbermen who have carried on operations there for many years. If there were some means, not too expensive, to supervise the cutting down of timber on Crown lands, the Government would be benefitted by it, as it would prevent the waste on a large scale, which is being practised in the public domain.

The water powers in the township of Belleau are, one, on the Red river, and the other, at the discharge of the Clear Water lake, where falls occur which are powerful enough to run mills.

(*T.-C. de la Chevrotière*, 28th November, 1870.)

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As to the land by me surveyed and subdivided in Belleau, the soil, though fertile, is disadvantageous for cultivation and settlement on account of its rocky and hilly character in places; there are, however, some good

table-lands in these two ranges, especially near the line of the Caxton gore. The timber generally is fine and tall and consists usually of white birch, maple and birch. I also met several maple groves, which seemed to have been already worked. White and red pine are common enough. There is a border of red pine to the mountains around the lakes; among others the one called Red Pine Lake and the white and red pine, as well as the white spruce, are presently being cut off for the lumber trade, especially around lake à l'Isle, where dams for the purpose of driving the timber have been constructed at the discharges of the principal lakes.

(*T.-C. de la Chevrotière*, 8th March, 1882.)

Township of Desaulniers.

The land I surveyed and subdivided into farm lots in the first range of this township is well suited to settlement, as the river du Loup cuts a portion of the lots of the range, creating on each side, generally speaking, fine low grounds. The soil of the latter is a black earth, but upon the heights it is of gray sand.

The timber is fine and tall, and consists of birch, white birch, white and red pine and white spruce. There is still a good deal of white pine, but the best has already been cut off for the trade. The three first lots in the first range of the township of Desaulniers form part of the place known as "The Red Pines." These lots are partly closed, having been formerly swept over by fire and the only growth now upon them, properly speaking may be said to be of blueberry bushes.

(*T.-C. de la Chevrotière*, 8th March, 1882.)

Gore of Caxton.

The soil generally is composed of yellow mould, rocky and inferior in quality; the mountains lie in close proximity to one another: the principal woods are white spruce, fir, hemlock, maple, birch and beech.

The soil in all the sections of the gore of Caxton is composed of yellow and rocky loam; the land although mountainous in some parts is fit for cultivation; the growth of timber is of very fine appearance.

(*L.-A.-O. Arcand*, 8th February, 1876.)

COUNTY OF TEMISCOUATA.

—
Township of Begon.

Although there are no buildings on the fifth range, it seems, from the information given me, that this range is taken up by twenty-two or twenty-three settlers. The most striking feature of this place is the extraordinary height of the banks of the rivers and also the immense extent of land nearly all covered with dead-wood, such as white birch, fir, spruce, birch, &c. The land is generally level to the banks of the five rivers,—Trois-Pistoles, Boisbouscache, aux Sapins, aux Bouleaux and aux Perdrix. The soil is generally very good for a small distance from each of these rivers; and there is even, along the Trois-Pistoles river, certain small flats which are of the very best land that can be found, covered with large timber,—elm, ash, willow. There is, at the mouth of the Boisbouscache river, a small island composed of splendid land. As for merchantable timber there is scarcely any left; it has been either destroyed by fire or taken away by lumbermen.

(*G.-A. Doucet*, 19th April, 1870.)

I proceeded to the subdivision of the base of the seventh range. Following this last as far as range A, I found good soil, adapted to the growth of wheat, being for the most part good loam, the surface in certain places being covered with a layer of black mould, with a good clay subsoil, which renders it very fit for raising hay; it is somewhat broken, it is true, but not so much so as to be an obstacle to colonization. I also found, principally in the valleys, this line somewhat stony, but nothing formidable, except on the four first lots which at their base are covered with rocks, extending for about twenty chains to the south east. Following the base of the eighth range from the centre line towards the south west, I found a soil very much like that of the seventh range, covered in certain places with cedar, mixed wood, and hard wood, with this difference that I did not meet any rocks, these last extending to the north of the river Boisbouscache.

Following the base of the sixth range from the centre line, I found the first lot composed of good soil, and covered with excellent wood, but the other lots, to number twenty-eight, inclusively, are of very mediocre quality. From this point to the rear line of range A, I met very good soil, somewhat broken, it is true, but not sufficiently so to be an obstacle to colonization ; on the contrary, the higher parts need but little labor to clear them. Following the first, second, third, fourth and fifth ranges to the north east of range A, and finding no material difference in the quality of the soil and timber, where it had not been ravaged by fire, I may say that these last ranges are exceptionally fine, and have a soil suited to all kinds of tillage, being alternately a good loam and good clay. The timber is frequently a mixture of cedar, poplar and alder, and very often mixed with hard wood, but there is very little hard wood proper.

As regards the opening of these lands, in dividing the first range to the south west of range B, I also found a very fertile soil, as far as the Trois-Pistoles river, of which the banks, being very steep, have necessarily a dry soil ; but from this last I met a level and fertile soil, to the south west line of Bégon, which can also be surmised from the honest comfort in which the settlers live.

(*J.-Evariste St. Pierre*, 30th July, 1872.)

Township of Botsford.

The results of this survey fully warrant the opinion hitherto entertained of the value of these lands. This township, nearly all over, is eminently fit for settlement ; there are a few mountains, but they are mostly all covered with arable soil. Hard wood prevails in the first range. There is not a single lot crossed by my lines, which does not show birch in abundance ; sugaries are very numerous and extensive ; the cedar groves are not generally as extensive as in the townships which I previously traversed. It may be remarked that cedar occurs also here on the slopes of the mountains, in many places, which shows that the land is arable. Another proof in favor of the excellence of these lands is that the timber is remarkably tall and large. I frequently met pine logging roads running in all directions, so that all the fine pine has been removed. As for tamarac, I did not come across any, or in such small quantity that it was not worth mentioning. There are no swamps in this township. To conclude as

regards the timber, I may say without exaggeration that hard wood is more abundant than in the other townships which I have thus far seen. The soil is stony in certain places; but these places are so few, that I do not think them worthy of remark. However, I hold above all to be truthful in my report. All the lots along the Saint-Francis river are first class; to appreciate the truth of this statement, one has only to see the comfortable position to which Messrs Joseph Nadeau and John N. Morrison, who reside on these lots, have already attained. I have no doubt that when these lands are known, they will be almost immediately taken up and settled; but there is one drawback which is calculated to greatly delay the progress of colonization in these localities—I mean the want of communication with the settlements below.

(*J.-N. Duval*, 28th January, 1865.)

Township of Cabano.

The two first ranges of this township are cedar groves on excellent grey and black soil. The lands to the north east of the river Bleue are just as fine and level as those along the Cabano river.

(*F.-A. Têtu*, 15th November, 1864.)

I began by running the range line between the ranges 3 and 4. In following this line, I passed through a number of cedar groves, principally to the north east of the centre line, and in the south west section of this range, where I crossed one of great extent. I also traversed land somewhat broken, it is true, but fertile, judging from the excellent quality of the soil, which is covered on the heights with good mixed hard and soft wood, and in the bottom lands generally with cedar, yet somewhat stony in certain sections. It is to be remarked that the soil in the cedar groves, instead of being of a wet black earth, is good clay, covered with a light coat of black mould. No wild meadows occur, but in certain sections the soil would be particularly suited to the growth of hay. In following the range line between the fourth and fifth ranges, I found the soil mostly the same, except in the south west section, where I did not meet the cedar grove already spoken of. There is also to the north west of this cedar grove, and near

the centre line, a splendid ridge of maple groves, used as sugaries. The central part of the range line between the fifth and sixth ranges is low land covered with cedar, except on the banks of the Bleue river, where, as far as I can judge, the soil is mostly clay and covered with alders. The two extremities of this last range are somewhat broken, but the soil, on the whole, is so rich that I would recommend this last line to make a double range. There is, in the north east part of this range line, a small mountain which has been burnt over, and which is now covered with a second growth, consisting of white birch, fir, spruce, and in some spots of a little maple. Following the range line between the sixth and seventh ranges I met a very good soil, generally covered with mixed wood, except in the bottoms where, as elsewhere generally, cedar predominates, but nothing that can prevent the settler from locating there. On the whole, I would recommend the surveyed part of this township to intending settlers and advise them to settle there.

(*J.-E. St-Fierre*, 30th July, 1869.)

Township of Demers.

Throughout my operations I only met one small lake called Trout lake, the banks of which are not very high and which is surrounded by mixed timber. As for the quality of the land embraced in this survey, I may say that it is generally very good, although somewhat stony in certain places, but no fixed rocks are met with. The region is also well adapted to settlement, as it is generally level, especially along the range line between the sixth and seventh ranges. There are also facilities for making a good road in the northeastern part of this township.

The land in this township which remains to be surveyed seems to me rather good, and hunters who have visited it agree in saying that it is well fitted for tillage.

(*G.-A. Doucet*, 20th February, 1865)

Township of Estcourt.

From the north east bank of the Saint-Francis river to the south west of the Portage, I ran a line in the astronomical direction north 45° east, which I prolonged to Long lake, that is to say, for a distance of two hundred and thirty-five chains and sixteen links. On the course of this line for 123 chains, the land is level and the wood mixed, comprising cedar, fir, spruce and birch. The remainder of the line passes through a large maple grove. This land rises to 140 chains, then gently slopes towards the lake for a distance of 122 chains. The soil on all the line is of excellent quality, as far as can be judged by the size of the timber, which is large and tall, an infallible indication of great fertility. The Blue river has a strong current in some places, and all the branches furnish water powers. The land on both banks, as also on those of its tributaries, is of superior quality. The poplar and elm abound, specially on the banks of the main river, which are everywhere covered by these trees. I met no stones.

All these advantages combined render this place suitable for settlement. But this is not all ; at a short distance from the Blue river, there is a series of splendid maple groves, which appeared to me to be very extensive, so that the farmer is certain to find therein all that he needs for the prosperity of agriculture, a fertile soil free from rocks, numerous and powerful water powers, wood of the best quality, rich and abundant sugaries. Could a finer prospect ever be offered to the Canadian pioneer ?

The north east lateral line of the township of Estcourt has been prolonged to the river Cabano, that is to say, for a distance of ten miles and sixty links. The first mile crosses a very high mountain, but the soil is of good quality and covered with hard wood. The second mile finishes on the south west side of another, but smaller mountain than the first, and a branch of the Blue river flows between these two mountains. From the top of the highest, in very clear weather, I took in at a glance the whole township of Estcourt, from which I judged that it is in general pretty level and well wooded, while a closer examination enables me to state that there is hard wood everywhere mixed with cedar, fir and spruce ; the trees are very large and well shaped. At twenty-three chains on the third mile, the line cuts one of the branches of the Blue river, which at this point is seventy-two links wide and flows to the north east. As far as there the land slopes a good deal ; the most abundant woods are generally birch, fir and cedar ; the south east bank of the river is fifty feet high here. On the

last section of this mile, there is some pine, and also, as in the first section, cedar, fir and spruce. The land along the whole extent of this mile is generally good. The fourth, fifth and sixth miles are generally level, the soil is good mostly everywhere and comparatively free from rocks, and the timber is again cedar, fir and spruce. On the seventh mile the timber continues the same, and the soil is of as good a quality, but more rolling. At seventy-one chains on this mile, the line cuts the main branch of the Blue river, which in this section measures one chain in width and runs to the north east. The eighth, ninth and tenth miles are level; as for the timber and the quality of the soil, &c., they are very much similar to the last preceding miles. At fifty-eight chains on the eleventh mile, I met the Cabano river. At about fifty chains from its mouth, the land slopes towards the river, and the soil is about of the same description.

I may state in conclusion, to sum up this report, that the township of Estcourt is one of the finest which has ever been explored in this country. It would not be easy to find many others so level and combining in so high a degree all the advantages which it contains. The climate is generally warmer than on the shores of the Saint-Lawrence; this winter there has been less snow and the cold has been less severe than in the parishes on the shores of the river.

(*E. Casgrain*, 18th April, 1864.)

Along the front between the fifth and sixth ranges, we meet but one river, called the Blue river, on the 54th lot. It is one chain wide and it flows south east; its bed being composed of very fine sand, mixed with grey and white pebbles. This line is, moreover, cut at intervals by small brooks running towards the north east. On the way from one extremity to the other of this front range, I noticed that the land was very arable, grey and not very rocky. The most common woods are the cedar, birch, fir and spruce. The surface is generally level; I met some hard wood ridges, but not high or steep enough to prevent the making of a good road.

Between the sixteenth and seventeenth lots, I ran a line running towards the north east towards the depths of the sixth and seventh ranges.

Along the whole of my lines, the land traversed was level and very fit for tillage, being composed generally of a grey soil. The most abundant woods in this part are cedar, fir and birch; there are also a few poplars.

Between the thirty-ninth and fortieth lots of the front line, I ran a centre line towards the south-west, to determine the depths of the fourth, fifth, sixth and eighth ranges. This line passes over generally level land except on the sixth and seventh ranges, which are very broken in the neighborhood of the Blue river, which crosses at the forty-fourth chain on the sixth range. I subdivided the ground into sixty-six lots of thirteen chains, on both sides of the Ponhenagamook road, from the south east line of the township of Estcourt. This line crosses the most level land of the whole township. It is everywhere very fit for tillage and very free from stones. The forest growth is very vigorous ; there are magnificent maple groves on the ninth, tenth, eleventh, nineteenth, twentieth and twenty-first lots, which will make magnificent settlements. On the remainder of the road, the timber comprises cedar, birch, fir and spruce, which are all remarkable for their size. Two rivers cross this line. The first on the sixth lot is not very large and runs to the south west ; its width is forty links and it is fordable. The second is the Blue river, crossing the sixty-fourth lot and running to the south east ; it is one chain wide and its depth of water is three feet. Its bed is covered with very fine sand.

Range VIII. At seventeen chains, on the sixty-sixth lot, I struck the south east lateral line of the township of Estcourt. The land is generally level and cultivable and shows few stones or rocks. There are splendid maple groves on the second, third, fourth and fifth lots, and on the remainder of the line the most abundant woods are cedar, fir, birch and spruce ; there are also a few pine of inferior quality which the lumbermen overlooked.

Range VII. I finally went to the post between the sixth and seventh ranges, on the centre line, from which I ran a front line parallel to the preceding, running to the south east 355 chains, and towards the north west 299 chains, which front I divided into lots of thirteen chains. Like the preceding it is cut by the two branches of the Blue river, viz : on the thirty-fourth and forty-sixth lots, and both streams run towards the south southwest between very high banks ; otherwise, the land is generally level on this line and everywhere cultivable. At seventeen chains on the sixty-sixth lot, we met the lateral line of the township. My survey ended there.

From this report, it is easy conclude that this township is admirably qualified for settlement, being generally level, comparatively free from rocks, well timbered and watered by a rather large river ; there is no place where the land is not of good quality, and it is everywhere cultivable ; in certain places indicated, the soil is even of superior quality. Then are a few ridges

here and there, but they are all cultivable. I can therefore say in concluding this report without fear of being taxed with exaggeration, that the township of Estcourt, thanks to all these advantages so rarely found together, is one of the most deserving of the attention of courageous settlers.

(*E. Casgrain*, October, 1864.)

Before closing this brief report of my operations and observations on the territory explored, I may remark that this last part of the township of Estcourt, which I was instructed to survey, is very fit for tillage; the soil being generally level, not very rocky and well watered, and, as shown by my report, offering great attractions to the settler.

(*E. Casgrain*, February, 1866.)

Township of Hocquart.

The land along this line is generally of inferior quality, stony, marshy and very uneven; nevertheless, on the seventh and eighth ranges, there are fine maple groves, where sugar is made every year. By what I could see from the heights, a part of the fifth and sixth ranges consists of land of mediocre quality for cultivation, but the upper part of the township seemed to be nearly all in maple groves, although the land appeared to me to be mountainous and uneven. As in the other sections of the township, the merchantable timber has been cut off long since.

(*Chas. Fournier*, 10th December, 1864.)

Township of Parkington.

This township is nearly all well adapted to cultivation and offers very great advantages for colonization. The soil is rich and composed in part of grey loam. The timber is generally very large and tall over the whole tract surveyed, which is a proof of the superiority of the land. Although I made this survey when there were three feet of snow on the ground, I can

nevertheless say with certainty that it is not stony, as all the posts were solidly placed in the earth. The rivers and brooks crossed in this section are very few, which is the reason why the land is generally sandy; nevertheless we frequently come across fine valleys (or low lands), so that nothing is wanting for successful grain culture. The mountains, in this district, are covered with soil and have gentle slopes.

Hard wood predominates; there are scarcely any lots, crossed by my lines, on which I noticed any birch, but large and splendid maple groves are met, very fit to form fine sugaries. I also noticed certain cedar groves, small, it is true, but so fine as to make it my duty to mention them. The cedars are straight and of an extraordinary size and length, and the soil in these sections is very rich. Old logging roads cross this township, in every direction; and some rather fine pine, but in very small quantity, can still be seen in some spots. As for tamarac, I did not see any. I need not insist on the value and attractiveness of the lands just traversed.

(*J.-N. Dugal, 26th August, 1866.*)

Townships of Parkington and Robinson.

The most of the land subdivided by me in these two townships is eminently adapted to tillage, with the exception of a few rocky outcrops in certain spots, so that nearly the whole of it offers guarantees of comfort to the settlers who will not fail to locate there as soon as your Department throws it open to purchase. The surface of the two townships is pretty broken, cut, as it is, in all directions by brooks, rivers and their small affluents, which come down from both sides of the heights into the valleys and upon some of which mills can be erected at small cost and with the prospect of great usefulness to the settlers. These tributaries generally take their rise in the surrounding lakes.

The soil, in such broken land, is not, of course, composed of alluvion and clay; it is rather a grey and yellow loam mixed with sand, overlaid with a fertile mould, which promises well, judging from the luxuriant forests of all kinds of wood upon it. Ash, white pine and cedar predominate in all the bottoms of the Baker river and a part of its tributaries, covering land of the highest value. There is no longer any great quantity of merchantable timber along this river and on the heights in the two

townships. Pine, which was never abundant, is now all gone, and on the heights and their slopes, the maple, birch, beech, fir and spruce predominate. All the merchantable spruce, however, has been cut off.

The Baker river, which discharges into lake Mernimpticook and thence into the river St. John, is a very pretty little stream with a sandy and rockless bed, and without falls, but, in certain places, with a rapid and shallow current, which renders it navigable only by canoes. The lakes, which empty into it, are deep and, as they are full of fish, would be of great assistance to the settlers locating in these townships, if their finny wealth was not in great part destroyed in summer by poachers from New-Brunswick, who ascend this river armed with nets and *negogs* and commit irreparable havoc among the large red and white trout. The so called fishery guardians do not seem to pay any attention to this great wrong, as not one of them has yet taken the trouble to pay this place a visit, though one is imperatively demanded.

In the township of Robinson, some clearings have been made by settlers from New-Brunswick, who are located and reside on the shores of the magnificent lake Baker. They have selected this place in order to be nearer the church erected at the other end of the lake, a distance of four or five miles. Here as elsewhere the land is excellent.

(*F.-A. Tétu*, 19th January, 1881.)

Township of Raudot.

Resides the remarks contained in my field book, I think it right to give you a brief report on the soil, timber, &c., of the section I surveyed in this township.

SOIL.—The first range of the township of Raudot is generally good loam mixed with sandy loam on which hard wood prevails and a large number of sugaries have been established ; it is also composed of good clay bottom lands well adapted to tillage. With several slight deviations, to avoid two small lakes and one ridge, a good road might be opened from one end to the other on this front. The second range is generally of good land, in the north east section, from one end to the other of the lots, but towards the middle of the south west section, only two thirds of the lots are good ; the remainder, near the front between the second and third ranges, is low

and swampy. It will never be possible to open a road on this front, from one end to the other, for this reason.

The third range is also generally very good land, except a small part of the front of these lots between the second and third ranges. There is a number of sugaries on this range. The same may be said of the fourth range, near the front; a road is only needed to open up these lands promptly. In all the section which I surveyed, the land is uneven, being nothing but a mass of hillocks, hills and dales, of which no part of any extent is level; nevertheless there are no rocky outcrops or any uncultivable mountains in the sections through which I passed; a road can be made on this front from one end to the other, with the exceptions specified further on.

TIMBER.—These lots are wooded with fir, white birch, birch, maple, a few beech and spruce. All this last kind of wood which was fit for logs, in the neighborhood of and along the rivers, has been cut off years ago. We met pine stumps here and there, but not one single pine tree is standing now, where I passed.

LAKES.—It is seldom, on the south side of the St. Lawrence, and on so small an extent of land as that surveyed by me in Raudot, that so many lakes occur. I was told that there is another pretty large one, on the fourth range, towards the lots numbers twelve and eighteen or twenty, but I did not see it.

Lake St. John is generally deep, although the lands, on both sides, near the lake are level or gradually sloping, and seem to be well wooded with hard and soft wood, especially towards the south west part of the lake. Viewed from the lake, and judging from the appearance of the timber which surround it, the land seems good for tillage. There is a great deal of fish in this lake; we caught three kinds white fish, of which some measured from fifteen to eighteen inches in length, pickerel and trout. They say there is a fourth kind, but we did not catch any. The small lake which discharges into the river Boisbouscache, on the lots number three and four of the third range, contains, they say, a great deal of trout; we did not fish there. The other lakes are not very deep, and some of them, although covered all over throughout the year with water, look more like swamps than lakes, and contain no fish.

(*C.-F. Fournier*, December, 1865-66.)

COUNTY OF TERREBONNE.

Townships of Beresford and Howard.

As my instructions expressly enjoined me to only survey in Howard and Beresford the most suitable settling land, I thought it my duty to not touch Howard on account of its extremely mountainous character, its stony soil and the poor quality of its hard wood, which render it altogether unfit for colonization; perhaps, it is better in the west towards the river Rouge; still nothing can be seen but mountains.

I ran the division line between Howard and Beresford and planted a boundary and post; I prolonged this division line, which I chained and bounded, as far as the central line, that is, to lot number twenty-three. The land on this tract is fine, except a few lots, and even there is only a small part of these bad. But on the twenty-first lot, a terrible mountain is met, over which I deemed it advisable not to run the centre line. I ran and bounded the second range line to the same depth as the preceding, that is to say, to the centre line. This range line is fine and there is a great deal of hard wood. I ran the third range line only to the depth of ten lots. The tenth lot is cut by a large lake, which is said to be about four to five miles in length. I ran a fourth range line to the same depth as the preceding, that is, ten lots, not desiring to prolong it, until after the scaling of the lake. From the fourth range line I chained the fourth range, which the river du Nord cuts at twenty-six chains from the last range line.

I did not notice in the course of my survey any remarkable river, except the river du Nord; but I cannot speak of it until after scaling it. The largest brook is the discharge of lake Cornu, which cuts the second range line on lot nine, and falls, I think, into the large lake, running consequently to the north east. Its average width is from forty-five to sixty links. I did not notice any falls or mill sites. There are swamps only around the lakes, and they are not of great extent; only the land is very stony. Still, these little swamps will always be useful to settlers, on account of their timber, as there is no pine at all. This section of Beresford would certainly make fine settlements.

(*G. Laviolette*, June 3rd, 1855.)

Township of Wexford.

The township of Wexford presents a very broken surface, composed of mountains, some of which are very high, of valleys and of level land, with a great number of lakes, of which some are rather large. All the mountains are composed of primitive rocks, all dipping in the same direction. The variation of the needle, which fluctuates in a rather astonishing manner from one point to another, indicates that the most of these mountains contain iron. The surface of the soil is everywhere covered with all kinds of wood, most of which are of fine growth. It is especially on the tops and slope, of the mountains that we find fine hard wood, which is rather singular; the summits and slopes of some of these mountains show excellent lands. The soil is composed of a light loam, partly stony. Nearly all the lots situated near Chertsey also show very good lands, but, after all, as a matter of fact, a part of all the lots of this township is fit for cultivation. The centre line proved that the portion of the township, which remains to be divided, will give to both sides of this line lots which seem better than those already divided; at least, everything points to this conclusion, judging from the view I had from the top of some high mountains.

(*F.-G.-V. Regnaud*, 10th December, 1851.)

The township of Wexford is very mountainous and broken, filled with hills and valleys and dotted with a considerable number of fine lakes, especially in its north eastern part. All the larger lakes are deep, and their waters clear, limpid and very wholesome. The slope of the mountains shows a land admirably adapted to cultivation. The rocks of the north east section are, so to say, all alike. They consist of feldspar or trapp, and in general contain very little iron. I found one which seemed to be serpentine—at least it had all its characteristics; it is located between Wexford and Doncaster. Those of the south west section differ little from the preceding; only a few contain a little more silica. I searched with particular care, in the interest of colonization, for limestone, but found none anywhere.

The township of Wexford produces nearly all kinds of timber, with the exception of oak; at least, I saw but a few small ones, especially near Doncaster. All the north east section abounds with maple, birch and other

hard woods, and this section is generally more favorable to agriculture than that in the south west ; the land is also less broken. The south west section produces finer pine, but it is generally little adapted to cultivation ; the mountains are moreover steeper and the valleys rockier. The surface of Wexford is obstructed by numbers of large fallen trees, which caused me considerable loss of time ; they are sometimes so interlaced one into the other that they can only be compared to *chevaux de frise* presenting their points. The prevailing winds are from the west or south west, for, although the fallen trees are lying in all directions, still, in the places where there is a series of fallen trees, they are mostly found with their heads to the east or to the north east.

The surface and soil of Wexford can only be compared to the Vermont mountains in the United-States or those of Switzerland, in Europe. I have been through both of those countries, and I can certify that, if there is a difference, it is in favor of Wexford.

(*F.-G.-V. Regnaud*, 4th March, 1853.)

COUNTY OF WOLFE.

—

Township of Garthby.

The present road lines traced in Garthby pass over a fair average of land fit for settlement. From the position and extent of these road lines, as delineated on the plan, it will be seen that only a minor portion of the township is comprised in the lots fronting on the same, and bounded in the field. It does not appear, however, from all the observations I was enabled to make, that much land available for settlement can be found in any one tract in that township.

For the purpose of affording access to the unsurveyed portion of Garthby, lying to the south west of the present survey, and contiguous to the augmentation of Ham and eastern part of Weedon, it would seem advisable to reserve a road line along the north east line of the augmentation of Ham from the Gosford road on the end of lot F, quite through to the tract lying contiguous to Weedon and also to reserve a road line along the line between lots fifty and fifty-one, range one south, continuing in the direction of that line to Weedon, in which vicinity there are some elevations of land, apparently of good quality for settlement, among the unsurveyed waste lands of the Crown in both townships.

(A. Wells, 18th April, 1849.)

In general the lands of the township of Garthby are pretty level. There are but two high mountains, one on the south east line of Wolfstown, between lakes Breeches and Sanday, in the first range south east, and the second range north, and the other to the north west and north east of the East lake. The forest is composed principally of soft and resinous woods, such as spruce, fir, pine and cedar; and the hard woods, including birch, soft maple, maple, ash and beech, are generally scattered through and mixed with the first, but in numerically inferior proportion; so that there are but few lots on which hard wood predominates. The lands on which the hard wood grows in greater abundance are in the fourth, fifth

and seventh south east ranges. I remarked that the hard wood lands are generally rockier than those upon which the wood is mixed, soft and hard, and I have no doubt that these last will be preferable and of better quality when they are cleared. Still, it is seldom that the latter are sought after as much as the former, and the reason of this preference lies in the fact that the hard wood lands may be cultivated at less expense, and that the poor settler, in locating on them, recovers a part of the value of his labor from the ashes which he converts into ashes for the manufacture of alkalis, such as potash and pearlash.

In general, the lands of the township of Garthby, are not of poorer quality than those of many other townships, where colonization makes remarkable progress every year, which leads me to hope that, from the undeveloped state in which they are to-day, they will soon be changed into fertile fields, which will be the case especially if they are rendered accessible by by-roads.

(*J.-B. Richard*, 9th June, 1870.)

Township of Ham.

The land in this part of the township of Ham is generally mountainous, but with slopes which will allow settlers to locate on them. The soil is generally good for agriculture, but it is somewhat rocky. This part of the township is generally in hard wood mixed with white spruce.

In concluding, I think it my duty to remark that, although the part actually surveyed is of a nature to develop colonization in this important section of the township, I have no doubt that the south west and north west of this township, as also the ninth, tenth and eleventh ranges of the township of Wolfstown, which are still undivided, are much better adapted to settlement.

(*F. L. Poudrier*, 2nd October 1855.)

Township of Stratford.

The principal line of road proceeding from lake Aylmer through Stratford, in the direction of lake Megantic, is on the front of the second and third ranges south west. The quality of the land on this line is generally favorable for settlement and for the construction of a road through the whole township, and there are extensive tracts of land apparently of very good quality for settlement on the south west side of this survey, extending back in some cases near the southern part of the township to the depth of several additional ranges.

There is also a tract of very excellent land for settlement on the centre or first range north east and south west, extending from the thirty-sixth lot to the end of the township, and it is probable that a considerable portion of these ranges to the north west of the above section will, at some future day, be brought under cultivation.

The land along the line between the second and third ranges north east, with the exception of the lots from number thirty-six to forty, is entirely unfit for settlement, and no road line could be carried in that direction.

The whole formation in this section of the survey consists in swamps interspersed with rocky hillocks, the swamps as well as the higher parts being exceedingly rocky and the surface of the ground covered with a deep moss.

It is said by hunters and others, who have traversed that region, that there are some tracts of land in the territory fit for settlement, situated to the north east of these ranges; but my own observations did not enable me to decide as to the accuracy of this statement.

(*A. Wells*, 18th April, 1849.)

Townships of Stratford and Garthby.

Two-thirds of the land in the eleventh range of Stratford, as also in the fourth and fifth ranges of Garthby, appear in general to be fit enough for tillage. The soil is somewhat stony and composed in great part of a whitish earth. The timber consists mostly of pine and spruce, with a few fir, cedar, birch and hemlock; from what the people of the locality say,

most of these lots will be settled ere long. Lots thirty-eight, thirty-nine, forty-one, forty-two and forty-three of the third range of Garthby are covered with timber through which fire has run.

All the twelfth range of Stratford is fit for tillage. The soil in general is composed of black mould. The wood is composed of birch, hemlock, ash, maple, spruce, fir, a little cedar and beech, but the bulk is hard wood. According to the information received, it would seem that all this range is already well started for settlement.

In the sixth range of Garthby, all the soil is arable, being composed of black mould. The timber consists in greater part of hard wood. Mostly all this range is already being settled. There is a magnificent water power for mills on the river Saint Francis, opposite the thirty-first lot of the sixth range of Garthby and the eighth lot of the twelfth range of Stratford.

Before concluding, I would remark that, as for the timber which remains in the section of the townships which I subdivided, all the best of it has been cut off by the limit owners, and there remains nothing now except what was of no value to the lumbermen.

(*C. Michaud*, 1st March, 1878.)

SURVEY OF TERRITORIES

OTTAWA DISTRICT.

REGION BETWEEN LAKES TEMISCAMINGUE AND ABBITIBBI.

In accordance with your directions, I was engaged during the past season in making a geological examination of a portion of the country on the Ottawa to the northward and eastward of lake Temiscamingue. The country bordering the Ottawa river, as far as the head of this lake, was explored many years ago by Sir W. E. Logan; and in 1870 and 1871, exploratory traverses were made, in the former year by Mr. Richardson, and in the latter year by myself, across the country in a north-westerly direction from Lake St. John, on the Saguenay, as far as lake Mistassini. Between the latter lake and the head of lake Temiscamingue, and extending northward to Hudson's Bay, there is a large area, of the geological character of which almost nothing was known. I was directed to turn my attention to this region, with a view of determining, as far as possible, the boundaries of the principal rock formations; a special interest having recently been given to it by the discovery in 1870, by Mr. Richardson of the Geological Survey, of a series of crystalline schists, with serpentine and conglomerates, occurring to the south of lake Mistassini, and having a north east and south west strike. These rocks possess the double interest of containing important deposits of copper ore, and of having furnished a fossil coral. It was therefore part of my instructions to endeavour to ascertain how far they extend to the westward, and, if possible, what may be their relation to the Huronian rocks so extensively exposed along the north shores of Lakes Huron and Superior.

Leaving Fort Temiscamingue on 11th of July, we set out for lake Abbitibbi by the route usually followed by the canoes of the Hudson Bay Company. From the head of the lake, we ascended the Ottawa to lac des Quinze, a distance of about fifteen miles, though in a straight line the distance is only eleven. This portion of the Ottawa is locally known as the Quinze, from the fact that, in ascending it in canoes, about fifteen

portages have to be made, though the number varies according to circumstances. Its general upward course is E. by N., or nearly at right angles to the general direction of the valley of lake Temiscamingue, and that of the river Blanche, its extension northward. It is, for the greater part of the distance, a succession of formidable rapids and cascades, the difference in level between the two lakes being probably not less than 250 feet. The rocks are well exposed throughout, especially at the portages. I shall therefore describe the rocks with reference to the various portages. The first of these is about two miles above lake Temiscamingue, and is succeeded by two others in a distance of a little over a mile. The first two are quite short, and overcome two falls from ten to twelve feet high; the third is half a mile long, and the fall is about fifty-six feet. At one point in this latter, there is a descent of about twenty feet in a single fall, which appears to be the highest at any one point on the Quinze. The rock exposed at all these portages appears to be very uniform in character, being a very hard, dark grey silicious mica slate or schist, usually having a rather imperfect cleavage parallel with indistinct whitish lines and streaks. These lines, though usually obscure, were always detected on close inspections: and as they are remarkably uniform in direction and inclination and appeared to correspond with occasional slight variations in texture and colour, I think they may be regarded as indicating the bedding of the rock. This supposition is confirmed by the fact that the dip which they give corresponds with that observed further up at various points where there cannot possibly be any doubt of its character. The dip obtained in this way, on the first three portages, varies in direction from 50° to 80° W. of N., and in amount from 61° to 85° , the prevailing strike and dip being about N. 70° W. $< 70^{\circ}$. The direction of the dip appears to become more nearly west, and the inclination less in going up the river.

Above the third portage, there is an interval of nearly three miles before the fourth is reached. The rocks are the same, as far as they are seen, but there are few exposures. The fourth portage is the first of another group of three, occurring in about the same distance as the first three, and situated on the south side of an island which here divides the river into two channels. It is only a few chains long and overcomes a beautiful cascade just above where the two channels unite. The whole fall at this portage is about twenty feet. The rock is the same as on the lower portages, except that it is finer and more compact in texture, and less silicious. The dip, observed only at one point, is S. 68° W. $< 62^{\circ}$.

The fifth portage begins about a quarter of a mile above the last, is nearly half a mile long, and the fall in the river is about fifty feet. The rocks are well seen, and consist chiefly of fine-grained, rather soft mica slate, cleaving readily into thin, regular sheets. The colour is lighter than on the lower portages, and considerable masses are very soft, and greenish-drab in colour, approaching in character to nacreous slates. In the lower part of the portage, the slates are interstratified with massive grey quartzites very slightly micaceous. At the head of the portage, crystalline diorite forms a ridge of about a hundred paces wide, having a direction which accords with the strike of the slate rocks. The dip of the rocks on this portage is well seen, and is pretty uniform throughout, being about S. 34° E. $< 76^{\circ}$. Similar soft rocks occur along the river for about three miles farther, for which distance the river runs nearly in their strike, or about N. E. and S. W. The dip, for the greater part of this distance, as on the portage just described, is to the south eastward, but at so high an angle that a very slight change would give an inclination in the opposite direction, which is the prevailing one throughout the Quinze section. No lower inclination than the above (76°) was observed, and in the upper part of the distance the strata are generally nearly vertical.

The sixth portage is about a quarter of a mile above the fifth, and reaches to within a few yards of the head of the island. The fall here is about eight feet. On the upper part of the island there is a conspicuous exposure of a light grey granitic gneiss, consisting of glassy quartz and white feldspar, with a smaller amount of dark brown mica in small scales. The whole mass, as far as observed, is quite uniform in colour and texture, and occasionally there is a decided parallelism in the arrangement of the constituent minerals. The strike and dip of the planes thus indicated, at the only point where they were well observed, is the same as that of the stratified rocks in the vicinity. The whole rock, however, is affected by another remarkably regular set of divisional planes, forming layers from two to five or six feet thick, and of which the underlie is about N. 8° E. $< 26^{\circ}$. The mass is lenticular in form, and is about six hundred yards long by one hundred wide, the longer axis being approximately parallel with the strike of the slate rocks in the vicinity. On the south west side it presents a nearly vertical escarpment facing to the south, and rising to a height of about a hundred feet above the river. At the base of this cliff, near the head of the portage, there is an exposure of soft greenish-grey, massive, steatitic rock; and a little farther up, soft chloritic slates are seen in contact with the granitic gneiss, sometimes corrugated and apparently unconformable with

it, but at other points quite conformable. For about two miles above this island, as already mentioned, the soft slates are the predominating rock, and the river runs in their strike; but, besides these, diorites and dioritic slates are met with occasionally, and appear to come in from the south east side. At the end of this distance there is an abrupt turn to the south, going up the river.

Just before reaching the turn, there is a short portage (the seventh from Temiscamingue) on the north or right bank of the river. This leads from the river to a small lake, after following which for a few chains the canoe-route passes into the Ottawa again by the outlet of the lake. Immediately below the portage, a bed of greyish feldspathic rock was observed, containing a considerable quantity of iron and copper pyrites disseminated through it. At the outlet of the little lake, mica slate and micaceous quartzite, similar to that on the lower part of the fifth portage, were observed; but after a short distance these give place, on the S. E. side, to diorites and dioritic slates.

The upward direction of the river, for about three miles, is a few degrees E. of S. A portage leads from the river immediately below the turn, on the opposite side from the above small lake, to another small lake situated in a ravine running parallel with the river above the turn, and about half a mile long. This portage is about three hundred paces long; and, beyond the lake, another portage of similar length continues in the same direction, to the river at the foot of a lake-like expansion. From this point to the turn, a distance of nearly a mile, the river flows swiftly, with occasional falls, between high rocky banks, and the total fall is a little over forty feet. The canoe-route just described crosses the strata nearly at right angles, and the rocks are well exposed. These are chiefly massive crystalline diorites. At the foot of the lower portage, however, the diorite is not distinctly crystalline, and is occasionally slaty. In some parts it contains much epidote in veins and disseminated grains. Much of this fine grained diorite seems made up of flattened shuttle-shaped masses from three to twelve inches, or more, in width, and perhaps six or eight times as long. At one point, a width of about twelve feet was made up of regular hexagonal columns, having a diameter of about ten inches, and inclining at an angle of 57° , in a direction S. 42° W. Towards the head of the second portage, the slaty character is in some places pretty highly developed.

The stratification of the massive crystalline diorites, which occur largely in this locality, is well shown by the frequent occurrence of quartz-

ite in thin, regular layers, and often interstratified with similar layers of magnetic iron ore. The most conspicuous example of this which was observed is near the head of the lower portage, where a thickness of about thirty feet is made up of such layers. The quartzite is fine and close-grained, sometimes approaching jasper in character, and in layers from the thickness of paper to about an inch. The colours are light and dark grey, and blood-red. Interstratified with these are similar layers of black magnetic iron, forming about a fourth of the whole. These various layers being perfectly regular and even, and the different colours alternating with each other, the rock has a very striking appearance. The dip of these strata is N. 70° W. $< 70^{\circ}$. After passing these two portages, which, with the preceding short one, may be regarded as a third group of three, there is an interval of about a mile to the next. The direction, as already stated, is S. by E., and the strata are crossed obliquely, the dip being still W. by N.

From the foot of the next or tenth portage, the direction is east to the lac des Quinze. On this portage, which is the longest on the Quinze, its length being a little over half a mile, the rocks are well seen, and are slaty throughout, displaying a fine but distinct lamination, and are chiefly hornblende slate. It is usually greyish-green in colour, but frequently there are streaks and patches tinged with red. There are also in many places numerous obscure lenticular masses of a feldspathic character, lighter in colour than the above, and showing crystals of feldspar, and usually flakes and streaks of dark green hornblende. The latter, as well as the whole mass, which may be from an inch to several feet long, and from a line to several inches in thickness, are parallel with the general bedding of the rock. The dip at the foot of the portage is W. $< 62^{\circ}$; about two hundred paces to the eastward, S 82° W. $< 45^{\circ}$; and at the upper end, S. 78° W. $< 50^{\circ}$. The fall in the river here, as nearly as I was able to ascertain it, is about twenty feet.

Continuing up the river, the rock is hornblendic slate, differing from the last chiefly in being apparently quite homogeneous in texture, and in its dark greenish-grey colour. The same obscure interlamination of darker and lighter layers was observed, and the rock cleaves with tolerable facility parallel with these. This rock, as well as the last, though usually hornblendic, occasionally contains considerable mica. It occurs for about half a mile across the strike, extending across the next or eleventh portage, to about half way between it and the twelfth, which is the last before reaching lac des Quinze. Here it is succeeded and underlaid by syenitic gneiss. For some distance before it gives place to the latter, it is more coarsely

schistose, and the colour is lighter and more nearly grey. There are also lighter and darker bands, and immediately at the base there are occasionally thin reddish layers resembling the underlying rock. At this point the river expands to a width of about a quarter of a mile. The dividing line between the rocks just described and the succeeding gneiss crosses this wide part obliquely, the rocks being exposed on both sides. On the south side the shore is low, and the rock is often concealed; but the two varieties, though not seen immediately in contact, were seen within four or five feet of each other at a point where the rock rises only a few inches above the water. On the north side there is an interval of 200 paces between the last exposure of slate and the first of gneiss. The dip here, as on the portage below, is S. W. $< 50^\circ$, while on the south side it is immediately at the point of contact, S. 22° W. $< 52^\circ$. In both cases the dip of the two rocks, where they approach nearest to each other, is the same. The gneiss is made up of reddish feldspar, with a considerable quantity of dark green hornblende, and a smaller amount of glassy quartz; sometimes it contains a little mica. It is moderately large grained, and breaks up readily under the hammer. The hornblende and mica are so arranged as to give the whole a stratified appearance, which, though usually obscure, is often sufficiently distinct to allow of the dip being ascertained. This rock occurs, with little change, to lac des Quinze, a distance of about three-fourths of a mile in a direction nearly east. At the head of the uppermost portage, however, a quarter of a mile to the eastward, though made up of the same constituents, it is coarser, and has a porphyritic appearance owing to the occurrence of numerous crystals of reddish orthoclase, many of them as much as half an inch across. The stratification is very obscure in this locality, but some distance further east, it is quite plain and unmistakable. The fall in the river at the last (12th) portage is about ten feet, and at the next one below, eighteen feet.

In regard to the levels given in this report, it is necessary to state that they are only approximate, being the result of observations with a small aneroid barometer. It is believed, however, that they are on the whole pretty accurate. We had occasion to pass between lakes Temiscamingue and des Quinze four times in the course of the summer; each time barometric observations were taken at both extremities of every portage, and the average of the four results adopted. In addition to this, the difference in level was calculated from the mean of a large number of readings taken during steady weather, both on lake Temiscamingue and on lac des Quinze. The two results agree so closely that I can state, with a considerable degree of confidence, that lac des Quinze is about 260 feet above lake Temiscamingue.

Lac des Quinze is an expansion of the Ottawa, and is in most parts about a mile wide. Its direction going up stream is south east for eight miles, then north east for fifteen miles. At its lower extremity a bay extends northward, with a tolerably uniform width of about a mile, for a distance of eight miles, when it divides into two arms continuing in the same direction for about three miles further. About two miles above the first bay, another bay, rather less than half a mile wide, extends in the same direction for three miles; and near the point where the direction of the main body of the lake changes from S. E. to N. E., a third bay extends southward for five miles. These three bays are as nearly as possible parallel, their direction being a few degrees E. of N. and W. of S. This is also the direction of the strike of the rocks on the first two; the third I did not examine. The rock is chiefly grey syenitic gneiss, generally highly quartzose. It is often schistose, and sometimes passes into well-marked hornblende schist, consisting chiefly of glistening black plates of hornblende with some mica. This rock was observed especially along the east side of the lower half of the principal bay, and it seems probable that all these bays lie on the strike of similar schistose bands. On the north side of the lake, between the first and second bays, the rock become finer in texture, with a granular appearance, sometimes resembling a sandstone, and frequently contains a considerable amount of epidote. On the lower part of the lake massive crystalline diorite was observed at several points, and evidently belongs to two dykes which cut the above rocks. They appear to have a course about N. by E. and S. by W., and to be from fifty to one hundred feet wide.

The mean of a number of dips observed at various points along the east side of the first or principal bay, from one to four miles from the foot of it, was W. $<29^{\circ}$; that of a similar number taken along both sides of the second bay was N. 85° W. $<45^{\circ}$.

On the accompanying map, I have indicated the dividing line between the gneissoid strata of lac des Quinze, and the overlying series of slaty rocks. Assigning to it a direction a little S. of N. and W. of S., which appears to be that of the general strike of the rocks of both divisions, it would, when continued southward, coincide very nearly with the line traced for six or eight miles by Sir W. E. Logan, as the boundary between the Laurentian and Huronian on lake Temiscamingue, near the mouth of the Montreal river. Continued in the opposite direction, it would run a little to the westward of the first described or most westerly bay of lac des Quinze, and parallel with it.

The distance in a straight line, bearing A. 6° W., from the outlet of lac des Quinze to the Hudson Bay Company's post on lake Abbitibbi, is about seventy-six miles. The canoe route followed by us passes from the head of the western arm of the first bay of lac des Quinze up Lonely river, and thence through two long narrow lakes, named respectively Obikoba and Opatatika, which are connected by a small stream. With the exception of a short portage, at a rapid with a fall of four or five feet on Lonely river, a little below lake Obikoba, there is uninterrupted navigation for canoes from the foot of lac des Quinze to within half a mile of the height of land between the waters of the Ottawa and those flowing to Hudson's Bay, there being scarcely even a perceptible current to overcome all the way. The distance from the mouth of Lonely river to the height of land is about thirty-one miles. The rocks over the greater part of this distance are of the same gneissoid character as on lac des Quinze. The regular north and south strike, and westerly dip, were, however, not observed farther than about half way up lac des Quinze bay, on the upper part of which very few rocks of any kind were seen. On Lonely river, and on the lower part of lake Obikoba, the stratification was not apparent. The rock is usually granitic, fine-grained in texture and of very light grey, brown, or reddish colours, often approaching white. Associated with this, there is often another somewhat similar rock, but containing a large amount of black hornblende, giving the whole a dark colour. This appears to cut the former, but the two varieties are often so entangled with each other that it would be difficult, without examining a large area, to determine which is the intrusive rock. This is characteristic of the whole district, along the line examined, from the head of the lac des Quinze bay to the foot of lake Opatatika, a distance in a north and south direction of about fifteen miles. There are also many veins of coarse granite, consisting usually of vitreous quartz, red feldspar, and brown or greenish mica. The feldspar is occasionally milk white, giving a white or light grey rock. It is plain, however, that the staple rock of this district is gneiss, which was observed, especially in the northern part of the above mentioned fifteen miles, to pass into a distinctly stratified schistose rock, chiefly composed of quartz and mica. The best instance of it occurs on the upper part of lake Opatatika, just above when, going northward, the lake suddenly contracts in width from upwards of half a mile to six or eight chains. Here a well defined micaceous gneiss was observed, very regularly and finely stratified, the dip being S. \wedge 77°. Wherever the stratification appeared in this locality, the strike usually approached east and west, with a dip to the south, the inclination apparently becoming less going northward.

Continuing northward, the rock on the lower part of lake Opatatika, where it is well seen, is the same fine-grained granitic gneiss, but it is not so much cut up and disturbed by veins and dykes as the above, and it is generally quite distinctly stratified, the bedding being often shown by the occurrence of lighter and darker bands, owing to the varying amount of dark mica in the rock. The same rock occurs all along the lake for about nine miles, and then gives place to a series of slates and schists similar to those of the Quinze. It seems to occur here in the form of a low anticlinal, the dip being southerly in the lower portion of these nine miles, and in the opposite direction in the upper portion. Epidote occurs occasionally in this rock, especially in or near small veins, in much the same manner as it does in similar rock near the foot of lac des Quinze.

Towards the north end of lake Opatatika, as already stated, these gneissoid strata give place to others of an entirely different character. The upper part of the lake is much wider than the lower half, the width being upwards of two miles. From the east side a bold tongue of land nearly a mile wide extends more than half way across, the extremity being to the west, and divided into two small promontories by a narrow deep bay; along the edge of the water round the lower promontory there are exposures of a dull grey micaceous schist, much resembling the lowest members of the slaty series of the Quinze, but more micaceous and somewhat more coarsely schistose. This is overlaid by a rather complicated and greatly varying series of strata which the time at my command did not enable me to examine very minutely. First, there is a thickness of twelve or fifteen feet made up almost entirely of foliated brown mica, very much corrugated, and often folding round what appeared to be nodular masses of grey quartzite often nearly a foot in diameter. Succeeding this there are thirty or forty feet of quartzite and hornblende schists, including layers containing large quantities of magnetic iron, always finely stratified, and having exactly the appearance of having been originally in the condition of fine sand. Along with these there is also a layer eight or ten inches thick made up chiefly of magnetic pyrites. A specimen of this having been submitted to Dr. Harrington was found to contain traces of copper and cobalt. Above these quartzites there is a considerable thickness of massive steatic rock and steatic schists, with probably chloritic schist. These steatic rocks contain numerous minute grains and octahedral crystals of magnetic iron. The dip is to the eastward, at an angle of about 40° , but the rocks are much disturbed. The northern part of the tongue of land above described is made up of massive crystalline diorite, evidently a dyke, running apparently in a direction a little north of east.

Immediately opposite on the west side of the lake, similar rocks are seen, but they are still more irregular. Crystalline diorite occurs in the line of the above dyke, and is, no doubt, a continuation of it. Immediately to the south of the diorite, there is a large exposure of massive greenish-grey steatitic rock, while to the north of it mica schist occurs along the shore in such a way as to give the idea that an anticlinal axis occurs beneath the waters of the lake. There are also on the west shore some exposures of a soft greenish talcose slate, containing great numbers of cubical crystals of iron pyrites, some of them more than half an inch in diameter. The dip of all these rocks is so irregular that it was found impossible to form any correct notion of their general attitude. Similar rocks, however, are well seen a little farther north, towards the height of land, and the strata are more regular, the dip being usually N. by W. Proceeding up the lake, no rock was seen for about two miles, beyond which on both shores there are large exposures of coarse mica schist; but, as higher strata are reached, the rock becomes finer grained and more compact, and is associated with close-grained horn-blendic slate, precisely similar to that on the Quinze. The dip, as already stated, is northerly, generally somewhat to the west of north. The inclination is at first from 20° to 40° , but increases on going northward.

At the head of the lake, the rocks last described are succeeded, in ascending order, by conglomerate. The matrix is generally a dull, greenish, fine grained sandstone or quartzite, and the imbedded pebbles consist of syenite, greenstone, chert, and white quartz. They appear to be all rounded, and are usually small, but are occasionally nearly a foot in diameter. Sometimes the rock is chiefly made up of these pebbles, but sometimes they are sparsely scattered through the matrix. From this to the height of land, the distance is about half a mile, and there a similar rock was observed; but at an intermediate point it is a hard, greenish grey slate, the slaty structure not very well developed, and the rock apparently dioritic. All these rocks appear to dip with tolerable regularity a little W. of N., and the angle of dip at the head of lake Opatatika is from 70° to 80° .

Continuing northward, across the last mentioned conglomerate, and over the height of land portage, the rock exposed on a small lake beyond the latter is dark greenish diorite, with little or no appearance of stratification. From this lake, which is about a mile long, the head of lake Matawagogig is reached by a small tortuous stream without any rapids. The distance from the height of land portage to lake Matawagogig is about two miles, and the direction a little west of north. Here the rocks are similar to those between

the head of lake Opasatika and the height of land, but the conglomerate, of which, however, not much was seen, is finer, having a very hard, close-grained matrix, and closely resembles the slate conglomerate of lake Temiscamingue. The distance across the measures to the point, from the part of lake Opasatika where this series of strata with a regular northerly dip was first observed, going northward, is about five miles; while from the point where the micaceous schist first appears, succeeding the gneiss, the distance is about ten miles.

It will be seen by these observations that on lake Opasatika we crossed the boundary line between the two great classes of rocks described in this report, the gneissoid division being on the south, and the slaty and dioritic division on the north. It seems probable that from where this line was crossed near the head of the Quinze, it runs northward for a few miles, and is then thrown to the westward, how far I had not the means of determining. It may curve round uninterruptedly to lake Opasatika, or it may be intercepted by the gneissoid rocks just described, extending westward to join similar rocks, met with later in the season, about twenty-five miles to the west, on the river Blanche. The former supposition seems the more probable, and I have so indicated it, provisionally, on the accompanying map.

About a mile and a half south westward of the head of lake Matawagogig, and just on the north side of the height of land, two remarkable hills rise to a considerable height above the surrounding country. All the way from the foot of lac des Quinze, the country is comparatively low, no hills being seen which appeared to rise more than 150 feet above that lake, but these two hills are more than 700 feet above it. The two face each other in a south west and north east direction less than half a mile apart; and at a distance of twelve or fifteen miles in a direction W. by S. an exactly similar hill is very conspicuous and is said by the Indians to be the highest hill in this part of the country. We ascended the higher of the two nearest ones, reaching it from the small lake already mentioned, on the north side of the height of land, the direction being about west, and the distance about a mile and a half. First, we passed over some low hills consisting of dark greenish diorite, similar to that seen on the lake from which we started; then for a short distance over flat ground where no rocks were seen, beyond which, on the slope approaching the high hill, exposures were met with, of a fine hard bluish-grey slate. The summit of the hill itself was found to consist of very hard close-grained grey quartzite. It was observed to contain what seemed to be very small pellucid grains of

quartz, and occasional small crystals of feldspar, the whole weathering brown. This rock seems to compose the whole summit of the hill, which is about ten chains across. So far as seen, it is perfectly uniform throughout, without the slightest indication of line of deposition, and on all sides, except the north, forms vertical cliffs, apparently two or three hundred feet high. The height of the summit of the hill above lake Matawagogig was found to be 690 feet. The other hill, which is not quite so high, is separated from this one by a very deep narrow ravine. It presents exactly similar appearances, as does also the more distant one already mentioned, so much so that it seems very probable that all are composed of similar rock.

From the summit of the above hill, a good view is obtained of the surrounding country, and it was observed that on the north a series of hills extends east and west for many miles. These hills are not so high as the one from which they were seen, though many of them are probably not less than 300 feet above the general level, and instead of rising, like it, square and precipitous, they are all rudely cone-shaped, and appear to be mostly isolated. They form a conspicuous feature over a large extent of country, and will be again referred to.

From lac des Quinze to the small lake which occurs at the foot of the height of land portage, a distance of about thirty miles, the rise is only about ten feet: thence crossing the portage three quarters of a mile in length, there is a rise of about sixty-five feet in the first eight or ten chains, and then a gradual descent of forty feet to another small lake, the water of which discharges by the Abbitibbi river, the fall in which to lake Abbitibbi is about fifty feet, and therefore the latter lake is about fifteen feet lower than lac des Quinze. As this lake has been estimated to be about 260 feet above lake Temiscamingue, and as the latter is 612 feet above the sea (*Geology of Canada*, 1863, page 16) the height of lake Abbitibbi above the sea is about 847 feet.

Continuing northward to lake Abbitibbi, we passed through lakes Matawagogig and Agotawekami, respectively, eight or six miles long. These are connected by a small stream, with four short portages, the distance being about eleven miles. On this part of our course, we passed through the hilly country referred to above. With the exception of an island in the upper part of lake Matawagogig, composed of reddish granite, probably intrusive, the only rock seen all the way is a hard fine-grained, greenish-grey diorite, in which no appearance of stratification was observed. In most places, the rock is more or less vesicular, the vesicles being usually

filled either with calc-spar or white quartz. It also contains, usually, more or less pyrites in disseminated grains.

A few chains below lake Agotawekami, the outlet of that lake joins the Abbitibbi river, flowing from the south west, and this we followed down to lake Abbitibbi, a distance of about nine miles. The massive diorites were not traced farther than to within a mile or two of the foot of lake Agotawekami, where they give place to obscurely stratified, dark greenish-grey dioritic schists. These seem to have a strike approaching east and west, as did also a somewhat similar rock at a short portage a little over a mile below the lake. At an intermediate point, however, a rock was observed which appears to be an impure limestone. It is very close-grained and homogeneous — slightly saccharoidal — in texture, of a light grey colour, but somewhat harder than ordinary limestone. As the locality was not examined very minutely, the extent of it was not ascertained. About a mile below the portage, a somewhat similar calcareous rock occurs, but differing in being mottled with greenish and pale pink spots. This rock appears to be partly composed of serpentine, and a specimen of it is at present under examination.

A track survey of the route followed by us from the Ottawa to lake Abbitibbi was made several years ago by Mr. Lindsay Russell, P. L. S., and his plan has been used in constructing a general map of the region to illustrate our observations on the geology. Lake Abbitibbi was also sketched by Mr. Russell with a remarkable degree of general accuracy. There is, however, necessarily an absence of details in the conformation assigned by him to the shore lines, which rendered it difficult for me to indicate on his plan the precise position of the rocks observed on the ground. It was therefore considered advisable to make a micrometer survey of this lake, from which, accordingly, it has been laid down on the accompanying map.

Lake Abbitibbi consists of an upper and a lower lake. The upper lake, the eastern extremity of which we have now reached, lies due east and west. Its length is thirty-three miles, and its width from two to eight, except a little to the eastward of the middle, where a bay extends eight or ten miles to the north, and another bay directly opposite increases the width of the lake two or three miles southward, giving the upper lake a total width here of about seventeen miles. At the north west corner, it is connected with the lower lake, at its south east side, by the *Narrows* running in a direction about N. by W. for two miles. The latter is purely circular in form, with a width varying in different parts from fifteen to

twenty miles. The greatest length of the whole, in a direction about W. by N., is about forty-seven miles. The shore line in both lakes is exceedingly irregular, and the number of islands in all parts is very great. The main body of the lower lake is to the north of that of the other, so that an east and west line can be drawn on the north side of the latter, but cutting off the above mentioned bay, which when continued westward will pass to the south of the lower lake. The principal stream falling into lake Abbitibbi is the Abbitibbi river, by which we reached it, but there are several other tributaries nearly as large. The outlet retaining the same name flows from the south west part of the lower lake, and was surveyed for about seven miles to the first fall. Its direction for the first two miles is south west: beyond which it is west to the falls.

The position of the two portions of this lake with reference to each other is closely connected with the geological structure, the longer axis being parallel with the curved line which represents the strike of the rocks. The rocks belong to the same two classes met with farther south. Gneissoid and granitic rocks occur all along the north side of the upper, and on the south east side, of the lower lake, while the other portions of both are occupied by micaceous, hornblendic and chloritic schists, fine-grained hard quartzites, diorites, and dioritic schists, with serpentines. The dividing line between the two classes of rocks, as shown on the map, coming evidently from the east, passes to the south of the east end of the upper lake; and, turning north for three or four miles, divides longitudinally, the club-shaped peninsula on the west side of which the Hudson Bay Co.'s post is situated, and strikes across to the north shore, where it again turns westward. After following the north shore for a few miles, it continues westward through the lake (having some of the islands on one side, some on the other), cutting a thin slice from the north side of a mallet shaped peninsula extending more than half way across from the south side, and situated towards the west end of the lower lake. Still continuing westward, it passes to the south of the Narrows, curves round to the northward in the south east part of the lower lake, returning on itself in a northeasterly direction, so as to include a space of which the width is twelve or fourteen miles. It would appear, therefore, that this is the western extremity of a band of these rocks coming from the eastward, or probably, considering the prevailing strike of the contiguous stratified rocks, from a direction north of east. I have no means of forming, even a conjecture as to how far they may extend in this direction.

The gneissoid rocks on this lake, as far as they were examined, are uniformly massive and coarse-grained in texture, and usually of a light grey or brown colour. They are chiefly composed of vitreous quartz, white or light flesh-red feldspar, and brown, sometimes greenish, mica, in large scales and flakes, the latter being in most cases parallel with each other. Sometimes the mica is partially or wholly replaced by hornblende. At the western extremity of the area occupied by these rocks, in the vicinity of the Narrows, the gneissoid structure is generally obscure, and sometimes could not be seen at all. Near the lower end of the Narrows on the east side, a coarse grained syenitic rock was observed, which contained a considerable amount of magnetite.

The schistose, or slaty rocks, which, as already stated, occur over the greater portion of the lake, have a strike for the most part parallel with the line indicated as the boundary of the gneiss. It cannot be said, however, that they were actually seen to curve round the western extremity of the band of gneiss included within this line, as no exposures of rocks showing stratification were observed in this locality; but in the case of the subordinate curve indicated on the map as occurring near the east end of the upper lake, they were plainly seen to confound with the outline of the gneiss. The general strike on the south side of the gneissoid area, as seen along the south side of the upper lake, varies but little from east and west; and usually where they were seen within a mile also of the gneiss, the strata are either nearly vertical, or they dip away from the gneiss, the angle of inclination being some times as low as 45° . About the middle of the upper lake, however, the strata, in many places, dip towards the gneiss, at angles varying from 45° to 70° or 80° ; but this is usually at a considerable distance from the latter, and the locality shows indications of disturbance. The strike of the similar rocks occurring on the north half of the lower lake, where it is generally well seen, is about E. by N., a direction which would carry them along the north side of the gneissoid area. The dip is seldom less than 80° , and it seems to be about as often southward as northward.

Off a prominent point, about the middle of the west side of the lower lake, there is a small island, not more than six or eight chains long, which is composed of a dark green, rather soft rock, with splintery fracture and resinous lustre, and weathering a dull white. It is so strongly magnetic that our compasses were found to be quite useless on this island. This rock proved to be serpentine, and specimens of it being, at your suggestion,

handed to Dr. Harrington for examination, it was found to contain grains of chromic iron.

At several points along the south side of the upper lake, there are exposures of a rock somewhat similar to that described on page 125, as having been observed on the Abbitibbi river about a mile below the portage, and which is supposed to be partly composed of serpentine. This was observed chiefly towards the east end of the upper lake, but it was also noticed on the south east part of the lower lake. It was not here seen *in situ*, but large masses of it were seen on the shore of the lake, in a locality where no other rocks were met with, their appearance being such that there can be little doubt they were not far removed from the parent bed. All the localities where no other rock was observed are on a line which is approximately parallel with the general strike of the rocks. At many points, especially along the south side of the lake, there are large exposures of dark green crystalline diorites, passing into dioritic schists and having a close resemblance to those of the Quinze. These usually appear to be destitute of any appearance of stratification, but as in the case of the Quinze diorites, the bedding is occasionally shown by the occurrence of thin, angular layers of quartzite, here approaching the character of chert, with thin layers of magnetic oxide of iron, the quantity of the latter seen, however, being insignificant. Much of the diorite also contains epidote, which is another point of resemblance to the diorites seen on the Quinze. Besides these crystalline diorites, there are hills along the south side of the lake, which, as far as examined, are composed of the same light greenish-grey compact diorites already noticed in speaking of the hills observed along lakes Matawagogig and Agatawekami, and the connecting stream. They are precisely similar in appearance, and from one of them which was ascended, and which rises to a height of about 400 feet above the lake, the country was seen to be studded with them as far as the eye can reach, looking southward as well as east and west. Diorite, similar to that which composes these hills, was also seen at the fall on the Abbitibbi river, about seven miles below the lake.

In regard to the stratigraphical relation of the two classes of rocks on this lake, the only fact which I have to offer is that at the only two localities where they were observed to approach within about a quarter of a mile of each other, and where both showed stratification, both have the same dip. One of the localities is on the point on which the Hudson Bay Company's post is situated, where quartzites and slates are exposed on the west, and gneiss on the east side, both dipping to the westward at an angle of about

50°. The other locality is twenty miles further west, where, at the mallet shaped peninsula already noticed, both were seen, within a very short distance of each other, with an east and west strike, and nearly vertical attitude. In both these cases, the only indication of stratification in the gneiss is the parallelism in the arrangement of the different minerals composing it ; but this is quite distinct and regular.

Having returned to Temiscamingue on the 27th of August, we started on the fourth of September to commence the survey of the river Blanche. This survey was carried from the mouth of the river, at the northern extremity of lake Temiscamingue, to a small lake about three miles in diameter, known by the Indians as Round lake.

The upward direction to the north-west side of Round lake is N. 36° W., and the distance in a straight line about forty-five miles. Following the stream the distance is nearly sixty miles.

Ascending the river, no rock exposures occur for about twenty-five miles, the stream flowing for that distance, with a rather strong current, but no rapids, between banks of clay and sand. Above this there are occasionally exposures of crystalline diorite for several miles, succeeded, a little further up, by chloritic and dioritic slates. Of the former there was very little seen, and the slates were observed only along the edge of the water, at the foot of high cliffs of clay and sand.

For a distance of ten miles in a straight line, above the chloritic slates, the only rock met with is granitoid gneiss, very similar to that of lake Abbitibi. Like the latter, it is uniformly coarse-grained and light grey or brown, occasionally red, in colour. On the south east side the stratification of this rock is well shown, both by the usual parallel arrangement of the constituent minerals, which is here very distinct, and by the occasional alternation of coarser and finer layers. The dip and strike, the latter about N. by E. and S. by W., are exactly the same as those of the slates to the south east, which though not seen in contact with the gneiss, were observed at a distance from it not exceeding eight or ten chains. The dip being always nearly vertical, it was found impossible to determine which are the uppermost beds.

On the north west side of the gneissoid area, which extends to Round lake, slates are again met with. The principal exposures examined are almost immediately in contact with gneiss, and are chiefly hard grey micaceous and hornblende schists ; but a little more distant from the gneiss it has a greater resemblance to the slates described above. The strike being E. by N. makes an angle of about 45° with that of the latter. The dip, though

sometimes to the northward, appears to be usually to the south, and at a very high angle. In one place the dip is S. E. $< 55^\circ$, but the rocks in this locality are much disturbed, and are cut up by numerous dykes of diorite and porphyry, from six inches to as many feet wide. The slates are exposed on this lake for about a mile across the strike, when they are cut off by a rock which appears to be intrusive. It much resembles ordinary red syenite, but was not observed to contain quartz, being made up of large grains of a rather dark red feldspar with a smaller amount of greenish hornblende, and sometimes a little epidote. This occurs all along the north side of the lake, but I have no means of knowing how far it extends beyond the lake.

Having again returned to Temiscamingue on the 17th of September, from the survey of the Blanche, I paid off the two Indians who had been engaged for the short term of about two weeks, which it was expected would be required for this trip, and notwithstanding that they expressed themselves well pleased with the treatment they had received, as well as with their pay, it was found impossible either to induce them to re-engage or to procure others to take their places; the chief reason being, no doubt, that the hunting season had commenced, and all the Indians were eager to get away to their hunting grounds. We were therefore unable to make further surveys with the micrometer telescope, as to do so we should have required two canoes, and as we had now only the two white men who had been with us the whole season, we could man only one. Under these circumstances it was thought advisable to devote the remainder of the time, still available for our work, to making a further examination of the rocks on the Quinze, and exploring the upper portion of lac des Quinze and lake Mejiowaja, (another lake-like expansion of the Ottawa, and occurring immediately above lac des Quinze,) which lakes extend for about thirty miles to the eastward from the point where, at the foot of the first named, we turned northward going to Abbitibbi. These lakes, as well as the Ottawa river both above and below them, having been already surveyed and mapped and no further measurements being necessary in order to fix the position of the rocks observed, a single canoe was sufficient for this trip. We accordingly set out once more from Temiscamingue on the 25th of September.

The facts obtained during this excursion in regard to the rocks of the Quinze, and of the western portion of lac des Quinze have been embodied in the account already given of them. The only rock met with farther east is gneiss occasionally passing into hornblende and micaceous schists of a coarse texture. The latter is seen occasionally along the shores of the

upper part of lac des Quinze, where, as already stated, the direction of that lake is north east for fifteen miles, apparently conforming with the strike of the strata, which dip northwesterly at a high angle. The gneiss is generally reddish and rather coarse-grained, with obscure bedding; but it is often grey in colour, and is also, occasionally, regularly and distinctly stratified. Along the upper part of lac des Quinze, the gneiss forms hills which rise sometimes from 200 to nearly 300 feet above the level of the lake, being the highest hills seen between lake Temiscamingue and the height of land on the route to Abbitibbi.

Having ascended the Ottawa for several miles above where it falls into lake Mejicowaja, and the season being now too far advanced to allow the ascent of this river to be continued sufficiently far to make it probable that any important results would be attained, we returned to Temiscamingue reaching the fort on the 12th of October. After a delay of a couple of days, owing to a severe storm of wind and rain, we set out for home, reaching Ottawa on the 24th of October.

In several localities copper pyrites in small disseminated grains, and small quantities of the green carbonate of copper, were observed. The latter were noticed particularly in small veins in the diorites and dioritic schists below the eighth portage on the Quinze. At the foot of the seventh portage, which leads from the Ottawa to a small lake on the north side, copper pyrites associated with iron pyrites were observed disseminated throughout a bed, about three feet thick, of a greyish feldspathic rock. The quantity, however, both here and at the other localities where copper ores were seen, is not sufficient to render it of economic importance.

Magnetic iron was met with in several localities. The most important of these is that already mentioned, on the eighth portage of the Quinze, which leads from the Ottawa river, immediately below the point where, after flowing northward for three or four miles, it turns abruptly round to the southwest. The portage is on the south, or left hand side of the river, running in a direction about south east to a small lake in a narrow ravine, and is not more than a quarter of a mile long. The iron ore crosses the portage near the upper or south end. It occurs in the form of layers from the thickness of paper to about an inch, and is interlaminated with similar layers of whitish, grey and dull red, fine-grained quartzite. The iron ore constitutes probably from a fourth to a third of the whole, and as the thickness of the whole band is about thirty feet, the total thickness of the layers of iron ore would probably not be less than eight feet. The band

was traced along the strike for about a hundred yards. Magnetic oxide of iron was observed under similar conditions at several points on this portage, and on the next above, but in much smaller quantity. This ore occurs also on lake Opatatika, about six miles south of the height of land. On lake Abbittibi, it was observed on the south side of the upper lake, and also on the west side of the lower lake. At none of these localities, however, was it found in important quantities.

A bed, eight or ten inches thick, composed chiefly of magnetic pyrites, was observed on the west side of lake Opatatika, at the locality already described as the first where, in going north, the gneissoid and granitic rocks of the southern part of that lake are found to have given place to the crystalline schists and conglomerates of the northern part. It is associated with silicious layers containing a large proportion of magnetite.

This rock occurs largely in the same locality as the last; considerable exposures, as has been stated, occurring on the west side of lake Opatatika. Steatite was also observed on the Quinze, near the upper end of the island, on the south side of which are situated the fourth, fifth and sixth portages.

On the fifth portage of the Quinze, some of the dark-grey, and light greenish-grey argillaceous slates, which are there exposed, have a very perfect cleavage, and would probably be well adapted for roofing purposes.

White and red pine are found over the whole region and are by no means rare even as far north as Lake Abbittibi; but on this lake, with the exception of a few healthy-looking individuals, about six feet in circumference, observed near the outlet, they are all very small and scraggy, and are confined to the numerous islands and points. They are quite abundant and of excellent quality on the slopes of the hills along both sides of the height of land. When ascending the hill described as rising to a height of 700 feet above lake Matawagogig, on the north side of the height of land, several fine trees were measured and found to be from eight to nine feet in circumference, at the height of four or five feet from the ground; and from the summit of the hill, groves of white pine were observed in all directions. White spruce, yellow birch and cedar, are also tolerably abundant, and of good size. Fine specimens of the latter tree—tall and straight—were observed, chiefly in hollows among the hills, on the south side of lake Abbittibi.

Groves of white pine are conspicuous along the shores of lakes Opatatika and Obikoba, generally a little distance from the water. Both red and

white pine are met with, but not abundantly on the lower portion of lac des Quinze; but with one exception probably the best timber seen by us during the summer is that which grows on the hills on both sides of the upper part of lac des Quinze, and the lower part of Lake Mejiowaja. The exception mentioned is on the Quinze, in the vicinity of the fourth and fifth portages, where there is a great quantity of very fine pine, both red and white. There is very little pine on the Blanche, the only specimens observed being a few very small ones near Round lake.

Sugar maple is tolerably plentiful round the head of lake Temiscamingue, but was not seen further north. The same remark applies to swamp maple and white oak. Large numbers of these grow on low level land near the mouth of the Blanche, and also, in smaller quantities at the mouth of other rivers falling into the same lake. Hemlock is abundant on the lower half of lake Temiscamingue, but no specimens were observed as far north as the Hudson Bay Company's post.

The most abundant tree in this region, north of the limit of sugar maple, is aspen, after which come canoe-birch, spruce, Banksian pine and Canada balsam. Elm and ash occur occasionally on low flats as far north as lake Abbitibbi.

The whole region examined, extending northward from the mouth of the Montreal river, which is about thirty miles south of the head of lake Temiscamingue, may be pretty correctly described as a level clay plain with a great number of rocky hills and ridges protruding through it. There is a marked distinction between this region and the country to the south. The unyielding Laurentian rocks of the latter maintain a uniformly high surface, considerably higher than the level at which the clay is found; while the softer slates and schists which occupy so large a portion of the country further north, have been largely removed by denudation, leaving only the harder rocks—diorites, quartzites, and conglomerates,—to form more or less isolated hills, surrounded by arable clay land.

The height of the clay appears to be pretty uniform throughout the whole region. Around lake Abbitibbi it is about thirty feet above the level of the lake, which was estimated to be 245 feet higher than lake Temiscamingue, giving 275 feet as the height of the clay at Abbitibbi above lake Temiscamingue. On the upper part of lac des Quinze it is occasionally seen along the edge of the lake and rising about twenty feet above it; and therefore as the latter lake is supposed to be about 260 feet above lake Temiscamingue, its height above that lake would be about 280 feet. On the Blanche

the highest clay plains, about thirty-five miles up the river, are nearly on the same level with Round lake, which was estimated to be 275 feet above lake Temiscamingue. Clay is seen, I believe, on all the portages between lac des Quinze, and lake Abbitibbi. This would give a greater height than the foregoing, since on the highest of them—the height of land portage, it is about sixty feet above lake Abbitibbi or 305 feet above Temiscamingue. Taking the mean of all these heights and adding it to 612 feet, the height of lake Temiscamingue above the sea, we find that the height of the clay plain above the sea level is about 900 feet.

The largest areas of arable land are on the Blanche and around lake Abbitibbi. On the Blanche, the banks are at first only eight or ten feet above the ordinary summer level of the river, but, ascending the stream, they gain in height, step by step, until thirty miles up they rise to a height of from 100 to 150 feet above the water. Until within a few miles of Round lake, no rocks are seen, except in the channel of the stream or in the face of the cliffs. Toward Round lake the gneiss only occasionally appears above the level surface. Bluish clay was exposed in the bed of the river all the way to Round Lake, but about half way up is overlaid by a rather coarse brown sand, which in its turn, farther up, is again overlaid by clay six or eight miles below Round lake, where the cliffs are upward of a hundred feet high; the middle portion consists of sand, while at the base and summit nothing is seen but clay. The level land in the valley of this river will therefore be partly clay and partly sand, perhaps, in nearly equal proportions. The width of arable land is probably, on an average, not less than six miles, and may be much more. On the lower levels, a good deal of the surface is probably swampy. The higher levels have been almost entirely denuded of vegetation by repeated fires.

Lake Abbitibbi is surrounded on all sides by level clay land. At a good many points, however, the rock rises above the level of the clay. This is especially the case along the south side of the upper lake, where the dioritic hills, already described, approach the lake; but even here there is generally a strip of clay land along the shore. To the north, and especially the north-westward, the clay level seems almost unbroken, and it is well known that it extends in this direction to the shores of Hudson's Bay,

Several acres of this clay soil are cultivated at the Hudson Bay Company's post at Abbitibbi, and with satisfactory results. The only crop grown at present is potatoes; but I was informed by the man who has charge of the farming operations (a French Canadian, who has been more than

thirty years at Abbitibbi, but was brought up as a farmer near Sorel, in the province of Quebec,) that several other crops, including wheat, had been tried in former years, and with such results that he is inclined to insist that all the ordinary cereals can be cultivated as successfully at Abbitibbi as on the St. Lawrence. Such an opinion from a man who has been for so many years practically engaged in the cultivation of the soil, is worth recording, and ought to be reliable.

Indian corn is grown at more than one locality near the head of lake Temiscamingue, and is said to ripen well. I am able, personally, to testify to this, as I was shown some good ripe ears, which had been grown during the summer of 1872, on the farm of Mr. Angus McBride, at the head of the lake. It should be said, however, that the locality is perhaps unusually advantageous, as, besides being close to the lake, it is particularly well sheltered on all sides, except the south.

(*Walter McQuat*, May, 1873.)

EXPLORATORY LINE BETWEEN MONTREAL AND OTTAWA.

According to the instructions received from the Department, the field notes of the work entrusted to me had to be divided into the following sections :

- A.—Departure section ;
- B. —Rouge section ;
- C.—Du Lièvre section ;
- D.—Gatineau section ;
- E —Jean de Terre section.

And for the better review of this survey, I will, in this report, confine myself to these subdivisions.

A.—*Departure Section* begins at the northern angle of the township of Grandison, county of Argenteuil, where a post was erected by Mr. Provincial Land Surveyor Albright and extends to the easterly branch of the river Rouge. This section is the most mountainous of the whole line and especially the first twelve miles, that is, to the west shore of Warm lake. The point of commencement lies about six miles north north east of the

Trembling mountain, which is the highest peak of the range of mountains lying between the North river and river Rouge. The issues or connections of this formation are prolonged (as far as I am informed) towards the north about fifteen to twenty miles and to the westward to the Maccassie lake, which belongs to the most easterly branches of rivers crossed by my line. The direction of the mountains is in most instances parallel to the river Rouge, and there are only few exceptions going from east to west when constituting the boundaries of lakes, which intersect this section of country.

The largest lake of this part of the province is undoubtedly the Trembling mountain lake, lying on the front of the westerly side of the Trembling mountain. The name given to this lake by the Indians arises from the fact that, sometimes on calm days, the lake becomes moved on its surface, the cause of which is volcanic, and not as the Indians say : residence of evil spirit. West of it is Balsam lake, whose waters discharge into the Trembling mountain lake, and thence into Warm lake and Maccassie lake.

The highest ridge of mountains passed over by this line is undoubtedly the one situated on the northerly point of Balsam lake, and reaches (according to the measurement by an aneroid barometer) to upwards of seven hundred and fifty feet in a horizontal distance of fifty chains or three thousand feet which is equal to one to four. The materials of which all these mountains consist are grey granite and notwithstanding all the pains I took, I never could discover any veins of quartz to any extent.

From the west side of Warm lake towards the river Rouge, the surface of the whole country is gently sloping, and elevations of any amount can only be found in places near some lakes north of Warm lake.

The timber in this departure section is mostly mixed hard wood, that is, maple, beech, birch and elm on the sides of the mountains and cedar, ash and elm in the lower or moist posts. There are, however, occasionally a few white pines amongst a great deal of balsam. This part belongs to the limits of Messrs Hamilton Brothers, of Hawkesbury, and I met in this section two shanties, one at Warm lake and the other near the river Rouge below High Rollway.

I entertain only very little hope that, for agricultural purposes, this section will be used, except in the event of a road being made to connect the settlement of the township of Rawdon with the excellent and extensive tract of arable land lying in the next section between the rivers Rouge and Lièvre. A road through this section, although I will not deny the many difficulties which the best engineer may encounter, may yet be got, with

arable land enough to support a good many families, whose places would be used as stopping places by those who intend to locate in the section between the Rouge and Lièvre rivers.

B.—*Rouge Section* is, as a whole, level and undulating, no mountains or hills of any consequence, with the exception of the one constituting the division of the water shed between the tributaries of the Lièvre and Rouge rivers.

Near the west side of river Rouge, two or three deep gullies occur in which creeks are running, but beyond this the surface is almost level, with only a few stones or boulders on the surface, and the land must be warmer since I found more ice when advancing into the next section than here.

The soil varies between heavy and light loam of both colors, yellow and black. The extent of this tract of good land is the best adapted for agricultural purposes, which I found during my survey of one hundred and six miles, and is equal to the best lands of Upper and Lower Canada; it is also larger than, perhaps, any one not acquainted with this section of the province of Quebec might imagine. It would open a home to a large proportion of those young Canadian farmers, who cannot remain on their father's homesteads, and who at present emigrate to the neighbouring republic, whose institutions are not familiar to them. By opening up this section for settlement, Canada would gain double by it; firstly, by retaining a population brought up to farming and used to our customs and climate, the very nerve and sinew of any country, and, secondly, by raising the revenue of the country.

The distance between Rouge and Lièvre is twenty-eight miles and sixty-six chains; from this deduct about three miles west of Rouge, which leaves about twenty-five miles.

Thence downwards about forty miles and upwards twenty miles, that is, above the *Boulean* farm, and we get an area of one thousand five hundred and fifty miles; add to this an area of ten miles by seventy miles west of the Lièvre or seven hundred square miles, and we have in all an area of two thousand two hundred and fifty square miles or one million and a half of acres of land well adapted for agricultural purposes.

The farms of the two lumbering establishments, which up to this date monopolize this portion of Quebec, will give the best proof of my statements.

The resident farmers on these places assured me that they had not found any difference in the time of cultivating the lands up on the Lièvre and on the banks of the Ottawa. There are from the High Falls up to the line and outside of my calculated area a good many stretches of fine lands, and although these latter lands had been settled, yet for want of roads the settlers have left their places.

Up to date, there is no road whatsoever except during the winter on the ice and during the summer by canoeing, to enable any one to reach the High Falls which are twenty-four miles above the village of Buckingham.

This fine tract of land which, I have not the slightest doubt, will some time play a great role in the drama of colonization of the province of Quebec may be approached from three different points. Firstly, from Montreal by the road passing through New Glasgow and the village of Rawdon, and then by a road yet to be opened along my line to the Rouge. Secondly, by continuing this road up the Rouge, in the county of Argenteuil, following from the lower farm of Messrs. Hamilton Brothers their provision road, which from this place keep always on land for more than eighty miles. I may remark here that wherever these gentlemen have any establishments you may depend on finding good roads for transportation and always avoiding lakes or swamps. It will therefore be a good saving for the country. Thirdly, to continue the road which at present connects the city of Ottawa and Priest creek settlement, a distance of ten miles, would give to those poor wretches who have been waiting for the last five years patiently, a chance to get a communication with a market. These ten miles would bring the road about thirty miles on the Lièvre from the river Ottawa. From here a road could easily be found to get up to the river Lièvre, and there would be no necessity for opening up a road from Buckingham to the Ottawa and Priest creek and Lièvre road, since the distance from Ottawa would be the same as to Buckingham.

The predominating timber here is the maple, having in its company birch, (black and yellow), balsam, but no beech, as far as I could see; in the swamps, we found cedar, ash and elm; pine were few and scattered and not in groves as in a regular timber country.

This tract of land appears to me to be of an alluvial formation over limestone or Silurian outcrops of limestone in a primitive state. I found these near the height of land and again on the Lièvre at the Cedar Rapids below Tapanee. Specimens collected are lost.

C.—*Du Lievre Section* has to be divided into two parts. The first beginning, at the Lievre and ending at the height of land which divides the waters between the Lievre and Gatineau is a gentle ascent for the most part.

The other half lying in the watershed of the river Gatineau is most broken, sudden descents and stony swamps changing alternately with extensive bogs all overflown, when I passed in the neighbourhood of the many creeks and brooks with which this part abounds.

For agricultural purposes only the first half of this section can be recommended, and is included in the calculated area of arable land lying in the Rouge section. The soil for the most part is loamy but not stony although rough spots may be found near the boundaries of some of the lakes situated in the vicinity of those belonging to the Gatineau tributaries. The second part of this section with but few exceptions will be fit for settlement and these exceptions are in the township of Basketong.

The timber which grows on the first half is chiefly hard wood, with cedar, ash, balsam in the lower places, mixed with a few white pines of good size.

The foreman of a lumbering establishment complained of the great extent of ground to pass over to get a good winter's work. The second half excels in very good pine, which appears here more in groves, large spruce, and only seldom met with, hard wood; a large and extensive brûlé was met commencing at the Basketong river and nearly extending to the Gatineau. Messrs Hamilton Brothers, who have a farm near the Sturgeon Falls, only keep this place more as a depot and not to expect good crops, the soil being too sandy or too rocky.

D.—*Gatineau Section*, which begins at the west side of the Gatineau river and extends for thirty miles to where I left off my work has to all intents and purposes the appearance of a northern climate. The whole surface is broken and rocky, extensive spruce swamps with large boulders in them, varying with sudden changes of deep ravines, caused likely by volcanic eruptions; often also passed over high and steep precipices leading to the environs of small streams full of rapids, and leaving no doubt in the visitor to these regions that these waters belong to the Gatineau river.

I have to remark here that when passing the Rouge section where snow had gone from the ground, it was soft, but here, on the twelfth or thirteenth of June, I crossed on a deep bank of snow and ice under which a wild mountain brook had made its passage; the level parts being spruce

swamps were all frozen, and after removing the sod the bare ice was visible. This whole section, even, if situated nearer to communication would never be chosen by settlers, being wholly unfit for cultivation, and since the timber growing in this part of the Dominion consists mostly of white birch, poplar and balsam, &c., on the higher situated lands, and spruce in the lower and wet spots, it will by the law of nature remain the hunting ground of the aborigines or the white hunters. I mention here again as a proof of my assertion the Pongeau farm on the banks of the Jean de Terre belonging to Messrs. Hamilton Brothers, of Hawkesbury.

This farm, although situated in the most favorable spot which could be chosen, facing altogether to the south, is full of large stones, and when I left in the middle of June the oats were barely out of the ground, and of potatoes nothing was to be seen yet.

As I have remarked herebefore, corroborated by my report of the survey of the upper part of the river Jean de Terre, I only can repeat that there is in this section only to be found white birch, poplar, fir, a few beech, balsam and spruce: cedar, hemlock and white pine or red are a rare occurrence.

W. Wagner, 24th October, 1867.

HEADWATERS OF THE OTTAWA RIVER.

After making all the necessary preparations, I left Ottawa city on the eleventh of March on my journey up the Du Moine to the eighty-fifth mile post, the point from which I was to commence my explorations, arriving within nine miles of Big lake on the nineteenth of the same month. I came to the conclusion that as I had supplies sufficient forward to do my party until the opening of navigation, it would be better to push on to Victoria lake, which I accordingly did, arriving there on the seventeenth of April, scaling the canoe-route through, agreeable to instructions.

This route intersected Victoria lake at its western instead of its eastern extremity as was originally supposed. I next proceeded with the scaling of Victoria lake, which work I prosecuted with diligence until the eighteenth of May.

On the twelfth of July, I made connection with Mr. P. L. S. Wagner's, former survey of lac des Rapidos. which lake has two outlets, one running

into the Ottawa and the other into Kakebonga lake. I deviated from the main Ottawa and made this connection for the following reasons: firstly, because from a reliable source I ascertained that Mr. Wagner had suspended operations before intersecting the Ottawa and a connection at some point was very desirable. Secondly, because lac des Rapides was only seven miles in a direct line from the Ottawa.

Having thus far given a general description of my proceedings, I will now make a few remarks upon the soil, timber, &c. Generally speaking, the soil is either very rocky or sandy, and with the exception of a few fertile spots at the mouths of the small rivers and creeks is totally unfit for settlements.

From the head waters of the Du Moine until you approach the Gati-neau, the country is very level and might be compared to the table lands of Mexico. In the vicinity of Big lake and the headwaters of the Du Moine, white pine is found in considerable quantities, and of a good quality; further north, a few scrubby, stunted pines can only be seen; white birch, balsam, spruce and cedar are the most common trees.

The plants here are principally of the cryptogamic tribe—ferns, mosses, &c., and not differing from those found in the vicinity of Ottawa city.

The rocks are of the primary formation; minerals of any formation or description are unknown by the natives; cold and heat are here felt in their extremes; and the transition from winter to summer is very sudden; the thermometer sometimes sinks in winter to 46° below zero, while in summer it occasionally rises as high as 102° . The year is divided between these two seasons, spring and autumn being almost unknown. The frost begins about the first of September, and the ice disappears about the end of May, when vegetation proceeds with great activity. Potatoes, turnips and vegetables generally are cultivated with success by the Hudson Bay Company, at their trading post, at Victoria lake; last year, three hundred bushels of potatoes and two hundred of turnips were the product of a very few acres of ill-tilled land. The Hudson Bay Company have oxen, cows, and a number of other domestic animals at this post.

The Indians here are mixed, belonging to different tribes, but the majority are Algonquins; their habits and customs differ little from those of other Indians. The humane exertions of the missionaries and the Hudson Bay Company are fast working Christian results among them.

The most common animals here are moose, deer, caribou and beaver; the lakes and rivers teem with fish of almost of all descriptions; among the best are the white fish, which can be caught in Victoria lake in great quantities; they may be compared to shad in size and shape.

In conclusion, I would state that lac Barrière, the highest point reached by me on the Ottawa, is, according to information received from the employees of the Hudson Bay Company, about one hundred and twenty miles, following its sinuosities from Trout lake, its source. This lake lies between the river Jean de Terre and the west branch of the Gatineau river.

(*H.-C. Symmes*, 25th August, 1867.)

On the receipt of my instructions, supplies for the survey were forwarded to Messrs Burstall & Co's shanty on the river Du Moine, about fifty-three miles from its mouth.

On the thirteenth May following, my party left Ottawa en route for Victoria lake, and from that date to the thirteenth of June was employed in travelling up the rivers Ottawa and Du Moine, in forwarding provisions from our depot to Messrs Burnstall's shanty across the height of land from the river Du Moine to Victoria lake, and in forwarding a portion of these supplies in advance of the survey, down the river Ottawa below Victoria lake. From the thirteenth of June to the fourth August was spent on scalings of the river Ottawa from Victoria lake to the head of the river Quinze.

From the fourth to the sixteenth August, was occupied in an exploration of a portion of the route from the river Ottawa to lake Abbitibbi.

The portion of the Ottawa river covered by my survey flows through a country of very uniform character in nature of surface, kind and quality of soil and prevalent growth of wood. The surface is everywhere uneven, being broken by the low and generally rocky hills of the Laurentian formation which extends throughout; any of the small comparatively level areas are usually spruce and tamarac swamps.

As will be seen on reference to the plan, the river makes many and lengthy zig-zag or lateral deviations north and south of its general westward course. These are not the windings observed in rivers flowing

through very level countries or crossing from side to side of a wide flat valley. They are caused by the stream following in its descent the trench-like synclinal axis of the formation. The strike of the fold is seemingly nearly parallel everywhere, and its general bearing in the majority of cases about north 10° east, being that already assigned in other parts of the same formation on the north side of the Ottawa by Sir William Logan. This parallelism is singularly evident from lake Temiscamingue to the river Gatineau, being shewn eastward of my survey in the north and south direction of the long bays of Victoria lake, the lakes on the Ottawa between that and the Kakebonga, the lac des Rapides, and then in lake Kakebonga itself.

There is, though with great unevenness, a general uniformity of altitude in the country going from the height of land of the Coulonge, Du Moine, and Keepewa rivers, northward, to the slope to Hudson Bay. The depression in crossing the Ottawa being inconsiderable, it may be considered a rough plateau and but slightly inclined to the westward, however much it may rise in the opposite direction towards the sources of the St. Maurice and Saguenay rivers. The highest hills, seen some miles inland of lac des Quinze, were about three hundred and fifty feet in height; this added to the one hundred and forty feet fall in the river between would give four hundred and ninety feet, height of the Victoria lake hills, relatively to the four hundred and fifty feet of those below, or barely a difference when using mere estimations. These, the extreme highest points seen on the survey, would have an altitude above the sea of twelve hundred and fifty to thirteen hundred feet. The average height of the whole country, striking a rough mean between ordinary hills and the valleys, might be taken at nine hundred to a thousand feet above the sea.

The soil, as far as can be judged from what was seen on the survey, is usually light, sandy and poor. The hills, in many cases, were bare, rocky ridges; in others but lightly covered with soil and growth. In the valleys and low grounds adjoining streams, the soil was deeper, though generally similar in character if dry. The greater part of the level or low grounds was either tamarac and spruce or open mossy swamps. In a few exceptional cases a narrow border of richer soil was observed along the edges of streams, being the alluvium thrown up by them during floods. One instance in which this occurs to a considerable and important extent is on the banks of the Ottawa about the junction of its Abittibi branch. Here the Ottawa has got far enough to the northward to be on the verge of the southern

margin of the white clay which prevails on the adjoining slope of the Hudson Bay basin. This clay seems to have in places extended somewhat across the height of land and over the Ottawa formation. The reasons for this opinion are that the waters of the Abittibi branch, and those of the small creeks falling into the main stream near it are thick and of a milky color, through holding in suspense much of the white clayey material washed from their banks in the upper part of their course.

From appearances, the Ottawa would seem here to have, in remote times, had a much wider flood plain than at present. The waters, being gorged below at what is now the last rapids, must have spread out into a broad and comparatively stagnant reach, flooding back to near the Bear Chutes and up the Abittibi branch. The alluvium of that stream and adjoining small ones, by mixing with the waters of the main river, rendered the lake thus formed a muddy one that deposited its silt all over its area, making what is now a good deep soil. Nowhere else in the course of the survey was the Ottawa observed to have made similar deposits of any extent; its waters proper are too clean, coming as they do in this part of its course out of a Laurentian formation. Their characteristic dark brown color is, I think, owing altogether to a vegetable dye either from the living moss or decayed matter of the innumerable mossy swamps that contribute to them.

The prevalent growth of wood is similar throughout the whole ground traversed, with but slight changes in size corresponding to the changes in position from barren hill top to richer valley. The kinds observed were balsam, white birch, poplar, grey and black spruce, tamarac, pitch pine and cedar, enumerating them in the approximate order of frequency; little or no white pine fit for timber was seen. As the survey was confined to the vicinity of the river, it would be assuming too much to affirm that this would be the case all over the country, but I am afraid that the appearances would lead any one accustomed to explore for timber to judge that it would not be found in any size or quantity.

In this, however, as in the foregoing general character given to the country the conclusions are not based on observation of the immediate river banks only, though even that would be of more than usual value as the crooked course of this stream takes the observer over much more of the ground than if it were ordinarily straight. Any opportunities that offered of seeing the surrounding country from the summits of inland ridges or hills were used, and in some cases views extending all around in a radius of several miles were obtained. On account of its importance as a resource

of the country and to the revenue, a particular lookout was kept in this manner for timber, but though care was taken that in travelling down the river none should escape notice and that on heights inland an excellent field glass was used, yet not a single grove of white pine of any description was observed.

A few struggling small white pines were met on lake Nameway, again on the southern shores of lakes Expanse and Quinze, a struggling growth of scrubby white pine was observed and one small grove of red pine on the latter lake, but not any that would be considered by a lumberer of the present time worth seeking.

Besides the knowledge gained on this survey, I am, from personal acquaintance with a good deal of the country lying westward of the Gatineau along the headwaters of the Desert, Coulonge, Black river, DuMoine and Keepawa rivers, inclined to believe that little pine timber will be found northward of the sources of these streams. It is difficult to assign a reason for this, as the soil and climate do not differ materially from that of the adjoining tracts on these rivers, producing the finest timber in large quantities. It is not that the climatic northern limit of the white pine is here reached, for I have seen healthy, isolated individuals of the species at Abittibi lake, nearly one hundred miles north, nor can it be owing to the poverty of the soil, for it is quite evident in our Ottawa country that white pine can grow in any soil short of pure sand, the principal effect upon it observed in the more barren situations being that many of the trees are hollow-butted.

The small and comparatively young growth all over the country traversed by my survey would suggest the possibility of its having been over-run by fires that swept off the pine, which was then succeeded in natural alternative by the present white birch, poplar and balsam woods.

Of small fruits the following were occasionally met with : blueberry, raspberry, strawberry, cherry bush and moss cranberry and the June berry or poirier.

The main Ottawa seemed to be well stocked with fish of various kinds. The principal seen of the larger or finer as food were : maskiuongé, pike, pickerel, bass, sturgeon, white fish, Atanabit of the smaller or inferior kinds, gold eyes, suckers, dace, catfish and eels ; trout are not found in the main stream, but, in some of the tributary lakes, they are got in abundance and of the finest quality.

Some animals are not plenty and the fur-bearing ones but moderately so, being pretty well kept down by the native hunters trapping for the Hudson Bay Company. Moose and caribou are the representatives of the deer tribe, but in small numbers—nothing like what may be found in the St. Maurice or more eastern territories. The principal furred animals are on land : bear, lynx, fisher, fox and marten ; those frequenting the water : beaver, otter, mink and muskrat.

Of game birds and wild fowl, there are the ruffed partridge and the Canada goose, rarely, the ptarmigan, ducks of various kinds, bitterns occasional geese and very rarely swans.

As to climate, the country traversed would seem to be nearly three weeks behind in spring that of the city of Ottawa, with a corresponding earlier setting in of winter. The greater altitude and nearer exposure to the bleak north winds of Hudson Bay necessarily make the summer much colder than that of the lower Ottawa country, and also a winter of longer continued severe frosts. The average fall of snow is about eighteen inches or two feet more than at Ottawa, and the rainfall if measured would, I think, be in similar proportion.

On the first point tolerably clear information can be had from the natives, but of the latter their ideas are necessarily more indefinite. My own short experience would lead me to say that there was decidedly much more snow than on the Ottawa below.

As to the intensity and duration of the summer heat, I do not think it would ever be sufficient to ripen wheat ; oats and barley might, perhaps, come to maturity ; potatoes of medium size and excellent quality are grown at the Hudson Bay Company's post, on Victoria lake.

Of the fitness for settlement or other future resources of the country, it is hard to draw any favorable picture.

Apart from climate, the nature of the surface and soil is such, that with the exception on the small area before mentioned at the junction of the Abittibi, I neither know nor have been told of any portion of it fit for profitable cultivation in the sense understood by settlers of the present day in Canada. Even in the possibly fertile situations, its climate would impose too narrow limits as to the kinds of crops that could be raised. It would be absurd, however, to advance that it would not by agriculture sustain a certain population of human beings. When all the more favorably situated parts of this continent are as thickly inhabited as those of Europe, our

northern Ottawa country may similarly to Poland or the north of Russia be occupied by a scattered population who will be able by persevering industrious struggle against its sterility and severity of climate to secure a poor but independent livelihood.

As before stated, no evidence was seen of there being any pine fit for timber, and the information obtained from Indians as to the nature of the country inland goes to sustain the opinion that it is of rare occurrence, and, if such be the case, it cannot be classed with the Lower Ottawa as a field for lumbering enterprise.

Its present growth of wood can be of commercial value at some remote future period only, when even the inferior kinds of timber may become scarce and in request; at the same time its numerous mossy swamps may come in fit for fuel.

Its mineral resources are yet to be discovered. No metallic veins or metalliferous rocks were met with or heard of on the survey. The fur-bearing animals and fish in the streams are the principal sources of value for the present inhabitants who are likely to keep their increase in check so well that they will never be got in sufficient quantities to tend to a civilized occupancy of the country.

In giving information as to the agricultural capabilities of this and similar regions occupied by them, the gentlemen in the Hudson Bay Company's service are a little too apt to deal in wholesale condemnation; on the other hand some sanguine theorists wish the blank spaces on our Canadian maps to be looked upon as all more or less favorable for future immigration.

The opinions here given have been as little influenced by the former as those of any experienced Canadian explorer are likely to be affected by the latter.

The foregoing brief description is intended to apply more particularly to the country passed through on the scaling of the Ottawa. On that travelled during the exploration to lake Abittibi and of the valley of the river Blanche, I would make the following additional observations:

The first noteworthy feature on the route from lac des Quinze to lake Abittibi is that the Lonely river like the Abittibi branch is a muddy, milky-looking stream, seeing that we are again approaching the white clays of Hudson Bay. Lonely River, at its mouth about a chain wide, has a narrow, flat bank of alluvium on either side, but not extending inland any distance. The general character of the country remains the same as that heretofore

described until about the height of land, where it becomes perceptibly flatter and does not seem so rough, and the soil where seen is clayey. About the middle of lake Opasatika a change occurs in the rock formation from the hitherto prevalent gneissoid or granitoid gneiss, to a hard fine-grained greenstone or diorite which continues through to lake Abittibi and over that lake. The exact point at which this change occurs could not be seen, but near the position indicated the last of the gneiss was seen and a few miles farther up the lake the first of the new rock was met with.

The route continues from the height of land by the waters of the Abittibi river through lake Matawagogig, a picturesque labyrinth of islands, down to its discharge, a stream twice as large as Lonely river, crooking about in a flat valley wooded with the usual growth of poplar and white birch, but with a clayey soil better than that on the Ottawa left.

Then through lake Agatawekami studded with rocky islands and surrounded by low rocky shores into the wide, sluggish reach in which the river Abittibi flows, with one short interruption at the portage Danseur till it enters the bay near the Hudson Bay Company's fort on lake Abittibi.

This lake, though it has a coast line of over one hundred and fifty miles, is only about forty-five miles in length, with a breadth varying from three to twelve or fourteen miles in opposite bays. The surrounding country is so flat that barely anything beyond the immediate rocky shore is visible. In places, numerous islets are scattered over its surface; these and the shores are wooded with a small growth of poplar, white birch and balsam. Their lowness much increases the effect of apparent distances; in places the farther shores and islands melt down beneath the horizon, leaving only the blue line of sky and water. This has, I believe, led to the exaggerated accounts given by voyageurs of the size of this lake.

In the usual correspondence of small depth of water to flatness of the shore, this lake is very shallow and on this account in high winds the swell rises suddenly and is an unpleasant curl. Its waters, like those of all its feeders seen, are white and muddy. The Narrows at about two thirds of its distance downward divide it into what is almost properly two lakes. There is however hardly a perceptible current between them. Its discharge, after between three and four miles of sluggish course, precipitates itself in two steps, over all of about thirty feet high, where there was a good opportunity of estimating the size of the stream. I judged the quantity of water to be about equal to that discharged by the river Madawaska, where it joins the

Ottawa at Arnprior. These first falls on the river below lake Abittibi were the remotest point reached by our explorations.

Next to the main inlet of the lake, by which our route entered it, the principal feeder is the White Fish river, whose sources lie, I am told, about due east from lake Abittibi; I should judge it to have a course of sixty or seventy miles. The number of small creeks that fall into the lake contribute the balance of its waters.

The game and fish got in the Abittibi country are the same as those I mentioned as found on the Ottawa, with the exception of the moose which does not come here so far north or has been killed out.

As to climate, I am told that there is much rain and cold raw weather in summer, but it is evidently warm enough to grow and ripen potatoes, as they are cultivated for food in quantities at the Hudson Bay Company's fort.

With reference to the exploration of the river Blanche, on account of its reputed fertility at its mouth, I felt warranted in devoting a few days of our yet remaining time on our homeward way to its examination—its comparative accessibility and lower altitude rendering it of importance.

I ascended its main or eastern branch about thirty-five miles to the first serious break in navigation. I also went a few miles up its secondary branch on the west side. I also examined its banks in several places to a distance of a mile and two miles inland.

Its valley presents some interesting features. It is an alluvial plain rising northward from lake Temiscamingue in successive flats on the upward course of the stream; these in accordance with the theory of terrace formation should, I presume, be connected with corresponding changes of the level of that lake in remote time. The width of the plain will, I think, be found to be limited by a continuation of the hills on either side of the trench-like hollow containing the lake, and of which the valley is evidently the production northward, having formed the north end of an older lake Temiscamingue.

On the low delta-formed islands in the mouth of the river Blanche, and on its shores for several miles up it, there is a beautiful growth of elm, oak, soft maple and ash, with a small proportion of balsam and spruce; seen from

the river, its rich deep banks of the finest soil overhung with that heavy growth give fair promise for the interior.

I was much disappointed to find on penetrating inward that the land fell and that these woods soon gave place to a continuous black spruce and tamarac swamp. The surface moss and water proved to be shallow, and, on digging, the good clay was generally reached at a few inches or a foot, but still the land, to be used, would require much drainage. This first flat is, say, from ten to fifteen feet above the low water level of lake Temiscamingue. About fourteen miles up the stream, the banks rise to twenty-five or thirty feet.

The land is dry as shewn by extensive brulés. The soil though of a lighter texture than that below is yet quite fit for cultivation. At twenty-five miles up, the river is flowing through a third level or plain about eighty or ninety feet above its waters, which are say six or eight feet above lake Temiscamingue. A land slide excavation of two or three acres in extent caused by springs gave an opportunity of seeing a section of the soil.

First on the top were two or three inches of decayed leaves and then about a foot of red sand merging into grey clay, and then a dark blueish plastic clay which extended down under the river.

Though the soil is not equally good throughout on this stream, yet I think that at some future day a fair settlement may be made in its valley connected by steamer navigation with lake Temiscamingue. As to the Indians inhabiting the country traversed during our excursion, I can hardly say anything that is not already well known.

They are all of the Algonquin race ; they are quiet and orderly and completely under the control of the Hudson Bay Company's officers, and of their zealous, self-denying spiritual teachers, the missionaries.

The combined effect of both has been to change the savage condition of these Indians morally to that of uneducated civilized man, whilst, through acquiring some of the appliances and the dress of civilization, their outward life approximates more to it that many are aware.

(*Lindsay Russell*, 28th March, 1868.)

My instructions said to go down the Ottawa river until I would meet a post at Barrière Rapids planted by Mr. Symmes, yet the temptation was

for me too great not to take this lake into my plan, so I measured the main direction without going into details of offsets to the deep bays, and, in memory and acknowledgment of the great services which our Surveyor General for the province of Quebec had rendered to the exploration of the Ottawa river, I baptized this lake lac Bouchette, and that piece of river lying between lac Bouchette and lac Barrière I named Bouchette river.

I thence started with my party down the river and surveyed until I reached the Barrière Rapids, where Mr. Symmes had planted a post.

This place is known either as Barrière Rapids or as the Mission Post at lac Barrière. It is the burying-ground of the Indians living in this district.

Mr. Symmes also surveyed that portion of water which runs from lake Rapid toward the Ottawa river and planted a post marked sixty-seven miles sixteen chains on Iroquois point, at the head of lake Rapid where the waters run to the Kakebonga lake. From this post, on my return, I connected with a tree post marked H. B., at end of station twenty-nine in my former survey of lake Rapid and river Jean de Terre. By this operation the surveys are connected with old work on the river Desert.

It is known to your Department that lake Rapid has three discharges of its waters; one to the Ottawa surveyed by Mr. Symmes; the second or main discharge surveyed by myself a few years ago to lake Kakebonga, about ten miles south from the head of this lake; the third discharge known as the canoe route has not been surveyed, and, not having instructions to do so, I only took the bearings and stepped the distances, so as to enable me to give as correct an idea of the communications between these two large lakes as possible. I have shown on my plan all their connections to give a better idea of the situation of this magnificent water communication.

That portion of land through which this part of my line runs is only in a few places interrupted with hills of any consequence; the rest was of an undulating character, broken up with a great many lakes, so much that I do believe at least thirty per cent is water.

There can be no doubt entertained that the line runs outside of the timber region of our Ottawa waters, since I did not meet with a single grove of pine; the general sort of timber was spruce, birch, balsam and poplar.

The ridge east of lake Kakebonga has a little hard wood, maple and black birch.

For agricultural purposes, this tract of land has no value whatsoever.

The mountain ranges which I passed were all granite, belonging to the Laurentian formation, now and then interrupted with veins of quartz.

(*W. Wagner*, 1st April, 1868.)

BLOCK A, IN THE COUNTY OF PONTIAC.

With regard to the soil and timber, a reference to the plan and field notes of survey will give the best information on those points. I may, however, state that there is a large quantity of good arable and agricultural land along the line, and that the country is in general fairly level, without any very high mountains. The soil is mostly good clay, and, as it is more than probable that in the near future a rail-road may be built north of the Laurentides, there is no doubt that in that event the tide of emigration would soon turn in that direction. There is some very fine white pine on the second and also on the fifth limit, and a good deal of red pine on the first limit. There is also a great deal of very fine tamarac, and, should a railway be built, it would be very valuable for ties. Unfortunately, however, there is a great deal of the best timber blown down. There are also some large tracts overrun by fire, particularly on the fifth and sixth limits in the second range.

As the survey is not completed, I will not attempt to make a report of any length, but wait until such time as it is, when I shall be in a better position to report on the resources of the country.

(*John O'Sullivan*, 11th December, 1882.)

In the preliminary reports, I transmitted to your department, of the survey I made of a due east and west base line, and of meridian lines, on block A, in the county of Pontiac, in accordance with instructions from the Department of Crown Lands, dated June 14th, 1882, I gave a description of

the timber and land, &c., through which the lines pass. I will now give a more particular description of the same and a more general description of the country around block A.

From lake Temiscamingue to the 20th mile-post along the boundary line between the province of Ontario and the province of Quebec, the country is fairly level and in great part good agricultural land. About a mile north of the lake, the land commences to be wet, and for about three or four miles it is swampy, but if cleared and drained it would become in part good meadow land. This is on the Indian reserve, a tract of land ten miles in depth along the province line and containing a superficies of 38,400 acres. Great part of this tract is good agricultural land, and, as the Indians are very poor farmers, I am of opinion it would be better for them and for the country if the Government would have the reserve surveyed off into township lots and give a certain amount of money each year instead thereof to buy provisions and clothing for the tribe. Several of the Indians, about fifteen or eighteen, I was told, died from starvation last winter within a circuit of thirty miles of where I was surveying. Had these poor creatures had some supply to call on for a hundred of flour and a blanket or some clothing, they might have managed to pass through the winter, whereas there are not more than five or six families who cultivate anything on the reserve.

From the Indian reserve to the base line, the land is higher and more cut up with streams and creeks. The timber on the low land is mostly spruce, tamarac and fir, and on the high land bouleau, poplar, spruce and small red pine.

From the 20th mile post on the province line, the initial point of departure of my survey, to the Otter creek, the land is good and level and well timbered with tamarac, spruce, white birch or bouleau, red pine, and poplar. The tamarac is not large, but would be splendid for railway ties. The line crosses the creek between 61 and 67½ chains from the province line. This creek is from forty to eighty feet wide and falls into the White river (*Rivière Blanche*) crossing province line on the 19th mile. From Otter creek the land continues pretty good for about a mile and a quarter, when it commences to be rocky and swampy in places, the timber being of poor quality.

On the fifth mile there is a nice flat of land, and the timber is mostly spruce and tamarac, the latter being large and of splendid quality. On the

seventh mile there is a great deal of the timber blown down, chiefly on the high land. On the eighth mile, between the 60th and 65th chains distance, there is a rise of about two hundred feet, and there is a splendid grove of white pine along this ridge which runs nearly north and south. The first half of the tenth mile is swampy or low land, and on the rising ground the timber is nearly all blown down, which continues on to the eleventh mile, the land being poor and rocky. On the twelfth mile there is a good deal of pine, but it is in great part blown down. On the east half of this mile it is mostly tamarac and spruce, the line crossing over a large beaver meadow which extends nearly a mile towards the northeast. The thirteenth mile is mostly rising land and is fairly good, but the higher part is very rocky. There is some white pine on the high part.

At 13 miles 33½ chains the line crosses the west shore of lac Barrière, and at 14 miles 38 chains the east shore. Through this lake is the general route for the Hudson Bay Company between the Ottawa and lake Abitibi and thence to Hudson Bay.

At the 15th mile post the line runs over a rocky height from which to 15 miles 64 chains the land is undulating. Here it touches the south end of a very pretty little lake which abounds with fish. There are some pine, cedar, and bouleau here.

Between 47 and 53 chains beyond the 18th mile the line crosses another lake around which there is a good deal of pine. Mr. Taggart took a raft of pine from around this lake last spring.

A portage of about a furlong in length is all is required from the head of this lake to a large lake running north and forming part of lac Barrière. From the 19th to the 31st mile the line runs over undulating land, the high parts being, in general, rocky with good land in the low tracts. On the 24th mile there is a fall of about seventy-five feet into a cranberry swamp and then a rise of about 125 feet in three chains. To the north east of this rise there is a lake of some size within less than half a mile of the line.

At 30 miles 46 chains the line crosses the west shore of a lake called Rodger's lake, and at 31 miles 42 chains the east shore. On the peninsula between this lake and the lake crossed on the 19th mile, there is a large tract of very good land south of the line, great part of which has been overrun by fire; the land is mostly low and is a heavy clay soil, and would make fine meadow land. There is a chain of lakes south of the line from a

mile and a half to four or five miles which nearly joins the two lakes. On the 24th and 25th miles there is a good deal of white pine.

From Rodger's lake to where the line crosses the Ottawa, a distance of five miles, is a splendid tract of country, the land being level and the soil good. The timber is mostly spruce and poplar, with some tamarac, and an odd white pine; near the Ottawa there are some large black birches. There are two discharges from Rodger's lake, one at the south and running almost due south, and discharging through a series of lakes into lac des Quinze, and one running nearly parallel to the base line on the south side for four and a half miles where it takes a bend towards the north and is crossed by the line thirty chains from where it strikes the Ottawa. It empties into the Ottawa thirteen chains north of the line.

The line strikes the right bank of the Ottawa at 37 miles 78 chains, and the left bank at 37 miles 11 chains 60 links, the breadth of the river here being 13 chains 60 links. The river here runs nearly north and south, and for several miles in both directions maintains an average breadth of about twelve chains. At 49 miles 34 chains the line crosses the Ottawa a second time. The tract of land enclosed by the bend of the river, and, in fact, the whole tract south, as far as lake Winnowaya, is a poor, barren country being either rocky hills or marshy swamps, and in great part overrun by fire. There is, however, a pretty good strip of land of from fifty to eighty chains in depth all along the river.

At 40 miles 5 $\frac{1}{2}$ chains the line crosses a creek forty feet wide, discharging out of a lake, half a mile to the south, of about three miles in length and one-half to three quarters of a mile wide. Between 45 and 52 chains beyond the 46th mile, the line crosses a creek three times of about half a chain in width, and another of about the same breadth at 47 miles, and again eighteen chains farther on one of 30 links wide. From this stream to the Ottawa there is no timber but small cypress to be seen, which would indicate poor land, and yet where the soil was exposed it appeared to be of a pretty fair quality. This section appears to have been overrun by fire some thirty years ago.

The breadth of the Ottawa where the line crosses it a second time is 6 chains 70 links, the right bank being at 49 miles 40 chains 70 links. From the Ottawa to 50 miles 20 chains the land is good and the timber mostly tamarac, poplar and spruce, the line then crosses a cranberry swamp which extends to the 52nd mile.

From the 52nd to the 57th mile the land is more rolling with occasional patches of swamp, and of high land, of rises of from 40 to 60 feet. The timber is mostly spruce, tamarac and cypress, with poplar on the patches of good land.

From the 57th to the 60th mile, or end of the base line, the land is more uneven and the hills much higher. At 58 miles 9 chains the line runs within a chain of the south end of a lake which runs nearly due north for several miles, having a breadth of from one-half to three-fourths of a mile.

On the 59th and 60th miles, there is a pretty good ridge of white pine, the other timber is pretty large also, being bouleau, spruce and fir, with some old cedars.

Between 53 and 65 chains on the sixtieth mile the line crosses over the centre of an oval-shaped pond, the water in which is very clear and of a great depth, and I could see neither inlet nor outlet. From this pond the land rises towards the east about 100 feet in five chains, where it is level for about seven chains, when it again descends, the fall being about 60 feet to the 60th mile post.

The 60th mile post is on the side-hill, the post being of tamarac and about 6 inches square. I also cut off a spruce tree, 6 feet high, and squared it as a post, and marked on it the distance, the number of the limit and the date.

From the 60th mile-post I ran a meridian line as far as the river Ottawa, a length of eight miles, fifty and a half chains. All need be said of the land along this line can be said in a few words, that is: it is poor and barren for eight miles, being either rocky or swampy, and in great part overrun by fires. The last half mile next the Ottawa is, however, pretty good land, and the timber mostly poplar, tamarac and spruce, but not of a large size, being a growth of about 30 years.

Meridian Line from 35th Mile-Post.—From the 35th mile-post I ran a meridian line south to lake Winnowaya, a length of 11 miles, 64½ chains. The land is good all along the line, but more particularly for the first five miles next the base line. Great part of the belt of land between Rodger's lake and the Ottawa appears to be good land, and is pretty well timbered with tamarac, spruce, fir and poplar; there is also large bouleau and some

birch. At five and a quarter miles the line strikes a marshy bay in from the Ottawa, and at 6 miles 7 chains a bend of the river for over a quarter of a mile.

At 6 miles 47 chains the line crosses a creek, one and a half chains wide, discharging out of a small lake or pond a little to the west. A quarter of a mile further on, the land rises from the marshy land, between the small lake last mentioned and the Ottawa river. Opposite to this there is a good grove of pine on the east side or left bank of the river.

From the seventh mile to the tenth, or to the first range, the land is broken and rough, but the soil appears to be good.

From the tenth mile to lake Winnowaya, the land is low and level and apparently good, bearing spruce, tamarac, poplar and fir. There is a pretty good grove of pine along the Ottawa, on the west shore, a few miles up from lake Winnowaya.

The best pine I have seen appears to be on the south end of the 6th limit, in the second range, along the west side of Rodger's lake, and on the ridge on the second limit.

The climate at the head of lake Temiscamingue is not much different from what it is at Quebec. The season may possibly be a few days shorter but the snow-fall is not so great. It is hard to judge by last spring as it was a late, wet spring all through the province; I saw very fine wheat growing last summer along the Quinze river, and Mr Taggart has a farm he commenced sowing last year on the west shore of the Quinze lake, and I never saw finer potatoes or oats than he grew.

The Burwash brothers have two farms, one on the south side of the Quinze river, and another, which, I understand, is on the Indian reserve; and one of them told me last spring they had sold for over two thousand dollars worth of hay and oats between Mr. Grant's and Mr. Taggart's shanties. When I was on my way up to survey, they were getting up a mowing and a harvesting machine.

From the time I arrived at where I discontinued last fall on the 24th March up to the 14th April, the thermometer generally ranged between five degrees above and ten below zero during the night, but the days were fine. On the 16th, 17th and 18th April we experienced a warm wave which melted the snow all off in the swamps, and the men had to wade through

the water and throw off their snow-shoes ; it was more like July than April weather. Previous to that, we could only find water in the lakes and large creeks. Fortunately for us we had some cool weather and frosty nights for the remainder of the month, or we could not have finished, as it was impossible to get up provisions. We had to work on Sundays, and were several days with nothing but crumbs of wet biscuit and a small allowance of pork.

On the 27th April we reached where we had a store of provisions, when I preferred to return to the 35th mile-post to finish the meridian line from that point to lake Winnowaya. The ice having disappeared on the Ottawa, I procured a bark canoe at Fort Winnowaya and got started on the 3rd May, and worked up the Ottawa and around by Rodger's river to the line. I then had to send some of my men up the Ottawa for baggage, which we were unable to take out with us when our provisions were scarce.

During the time I was occupied in running the meridian from the 35th mile-post to lake Winnowaya we had very unfavorable weather, it having rained or snowed nearly every second day. I finished the line to the lake on the seventeenth of May, and it was only the day before, on the sixteenth, that the ice disappeared from the lake. There was still a good deal of snow on the north sides of hills and of soft wood lands.

On the 18th I scaled part of the shore to connect the line with a survey I had previously made, to lay down the entrance of the Ottawa to lake Winnowaya. On the 19th we left Fort Winnowaya on our return home, and on the 21st and 22nd it snowed and froze so hard at night that we had to break the ice to pass through the shallow bays with our bark canoes. After that it turned fair and we had fine weather until we reached Mattawa on the first of June.

In the course of the survey I took notes of the general configuration of the country, and collected what information I could, with the intention of reporting on the most feasible line for a railway, but pressure of business prevented my studying the matter as thoroughly as I had intended ; so I shall, for the present, abstain from making any remarks on the subject.

(*John O'Sullivan, 1883.*)

THE UPPER OTTAWA.

In accordance with instructions received from your Department, dated 10th August last, for the scaling of a portion of the Upper Ottawa from the mouth of the river Shu-shu-guan to P. L. S. Wagner's post at the end of the line between the counties of Pontiac and Montcalm, and also of a portion of the tributaries coming from the North, — I beg to report as follows :

Having made all necessary preparations, I left Quebec on the 13th September and arrived at the head of lake Temiscamingue on the evening of the 20th.

Here I procured canoes and men and proceeded up the river, arriving at lake Waboosknan on the 4th October and began scaling a stream coming in from the North, which was supposed to be another channel of the Ottawa, running out of the north end of Victoria lake into lake Wabooskanan.

The bed of this stream was about the same width as that of the Ottawa, but the water was shallow, with no current, and after proceeding five miles, I found that the bed of the stream narrowed to less than a half chain, with insufficient water to float a canoe. The forest closing in on each side, also proved that the stream was an insignificant one and not worth following up, I therefore abandoned it, and afterwards learnt that it did not flow out of Victoria lake, and had no connection with it.

I then proceeded on to Kitchisagan or Victoria lake, arriving there on the 7th and continued on to the mouth of the Shushuguan (or frying pan) and there began the scaling of the Ottawa, which I carried on to P. L. S. Wagner's post.

After completing the scaling of the Ottawa, I went down to the river Kapitajewano, and scaled it for about twenty-five miles. This river averages about two chains in width ; it is deep, with an easy current. The banks are low and level throughout ; the soil is excellent and the growth of timber is aspen, bouleau, spruce, fir and tamarac.

I then went down to the river Shushuguan with the intention of scaling a portion of that river in order to ascertain if the soil was as good and fit for culture as I expected, but I had not gone far before cold weather

set in, and, the ice forming rapidly, I saw that it was necessary to close operations and hurry down in order to escape being closed in.

From above lake Temiscamingue to Lac des Quinze is a succession of rapids and portages, the dread of voyageurs and still more so of the lumbermen on the "drive."

From above lake Expanse to beyond lake Victoria, the river averages about eight chains in width, the banks are low, and in many places grassy, the soil is good and the growth of timber is, along the banks, aspen, bouleau, spruce, fir, tamarac and pine.

The country is level and no hills to be seen; how far the growth of timber and good land extend back from the river, I was not instructed to ascertain.

Such crops as have been tried (principally potatoes) have proved a success. At lake des Quinze and Victoria lake, large quantities are raised. I also found at north end of lake Wabooskanan a small field of them planted by an Indian, who was then absent from home. Again on the north bank of Birch lake, a quantity sufficient for their wants was raised by Pawpawte, the chief who resides there.

And again near the mouth of the river Kapitajewano, I found an Indian named Natawe, who had a considerable clearing and had raised good crops. He had some good cattle and had cut and stacked a large quantity of wild hay as fodder for the winter.

I may remark before closing that, in view of the level nature of the country, the large extent of good land, and the facilities for making good roads thereto, we may expect to see extensive settlements formed there as soon as the country becomes known.

(John Bignell, November, 1887).

OTTER TAIL RIVER.

According to your instructions, I should have commenced my work at the 110th mile post. This was utterly impossible, as, after searching for two days, I succeeded in finding only the 105th mile post, where I com-

menced my survey, as appears by my field notes and plan. My notes are not voluminous, for I traversed an immense burnt tract of level, arable land, consisting of clay and sand, very fertile and fit for cultivation, especially in the projected townships of Gignes and Duhamel. In these townships farming operations may be begun with very little preparation, as they are nearly all burnt lands, except on the banks of the rivers and lakes; there are only a few stumps to be removed and the plough may then be used at once. A Mr. Piché, who lives in the township of Gignes, has a very fine farm, comprising over a hundred acres in cultivation; he has succeeded very well, even growing his own wheat. From lake Temiscamingue, I continued the scaling of the principal river as far as its source. I then commenced operations on the Cameron branch, which I found so considerable that I followed it up, in accordance with my instructions, as far as lac des Quinze. On this branch a good causeway and two slides have been constructed. Three large rafts of red pine were cut there some years ago by Messrs. Humphrey & Roche. From lake Sasseganega to the river des Quinze, the land is well wooded with white and red pine.

I am firmly convinced that, if it is desirable to avoid the rapids of the des Quinze, it will be easy and not expensive to run timber down the Cameron branch, by means of a short canal; but for this another exploration of a few miles of this section would be necessary, in order that the most suitable pass might be chosen.

(*Arthur Cimon*, 24th October, 1881).

TERRITORY OF RIVERS ROUGE, LIÈVRE AND PETITE-NATION.

I have the honor to submit the following report on exploration between the rivers Lièvre and St. Maurice performed under instructions from your department, dated 4th June, 1869:

On the plan accompanying the instructions for the exploration, the main or base line is divided into sections numbering eastward from its commencement. These sections are shewn and similarly numbered on the plan returned herewith. They afford a convenient division for the purpose of description and reference to said plan. East section, when mentioned in

this report, is to be understood to embrace all the space on either side of the main or base line, within its distance on that line, and extend as far north west and south east therefrom as the researches of the exploration have gone, indicated by the topographical features and descriptive notes on the plan.

Besides the ground in the vicinity of the actually surveyed lines, a good deal of country was necessarily traversed in travelling to and from the immediate field of operation and in transporting and procuring relays of supply. The information acquired or ideas formed respecting the character of localities thus passed through will unavoidably lack the precision and accuracy obtained by the closer examination on lines of the surveys, but will not be without their value in helping to make an approximate estimate of the general character of the country, as regards fitness for settlement and facilities of access by natural or artificial modes of communication.

The valley of the Nation river, from its mouth to its extreme source, was thus traversed twice by the whole party on first going to work; subsequently a second time by myself, with a relay of provisions, thus giving a favorable opportunity of comparing the character of the settled portions of the valley of that stream with those more remote and as yet unoccupied; the impression resulting from such comparison being rather in favor of the latter, as to fertility of soil and evenness of surface.

Section I.—Embraces the country along our projection of the northern outline of the township of Kiamika and along the base line to the intersection of Mr. LeBer's transverse line from lac Rond, of the Nomingue waters. It is qualified on the plan as fit for settlements of a scattered nature. Along the lines in this section some lands were passed through of excellent quality for agriculture, soil a rich dark loam, surface even enough to be cultivated with a plough; roads of the most desirable kind; large maples for this northern region, many a couple of feet in diameter; black or yellow birches, three feet through; an occasional basswood of similar dimensions and some hemlock; the two latter woods furnish a valuable indication of the climate with respect to the ripening of wheat. In connection with this, I would mention that I have, in this section, seen a few isolated butternuts of large size and healthy growth. These last are a still more conclusive evidence of fitness of climate for grain culture.

The good land is usually on the hills, whilst the low grounds, besides being very swampy in places, give generally a poor sandy subsoil under

the surface moss. In this characteristic of rich soil on the highest hills, the country resembles some parts of the Eastern Townships. The unfavorable features in this section are :

First.—That there are no large connected areas of the best land.

The hills or ridges are low and the ascents and descents from them generally not steep ; but the alternative of hill and hollow occurs often in a comparatively short distance ; the hollow is as before and generally poor soil ; the ascent and descent, the change from low to high ground and *vice-versa*, is often rocky even when not steep ; when steep, it is invariably so. Thus there remains for the useful area of good land such plateau or level surface, or easy slope, as may be found about the summit of the successive hills or ridges.

The second unfavorable feature is that the interruptions of swampy and rocky ground between the arable areas, besides necessitating a scattering settlement, and thereby making for a given number of inhabitants a greater required length of road, also entails a greater expenditure in building such road through these interruptions, where either rocks or stones have to be removed or swamps fascined and drained off.

I have spoken of the low grounds as very poor soil. I would not by that be understood to say that they are without exception useless, totally unfit for culture ; no doubt, with proper drainage, some of these swamps could be profitably cultivated in connection with pieces of adjoining higher and more favorable ground.

They would be less objectionable than the feature of rockiness and stoniness that is met with in some of the fine hard wood groves in which the soil is good and strong, and produces a heavy growth of large trees, but is yet so stony or full of boulders that ploughing would be out of the question.

Still, notwithstanding these drawbacks, I would consider section one as forming a part of the tract of habitable country that extends along the valley of the Nation river, thence northwestward across the Lièvre, and probably out to the Baskatong, and fit to be subdivided into townships and farm lots for the reception of settlers.

The river Kiamika, its larger tributary creeks, and the headwaters of the Nation river afford abundant water power for mills and other factories near almost any point that they may be required. I may particularize the

two falls below Big Bark lake, river Kiamika, as excellent mill sites, any of them being capable of driving half a dozen of the largest mills or factories at any season of the year.

The river Kiamika, though of sufficient size, will never, in any state of the settlement of the country, afford a means of transport; its course is too often interrupted by long shallow rapids of steep incline and therefore considerable fall.

No pine fit for timber was seen elsewhere than in places where lumberers had cut most of what was worth taking; even before they came, there must have been but little timber in this section. Where it is not hard wood land, it is generally wooded with spruce, balsam, tamarac and ash; the tamarac was not seen anywhere large enough for exportation, though of sufficient dimensions to be useful for local building purposes.

As to the occurrence of economic minerals in this section, I am not aware that our geologist, whose province it is to report on them, succeeded in meeting any. None of my party saw any.

Section II.—Includes the space explored lying between Mr. LeBer's transverse line at seventh mile of base line and Mr. Wagner's N. W. exploring line.

It is qualified on the plan as fit for scattered settlement.

We are in this section still in the same kind of country as in the previous or first section; all the remarks made on it apply directly to this section. To describe its character would be to repeat the same words with the modification that in this section there is a slightly increasing preponderance of rocky ground compared with the former section. This is particularly the case north west of the line of route from Little Bark lake, river Kiamika, through Pike lake to lac des Cornes.....

An important omission was made in last section, when mentioning that no discovery of economic minerals was made. Though I saw no beds of stones that would be very suitable for building, yet the fact that the geologist found in different places bands of crystalline limestone among the prevailing gneiss, assures to the future settlers a source from which to get at least a supply of that useful article, lime. The examination of the run of the rocks in this region will no doubt have enabled the geologist to lay down the probable course of these useful bands and to predict with some

certainly the nearest direction in which they will be found from any point required.

Section III.—Embraces the ground explored along the base line, and on each side thereof between Mr. Wagner's line and the transverse line, twenty-third mile of the base line.

In this section a very decided change has occurred in the character of the country, and an unfavorable one in an agricultural point of view. It is described on the plan as having scattered small areas fit for cultivation, especially between base line and the river Rouge. The change of character does not, of course, follow our line of division of this from the previous section, nor is it any where so evident or well defined that we can say precisely where the change from better to worse occurs.

A line due east from the lac des Cornes to the river Rouge would, in my opinion, form a fair average line, north east of which, I am afraid that no part of the country traversed by us will be found fit for agricultural occupation, as understood in the present day.

This opinion is based on the knowledge acquired by seeing the country, not only in the vicinity of our surveyed lines, but at many other points, where the necessities of the surveys obliged us to pass.

Besides a change to greater roughness of surface, inferior sandy soil and corresponding poorer growth of woods, both as to size and kind, there is the fact of a generally greater elevation of the country. This change of level produces the Long Rapids on the river Rouge. It is also particularly conspicuous in the high lands north east of lake Kiamika; thence trending round the Kiamika valley above that lake; and also in the high ridges running north and north west round the north east shore of lac Brulé.

Whether it be owing to a difference of climate attendant on greater elevation or to poorer soil, it is still a significant fact that north east of lake Kiamika the hemlock ceases to be found.

The imaginary divisional line above mentioned due east from lac des Cornes and crossing to the Long Rapids on river Rouge would leave included, in the area fit for scattered settlements, nearly all of section three, on the south east side of the base line. In this section a small area occurs between the base line and the south west end of lac Brulé, containing pine fit for timber or saw logs of good quality. The quantity, however, is small, and is included in the space defined opposite the twenty-first and twenty-second miles of the base line.

Sections IV & V.—Will properly be described together, as they are precisely similar in character and are unfit for any settlements.

In these sections, the soft woods predominate; occasional patches contain good sized yellow birch, say eighteen inches diameter, and even among these an exceptional maple; but spruce, white birch, balsam and poplar are the prevailing woods.

Where a small area of the hardwood mentioned does occur, it is invariably rocky and full of boulders. In this part of the country rarely did the picket man plant his rod without encountering at the first blow a stone, and not a small one.

The surface of the country is exceedingly uneven; hills that rise to no great height, but following each other like the waves of the sea. In travelling through it, one is either in the mossy spruce swamp of the hollow or on the steep incline of the hill face; the level surface on the top of the ridges being but small. However, when any of the hard wood growth indicating a little stronger soil occurs, it is on the summits of these ridges.

In section five, after crossing the Stone House tributary of the Rouge, called by lumberers, who explored here, Cameron's creek, the country changes a little in the greater prevalence of mossy open swamps over heights of hills, and even poorer soil and growth, the former being principally a whitish sand, and the latter small balsam, white birch and spruce.

The examination of section five was not pushed far from the main line on the south east side, because, in the first place, the main river Rouge ran through it and had been reported on by different Government explorers, and, next, on account of the known worthlessness for agriculture of the upper part of that stream, a character that our observations when travelling up and down it fully verified.

We did not observe any pine near our lines in either section four or five, but in striking out to the main river Lievre from lake Brûlé, by the waters of Iroquois creek, I saw fine groves on that stream that would warrant lumbering operations there.

Section VI.—The last shewn on the plan and terminating where our work was closed this season, at fifty-third mile post of the main line.

This section is like the two preceding totally unfit for settlement. In character, it is a continuation of the latter portion of section number five just described; and, for same reasons mentioned in that section, the explo-

ration of the lines was limited. In fact, the character of the country would not have warranted the survey of a transverse line, but knowing that, for the purpose of future mapping, it would furnish a valuable tie between the head of the river Rouge and the main and most easterly branch of the river Lièvre, I considered it advisable to scale it from the one across the base line to the other, thus connecting them both with that line and with each other.

I had hoped that, before reaching the north east limit of this section, we would strike the white pine timber country said to exist about the head waters of the Matawin or Milieu river, and those of the river Manouan, but of this we saw no sign. Large open swamps, intersected by rocky ridges with small white birch and poplar woods, are the prevailing features on the north west side of the base line.

On the south east of the main line, the banks of the Rouge are rough and hilly, a poor sandy soil, wooded with the same small growth of white birch and balsam, poplar and spruce.

In concluding the description of the country along the main line of exploration, I would observe that it is unfavorable for the construction of roads or railroads that might at some future day be planned to connect localities between which it intervenes. This is particularly the case with respect to railroads.

The hills are not high, but their steepness and frequency would involve nearly continuous heavy cuttings and embankments to keep up anything like reasonable grades. For common roads, this unevenness or roughness of the ground is, of course, a much less obstacle, as steepness of grade is in their case to a great extent admissible.

Game and fish, the latter especially, are often important to the first settlers in remote regions. I may therefore mention that the country we traversed is as well supplied with this as most other portions of the northern Ottawa country.

The fur-bearing animals are pretty well decimated, deer, that is, moose, caribou, and the Virginian or chevreuil are moderately abundant. Of fish, the lakes and streams seem to possess a bountiful supply, consisting for the most part of the finest kind of trout, pickerel or doré and the pike families.

The hunting grounds seem to be occupied principally by a few of the Two Mountains Indians.

I shall proceed with remarks on the country generally in the valley of the rivers Lièvre, Nation and Rouge.

The river Nation may be considered as lying along the centre of a tract of habitable country that extends back from the river Ottawa in a northwesterly direction, with certain interruptions, as far, I am led to believe, as the Baskatong, and embraced between the rivers Lièvre and Rouge, until they turn away in a northerly and northeasterly direction. The head of the Nation seemed to me almost a better country for agricultural purposes than the already settled part about its mouth. In like manner, the shores of the Lièvre appeared rougher and more barren for about fifty miles of its lower course than for the succeeding sixty or seventy above that; on the contrary, the lower valley of the river Rouge is the most favorable portion of its basin. These facts would agree in pointing out a band of good country extending as mentioned north westward from the Ottawa at the mouths of the rivers Nation and Rouge. The direction of our main exploratory line north east was across the smaller dimension of this tract and soon took us behind it.

Though speaking of this as good land for colonization, I would not be understood to compare it with the level and fertile plains along the St. Lawrence, in the province of Quebec, or of the western peninsula of Ontario, but my knowledge of all the north side of the valley of the Ottawa west of or about this, acquired by years spent in traversing it in all directions, enables me to say that the tract of country now referred to is the best wild land that still remains for colonization on the north side of the Ottawa above Grenville.

Communication through it will be best effected by continuing the road up the valley of the Nation river. It gives the shortest access to steamboat navigation; the road from the Ottawa to Papineauville, thence through St. André d'Avelin, is one of the best country roads on the Ottawa. It is already made nearly to lac Simon or Barrière; the gravelly and open nature of the soil along this road is particularly favorable to its being a great or leading road of entry into a back country, as the rainy seasons have not nearly so bad an effect in cutting it up as they have on more clayey roads. This road would be wisely continued by taking it across to the west side of the Nation, and keeping back a few miles from the shores of lake Simon, proceeding north-westward through the township of Kiamika and near its north-east corner, thence onward to cross the river Lièvre near Messrs. McLaren & Co's. mountain farm.

Branches from it could be made to give access to the good lands around the Nominique lake and upon sections one and two of our exploration.

A colonization road up the river Rouge would also, doubtless, help to establish there a settlement.

The ground along the lower course of the river Lièvre is so rough and unfavorable for roads that the settlers of its upper valleys will have to go in by the roads of the river Nation on the one side and those of the Gatineau on the other.

(*Lindsay Russell*, 15th January, 1870.)

UPPER LIÈVRE.

In obedience to instructions for the survey of part of the Riviere-du-Lièvre, extending from the N. W. corner of the township of Campbell to the Forks and thence up its three main branches to their sources, &c., I beg to report as follows :

Being unable to find the post at the N. W. angle of this township, or any vestige of the line, in consequence of the extensive lumbering operations and windfalls which have taken place since the post was planted (in 1846), I took for my point of departure and commenced operations at a very prominent mark, called the "Cheval Blanc" which is a huge grey boulder near the middle of the river, some short distance below where the post should have been found. We scaled upwards, marking mile trees as we progressed and arrived at the Forks in canoes on the 21st November, having encountered ice all the way, portaging over it wherever it was stopped. From "Cheval Blanc" to the Forks the land in the neighbourhood of the river is level and the soil good, several farms are met with where grain and fodder are raised for the lumbering establishments. The banks of the river are low and the current pretty strong, broken by an occasional rapid. The growth of timber is spruce, fir, birch, pine, elm, cedar and ash.

From the Forks, after taking an observation for latitude and ascertaining the variation, I ran a line due south-east to intersect the exploratory line between rivers du Lièvre and St. Maurice, and falling upon it between the 32nd and 33rd mile posts as detailed in my field notes. This line passes over a rough, broken and mountainous country, where are found many small lakes and streams; the land is poor and in many places rocky;

the growth is fir, spruce, birch, bouleau, cedar, maple, tamarac and pine, the last being abundant in the neighbourhood of the Forks for the first two and three miles, but diminishes in quantity to the twelfth mile, beyond which no more is seen. About the middle of the eighth mile, the line intersects a winter road which had just been opened between Tapanee Farm and the lumbering camps situated from 14 to 22 miles above the Forks on the east branch. The distance from the Forks to the exploratory line is twenty-one miles, and mile posts are planted throughout, numbered from the Forks.

Having completed this line, we returned to the Forks and scaled the east branch on the ice to the outlet of lake Nemicachingue, thence we continued the scaling by a small river and chain of lakes across to the west branch, which we also scaled from the Forks to its source together also with the north west secondary branch which flows into the east branch 25 miles above the Forks. All these branches are rapid and pass through many lakes, some of them of considerable extent. The aspect of the country is the same throughout, viz: hilly, and in many places mountainous and rocky, the soil is poor and the growth is fir, spruce, cypress, bouleau, aspen, tamarac and pine. The last is abundant at the Forks and for 25 miles above, along the east branch; beyond that it diminishes in quantity very rapidly and the quality is very inferior. Along the west branch it is also plentiful in some places and is found in gradually diminishing quantities as far as the head of lake Mejomangoos; beyond that no more is seen.

From the head of the west branch, we chained across to the east branch of the river Gatineau, scaling the large lake lying at the head thereof named Menjobagoos. Thence we chained across the head of Ribbon river, scaling it from its source to its confluence with the river Matawin, near the St. Maurice, where we closed our operations. All this portion of the territory is rough, hilly or mountainous, the soil is poor, being sandy near the rivers and lakes and generally rocky on the hills. There is a good deal of *brûlé* around lake Menjobagoos and along Ribbon river, and, where not burnt, the growth is fir, spruce, bouleau, cypress, aspen and tamarac.

Having closed our operations, we made our way to the Hudson Bay Post, at Weymontachingue, and the next day we travelled down the river St. Maurice towards La Tuque, where we were detained one day.

(John Bignell, 22nd August, 1874.)

BEAR RIVER.

I have the honor to submit the following general report of my survey of Bear river and its principal tributaries :

Bear river is one of the chief tributaries of the river du Lièvre and a river of importance, as far as the lumber business is concerned. It is not known as Bear river, but as Deaf river (*rivière du Sourd*)....., but, as my instructions call it Bear river, I will retain it by that name.....Bear lake might almost be termed the head of the river. It is a beautiful lake of good size, with numerous bays, points and islands. Two large creeks are shewn as tributaries to the lake, viz: Cameron and Kavanagh creeks. The former is the main or principal creek. In descending the river from the lake, the first tributary met with is Bouleau creek. It is of size sufficient to float saw logs, for a distance of four miles from its mouth. Descending, the next is Kennedy creek, which is the largest tributary of Bear river. At two and one half miles, or thereabouts, it branches off. The branches are lengthy and have both been driven by the lumbermen. Thence descending the river, we meet with the waters of the Benjamin creek, which I found of a fair size and navigable for timber the distance I have scaled. Continuing down the river, a few chutes, rapids, &c., are passed, when we reach the river du Lièvre. Bear river is a swift-running stream, with many small chutes, rapids, &c. Its power is simply immense.

The country drained by this river is by no means rough or mountainous. Small mountains surround Bear lake, but the country in general is undulating. The lake contains some beautiful islands and the scenery surrounding it is very beautiful. There are a few small inland lakes. The banks of the streams average from six to eight feet in height.

TIMBER.—Were the value of the pine that has been floated down this stream computed, it would amount to millions of dollars ; there is also a large quantity still standing. Spruce and tamarac are plentiful and there is also a good deal of hardwood and a large quantity of balsam.

SOIL.—The soil consists of light clay sandy and gravelly loams. Surrounding the lakes and on Beaulieu and Kennedy creeks, the soil is of a very fair quality, but, on Benjamin creek, it is sandy and not of a nature to encourage settlement.

FISH AND GAME.—Fish, such as trout, pike, bass, &c., are plentiful in Bear lake, but not so much so in the streams, owing to the swift current

and few pools. The scarcity of fish in the streams may also be attributed to the extensive lumbering operations which are being carried on.

I saw very little game throughout the whole of my survey.

(*G.-E. McMartin*, 14th November, 1887.)

RIVER ROUGE.

On arriving at the place of beginning, I took a meridian at the earliest opportunity and proceeded to the verification of the rear line of Clyde and the west line of Grandison, all which will be found fully detailed in the field book.

The tributaries on the east side are the Three Branch river; two considerable creeks entering just below the great rapids; Island creek, at forty six miles and one half, Knoll creek, at fifty-six miles and three quarters, and the last but not the least, the Two Branch river, at forty-seven miles and thirty-five chains.

On the west are the great Nomingue and Pike creeks, the little Nomingue, two large creeks below the great rapids; Soft creek, a little above the sixtieth mile, and lastly, the Stone House creek, where I quitted the survey for this season.

Although all these streams were explored a short distance up, the only one surveyed was a portion of the Three Branch river, that branch of it call the Mocazi which was surveyed up to Balsam lake, a distance of nine miles, which divides the Three Branch river, at about one mile and a half, into three streams, called respectively the Mocazi, the Cold creek, and the Warm creek; the first is considered the largest, it has several lakes on it; the second, Cold creek, has no lakes, and the third is largely supplied by lakes, but it is not so long as either of the other two, which will extend into the interior at least thirty miles in length. I have learned from the Indians that it is the Two Branch river which connects with the Matawin branch of the St. Maurice.

The streams which are of sufficient size and length to require surveying are the Three Branch river, Island creek, Knoll creek and Two Branch river on the east; and the Big Nomingue and Pike creeks, the two creeks below the great rapids, Soft creek and the Stone House creek on the west;

with about thirty miles more of the main river ; I quitted within three miles of Rouge lake, the only one on the main river.

The rapids of this river are rather formidable for canoes during high water to run them, but from the Long Rapids the stream (the rapids and chutes) present no difficulty to the descent of timber either in saw logs or square timber, except in the lower part through the township of Grenville. This river opens early, so that any timber laid on the main river could go down in good time to market.

The banks are high and bluff-like, coarse and sandy, no stones appearing except at the rapids. From the rear of Clyde the mountainous aspect of the country on the Rouge disappears as we go northward. I have estimated the rise of the river from the commencement of the survey at Clyde to its close at the mouth of the Stone House creek from a few cursory levels taken, which are as follows :

1. Iroquois Chute at.....	6	miles	6	chains long.....	30	feet.
2. Pine Rapids.....	9½	"	4	" " "	4	"
3. Chute of the Two Sisters	12	"	2	" " "	14	"
4. Chute Split Rock.....	12½	"	3	" " "	10	"
5. Long Rapids the less....	13	"	115	" " "	50	"
6. A small rapid.....	18	"	8	" " "	2	"
7. Slippery Rock.....	18½	"	5	" " "	8	"
8. Lantier's Rapids.....	30	"	55	" " "	30	"
9. Long Rapids the great..	44 chs. 56 links		1121	" " "	840	"
10. Trout Rapid.....	60	"	30	" " "	30	"
11. Caribou Rapid.....	68 m. 70 chs.		10	" " "	10	"
			1359	} at 8 feet per m. }	1028	
12. Distance of smooth but swift water			4187		418	
			5546		1446	
			69 m. 26 chs.			
13. Three miles' work with considerable rapids to Rouge Lake...					54	
					1500	
From the Ottawa to Clyde is a distance and rise equal to the past sum.....					1500	
From the Ottawa to Rouge lake.....					3000	

The timber (pine) has been very abundant on the banks of this river from the rear line of Clyde to the foot of Great Rapids, then it diminishes in size and quality until there are but a few trees of white pine to be seen towards the head of the rapids and the plains above them, but, on reaching Rouge lake, there is some quantity of pine to be found. Of course, I can only speak of what I saw; it was but small the extent of ground I saw compared with what I did not see.

The Three Branch river, the two Nomingues and Pike creek are good white pine streams. There is no other timber, except the white pine, of much value. The spruce above Clyde is generally small, but there are great quantities of large spruce, in the townships of Arundel, Montcalm, Desalaberry, Ponsonby, Suffolk and Amherst, of commercial value.

The soil is generally light alluvial sand along the banks of the river and back about half a mile on each side. The only clay we saw was a small spot about the middle farm at about the twenty-first mile. The soil on the hills, especially on the west side of the river, is a light, clear, warm loam with a tendency to sandiness. The land on the east side of the river is more broken with rocky ridges and sandy marshes than the west side is. The west side from the place of beginning the survey to the foot of the Great Rapids, a distance of twenty-six miles of nothing and a width of five miles, is a good country for settlement; and I feel great pleasure in recommending it to the Government as a fit place for settlement at the earliest moment that roads can be opened into it.

There cannot be a better route desired for a road than there is to be found along the river Rouge, from the rear line of Clyde to the Great Rapids; either side is eligible, but the west is the best; there is a winter road for teams and a summer road to drive cattle on from the end of the Government road in Arundel to the Great Rapids, passing along at some distance east of the river to Messrs Hamilton Brothers' lower farm, thence it passes along on the west bank of the river for at least twenty miles to the middle farm where the road crosses and thence along the east side until it terminates at the foot of Great Rapids.

This is one route by which the settling lands along the Rouge can be reached, but there is another equally good, if not better, which would start from the termination of the Government road in the township of Suffolk by way of the Petite Rouge branch of the Nation river, then to Maskinongé lake, where part of the tract of land I have just described would be reached at once.

White pine is to be found in the valleys along the creeks around the lakes and swamps on the west side of the river. The hard wood which largely prevails in the settling part is in general small, being poplar, birch, the bouleau of the voyageurs, with considerable tracts of hard maple.

The rocks in the upper part of the Rouge are those which geologists denominate metamorphic rocks, being partly stratified and partly unstratified, commonly called syenitic gneiss rocks.

To the knowledge I had previously possessed, I added a few more facts during this expedition respecting the growth and age of pine as well as the causes of decay which will be deferred until another occasion, as the information elicited by the sixteen questions embodied in my instructions pertaining to this and other commercial woods will require a separate paper to treat of those questions properly.

The probable area of pine timber lands on the Rouge above the line of Clyde still vacant, I have estimated as follows: forty-five miles of northing already done, and I think there is at least a northing of fifteen miles more, which will make sixty miles, and I have ascertained that there is a width of about ten miles on each side of the Rouge, then sixty miles by twenty will give twelve hundred square miles, thus giving an area sufficient to make twenty-five large limits of fifty square miles each.

(*Duncan Sinclair*, 20th May, 1864.)

I beg leave to present my report upon the completion of the survey of the river Rouge, in the county of Ottawa, with some of its chief tributaries and a part of the river du Milieu, a branch of the Matawin, a tributary of the river St. Maurice, performed under instructions from the Commissioner of Crown Lands, dated at Quebec, on the seventeenth February, 1864, and also supplementary instructions dated at Ottawa, the twenty-seventh December, 1865.

The work done in conformity to those instructions was done in three campaigns or trips; the first in the spring of 1864; the second in the winter of 1864 and 1865; the third and last in the winter of 1866.

The main Rouge has been surveyed from the rear line of Clyde to its principal source; and its tributaries which have been surveyed are the

Three Branch, Lantier's creek and Two Branch river on the east, and the Nomingue creek and its lakes and Sougu creek, which is only another name for the upper part of the Nomingue; on the west the measured distance of each stream is as follows :

The main Rouge, 1st, 115m—2nd, 38m=.....	153
The Threc Branch river	129
Two Branch river 17½, Lantier's creek 6.....	23½
Nomingue creek.....	76½
Rivière du Milieu	68¾
—————	
Total survey.....	450½ miles.

Soul.—The soil is generally light and sandy, but there is a large extent on the west side of the Rouge extending from the rear line of Clyde to the forty-fifth mile at the foot of the Long Rapids, that is sufficiently fertile to produce good crops for a few years after it is cleared. The good land, which is on the east side of the river, is in such small and detached pieces that it is not a very suitable place for settlements at the present time.

From the foot of the Long Rapids on the forty-fifth mile of the survey, the land is rough and rocky and the soil light and sandy, and this is the character of the country to the sources of the Rouge, only that it becomes more swampy near the watershed. There is, however, a very nice parcel of land around the last lake of Two Branch river as well as around the first lake of the Matawin, nicely timbered with maple, birch and some balsam and spruce.

From Matawin lake down to the Rivière du Milieu, the soil is a rough gritty sand near the shore, but I have no doubt that the hardwood hills which were in sight all the way down, were they explored, would show better soil than that along the margin of the stream.

Timber.—From the rear of Clyde to the foot of Long Rapids at the forty-fifth mile aforesaid, the Rouge is well timbered with white pine of a fair average size although somewhat faulty; but it does not extend far back from the river, scarcely a perpendicular depth of five miles, more especially on the east side. It is not to be found in paying quantities on the streams or branches of Three Branch river, beyond the thirteenth or fourteenth mile of the survey of those streams, viz: the Macaza, Cold creek and Warm creek; but pine is to be found in scattering quantities along the hill sides of the

Sougu to its source on the west of the Rouge, and I have reason to believe that it is the same on Pike creek and the little Nomingue.

The land on the head streams of the Rouge is chiefly timbered with bouleau, spruce and balsam, all small. And it is nearly the same description of woods that is to be found on the Rivière du Milieu down to the twentieth mile, and there we met with another large branch of the same river, at which place we found ourselves introduced to a new kind of timber, viz : cypress or pitch pine, which is to be found thickly studded along both banks of the river down to Long lake, where we met with rather a small growth of red and white pine,—I mean, small for merchantable purposes.

From the head of Long lake at the twenty-sixth mile of the survey to the thirty-fifth mile, there is a good deal of white pine near the shore, but as the hills rises a little back from the water edge, hardwood begins to predominate which consists chiefly of birch and poplar.

The remainder of the Rivière du Milieu as far as our survey went is timbered with white pine of a small size and cypress, but every tree has been burned so that scarcely a green tree is left in sight of the river down to the Forks below lake des Pins.

(*Duncan Sinclair*, 8th May, 1866.)

RIVER DU DIABLE.

I have the honor to submit the following general report of the survey of part of the Devil's river and its tributaries, commencing in the county of Terrebonne, at the second range of Grandison, and extending through the township of Wolfe, thence to its source in the county of Montcalm.

The name of this river appears to have been well chosen, judging from the numerous falls, chutes, rapids, whirlpools, eddies, &c., which were encountered during the performance of the perilous and difficult task of surveying one of the roughest of rivers. From the source the waters go through a succession of turbulent commotions, at places making deafening noises, so that no other earthly sound can be heard, then calm, circuitous running portions followed by waters rushing at race-horse speed, thence passing through lakes, thus it continues winding its way between the bases of Trembling and Blue mountains, thence passing the Tuque, a perfect

pinnacle, it continues its course around the shadows of that mysterious Trembling mountain, where, being joined by the Boulé river, it becomes a river of importance. Boulé river is also rough and wild, and the force of these two rivers combined might be reckoned by millions of horse power.

FEATURES.—Generally near the source of rivers the country is found level and rolling, so it is with the river du Diable and its tributaries; first level and as you descend hills rise and mountains loom and the country becomes rolling and hilly, but the features of the country are certainly not unfavorable for settlement. Inland lakes are few and insignificant.

SOIL.—There is no heavy soil to be seen along this river; it is either of a light clay loam, or of a light yellow and gravelly loam, and although an inspection gives the impression that it is not of a quality to warrant settlement, still there appears to be quite a number of settlers who are anxiously awaiting the day when this country will be surveyed and thrown open for settlement, and I have not the least doubt that, should their desire be fulfilled, in a very short time there would be equally as flourishing settlements as St. Jovite, which I well remember seven years ago was as silent as the forest. Where in Canada have there been such strides made? No place in the great North-West with all its reputed wealth has made greater progress. I found a town with churches, stores, hotels, saw, grist and woolen mills, tradesmen of every craft, and already preparations were going on to erect a \$15,000 new parish church. There is also a complete system of water works, and every family is supplied with good water for the sum of from \$4 to \$6 per year, and all this change within seven years.

There is also a flourishing village about six miles eastward known as St. Faustin, which is also prosperous. Both of these towns lie within a radius of four or five miles of an unsurveyed country. The people are intelligent, temperate and industrious. Such is the class of settlers, I find populating our northern country and asking for more land to settle on.

TIMBER.—Unlike most of our streams, the river du Diable cannot boast of her pine trees, and, although a well-timbered stream, it lacks the pine timber, but almost every other timber such as met with in Canadian forests may be found in plenty, of a fair size and of good quality. Fine hardwood groves are frequently seen, comprising yellow birch and basswood of uncommon size. Near the source the timber is small, but only a short distance from the river a larger growth is found. I noticed that the lumbering operations had extended up the river to the first lake; above that there is no pine of any account.

FISH AND GAME.—To those who are in search of sport, I can safely say that the country on the river du Diable is a veritable hunter's paradise, where the forest teems with game, and trout, bass, pike, perch, pickerel, &c., fill the rivers and lakes with moving things. Their only enemy is the otter, which is often more destructive to the finny tribe than the seine, spear, &c. Different kinds of game, such as the moose-deer, caribou and red deer are plentiful, and roam free and undisturbed in these quiet forests. They are actually so tame that they know not the fear of man, and can be approached easily to within a few yards. Small feathered game is not plentiful. Of fur-bearing animals, the bear, otter and mink are numerous. Beaver is almost extinct. The abundance of game on this river is due to the absence of the lumberman, the sound of whose axe has never been heard in those parts. The Indians, I am sorry to say, are now almost totally extinct on the Rouge and its tributaries; the country has thus retained its primitive character.

(*G. E. McMartin*, 13th July, 1887.)

DISTRICT OF ST. MAURICE.

TERRITORY BETWEEN THE LIEVRE AND ST. MAURICE, WEST PART.

On the 29th of April I left camp accompanied by two men and an Indian whom I had engaged as a guide to conduct me to the head waters of the river du Lièvre, and proceeded southwardly by lake Morialice, thence by portages to the Pasquatezebe river, which discharges northwardly into lake Madanbaskikac, or lake of the Graves, a lake of some magnitude, situate about two miles south of one of the large bays of lake Wabaskantyunk. I found an extensive brulé on the northern shore of this lake, not a vestige of any tree remaining, and I was informed by my guide, that it extended as far as lake Manouan. There is an Indian settlement of four families on the south shore; they have cleared a small portion of land and annually harvest a good crop of potatoes.

The lakes abound with trout, maskinongé, pike, white fish, doré and carp.

Leaving lake Madanbaskikac, I followed the Otatenzibe river into lake Sucrierie: here also the same burnt land prevailed.

On the south west shore of this lake is a maple grove much frequented by the Indians during the sugar-making season. Leaving lake Sucrierie, I crossed over a portage of about three quarters of a mile into lake Mazamasquahegon, from which the river du Lièvre takes its rise. This lake is about eight miles in length, with several deep bays. The north shore is skirted with lofty mountains, covered chiefly with white and black birch, spruce and balsam.

Having explored to the south of this lake for Messrs. Russell & LeBer's line without success, I continued down the du Lièvre for about six miles, when I struck their offset line which starts from river Rouge. This line I followed until I intersected the main line between the 50th and 51st mile posts, from which point I returned to my camp at lake Tourbis, where I arrived on the 3rd of May.

On the 10th of May, one canoe being completed, I left lake Tourbis, accompanied by two men, and proceeded down to the farm at lac des Bois to complete my complement of men.

On the 18th of the same month (May), I left the farm and reached the 53rd mile post on the du Lièvre and St. Maurice exploratory base line on Saturday, the 18th of June, after four weeks, constant and arduous labor, attributable in a large measure to the frequent and extended portages necessitated by the numerous rapids met with on the route.

Here having obtained the latitude and variation of my instrument, I laid off a line bearing north east, astronomically, continuing it for seventeen miles.

From the 53rd to the 60th mile, the land in the immediate vicinity of the line is very mountainous and rocky. The soil is ash grey and yellow sand and the timber chiefly white and black birch, balsam, spruce, tamarac, maple and pine. On ascending to the top of a high mountain, midway between the 57th and 58th mile post, a magnificent view of the surrounding country is obtained. It is very mountainous and well watered. There is an extensive tract of burnt land extending northwardly beyond Madanbas-kikac lake, and stretching south eastwardly as far as the eye can reach.

From the 60th to the 70th mile, the line traverses the extensive tract of burnt land already referred to which is covered with saplings of birch, ash, alder, cherry and maple. The latter part of this section is swampy and rugged land, with boulders and bed rock of gneiss. The timber to be met with here consists of white and black birch, spruce, balsam, ash, poplar, cedar and tamarac. The soil is light grey and yellow sand, and very stony.

At the 60th mile post, in accordance with my instructions, I laid off lines at right angles to the base line, and prolonged them for a mile.

I also made explorations at irregular intervals, as will be seen by reference to the accompanying plan, and found the general character of the land similar to that on the main line, and, in my opinion, unfit for settlements.

At the 70th mile post having, by direct astronomical observations, established the latitude and obtained the variation of my transit, I laid off a line bearing north west, astronomically, continuing it for 52.33 chains, when I intersected Mr. Arcand's base line for the eastern division.

I met with pine only in the vicinity of the 60th mile, and in very small quantities.

I saw no geological specimens of sufficient importance to forward to the department.

(*Edmund-B. Temple*, 12th September, 1870.)

ST. MAURICE DISTRICT.—WEST SECTION.

On the 2nd June, I reached the 30th mile post on the base line for the eastern division to the west of the St. Maurice. I began my operations immediately, prolonging a line running south 45° west, astronomical, for a distance of 23 miles and 50 chains, when I met a transverse line run by Mr. Temple, at 52 chains 33 links to the north west of the base line for the western section of the St. Maurice, at a depth of 50 miles from the township of Kiamika.

The country which I traversed is very broken ; it is everywhere rocky or sandy from which rise some steep rocks or small chains of mountains of no great height, surrounding lakes of some size with rocky bottoms.

Very seldom did we remark any small valleys covered with a layer of vegetable mould of good quality. Generally speaking, the land is very sandy and seems little fitted for cultivation. The principal species of timber remarked were resinous trees, such as balsam, grey pine, spruce, cedar and pine, the latter in very small quantity. There is also a good deal of bouleau and some rare birches.

(*L.-O.-A. Arcand*, 29th April, 1870.)

ST. MAURICE DISTRICT.—EAST SECTION.

We now beg leave to submit the following report of the progress made in the accomplishment of the object referred to, accompanied by such general remarks as to the physical features of the country traversed and its adaptability for settlements, as we deemed might prove of value to the department.

On the 25th June, having completed all preliminary arrangements and already sent forward a portion of our party in canoes by the St. Maurice river, to again connect with us at the Piles, we left Three Rivers, accompanied by Mr. A. Webster, a gentleman attached to our staff by Sir W. Logan, as geologist to the expedition, and proceeded overland to that place where we joined the remainder of our party.

We here entered upon the more special object of our mission, and commenced operations by starting from a point on the south bank of the little

Flammand river, a stream of no great magnitude, discharging itself into the St. Maurice, at a point on its right bank, about three-fourths of a mile north of the Grand-Detour rapids, between the 80th and 81st mile posts, as shewn and represented on Mr. Bignell's plan of the survey of the said river St. Maurice, which accompanied our instructions.

After obtaining the latitude and variation of our respective theodolites, we laid off a line bearing south, 45° west, astronomical, continuing it for a distance of thirty miles terminating in lake Cowashekamick, a body of water of something over five miles in length by about three miles in width.

For the first ten miles of the route, the land in the immediate vicinity of the line is mostly broken, hilly and of a rocky surface, intersected by numerous small lakes, shallow and muddy. The soil is composed of yellow and ash grey sand of very moderate depth. The timber is chiefly spruce, balsam and birch, cypress and pine.

From the tenth to the twentieth mile post, the general appearance of the country is extremely mountainous and rugged, being chiefly boulders, and bed rock of gneiss with a thin surface of ash grey sand and moss—some portion of this section being also swampy — the timber to be found here consisting chiefly of spruce, balsam, birch, cypress, tamarac and alder.

On arrival at the twentieth mile post, from a position in the vicinity, we were enabled to obtain a more extended view of the surrounding country stretching for a distance of about eight miles toward the N. W. and ten miles to the S. W., the same mountainous character previously noted still prevailed, and, as far as the eye could see, the land appeared to have passed through the ordeal of fire.

From the twentieth to the thirtieth mile post, the line runs through an extensive tract of burnt land above referred to, of a less mountainous character than that previously traversed. The soil consists of a grey and yellow sand with occasional isolated spots of a more encouraging appearance than that heretofore met with, but of such limited extent and difficulty of access that the probability of any successful settlement of them would be exceedingly remote; the latter portion of this section presented a rugged, broken and rocky surface, covered with rolling boulders and bed rock of gneiss and granite, rendering it totally unfit for colonization.

At the tenth and twentieth mile posts, in accordance with instructions, we laid off lines at right angles to our base line, but, owing to the evidently utter unsuitability of the land for settlement, did not continue their pro-

jection for the distances therein mentioned, the surface being broken and stony and the prevailing character of the soil and timber similar to that on the main line.

At the thirtieth mile post we established lines on each side of the base line, running N. W. and S. E., astronomically, and prolonged them for a distance of four miles from the base line. The land on the S. E. side is of a better average quality than that on the other offset line, but in parts very rugged and stony, the timber chiefly consisting of spruce, white and black birch, pine and maple. On the N. W. side, the line traverses lake Cowashekamick terminating at the river Mandanak.

The general surface of the country along this line is level, with some few fertile spots, and occasional marshy portions. The prevailing character of the soil is grey and yellow sand. The timber found in this vicinity comprises balsam, hazel, tamarac and poplar.

We also made explorations at irregular intervals, on either side of the base line, alternately, at such points as we thought advisable, and as indicated on the accompanying plan, and found the general surface of the country rocky, hilly and in part swampy, and in our opinion unfit for settlements.

We met with pine only on the first section of the above line and on the S. E. offset line at the thirtieth mile, as above remarked, when speaking with more particular reference to the timber to be found on these respective sections; at the first mentioned spot lumberers are now engaged in getting out timber.

Returning to our starting point, we prolonged our base line in a north eastwardly direction for a distance of nine and one half miles. The character of both soil and timber is similar to that of the other portions of the base line. At a distance of about four and a half miles from the point of departure, the line intersects the river Windigo which empties itself into the St. Maurice at about five miles from this point; some pine is to be found in this locality, and lumbering operations are being carried on by parties who have established shanties here. While carrying out this exploration toward the north east, we received instructions from the department to close the further prosecution of the work on the first appearance of snow, and, the ground at the time being covered to a depth of six inches, we at once discontinued our labors and started on our return.

We may here remark that from information gathered from the parties lumbering in the vicinity, there would appear to be, within no very great

distance from the point at which our work terminated, a very extensive tract of level and fertile country in the direction of lake St. John.

Should it be deemed expedient to again continue the prosecution of this exploration, we would venture to suggest the advisability, as a matter of economy, of having as far as possible the necessary provisions, for the expedition transported during the winter season and cached at convenient points along the route, thereby avoiding the numerous delays and risks unavoidably incurred in performing this service during the summer season.

(*L.-O.-A. Arcand,*) } 1869.
 (*E.-B. Temple.*) }

RIVER MANOUAN FROM ITS MOUTH TO LAKE KEMPT.

The country between the St. Maurice and the opening into great lake Wabaskontyunk or lake Kempt, following the direction of the Manouan, is high, broken and rocky ; the surface being broken by wave-like and generally low mountains. There are some chains of hills, between which are small valleys, covered with a stunted growth of black spruce, cypress, white birch and balsam ; there are also some swampy spots growing tamarac ; but, as a general rule, from the post of the Coucoucache and even a little beyond it on the St. Maurice to the entrance of lake Kempt, the only timber is white birch, cypress, spruce and a few balsams here and there.

There are no great pine groves in this region, and the only ones I met were towards the 25th, 26th and 33rd miles on the side of my base line and also on the south eastern banks of lake Manouan. But according to the statement of a competent person, who has explored the course of the Manouan, there are large quantities of pine on the shores of great lake Wabaskontyunk or Kempt.

The soil of this vast region is wholly formed of sand, and in some places, so covered with rocks and stones, that the idea of ever cultivating it may be renounced. There are, however, some fairly good lands, but of such limited extent and so isolated as to be altogether unfitted for colonization. The fixed rocks all belong to the granitic formation and nowhere did I meet any trace of minerals or stratification.

(*T.-C. DeLachevrotière, 31st May, 1872.*)

RIVER MANOUAN FROM TEMPLE'S LINE TO LAKE KEMPT.

I reached Temple and Arcand's line at post No. 65. From that point I chained, following their line north eastwardly, a distance of 67 chains 30 links, to its intersection with the river Baskoutysiebi, and at this point I commenced the scaling of the river Manouan. My starting point was in the midst of a burnt clearing, consequently I was unable to blaze any living tree near it to verify its position. From the above point, I followed the general course of the Manouan as far as the point where I left off last year, at the 51st mile post, at the outlet of lake Wabaskontyunk. I followed my instructions as closely as possible; I entered in my field notes the magnetic bearing of all my courses, carefully noting at each station the angle contained between the different courses, to the nearest minute. At the end of every mile along my line of survey, I planted on the south bank of the river a post with the number of the mile marked on it, counting from Temple and Arcand's line of exploration to the termination of my operations of last year at a post marked 51 miles. I then continued the numbering of last year from the 51st mile post as far as the height of land. At the same time I blazed as many trees as possible near each post.

Wherever I met with islands, I followed as much as possible their south channel, though I was sometimes compelled by falls or rapids to take the north; in the last case, I merely noted the extreme ends of the islands: when they were very numerous I measured the breadth of the largest, making a sketch of them in my field book, and noting the breadth of the river or lake at these places. Whenever the bays of lakes such as Wabaskontyunk, Thunder Bay, Morialice, Obaoukanane and Pinataocou, have been of considerable depth, I have made a rapid trace of their contour. For this purpose I abandoned for the time my main line of operations, following the contour of these bays from my last station in one direction and returning by another to connect with my main line, not planting any mile posts on the bays. I have further made mention, in my journal of exploration, of the rivers and streams which empty themselves into the Manouan, some on one side, some on the other, with their names, and in addition a description of the soil and wood, both as regards quantity and quality, also the general appearance of the land whether level or mountainous, describing all the inequalities of the country, the burnt clearings, pine woods and mountains, with their general extent and direction. Again I have noted all the falls, water powers, &c., which I have met with, giving their approximative height, and the position of all the "portages." I have laid down their

direction by chaining offsets from my main line to the banks of the river, carefully recording the existence of any islands intervening between the opposite banks of the river, and making a figurative sketch of the whole as a guide in the construction of my general plan of survey.

I followed this system through the whole course of my operations, till I completed the survey of the Manouan at the height of land between the waters of the Manouan and those of the Du Lièvre. Arrived at the middle of the portage, between these two rivers opposite to one another and distant only about four arpents, one of which, the Du Lièvre, empties itself into the Ottawa, and the other the Manouan into the St. Maurice, I planted a stout cedar post, on which I cut the following inscription: on the south east, "77 miles, 38 chains from the St. Maurice," on the north west "height of land Var. 13°. 16 west:" on the south; 1873. "J.-C. de la Chevrotière, Arpt. Prov." all of which is ineffaceable. I carried out in the same way the survey of lake Nemicachinque at the source of the river du Lièvre. I concluded my operations at the post No. 23 miles, at the outlet of the lake, which forms at this point the so called river du Lièvre. The posts planted at every mile in the scaling of this lake begin from No. 1 at the height of land and follow the contour of the lake to No. 23.

The country lying between Temple and Arcand's exploratory line and the 51 mile post of last year's survey is generally hilly, but the chains of mountains are of no great height; the soil is mostly sandy; yet in some places a rich brown loam is met with, especially at the settlements of Messrs. Stoddart & Co. and at the principal station of the "Tête de Boule" Indians, distinguished on my plan by the name of Dubé. In these places the land is well adapted for cultivation, grain and vegetables being perfectly ripened, which proves that the climate is much milder than at Weymontachinque, where the potatoes rarely come to maturity. This information is derived from one Dubé, a Canadian, who has married among these Indians and lived with them a number of years, and I had proof of his veracity by witnessing the harvest made at the place called Dubé, last autumn.

The Tête de Boule Indians are of a quiet and peaceable character, partially civilized and speaking very little French; they are visited occasionally by missionaries, which accounts for their civilization; at the place called Dubé, the site for a chapel is marked out, as well as a cemetery where the Indians bury their dead.

I deem it right to mention here the improvements made by Messrs. Stoddart & Co., during the last winter. Though working ostensibly only for their own benefit, they have opened a line of road 45½ miles long, which hereafter may become very useful to colonization, as they intend to complete it in the course of the summer, so as to be serviceable for all seasons of the year. In fact, this road connects the Matawin with the Manouan, at a place called Metabeskegariebi as shown on my plan, and on this line of country the soil is mostly level and sandy, and the trees, such as birch, white and red spruce, white birch, &c., are all of fine growth.

This part of the country is far better adapted for townships than the settlements which have been made at "Ste-Emilie de l'Energie," St. Simon, &c., which I visited when ascending the Manouan; these latter appear, however, to be improving, notwithstanding the uneven surface of the land. Messrs. Stoddart & Co., appear to be seriously disposed to make great improvements on the Manouan, as within the last six months they have employed about forty men erecting buildings on the river Metabeskegariebi to serve as lodgings for the men and as stores for their provisions, which were already very considerable consisting of 200 barrels of flour, 150 of pork, &c.

They are now about to build a steamer, for the conveyance of timber on lake Wabaskontyunk. Pine wood is found in some quantity in the region comprised between the entry to lake Wabaskontyunk and the height of land as shown on my plan by the word "Pin", also in the space between Atibène bay and lake Wabaskontyunk itself. I have not met with it in as great abundance anywhere else, but there is a small quantity everywhere; from what I have been told by good judges, it is all of excellent quality.

LAKE NEMICACHINQUE.

Head of River du Lièvre.—The soil and general aspect of the country are about the same at Nemicachinque as on the Manouan; pine is not so frequently found, but a small quantity is to be had between the height of land and the 7 mile post from the scaling of the lake. The other qualities of wood are about the same as on the Manouan, namely cypress, red pine, spruce, white birch, fir, and in some places cedar. I found maple in two localities only, on Maple Island, called Erimaticou Ministécou, also in the vicinity of Dubé, where the Indians have turned it to account for the manufacture of sugar.

I found, in some spots near the Manouan, immense burnt clearings which have done great damage to the timber, as shown on my general plan ; they were caused by the carelessness of the Indians, who latterly appear more careful, as they found they were injuring their own interests and means of existence, which depend altogether on hunting.

Finally, I am of opinion that the territory I have explored this year will prove more profitable to colonization, as regards the value and luxuriance of the woods, than that which I explored last year from Weymontachinque to the 51st post at the entry of lake Wabaskontyunk.

(*J.-C. DeLachevrotière*, 31st May, 1873.)

RIVER DU LOUP

Here follows a general description of the country through which I passed, with regard to its conformation, forests, quality of soil, mineral deposits, grain and fish :

The tract watered by this part of the river du Loup is generally mountainous and rocky. The height of the mountains varies from sixty to two hundred feet, and their inclination from four to over eighty feet. Several cliffs even present the appearance of vertical walls. North west of the township Chapleau, east of the river du Loup, beyond the reach of vision, and to the west as far as lake des Isles and lake Sorcier, the whole country was ravaged by fire about twelve years ago. The value of the timber thus destroyed is enormous. The land surrounding the Grand Lake des Isles, lake Sorcier and lake Sans Bout and their discharges, and the adjoining lands on the west side were spared by the fire. The forest in these parts still contains pine, spruce and cedar in considerable quantities. The sources of the river are probably three hundred feet higher than the starting point of my operations.

The cultivable land is found in isolated patches of more or less extent. I have marked them on the map, as well as the mountain gorges, by which access may be had from one lake to another. I found a little iron ore at the surface of the rock on the south side of Spaulding creek, near where it falls into the principal river : this place is also indicated on the map. I found no iron around lake Sorcier, though the variation of the needle there ranged

from 10° to 45°. On the west side of lac du Coteau a vein of quartz, twenty inches in width, is visible for a length of ten or twelve feet, at the end of which it plunges into the rock. The surface of this vein shows some small globules of silver. Its position is marked on the plan.

Besides roaming animals, such as mink, otter and others, there are considerable numbers of beaver in the river du Loup. If the hunting of beaver were prohibited for ten years, the number of these animals would increase prodigiously.

Except in the streams connected with lake Sorcier, Grand Lake des Isles, and lake Sans Bout, there is a surprising abundance of small trout in this part of the river du Loup, but no other fish.

(*Hector LeBer*, 1885.)

LAKES AND RIVERS IN THE TOWNSHIP OF RADNOR AND SEIGNIORY
OF CAP DE LA MAGDELEINE

I have scaled 108 $\frac{1}{4}$ miles of rivers and lakes, including offset lines. The little river des Cinq, which comes first in the order of my operations, is represented in the above total for..... 3 $\frac{1}{2}$ miles

The big river des Cinq and its branches.....	16 $\frac{1}{3}$	"
The river à la Pêche.....	21	"
The river Folle.....	20	"
The river Bouchard.....	7 $\frac{2}{3}$	"
The river Matawin.....	0 $\frac{1}{2}$	"

Giving a total of 68 $\frac{5}{6}$ miles and leaving about 40 miles for the lakes and offset lines.

The tract lying between the above mentioned rivers is about one hundred miles in superficial area, and may be divided into three plateaus, of different respective heights.

ELEVATION.—The first plateau, that of the little river des Cinq, beginning nearly a mile from the St. Maurice, is about four hundred feet above that river, and contains about eighteen square miles of generally level land. This plateau is much the same as that of the river Bouchard. The second plateau is that of the large des Cinq lake, (Grand lac des Cinq), about one hundred feet higher than the first. It extends as far as the Pêche lakes,

where it merges into the first. The third is that of lake Fou, about two hundred feet higher than the second, and seven hundred feet above the St. Maurice. Its area is about twenty-four square miles, while that of the second is as great or greater than those of the first and third together.

WATER-POWERS.—The river des Cinq, which appears to derive its name from the five rapids which extend from the St. Maurice to the first navigable waters of the river Matawin, offers four good water-powers, the last one down stream having a fall of about two hundred feet. On the river Folle there are seven, some with a fall of thirty feet; on the river Bouchard four, and on the river à la Pêche two, all of considerable strength.

TIMBER.—There is not much pine to be found in this tract, but spruce, cedar and hemlock are plentiful. I observed some groves of sugar-maple on the lakes à la Pêche, some of which are exploited.

The heights between lake Fou and lake Bouchard are crowned with fine hardwood of different kinds, including oak. The cutting of cedar has been begun near lake Bouchard. Although cedar is generally found growing in swamps, some considerable groves of it are met with on the higher lands in many parts of the region described in this report. One tree that I measured was eleven feet in circumference. I also remarked elm, ash and basswood of fine growth, butternut and *pembina*, which are considered to be indications of good land.

SOIL.—Although I met with some fifteen rocky headlands in this tract, I believe that there is generally a sufficient depth of soil for agricultural purposes, except upon a mountain of the line between Radnor and the Seignior of Batiscan, over which fire has passed, leaving nothing but bare rock.

One indication of a good depth of soil is that very few windfalls are to be seen; and, contrary to what may be frequently remarked in other parts of the Laurentides, the soil here appeared to me to be but slightly rocky and exceptionally free from stones, and to contain but few iron mines to influence the magnetic needle.

The soil is generally composed of good yellow earth, from the little river des Cinq to the Matawin, with traces of clay, and becomes more clayey downwards along the river à la Pêche and river Bouchard, until near the Saint Maurice where the clay banks come to the surface.

IMPROVEMENTS AND BUILDINGS.—From lake Edward, down along the river à la Pêche, I observed the vestiges of a road constructed by the Government more than fifteen years ago, with a bridge of twenty-four feet span, still in good condition.

A small clearing has been made at lake Etienne, another at lake Parker, and a third at the first lake à la Pêche, where a good log hut has been built for Messrs. Boyer, Parker & Co. These gentlemen have also begun the construction of another building on lake Fou.

DISTANCE FROM SETTLEMENTS.—There is now a chain of settlements from the Piles to the lake du Français, or fourth lake à la Pêche, a distance of about six miles, and within the limits of the new parish of Des Piles. These have all been made within the last ten years; and, in view of the development of the lumber business in these parts and the increasing facility of communication, it is probable that the tract comprising these lakes and rivers will be required for colonization purposes and furnish sites for new parishes. The district of Three Rivers will be indebted to you for rendering this possible by causing light to be thrown upon this region by operations which may serve as bases for the laying out of farm lots.

(*James Barnard. 4th December, 1886.*)

RIVER A LA CHIENNE.

The river à la Chienne, which derives its name from a rapid near its mouth on the river Matawin, is navigable by canoes for the first six miles. The two following miles are broken by two falls, the first about 200 feet high and the second about 75 feet. These two miles bring us to a region of lakes, intersected by hills, and then to a region of plains. As my operations were limited to 50 miles by my instructions, I was unable to explore the upper part of this valley, which seemed to me suited to colonization.

The river à la Chienne is famed for its pike and trout fishing. As for pike, I was unable to note their existence here, as I had occasion to do on a preceding expedition, at another point on the Matawin, where I saw some of these fish taken, weighing 15 lbs. and pickerel of 10 lbs.; but I do not doubt that lac au Brochet (Pike lake), which figures on the plan of this tributary, was thus named for good reasons. As for trout, I have seen them taken in great lake à la Chienne, weighing 10 lbs. and in abundance. I

also ascertained the presence of carp and perch in a small lake which I named lake à la Carpe, and on which some of these fish were taken to be used as bait for trout, which seemed to be very eager for the same.

The only varieties of timber which I remarked in any quantity on this river are cypress, poplar and white birch. The only pines to be seen are a few which escaped the fire by which this tract was swept about twenty years ago.

The soil, as well as I could ascertain under a covering of snow three feet thick, appeared to be of good alluvium extending over an area of five miles front by one in depth, at the mouth of the river, judging from the appearance of the vegetation, which consists of tall prairie grass, alders, and some scattered ash trees. In rear, the land is undulating and the soil on the hill-sides appears to be a good yellow earth, from the abundance of alders growing upon them. The pembina, indication of good soil, is met with in many places. The absence of rock is remarkable.

To show the fertility of the soil, I consider it sufficient to remark that, apart from the presence of rich lands which I have noted, all this tract near the river, which was burnt over a few years ago, is covered, in nearly all directions, by a heavy vegetable growth.

In conclusion, I am of opinion that there is a sufficient area of good land, on the banks of the river à la Chienne, for the establishment of a prosperous parish.

(*James Barnard*, 2nd August, 1888.)

REGION BETWEEN THE ST. MAURICE AND BATISCAN RIVERS, FROM THE
TOWNSHIP OF MEKINAC TO LAKE EDWARD.

According to the above detailed report, I conclude that more than one half of the territory visited is fitted for cultivation and that, as soon as communications are opened by means of colonization roads, it will be occupied by a robust and industrious population. Though rocky in spots, the soil is a good quality of yellow loam, which is not excelled by any not only in the surveyed townships adjoining, but in many of the Eastern townships, which have not as good a vegetable soil and are even more rocky. Water falls abound, as well as lakes swarming with fish. The other half might be

retained as a fire-wood reserve and for pasturage, where the soil is rockiest, which, instead of hurting colonization, would be a public and private benefit, because I believe it is high time to make such reserves, in opening the soil to settlement. The floatable rivers are the Mekinac and Eau-Morte, which are tributaries of the St. Maurice. The river Batiscan has for tributaries several discharges of lakes and the rivers Mequick, à Pierre and Michel. The merchantable timber brought down these rivers partly supplies the markets of England and America *via* Quebec and Montreal. However, it has nearly all disappeared under the axe of the lumberer.

To reach this region, the colonization roads might easily, but not without expense, be started from the points already settled. The colonization road already opened beyond the township of Montauban might be prolonged to the main line laid down in virtue of my instructions, which is only about 21 miles from the township of Montauban. This road would intersect the rivers Eau-Morte and Mekinac, towards the seventh mile of that line, a distance of about 21 miles. Another colonization road could be opened either on the east or west side of the Batiscan river to the Island of Lake Edward. This road, by following the south west branch of the river Jean-notte, would run in its course through lands suited to colonization. Two other colonization roads actually building, called the Radnor and de la Magdeleine roads, starting from points in the seigniory of Cap de la Magdeleine belonging to the Government, might be directed towards this region, which, after their junction at the Piles, would continue along the east or west banks of the St. Maurice to river aux Rats, one of its tributaries, where already, at various points, there are some new and old clearings and some hardy and enterprising settlers, whose only means of communication with their neighbors is by canoe and boat.

The climate of this region is about the same as that of Three Rivers. All the wild fruits come to perfect maturity as well on the tops of the hills as on the river flats. The first frost was experienced on the 28th September.

On my return, I paid particular attention to the country watered by parts of the rivers Mequick, à Pierre and Michel, along which I noticed tracts well suited to cultivation.

(H. Legendre, 31st January, 1870.)

RIVERS MOISE AND CROCHE

I have the honor to transmit the plan and field notes of the survey and scaling of the river and lake Moise and of the river Croche.

The land in the vicinity of these rivers is generally hilly and mountainous ; there are, however, some small patches of good arable land along the Moise ; a further exploration on both sides of this river would give a better knowledge of this tract, extending in the direction of the lake des Passes.

The prevailing species of timber along these rivers are spruce, balsam and white birch ; tamarac, and a variety known as *épinette à chatte*, are also met with in some places. The soil is generally sandy ; red sand, mixed with gravel, and in other places black earth.

(*F. Pagé*, 1st April, 1887.)

COUNTRY BETWEEN LA TUQUE AND LAKE ST. JOHN.

The country lying between the river St. Maurice and lake St. John, is elevated, broken and rocky throughout, in which numerous of their tributaries take their rise ; the surface is broken up into wave-like mountains, not generally of high elevation, but precipitous, without connections or regularity. There are few regular ranges of hills or extensive valleys, and the whole is clothed with a dense but stunted growth of mixed timber, consisting chiefly of black and grey spruce, fir and white birch, together with a very few scattered birch, poplar, tamarac and maple. The soil of this vast region is mostly sand, approaching, in some instances, to a light loam, but of such a stony and rocky character as to afford but slight hopes of its ever being brought under cultivation.

The country is well watered by small tributary streams, and innumerable small and large lakes, but their valleys are narrow and of limited extent. The fixed rock is all of a granitic formation, and in no instance did I observe any appearance of minerals or stratification.

There are no extensive groves of pine in this country, but considerable quantities are scattered over the hills bordering the rivers and lakes,

chiefly upon the waters of the Bostonais and Croche ; much of this timber is sound and good, but, as a general rule, many trees are faulty from wind shakes and spunk knots, and more suitable for saw logs than square timber. If the information I received can be relied upon, the great pine-bearing country of the St. Maurice lies to the west of that river.

The idea that there existed a large and extensive valley connecting the St. Maurice with lake St. John was quite a mistaken one ; the fact is, it is an elevated watershed with ranges of hills dividing the several streams. These hills, which have a considerable elevation near the main streams, gradually diminish towards the height of land, the country rising gently to the dividing ridge and descending in a similar manner on the opposite side.

From the foregoing description of the country lying between the river St. Maurice and the settlements of the upper Saguenay, it cannot but be observed that, from the broken and mountainous character of the land and the arid nature of the soil, but slender hopes can be entertained of its ever being made available for purposes of colonization ; many spots of comparatively good lands were met with in my exploration, but so limited in extent and isolated in position, that they could not be made available for settlement. The only prospect for any connected or continuous settlements would be, in my opinion, by the valley of the river Croche, where the alluvial deposits along the banks of that stream offer the only advantage for such a purpose.

(*W.-F. Blaiklock*, 18th August, 1859.)

RIVERS TRENCHÉ AND PIERRICHE

I commenced to scale the river Pierriche to its source, the distance being 22 miles and 37 chains. The chain of mountains, which borders the river St. Maurice, is at this point considerably leveled. After leaving La Tuque, the river St. Maurice is almost one succession of rapids, cascades and falls. At the distance of a mile from the mouth of thi river (La Tuque), we left the mountains behind. From the 4th mile of the scaling we passed through land generally level on each side of the river, and it extends thus as far as the eye can reach. The timber is second growth, of about 40 years old. From previous observations, I had arrived at the opinion that this

territory had been burned over about 40 years ago. An estimated extent of about 1,000,000 of acres had thus been swept over by fire. I remarked in some places the trunks of trees of large size which had escaped the general burning at that time. From these indications we infer that these localities were formerly richly timbered. The soil is in some places yellow loam, and in others grey loam, mixed here and there with sand ; there are not, however, any stones on the surface, which is covered by a rich vegetable mould. At the 19th mile, the timber is of a smaller growth, the fire having swept over a second time, in some localities, since the one previously mentioned. The soil nevertheless appears everywhere very suitable for cultivation. On arriving at the head of this river, white birch predominates over the other woods ; it is of very good growth.

From what I saw, the strip of land between the rivers Trenche and Pierriche, from their mouths to their sources, is suitable for farming purposes, particularly that part of it between the 5th and 19th miles, where the soil is of superior quality. The climate also is very favorable. On the 14th of February, the depth of snow there was between 10 and 12 inches.

I then returned to the river Trenche by way of the portage at the mouth of the river Pierriche. After having established the variation of the needle, I commenced to scale the river Trenche, from its mouth to its source, the distance being 102 miles and 20 chains. The same remarks made by me as to the land being generally level at the mouth of the river Pierriche, apply also to the land at the mouth of the river Trenche. From its mouth up to the fall in the 6th mile, the river flows through good yellow loam, suitable for cultivation. This part was formerly well covered with pine, but, above the fall named, little pine is now found.

There are some chantiers, nevertheless, for getting out saw logs, but pine is scarce. In the future the large quantities of cyprès (a kind of bastard red pine) and spruce available for the wants of commerce, will counterbalance the scarcity of the pine. The destructive fire already mentioned as having ravaged along the river Pierriche extended also to this river (Trenche), and at the same period ; the second growth of forest, which includes cyprès and white pine, will some years hence afford timber for commercial purposes.

Above the fall, on the river Trenche, mentioned above, dead water occurs ; there are however some short rapids up to the second fall, which is at the 43rd mile post. The whole of this distance the river is suitable for driving saw logs, &c. The land is generally level, and covered by a second

growth of timber of the same age and kind. This shows that the great fire which ravaged all the territory between the river Chamouchouan and the river St. Maurice, seems to have reached as far as the height of land, which divides the waters falling into lake St. John to an unknown distance towards the west.

The whole territory thus traversed by this river as far as the 43rd mile may be made available for colonization purposes, and extends from the river Croche and lake St. John, on one side, to as far as the eye can reach on the other. The land is suitable for cultivation. Between the 43rd and 60th mile posts, the land along the banks of the river is mountainous ; nevertheless there are certain spaces of considerable extent, where farms could be made. Beyond the range of mountains which borders the river, the land although uneven is susceptible of being cultivated, as both the soil and climate are good. On the 9th of March I did not find the depth of snow any place to exceed between 12 and 15 inches.

From the 60th mile post, up to the head of the river, the mountains gradually disappear, and the land assumes a level appearance. The soil is composed of a rich yellow loam, and of grey loam. There are no stones on the surface. Between the 70th and 85th mile posts, however, there are some large boulders, here and there ; the earth about them is nevertheless of a good quality. For the last 10 miles surveyed, a recent fire has in many places done considerable damage, yet in other places the cypres and spruce might later on be used for purposes of commerce. No pine is found here. In some of the ravines which escaped the destructive fury of the great fire already mentioned, we found some trees of larger dimensions, which shows, beyond a doubt, that the growth of timber in this territory was fully equal to that found in the valley of lake St. John. The north shore of the large lake of the river Trenche has often been devastated by fire ; the growth of timber there is small. The land is level, however, round this lake, which is a part of the river itself. This land is suitable for farming purposes.

On the 14th of March I was at the height of land which divides the waters which flow into the St. Maurice from those flowing into the Chamouchouan, and I there measured the depth of snow in several places, and found it to vary from 15 to 18 inches.

I remarked, in several localities around the lake of the river Trenche, the places where the Indians of the Tête de Boule tribe resort in summer to fish, and obtain their supply for the winter. This lake abounds in fish, such as doré, &c.

CONCLUSIONS.—The exploratory survey, which was entrusted to me in 1873-74, of the Salmon river and of the river Windigo, and their principal tributaries, and the one I have just performed of the rivers Trenche and Pierriche, have enabled me to make a tolerably correct estimate of the quantity of land susceptible of cultivation which is to be found in the territory between the river St. Maurice and the height of land which divides the waters which flow into the river Chamouchouan. Taking all these explorations together, I am warranted in stating that the extent of arable land thus become known is about one million (1,000,000) of acres. From observations made by me during my explorations, I have positively established that the climate of the forests through which I passed is fully as favorable for growing grain crops as is the country around lake St. John.

I therefore deem it my duty to bring prominently to the notice of the Government the importance of opening up for settlement this extensive territory by means of colonization roads. I am of opinion that a winter road can be opened at little expense, commencing at the last settlement on the river à l'Ours, following nearly a direct line to the locality called the Forks (*les Fourches*); thence following the north east side of the river Trenche down to its mouth, which would be a distance of about 70 miles, through land nearly all level.

Until a railroad is built, the population of lake St. John and the country around it would avail themselves of such a road for bringing the produce of their farms to the lumber establishments on the Upper St. Maurice. This would give a great impetus to settlement in the lake St. John country, seeing the high prices paid by these establishments for farm produce of all kinds.

(*Gédéon Gagnon*, 4th July, 1877.)

SALMON AND WINDIGO RIVERS.

I scaled the Salmon river, a tributary of the Chamouchouan river, from its mouth to its source. I then scaled the portage of the river Windigo, a tributary of the St-Maurice, as far as the intersection of one of the branches of this river, which I scaled as far as its mouth, as also its principal tributaries and those of the Salmon river, which have all been scaled from their mouths to their sources.

SOIL AND WOOD—SALMON RIVER.—From the ninth mile as far as the first lake of the Salmon river, in the fourth mile, the river is mostly a continuous rapid, offering many favorable mile sites. I saw many falls in this section of the river; the highest is of twenty feet in the twentieth mile. At fifteen chains from the forty-first mile, on the same river, is a suitable mill-site. Many other suitable places may also be found at the intersection of the little Rognon lake.

The land through which flows the Salmon river, from its mouth to the twenty-fourth mile, is generally level on both sides of the river, as far as the eye can reach; the soil is of good quality; it is a yellow loam and a grey clayish land. Besides the original growth that the fire spared, in the ravines and low lands, which is of large size, mixed with hard and soft wood, the chief wood is white birch, of medium size. From the seventh mile, white spruce, of rather good size, as also cypress, are in rather great quantities. Cypress, from the sixteenth mile upwards, is in great quantities in the groves we come across here and there, and large enough to be fit for making timber. From the twentieth mile as far as the head of the Salmon river, the soil is generally of rather good quality though stony in certain places; it is a mixture of yellow loam and of grey clay.

The fire which devastated these lands over the whole extent of country traversed by Salmon river and its tributaries, and even further to the north west, occurred 50 or 60 years ago. It would be difficult to make an estimate of the vast amount of valuable timber of all kinds destroyed in this section of the country. White spruce, pine, white birch and poplar are found in every direction where the fire has not reached. The wood everywhere was of good growth, showing that the land is fit for cultivation.

From the forty-second mile, the land is broken, going up as far as the head of the river, particularly around the lakes à la Croix and au Rognon; the wood is stunted and the land stony.

SOUTH EAST BRANCH OF THE SALMON RIVER.—The timber along the south east branch of the Salmon river, around lake Clair and other lakes, is of fine growth; white birch predominates. The land is more level, the mountains are less high; their sides are wooded with big white birch; lumber is rather abundant, particularly grey pine and tamarac. The only hardwood is white birch. The soil is of a yellow color in different sections, there are no stones. We find magnificent tracts which extend far off, wooded with tamarac and white spruce, and a few white birches. The soil seems to be of good quality.

RIVER DU CRAN.—The land through which flows the river du Cran is level. The soil is of superior quality, consisting in great part of clay, grey loam, and of yellow sandy soil, on the ridges. As on the Salmon river, white pine is scarce on the river au Doré and its branches. From the ninth mile, the land is stony and on the mountains of which the greater part are bare. Ash is everywhere of good growth, from the mouth of this river, as far as the seventh mile of the said branch.

The north east branch of the river au Doré and its tributaries flow through land very fit for farming, covered with hard and soft wood of good growth. In some places, to the north west, formerly devastated by fire and now covered with trees of a second growth the growth consists of white birch, balsam fir, spruce and here and there a few maples. But from the fourteenth mile, on the north west side of the river au Doré, the mountains follow one another as far as the head of this river, and are covered with brush wood in some places, and almost bare elsewhere. Large rocks here and there border the river.

The doré and the witouche are the most common fish in the lakes formed by these rivers.

RIVER OF THE FRAIE AU SAUMON.—The timber in general, on both sides of this river, as far as the fourth mile from its mouth, is of fine growth, such as white birch, tamarac and white spruce, alder, fir. The latter predominates. The soil is generally very good, on both sides of the river; but from the fourth mile the tract crossed by this river is mountainous and rocky. The timber is very long and of medium size. There is a great deal of dry and fallen timber on the slopes of the mountains. White spruce and tamarac, fit for lumber, are in rather great quantities. To the north east of this river, on the course of which there are a number of rapids.

RIVER OF THE LAKE DES PORTAGES.—The soil is stony all along this tributary. Certain tracts, around the Portage lake, are fit for cultivation. In a portion of the first and second mile, there are cypress or grey pine groves, consisting of trees of medium size, their diameter varying from fifteen to twenty inches. There is also white spruce.

RIVER COTÉ.—The tract to the south east and south west of the lake à Côté, as far as the Salmon river, is quite fit for cultivation. The north west section is mountainous. The timber of inferior growth, and in brulis in different parts, as also along its head. The other tributaries of the Salmon river flow through land generally unfit for cultivation. The tracts, which are fit for culture, are not of sufficient extent to form settlements.

The portage of lake Windigo is generally level, as also the land around the lakes traversed by this river. From the 13th to the 18th mile, the timber is of good growth, and tamarac predominates. Around the lakes, particularly around lake Wabepelen, spruce is plentiful and varies from 18 to 20 inches in diameter. The land is generally sandy and rocky. Some spaces here and there might be worth cultivating. From the 18th as far as the twenty-fourth mile, the land is stony and in *brulés* on the portages of the lakes. The same aspect is shown towards the north-east. Fire has again made a sweep, a couple of years ago, and spread towards the height of lands of the tributaries of the river Chamouchouan. From the twenty-second as far as the twenty-sixth mile, the soil is of a better quality. This tract, traversed by the portage, is fit for cultivation. Timber is of a fine growth. Tamarac of a diameter varying from twenty to twenty-four inches is in great quantities, as also balsam and white birch, which are also of fine growth. From the twenty-sixth mile, as far as the intersection of the Kabetogoanigum, tributary of the Windigo river, and even farther than this river, in every direction, as far as the eye can reach, the land is entirely level; the soil is sandy and rocky. It is the same with all the land traversed by the river Kabetogoanigum as far as its confluence with the Windigo river.

SOIL AND TIMBER OF THE WINDIGO AND ITS TRIBUTARIES. — From the mouth of the river Kabetogoanigum, the river Windigo, as far as the fourteenth mile, is bordered by mountains, for the most part, bare and devoid of merchant timber. Before reaching the sources of this river, we found a small quantity of green woods, principally towards the north west; in some parts, the land around lake Kawasbasha is covered with well grown timber; spruce is found in some quantities. No white pine is to be seen on this or on any of the other tributaries of the Windigo on the way towards its source. The tract of lands susceptible of improvement along these tributaries is of very limited extent.

The Windigo river, from the river Kabetogaonigum, as far down as the falls called Kwarasesiasita, is bordered by high mountains, of which a few reach the immediate borders of the river, and, in some places, recede from twenty to thirty chains. The table lands are wooded with white spruce, cypress, white birch, of medium growth; the soil is yellow and stony in certain sections. The mountains are generally well wooded in white spruce and tamarac of a fine growth.

The land, from the falls called Kwarasesiasita, is level as far as the south west branch of the Windigo river, offering a tract of good land from

twenty-five to thirty thousand acres. The opposite shore of the Windigo is mountainous, covered with green woods of small growth, and the soil scarcely worth cultivating.

Lake Kakashguataman, as well as its outlet, as far as the Windigo, are surrounded by magnificent valleys; though mountainous, they are of considerable extent toward the west. There is an absence of white pine, but balsam, birch and tamarac exist in large quantities around the lake. On the other tributaries, to the north west of the Windigo, from the 30th mile, white pine and spruce are pretty abundant as far as the mouth of the river. The soil is a yellow loam, well adapted for cultivation; on the north west, four or five ranges might be laid out to advantage when settlers have reached thus far. For the same distance, but on the north east of the Windigo, there is sufficient good soil for the subdivision of two ranges, which would give an area of about 80,000 acres of arable land, comprised within the 30th and 54th miles of the scaling of the Windigo. Some good mill sites are situated at different points of the river Windigo, from its mouth to its source.

The land through which flows the north west branch is mostly level as far as the 15th mile and appears to extend to the north east, as far as the range of mountains which enclose the river Windigo. The soil is a good yellow sandy loam, free from stones, and therefore well fit for culture. White pine and spruce, particularly, are plentiful as far as the eye can reach, in every direction.

Fires have extended their ravages also over the greater part of the territory drained by the north west branch of the Windigo, from the 20th mile as far up as its source. The soil is sandy and stony and unfit for cultivating.

The tracts, which were exempt from fire, are wooded in hard and soft wood of fine growth. Good water powers are found in different places on this river.

The country drained by the Kakastinowagamag tributary, coming from the south west of the latter, contains a great deal of timber. We find white pine and white spruce along this river. The soil is a rich yellow loam, and a black mould in the ravines, as also along the lake Kasaganabiskug tributary of the said river

The Kakaninacashenewac, tributary of the same river, is enclosed with mountains on nearly all its course; mostly all the ground was burnt over;

certain sections, to the south west, exempt from fire, are covered with white spruce of medium size, and in rather great quantities. The soil is everywhere sandy and rocky.

CONCLUSION.—The tract of land fit for colonization, traversed by the Salmon river and its principal tributaries, not including the township of Demeules already surveyed, has a frontage of about 12 miles, reckoning from the mouth of Salmon river, ascending the river Chamouchouan, by a depth of seven miles, making an area of 50,000 acres; there is besides this all the tract comprised between the river des Mousses, the river Franche and Salmon river, enclosing an area of 60,000 acres, three fourths of which might be divided into lots. There is no white pine on Salmon river, or on any of its tributaries, but scrub or gray pine, of middling growth, is found in great abundance in several places. White spruce and tamarac are to be had in abundance on the tributaries of Salmon river.

PORTAGE OF THE RIVER WINDIGO.—With the exception of some places crossed by the portage of the Windigo around the lakes and along the tributaries of the river Franche, there is no timber fit for commercial purposes. The soil, generally, all along this portage, is sandy and rocky; therefore useless for cultivation.

RIVER WINDIGO AND ITS PRINCIPAL TRIBUTARIES.—From the mouth of the river Windigo to about as far as the 30th mile, comprising the principal branch and its tributaries, a thousand acres of land are fit for cultivation. On the remainder of the Windigo river and its tributaries, there is no land fit for culture, to form settlements. There is no white pine, but we find white spruce and tamarac in rather great quantities, on the way to its sources. There, the land seems more fit for cultivation. White pine is in rather great quantities, as also white spruce and tamarac, on the Windigo river and its tributaries, from its mouth, to about thirty miles, but not further

(*Gédéon Gagnon*, 16th June, 1874.)

RIVER MATAWIN AND ITS TRIBUTARIES.

The scaling upon which I have the honor to report embraces a total length of about $86\frac{1}{2}$ miles, forming a superficies of about 72,000 square acres.

	Miles.	Chains.
Of this length, the river Matawin takes nineteen miles and twenty three and a half chains.....	19	$23\frac{1}{2}$
River des Ours, five miles and twenty-one chains and two thirds	5	$21\frac{2}{3}$
River Antikaiagamak, fifty-one miles seventeen chains and a half.....	51	$17\frac{1}{2}$
Creek d'Isaie, eight miles and sixty chains.....	8	60
River Shawinegan.....	2	$25\frac{1}{2}$
	86	$48\frac{1}{6}$
Total length.....	86	$48\frac{1}{6}$

RIVER MATAWIN.—I noted nine rapids or cascades covering a total length of about $6\frac{1}{2}$ miles. The fall of the Litte Grande Mere, which is about 30 feet high, is the largest. From the foot of the falls of the Galet, lower down, an extensive brûlé hereinafter described is the first thing seen.

Apart from the shore line of the rapids, which is more or less steep and rocky, the banks of the Matawin show alluvial tracts in the form of wild meadows, extending back in some places for a depth of half a mile. Below the river Antikaiagamak, the southern bank of the Matawin is covered with continuous groves of young pine, as far as the rapid des Cinq, skirting the heights which are clothed with hardwood on a clay soil. The river Matawin abounds with pike, pickerel and *outose*.

RIVER DES OURS.—This creek adjoins the brûlé already mentioned. There are some pine groves on it and a good deal of young spruce on hillocks of yellow loam.

CRAPAUD CREEK.—This creek leads to a large swamp wooded with tamarac and showing beaver meadows here and there. Below this, on the Matawin, is the rapid de Cran, which is bordered by yellow loam lands.

RIVER ANTIKAIAGAMAK.—The sources of this river are close to a chain of bare mountains, which can be seen at a distance of six miles off and around which extends a vast brûlé, the western end of which I did not

discover. Along the course of this river, there are extensive wild meadows and especially on the lake of the same name.

This river has three falls. The one above the lake of the same name is only remarkable for its height. This lake, which is barely higher than the level of the waters of the Matawin, into which it empties by a navigable channel, abounds with pike. A very light white clay is one of its notable features. On the branch which issues from Weasel lake (lac à la Belette), there are some pine groves, but the commonest wood on this river is white birch.

ISAIE CREEK.—The pine here has been recently worked. There are some good yellow loam and clay lands.

In general, this territory seemed to me fitted for settlement.

(James Barnard, 26th January, 1888.)

QUEBEC, PORTNEUF & BATISCAN DISTRICTS

COUNTRY BETWEEN THE JACQUES CARTIER AND BATISCAN RIVERS.

I began this exploration on the north west side of the Jacques Cartier river and at about two miles to the north east of the south west line of the seigniory of St. Gabriel. At this point, the banks of the river are very high, especially on the north west side, but are of arable soil of good quality. The prevailing timber is composed of maple, birch, beech, basswood, spruce and fir. Once the summit of the river bank is reached, the ground becomes more level for the space of a quarter of a mile; after which its surface grows irregular, there is less hardwood, and the land is inferior to the preceding. About two miles from the Jacques Cartier river lies lake St. Michel, which is about a mile long, by two thirds of a mile wide and near which there are some small rocky hills the prevailing forest growth being balsam, spruce and white birch. About a half mile from this lake, the timber is mixed and the land pretty good, although it shows some small rocks here and there. About two miles from lake St. Michel is lake Tantari, which is about two miles long by half a mile wide and which is stocked with excellent trout. It is the principal source of the river aux Pins and is surrounded by rocky cliffs, except at its north western end, where its banks are lower and the rocks disappear.

Beyond this lake, there are four other smaller ones within the space of a mile which render the surface of the land irregular; but the soil is arable and probably good. The predominating timber is spruce, balsam, white birch and alder. The ground continues the same as far as a large brook flowing with much rapidity to the west. The distance between the brook and the last lake is a mile and three quarters. Between this brook and the river Touryali, there is a large mountain, the top of which is covered with rocks which vary in height and superficies; but its flanks on both sides are of cultivable soil. The timber here is birch, white birch, spruce and balsam.

The river Touryali is one of the principal branches of the river St. Ann and flows over a rocky bed with much swiftness towards the north west. The valley in which it winds is about an acre and a half in width, but, in approaching the St. Ann, the high banks fall away and leave

it a free passage, so that its valley widens out to seven or eight acres and is composed of good cultivable soil.

From this river, the ground rises a good deal and thus continues by steps for about two miles, the land on these terraces being arable and covered with mixed hardwood of all kinds. At the end of these two miles, there is a chain of rocky headlands extending for a mile and a half from south east to north west, and intersected by a number of small lakes, of great depth, whose waters flow towards the river St Ann. Starting from the last of these lakes, there is a big mountain to descend for about a mile, with several very steep steps. About midway on this mountain, the land becomes arable and is fairly good. At the foot of the mountain, flows the river St. Ann, about one acre and a third wide, over a rocky bed and with much rapidity. It winds through a small valley, bounded on the north west side by the Talayarde mountain, which is simply a bare, barren rock of considerable height. This mountain is broken by a stream about 60 feet wide, which hurls itself over the rocks with great rapidity and loses itself in the St. Ann, at about a quarter of a mile to the south west. At about a mile on the top of this mountain, I found three small lakes, surrounded by rocks, and discharging their waters towards the south. From the river St Ann to these lakes, the surface is very irregular and strewn with rocks, the timber being balsam, spruce and white birch. From these lakes, to the third river St Ann, there is about four miles and a half. Within this space, the ground is mostly covered with rocks, which vary in height and superficies and between which there are some pieces of cultivable land, but of small extent and mediocre quality, except near the latter river, where below the high bank, on the south east side, there is good deal of cultivable soil between the rocks in the bank. This third river St Ann is an acre wide, flowing over a bed of large stones and with much swiftness towards the south. The timber on the rocky headlands consists of stunted spruce, balsam and white birch.

At the end of these five and a half miles, I began to cross towards the south west and so continued about six miles. Within this space of ground, I always met the same chain of headlands. About halfway, I met a large mountain which appeared to trend from north to south. On its western slopes, I found several small lakes and at the end of the six miles, I came across a branch of the river Batiscan, called the river à Pierre, 60 feet wide, flowing over a bed of large boulders and with much rapidity toward the west. Thence I followed an almost south east direction to come out at Fossambault.

From this river, the ground rises considerably, and at about three quarters of a mile, I found two small lakes, which discharge into river à Pierre and are surrounded by high rocks, and, at about three miles from river à Pierre, I met a large mountain apparently trending from north east to south west and dividing the waters flowing into the Batiscan from those flowing into the St. Ann. At the foot of this mountain, there are two small rock-bordered lakes; but at a distance of about two miles from these lakes, the mountains become more regular and begin to descend by terraces, sloping towards the east. The rocks disappear and the soil is arable. The timber consists chiefly of maple, birch, beech, spruce and birch.

The same kind of ground continues to the third river St. Ann, which flows over a bed of large stones with a little rapidity towards the south. The valley in which it winds is about two or three acres wide and the land in it is of good quality, the principal forest growth being ash, elm, poplar and alder. The bank on the south east side is very high, but in a regular and gradual way; then, the surface grows irregular, but the soil is of good quality. The timber consists of maple, beech, birch, spruce and balsam. The same ground continues to the river St. Ann, which flows slowly over a bed of gravel and contains several islands of some size and of good soil. The valley in which it winds is about four to five acres in width; then commence the great banks on the south west side of the said river. These are not very high and are composed of good soil for a distance of about two miles from the river, when several small lakes are met, near which are some small broken hills, and between which are some pieces of good arable land. Between these lakes and lake St. Joseph, there is a regular swell of good land. The timber consists of maple, birch, beech, &c. I then went down to the mill of Fossambault and thence began to ascend towards the north west, near the seigniorial line between Fossambault and Bourg Louis. Starting from the last settlements of the seignior of Fossambault, the ground is almost horizontal as far as lake Sergent, except near the different little streams. There are some small valleys in which the prevailing forest growth is composed of cedar, spruce, balsam, ash and alder. On the level land, the timber is composed of birch, beech, maple, spruce and balsam. The land is of good quality. Lake Sergent is surrounded by low lands, except on the north west side, where there is a gradual rise for about a mile. The ground then slopes to the north west and there is a small rocky hill to descend at the foot of which flows a large brook towards the south west. After ascending the north west bank, the ground is found to be level as far as the discharge of Seven Islands lake,

which is the principal branch of the river Portneuf. Its banks are somewhat high. Between lake Sergent and lake Sept Isles (Seven Islands) the land is excellent the prevailing timber on the heights being maple, beech, birch, spruce and balsam and, on the flats, spruce, cedar, ash, balsam and alder. From said discharge to the river Portneuf, the ground rises gradually for about three quarters of a mile, after which it begins to slope towards the river St. Ann, and, at a short distance, there is a swamp of half a mile to be crossed, the surface of which is flat and the soil bad. Beyond this swamp, the land again becomes good and continues so, gradually descending to the river St. Ann. The prevailing timber between the rivers Portneuf and St. Ann is birch, spruce, balsam and alder, and the distance is about two miles.

The river St. Ann here flows slowly over a bed of gravel and contains several islands of considerable size and excellent soil. The valley in which it winds is about 5 acres wide, and its banks are not high—that on the north west side being a little higher than the other. Once on top of this bank, the ground is horizontal to the third river, where there is also a hill of medium height to descend, at the foot of which a very fine valley spreads out, before reaching this third river, which flows slowly over a bed of gravel and in which there are also several islands of good size and soil. The distance between the two last rivers is about two miles and is composed of good quality land covered with maple, birch, beech, spruce and balsam.

The bank on the north west side, bordering this third river, is somewhat high and steep; but, once ascended, the ground becomes again level for about a mile, when it begins to slope towards the north west for half a mile, when a small river of 40 feet wide is met, flowing rapidly over a bed of large stones towards the east. The ground between the two last rivers is good and the timber consists of maple, birch, beech, &c. On the north west side of this small river, there is a heavy hill to ascend and descend at about half a mile from the river. I again met this stream coming from the north where it is skirted on its west side by a steep mountain, which I ascended obliquely, and the summit of which is crowned with rocks. Here end the arable lands of the river St. Ann. After descending this mountain, I was obliged to ascend another and, lastly, at the distance of $4\frac{1}{2}$ miles from the last little river, I began to fall upon small lakes, of which I met five in the space of $3\frac{1}{2}$ miles, surrounded and separated from each other by bare rocky cliffs, extremely high and steep. The waters of these flow towards the south west. On the north west side of the last, there is a heavy

mountain covered over with small rocks which render its surface irregular. There is about a mile and a half to the crossing, at the foot of which passes the river Ferré, 60 feet wide, flowing very swiftly over a rocky bed towards the north west till it loses itself in Long lake. This river is bordered on the north west by a great cliff, the summit of which is flat for about half a mile; there is then a heavy ridge to ascend, with a very uneven summit; and, at about two miles from the river Ferré, begins a descent which is extremely steep and which continues for about a mile, while, at its foot, passes the river des Aulnaies, 30 feet wide, flowing towards the west with a very slow current over a bed of sand. It rises in a lake a short distance to the east and loses itself in another to the west at about the same distance and then flows toward the Batiscau.

The mountain separating this small river from the river Ferré forms the height of land between the St. Ann and the Batiscau. On the north western slope of this mountain, about one half of the ground could be cultivated and is pretty good land. The timber consists of maple, birch, spruce and balsam. The river des Aulnaies winds through a small valley of good land in which there are many alders. Leaving this river, there is a large mountain which rises gradually, and the top of which is flat enough and is about half a mile wide; there is then a slow descent and at a distance of $1\frac{1}{2}$ mile passes a large brook flowing westward. On this last mountain, about a third of the ground may be cultivated. Between the small rocks on its surface, the growing timber is maple, beech, birch, spruce and balsam. On the north west side of this large brook, there is also a high mountain, with a very rocky surface and clothed with poor timber. On the north west slope, I passed between two small lakes, which discharge into the river des Aulnaies. On the north west side of these lakes, the ground rises slowly for about half a mile, when it becomes flat for a third of a mile; there is then a sharp descent to the north, at the foot of which passes the river à Pierre, which is also a branch of the Batiscau, and flows very slowly over a bed of sand in a deep channel through a fine valley of good land. At the point where I struck this river there are three small lakes which give it a much greater width than it maintains during the rest of its course. On the last mountain passed over, at least one half of the ground can be cultivated—the soil being of good quality, and the timber consisting of birch, beech, spruce and balsam. The distance between the river des Aulnaies and the point at which I struck the river à Pierre is about 7 or 8 miles.

In the lower part of the last lake on the river à Pierre is the mouth of the river Lincheque, 80 feet wide, flowing very slowly over a bed of sand.

From river à Pierre, the land rises by degrees for about a mile and then slopes gradually to the north west for about two miles and a half. At the foot of this descent runs the river Batiscan, with a width of $2\frac{1}{2}$ acres, flowing slowly southward over a bed of gravel, in a valley two or three acres wide. The ground between the rivers à Pierre and Batiscan is nearly all arable and the soil of good quality—the prevailing timber being maple, beech, birch, spruce and balsam.

The temperature seems to be warmer on the Batiscan than on the St. Ann, because the same kinds of fruits, which were green on the latter when I crossed it, were ripe when I reached the former, which indicates a difference of at least a fortnight in the season, which may be attributed to the fact that the Batiscan flows in a much lower channel than the St. Ann.

The valley on the north west side of the Batiscan is bordered by a small ridge, the ground then rising by degrees. The soil is of good quality and arable, for about $2\frac{1}{2}$ miles, after which the surface is broken by rock-covered mountains. In this mountain chain, I found three small lakes surrounded by very steep hills. On the north west side of these lakes, there is a heavy mountain to be ascended and descended with a stiff slope, at the foot of which passes the river Propre, 90 feet wide, flowing very swiftly over a bed of large stones between two large mountains. The distance between this stream and the Batiscan is about 10 miles. But there are only about 3 miles from the Batiscan that the land is arable; in the other 3 miles, there are also some pieces that might be cultivated, but they are of limited extent.

Leaving the river Propre, I went south and, at a distance of about three miles, I met a small lake, and, another mile further south, I passed between two other small ones. The waters of these lakes discharge to the west, and they are surrounded by large mountains nearly all of which are covered with rocks. Between the river Propre and these lakes, there is very little cultivable land between the boulders which strew the surface. The timber, however, is pretty good, principally on the mountain slopes. The same kind of land extends to another small lake, about 4 miles from the two last mentioned, and which also discharges to the west. I next took the direction of Long lake, which lies to the south west or thereabouts, and, after leaving this lake, I crossed a mountain on the summit of which there are some small rocks here and there, when the ground begins to slope to the river Batiscan and continues to descend by degrees to the valley of that river.

Along the whole of this long descent, the ground is cultivable and the soil pretty good ; the timber on the slopes is maple, birch, beech, spruce and balsam and, on the flats, ash, aspen, spruce, balsam and alder. Several small brooks water this section. The valley in which the Batiscan flows is about 7 or 8 acres wide, and the soil is good, the timber being ash, aspen, poplar, elm and alder ; there are also some pines here and there. The low banks of the river are of clay, with the exception of an overlying bed of sand, 15 to 18 inches thick. The river is very deep and flows with an extremely slow current at this place. On the south east side, the ground rises by degrees for a distance of about 3 miles, and the land is of good quality, the timber being nearly the same as on the north west side.

A large mountain occurs at the end of these three miles, rising regularly and covered on the summit with small rocks, which render the ground, almost uncultivable. On the south east flank of this mountain, I passed between two small lakes bordered by rocks of medium height, which extend for about a mile. I then found myself on the western flank of a large mountain of arable soil, except on its summit where there are small scattered rocks, which render its surface uneven. It abuts on the upper end of Long Lake, which is about 5 miles in length by 1 in width at its widest point. It abounds with excellent fish and is surrounded by high lands, but which rise by degrees, the soil being arable and of pretty good quality. The timber is generally composed of maple, birch, beech, spruce and balsam.

This lake is the principal source of Black river (*rivière Noire*) which is about two thirds of an acre wide, flowing over a bed of stones and gravel with some swiftness and discharging into the St. Ann in the seignory of Grondines. This little river runs in a valley from 2 to 3 acres wide, bordered on each side by high banks, but which rise by degrees and are of good arable soil. The timber on the high grounds consists of maple, birch, beech, spruce and balsam and, on the flats, of ash, aspen, poplar, spruce, balsam and alder. I went down by the west side of Black river to the first settlements on the river St. Ann and in the seignory of Grondines, whence I proceeded to the furthest settlements on the Batiscan river and in the seignory of St. Ann, where I got a canoe and ascended the Batiscan to the foot of the great currents, a distance of about 75 miles from the river St. Lawrence.

The part of the river which passes through the seignories of St. Ann and Grondines is nearly straight; it has five falls, between which the current is slow and generally deep—the course being from north to south. Its banks are low, except near the falls, where they are somewhat high. At

about $3\frac{1}{2}$ miles above the seignory of Grondines, I started to explore the country to the north west of the river for a depth of 7 or 8 miles. Starting from the river, there is a valley 4 or 5 acres wide, then the ground rises gradually for about $2\frac{1}{2}$ miles, after which it rises by degrees and the steps or terraces are somewhat steep, especially at the end of the 7 or 8 miles; but the land is cultivable all over and of pretty good quality, the timber consisting of birch, beech, ash, spruce, balsam, &c. I then continued to ascend the river from the seignory of Grondines to the mouth of the river des Aulnaies; it runs generally towards the north east, winds a good deal and has a valley of 8 or 9 acres wide. Its low banks are composed of blue clay covered by a bed of fine sand. It flows generally over a bed of mud and sand with a very slow current between several falls which also occur in this part.

Above the river des Aulnaies, it trends northward in a generally straighter direction; its small banks being always the same and its valley retaining the same width to the mouth of the river Propre, where its high banks commence to come closer together and the small ones are sandy, with large stones scattered here and there; it also becomes more rapid. At the mouth of the river à Pierre, the small banks are higher and the valley which is embraced within the two larger ones is no more than two or three acres wide. On these large banks, small rocks begin to appear here and there and they are steeper and higher. At the foot of the great currents, the banks come close to the water's edge, and, in the river itself, there are many large rocks. The river flows very swiftly over a bed of large stones. Here, I discontinued ascending it and started to explore the country on both sides, proceeding as perpendicularly as possible to the river. I began by going up on the east side. For a distance of about two miles, I met a great many hills of some height upon which there only grow stunted spruce and balsam. Then the big mountains commence, rising by degrees and falling away in the same manner, when they are broken by streams, at about 6 miles east of the mountain bordering the river Lincheque, on the north east side, which is very high and steep. Among the last mountains just passed, there are some pieces of arable land between the smaller rocks, on the surface of these hills, among a great deal of loose stones. The timber consists chiefly of birch, bouleau, spruce and balsam. Between the rocks which are everywhere along the Bastiscan river, there are also some small pieces of cultivable land, but so limited as to be unworthy of attention for agriculture.

I then recognized that I was at the end of the arable lands in the vicinity of this river, and I next went up the west side. Starting from the river, there are some rocky hills to be crossed, some of which are very steep; at a distance of about two miles, there are still stiffer, and at two miles and a half I passed by the southern extremity of a small lake surrounded on all sides by very high and steep headlands. Half a mile from this lake, I met another still smaller, also surrounded by great cliffs and at two thirds of a mile from the latter begins a very sharp descent of half a mile at the foot of which passes the river du Portage, 90 feet wide, flowing over a bed of large stones, rapidly and towards the south. The distance between the two rivers is about six miles, but only on the first two miles from the Batiscau are any pieces of cultivable land found, between the rocks which cover five-sixths of this surface. The timber, on these cultivable pieces, is bouleau, birch, balsam and spruce, while, on the cliffs between the rivers, it is stunted and of poor quality.

Starting from the river du Portage, there is another large mountain which rises by degrees for a distance of about two miles, and is covered with rocks. After these two miles, I met a chain of rocks of different heights and size crossing each other in all directions, and between which there are a great many lakes, and I continued along this ridge for about 8 miles to the north west of the river du Portage, where I met lake Clair, which is about 2 miles long, and the waters of which appeared to me to run towards the river St. Maurice. Between the river du Portage and lake Clair, I found no arable land and the wood on the heights is inferior stuff. I then also recognized that I had reached the end of the cultivable lands in the vicinity of the river Batiscau. I thereupon stopped the exploration and returned to Quebec without other interruption.

The region which is bounded to the south east by the seigniories of Jacques-Cartier, Bourg Louis, Fossambault and others; to the south west by Perthuis; to the north west by a high chain of hills, and to the north east by St. Gabriel, contains 89,500 acres, but, of this tract of land, about a third is covered with rocks, leaving 59,867 acres, and making 590 lots of 100 acres each and a small balance. The country bounded to the north east by the seignior of Perthuis, to the south east by Deschambault, Lachevrotière and La Tesserie, to the south west by Grondines, and to the north west by the rear line of the cultivable lands contains 140,800 acres; but about one quarter of this is rendered barren by the small rocks scattered here and there over its surface, leaving 105,600 acres, and making 1056 lots of 100

acres each. And the section bounded to the south west by the seigniory of Perthuis, to the north west and north east by the rear line of the cultivable lands, and to the south east by the chain of headlands contains 115,200 acres; but about one half of this surface is covered with small rocks, so that there only remain 57,600 acres net, making 576 lots of 100 acres each.

The total number of lots is 2,229, which could form four good parishes.

(*J.-P. Proulx*, 26th December, 1829.)

COUNTRY BETWEEN ST. RAYMOND AND LAKE EDWARD.

Your letter of instructions, dated 4th February last, respecting the exploration and tracing of that part of the proposed railway from Quebec to Lake St. John, comprised between St. Raymond and the south part of the Island of lake Edward reached me before I had completed the verification surveys and explorations in the valley of the river Batiscan.

1. I began the exploration of the railway route proper, at the foot of the Island of lake Edward, at about twenty chains north of the 51st mile post on the eastern bank of the river Batiscan, exactly opposite the junction of the river Jeanotte. A square post, duly inscribed, marks the starting point.

I made a careful examination of both banks of the Batiscan as I proceeded downwards as far as the river Meguick, a considerable tributary flowing in from the south east; and established that the eastern bank is the most suitable for the passage of the line, and in consequence the trees were blazed on the general course, so that no mistake might be made later on in the localization. This space measures about five miles, the level of the first two miles being forty feet and that of the other three twenty feet lower than the starting point.

2. Before continuing the exploration along the Batiscan, I visited the valley of the river Meguick, in order to become well acquainted with it and to judge if I might return to it later on. Starting from the mouth of this stream, which is sinuous, flowing over a smooth bed of considerable width, we crossed it, proceeding towards the south, and following a wide opening for a couple of miles, we came upon lake Bellevue, which is of a circular form and a diameter of about fifteen hundred yards. An isolated promontory juts out on the eastern shore, but not far enough to interfere with the line.

To the south of the lake, the opening above mentioned continues in a south easterly direction, and following it for five miles, brings us to a branch of the river Meguick, which winds about on our left. Ascending the course of this stream we reached its head, after having left on both sides other branches of more or less size, but flowing in different directions. Over these twelve miles or thereabouts from the mouth of the Meguick, no great difficulty is met with, the level rises regularly to about 220 feet above that of the Batiscan: the passage is in some places narrow, but sufficiently wide for the railway. The ground is clear of rocks and easy to work.

From the source of this branch of the Meguick arises also another stream, flowing in an opposite direction, or towards the south, facilitating our progress: we followed it to its confluence with the north branch of the river Pierre, another tributary of the Batiscan. This stream is about three miles long and from five to ten links wide. On the first mile from the source, the hills on either side, approaching each other suddenly, are almost united by the boulders detached from their flanks; the stream, however, still finds a passage. These detached rocks are in some places piled upon each other, while other spaces are left clear, facilitating the descent to the river Pierre, where the level is about a hundred feet lower than at the source of the stream, and where these boulders are the only difficulty to be met with.

Looking towards the south from the banks of the river Pierre, the aspect of the country indicates level ground, while a chain of mountains in the distance extends to the north east and south west, but does not approach the river until five or six miles lower down. Those on the north west side approach and recede from its sinuous course for about an equal distance.

The principal branch of the river Pierre flows through the level country above mentioned and joins the main river a little lower down than the mouth of the stream last explored. On proceeding up this south branch, three small lakes are met with in the space of two miles, and in the fine land surrounding them the beginning of a settlement has been made by the Messrs. Bennett. A space of at least fifty acres has been put under cultivation, and a two story house and depôt some sixty feet long serves as a store for the numerous surrounding camps. The oats grown on this farm have a fine appearance and are of good quality if we may judge from the samples left in the sheds of the establishment. The cultivable land in this locality may be estimated at about eight to ten thousand acres.

3. Leaving this part of our exploration aside for the moment, we returned to the mouth of the Meguick and followed the course of the principal branch of this river for some distance upwards, but, finding that its general direction lay too much to the north east, we abandoned this part to explore the Batiscan downwards to the settlements in the townships of Montauban and Chavigny.

4. For the first eight miles, especially on the south east bank of the river, the land is favorable for the passage of a railway. Lower down, the uneven shore and the frequent and sudden curves present some difficulties, but not such as to be insurmountable. Before taking leave of this spot, I may mention that a pass in the mountains called *la grande coulée* leads directly to the river Pierre and presents no difficulty. Descending the river, the land becomes more even, and at the tenth mile the banks resume their original aspect, and so continue with occasional interruptions of steep shores, either on one side or the other, as far as the 22nd mile at the mouth of the river Pierre, which discharges itself on the south east side of the Batiscan. From here to the parish of Notre-Dame des Anges, the seventh portage of the river Batiscan, the country is very favorable for the projected work and the soil is of excellent quality.

5. In order to become acquainted with the valley of the chief branch of the river Pierre, we returned to the road which leads to Mr. Bennett's depot, above the forks, exploring both banks to above the depot. No serious difficulty occurs in all this distance; the land being generally level and of excellent quality. But a mile above the depot, the valley closes in suddenly, leaving only a rough and broken bed through which the pent up waters rush in a torrent. There is a difference of level on the last mile of over a hundred feet, and no improvement takes place for at least a mile further.

Returning to the river Batiscan, we made a minute examination of the mountains and gorges bordering the river Pierre on the south east, and exactly at the great bend which it makes towards the north west, at about four miles from its mouth, a nearly level pass leads to the river Noire, a tributary of the St. Ann, less than a mile distant. The height from the depot to the great bend is about seventy feet, the distance six miles, and the ground easy and offering no obstacles.

6. This branch of the river Noire which we explored flows between two parallel chains of mountains, lying fifteen to twenty chains apart, and runs towards the S. S. E. to lake Montauban, four miles further; the difference of level in these four miles is sixty feet and the grade uniform. Lake

Montauban, which we explored from the west side, where the banks do not present many serious difficulties, may be also examined on the east side, by leaving these banks on the first mile after crossing the north east affluent, continuing along the west side of the discharge, behind Long lake which we coast on the same side as far as Mountain Bay at about two miles from the point where the above affluent falls into the lake.

If the uneven land, the perpendicular capes 200 feet high and the walls of rock which line the shores of Long lake over a distance of at least a mile were found only on one side, I would have continued the exploration of this river to its fall into the great valley of the St. Lawrence, several miles lower down; but this route being too costly, we examined another passage, less broken but, extending a little more to the west; that is to say, we followed the valley of the river Blanche, which we reached by Mountain Bay, between which and the lake of Seven Islands, a belt of firs, sixty chains across, and quite level, affords an easy passage over the height of land.

7. From the lake of Seven islands proceeding down the river Blanche, there are no great difficulties in the way of reaching St. Alban; and a pass a little to the east is at least as favorable; the greatest difference of level being two hundred feet over three miles of the descent to the smooth valley of the St. Lawrence. From St. Alban following the base of the mountain either on the north or south side of the river St. Ann, the ground is most favorable for the construction of a railway as far as St. Raymond, where my exploration terminated. From St. Alban to St. Raymond, the level rises a hundred feet in the space of twelve or fifteen miles.

8. In order, however, to become personally sure of the possibility of a direct line, I explored with this view the valley of the river Jacob up to the source of the river.

To reach lake Simon, two different routes offer themselves, both quite practicable; but beyond that to the height of land the rise is over a hundred feet in half a mile, increasing as we near the summit.

Considering the lateness of the season, the small stock of provisions remaining, the fatigue of four months' labor, and the exhaustion of the appropriation, we here ceased our explorations, ready to resume them on the return of the proper season, and examine certain parts yet unknown, which may give satisfactory results.

In conclusion I may say that this exploration on the whole has had the result desired, viz: to establish the possibility of crossing the southern

declivity of the Laurentian hills, and finding a practicable route by which the Gosford Railway might be prolonged to the shore of Lake St. John.

(*P.-H. Dumais*, 3rd May, 1876.)

NORTH BRANCH OF THE RIVER ST. ANN.

I shall divide this report into two distinct parts; the first relating to the section surveyed between the boundary line of the township of Rocmont and Gosford to the place commonly called the Forks; and the second comprising the survey from the Forks to the head of my work, including some lakes which I deemed it desirable to scale.

The appearance of the land in the neighborhood of the north east branch of the river St. Ann, in this portion, is very picturesque. The right bank, or east side of the river, is a plateau of fairly level land; and, judging from the quality of the soil and timber and the apparent satisfaction of the few settlers, seven in number, who live on it, it is good land to settle on.

The average width of this plateau is ten arpents. It becomes narrower, however, up towards the "Forks," as the mountains, which gradually increase in height, approach nearer and nearer to the river. The mountains all along the left bank are closer to the river than on the other side. There is no land under cultivation on this side, except one or two points formed by windings of the river, on which hay grows.

The soil is a somewhat rich sandy earth, more or less stony. The timber is mixed, comprising maple, birch, elm and spruce, the last named predominating.

The settlers to whom I had occasion to speak, told me that during the summer, the river abounds with fish, and that trout are taken in large quantities, but generally of small size. I was also informed that a new York gentleman, a painter, it appears, named Grace, was so charmed by the beauty of the site and the attractions of the place that he purchased a property at the "Forks" and has come there with his family to spend the fine season of the last two years.

From the "Forks" upwards towards the lakes, which I surveyed as far as my operations extended, the river, with the exception of a few stretches of still water, as indicated in my field notes, is confined within the mountains and broken all along by a succession of rapids. Even the

discharge of lake C flows over a ladder of steep rocks, worn away by the water and the weather. Along the tributary of the north east branch upwards to the lakes A, B, C, the country is very mountainous and the soil unfit for cultivation.

The prevailing varieties of timber are balsam, white birch and spruce, the latter too small for building purposes.

The land in this second part is generally mountainous and unfit for cultivation; the timber, which is chiefly balsam, is too small to be of any use.

The great number of lakes and their proximity to each other make this a magnificent country for fishing and hunting; but, unfortunately, sportsmen will always have great difficulty in reaching it.

The lakes contain trout, but only in small quantity and of middling size.

Along the discharge of lake Crapaud, from the Forks up to the lake, the timber, which consists chiefly of spruce, is of better quality, of medium size and very suitable for building purposes.

(*Eugène Fafard*, 14th July, 1887.)

RIVER TALAYARDE.

I have the honor to report that I have scaled the river Talayarde and its tributaries in the county of Portneuf.

The general aspect of the land on both sides of this river is very rocky and mountainous in all directions. The soil generally consists of yellow earth, very stony, and is in my opinion quite unfit for cultivation. The forest growth comprises chiefly balsam, white birch, spruce and yellow birch, of an average diameter of ten inches. Balsam is the prevailing variety.

This river, which flows towards the south, discharges into the river St. Ann in the 5th range of Gosford. Its course is for the most part rapid and frequently bordered by perpendicular cliffs, which are sometimes difficult and even dangerous to ascend.

As for the lakes which feed this river, they have been better stocked with fish, perhaps, than they will be in future, as the otter, mink and marten, which frequent them, destroy daily the trout and gudgeon in them

The temperature was very cold and there was a good deal of snow, but, as a whole the season was very favorable for the work of the survey.

(*N.-J.-E. Lefrançois*, 4th August, 1888.)

RIVER MAUVAISE.

I have the honor to report that I have scaled the river Mauvaise and its tributaries, as well as the different lakes included in the undivided part of the township of Rocmont, in the county of Portneuf.

The land watered by these rivers is very mountainous and rocky in all directions. The soil is generally sandy. The timber consists of balsam, white birch, spruce and yellow birch of good size for lumbering purposes. This river, known as the Bad river (*riviere Mauvaise*), flows in a serpentine manner to the north west branch of the river St. Ann, and is fed by five principal lakes, which I surveyed, except that of the Black brook, (*ruisseau Noir*) which is of considerable size, but lies beyond the limits assigned to me. I then went to "lake No. 9," situated on the height of land and regarded as the head of the river Mauvaise and ran a line thence to "lake No. 10" (a distance of 23 chains, 13 links), in order to connect my scaling with that of the lakes discharging into the lake of the corner and thence towards the north west.

Most of these lakes are very picturesque and, generally speaking, abound with fish (trout and gudgeon).

With regard to climate, I observed that the changes of temperature were about the same as those experienced in the vicinity of Quebec.

(*N.-J.-E. Lefrançois*, 12th July, 1888.)

RIVERS TOWACHICHE AND EAUX MORTES, &c.

The river Towachiche, in the county of Portneuf, thirty miles from the St. Lawrence, in latitude 46°, 50' N. and longitude 72°, 28', 30" West, at the point of departure, is one of the tributaries of the Batiscan. This river does not contain many fish, though the large lake Masketsy, and more

especially lake Roberge, from which it is fed, abound with large trout. These two lakes in reality afford very fine fishing. The river aux Eaux Mortes, its north branch, and its tributaries, the river aux Brochets, the creek Pronovault, the discharge of the small lake des Iles, and that of lake à la Vase, which I also surveyed, are in the county of Champlain, a little to the north of the preceding, and flow into lake Mekinac. These rivers do not contain many fish either, with the exception of the river aux Brochets, in which large numbers of pike are caught. But these fish are more plentiful still in the lakes aux Chat and aux Brochets, on the said river aux Brochets. The lakes Hamel, à la Dame, au Castor, and particularly, lake à la Truite, on the north branch of the river aux Eaux Mortes, also afford good trout fishing. The same may be said of the lakes à l'Ours, Dussault, and especially, Desrochers, on the main branch of the river aux Eaux Mortes. But the best places for trout and pike fishing are certainly the little lake des Iles, lake Long, and, above all, lake Travers.

I am happy to inform you that the land through which these rivers flow is generally fit for cultivation and settlement. It is also covered with spruce, birch and other merchantable timber. There is only a small quantity of pine to be seen at two places marked on the plan herewith.

The completed portion of the Basses Laurentides Railway passes through the tract surveyed by me, following the west bank of the river Towachiche to within half a mile of the lake à l'Auguste, thence, if it follow the present tracing, it will turn a little towards the east, pass between lakes Masketsy and Roberge, the little lake des Iles and lake Long, then follow the most northerly direction possible, as shown on the plan herewith. The road would be more useful if it would pass more to the south, through the best lands of the township of Chavigny and the parish of Notre Dame des Anges, ending at some nearer point on the lake St. John Railway. It is difficult to imagine the reasons by which the company charged with the construction of this road was induced to give it this direction so much too far to the north, involving useless extra length. They may, however, be found in the fact that the road is subsidized with a grant of ten thousand dollars a mile, while it does not cost over seven thousand dollars a mile to build it, which leaves the contractors a net profit of over three thousand dollars a mile, besides the property, which should be worth still more. I humbly submit that, in the interest of the Government and the public, it is very advisable that competent officers should be appointed

to superintend and control the tracing and construction of all the railways which are subsidized by the Government.

The natural advantages of the tract which I have passed over in the course of this survey, the timber, the water-powers, the fishing and hunting grounds, make it a desirable field for colonization.

(P.-P.-N. Du Tremblay, 15th January, 1887.)

LAKE ST. JOHN DISTRICT.

VALLEY OF LAKE ST. JOHN.

Leaving Chicoutimi on the 30th September, our equipment was sent by land to the foot of lake Kenogami, a distance of fifteen miles. Here a second canoe was hired, by which I was enabled to visit several points on the lake, while the provisions and other materials proceeded forward in a barge. Crossing by the Bon Portage from the head of lake Kenogami to lake Kenogamishish, we proceeded to the foot of it and then down the river Aulnais, and from its mouth down the Belle river to Lake St. John. Lake St. John was examined along the coast and around its islands, and we ascended three of its tributary rivers for different distances, the Belle river, as already mentioned, the Ouiatchouan for one mile and the Peribonka for twelve miles.

From the mouth of the Saguenay to Cap à l'Ouest on the right bank, a distance of fifty miles, we passed up so rapidly that I had only time to remark that on each side precipitous cliffs rise to heights of from 300 to 1100 feet, shewing a succession of almost bare rocks of the Laurentian age, apparently gneiss. It is only at the mouth of some of the tributary streams that a foot-hold can be obtained for agricultural purposes.

Such was observed at the junction of the river Marguerite on the left bank, about thirteen miles from the St. Lawrence, and that of the Little Saguenay, eighteen miles up on the right bank, and at the St. John, on the same side, a little over twenty-four miles up. In all other parts where the surface was not actually denuded of vegetation, it sometimes gave support to an abundant growth of blueberry bushes, or some few small spruce and pine trees of different kinds.

Advancing from Cap à l'Ouest the country becomes deeply covered with post-tertiary clays, through the horizontal surface of which the Laurentian rocks protrude like islands, with occasional cliffs of the same facing the bays and the rivers. These clays form an excellent soil, but in some parts, more particularly in the neighbourhood of Lake St. John, to which the clays extend, they are covered over with from one to three feet of sand and gravel. The area thus covered is considerable, and it is but little

resorted to for farming. Over a large part of this, however, the defects of the light sandy soil might be easily obviated. With a small amount of labor the clay might be brought up from beneath the sand and gravel and spread over the surface, where mixing with the lighter material it would form an easier worked soil, equally fertile with that composed entirely of clay. The beneficial effects of such a mixture are shewn by natural examples in some parts of the area on gentle slopes which have been formed by denudation, where the sand gradually thinning becomes well mingled with the clay for some breadth near the junction, or on flat surfaces where the denudation has left the sand so thinly spread over the clay as to permit the action of the plough to effect the mixture. At the same time that such a soil possesses a great and durable fertility, it requires less labor and care in its management than the stiff clay.

The clay deposit between the Chicoutimi and the head of Grand Bay has in some places a thickness of 600 feet, and where this exists land-slips are of common occurrence. They give to the surface a broken and rugged aspect, yet it is not uncommon to find whole farms situated on the remains of such éboulements, while others standing on the still unmoved ground might from analogy be supposed to be in positions somewhat insecure. The greatest display of these land-slips is to be seen up the Ha! Ha! river and the river St. Alphonse, both of which empty into Grand Bay, and on the road between Chicoutimi and the bay. But the conditions which produce these slips extend to Lake St. John, and may be expected beyond, as the clays were observed on the banks of lake Kenogami, at Bon Portage and on Belle river, where in many places they have a thickness of a hundred feet. It is here that large areas, as already mentioned, are overlaid with sand. On Lake St. John the clays were seen to the east of the Metabetchouan, at the Hudson Bay Company's post, and to the north west of the river Ouiatchouan, as far as Blue Point, where a very thriving settlement is established on them. To the west and north of Blue Point and around by the north margin of the lake to the outlet, the shores are low and sandy. The sand is greyish-white, and appears to be derived from the destruction of Laurentian rocks.

The greatest length of Lake St. John is about twenty-six miles, extending on a bearing N. 20° W. from about the mouth of the Metabetchouan river to that of the Peribonka, and its greatest breadth about twenty miles from the mouth of the Ouiatchouanish to the great discharge. The principal rivers that flow into the lake are as follows: First, the Belle river, which joins it on the south side about six miles above the little discharge. Its

average breadth just above the position where it is influenced by the waters of the lake is about one chain. Next, is the river Metabetchouan, which is probably as large again as the Belle, and is about eight miles above it. A little more than the same distance farther is the Ouiatchouan, equal in size to the last, and six miles beyond it a somewhat smaller stream, the Ouiatchouanish. About the same distance farther we come to the most eastern part of the lake, and here enters the river Chamouchouan, and a couple of miles to the north the Mistassini.

These two rivers are each of them over half a mile wide at their mouths and when the waters of the lake are at their highest, which is fourteen or fifteen feet over their lowest level, the two rivers join for some way inland. At low water the shore between them, as well as above and below them, presents a margin of dry sand of from one to two miles wide, forming a delta through which the rivers cut various channels. This description of coast extends all the way to the mouth of the Peribonka, which is the next stream, a distance of twelve miles, where the breadth of sand is upward of two miles, gradually tapering to nothing along the north east shore. Inside of this extensive margin of dry naked sand there is a considerable breadth of low sandy country supplying a growth of meadow hay, with strips of small trees and brush wood, giving farther evidence of the great amount of arenaceous material that is brought down by the rivers from the Laurentian rocks of the interior, the accumulation of which has so far filled up the whole lake as to give origin to its Indian name of *Pia-Koua-Kanny*, said to signify the broad, shallow lake.

For the first twelve miles of its upward course the Peribonka is from a quarter to a half mile wide, and it presents several low sandy islands, as well as low sandy banks. But at this distance from its mouth it at once contracts to a breadth of not much over one chain, and maintains it for a mile up. Through this sluice, bounded on each side by dark violet blue labradorite rock, the whole volume of the river rushes with immense violence, producing a rapid current for some way down in the middle of the wider water below. Above this the river again widens out and still water prevails for a farther distance up. It then once more contracts and again rushes between its rocky margins with the same violence as before. This alternation of still and rapid water holds for some distance up the river, and the country on each side is said to correspond with the changes, giving a swampy surface opposite the still water, while a ridge of rock runs across the rapid part, very probably indicating the strike of the Laurentian rocks through the vicinity.

On these ridges large quantities of pine timber are said to exist, and they have, I believe, already furnished a large proportion of its supply to the lumbering establishment of Messrs W. Price & Son. The timber over the country described consists generally of spruce, balsam, fir, yellow and white birch and maple on the clay, with elm and ash in low places. On the higher and more sandy parts white pine prevails.

The valley of Lake St. John may very properly be considered as commencing at the mouth of Ha! Ha! bay. This constitutes the eastern extremity of the general depression or comparatively level surface of which the area occupied by the lake is probably the lowest flat; and from this point the boundaries of the depression separate from one another, that on the north side of the Saguenay running about N. 20° W. for about thirty miles, and then changing its bearing to about N. 75° W., and in that direction running for about sixty miles. The boundary on the south side of the Saguenay separates a little from the south side of Ha! Ha! bay, in its progress running nearly S. W. It then gradually turns to about west of north, and gaining the south side of lake Kenogami, runs along its whole length as well as lake Vert beyond. It continues nearly in the same direction, and crosses the Metabetchouan about a mile from its mouth, coming very near the lake in a bay west of it. It crosses the Ouatichouan at the fall about a mile from the lake and then turns about N. 55° W. Running in this direction it crosses the Ouatichouanish about six miles up, and from Blue Point it is traceable by the eye running in the same course for twenty miles more, in which it keeps to the south of the Chamouchouan. Between the north and south boundaries where they can be no farther traced by the eye, there is a separation of about fifty miles for the breadth of the valley, the length of which up to a line running across at the upper end of the lake is about seventy-five miles, the general bearing of the valley being N. 70° W. How much farther it may extend in the same direction, I am unable to say. Thirty miles added to the distance above mentioned would give an area of 5,000 square miles. But as viewed from Lake St. John the northern boundary appears to terminate, and the valley may perhaps spread out to the eastward. Indeed, one of the Indians who was with me asserted that it did so, stretching along in that direction to the Seven Islands on the St. Lawrence, while in the opposite one it extended to lake Temiscaming. But it is uncertain what dependence can be placed on his information. I may state, however, that his account is in some degree corroborated by what I was given to understand last year when at the Mingan Islands. Mr. Henderson, of the Hudson Bay Company's post, informed me that large loose masses of

limestone, which from his description I inferred were Silurian, are met with far in the interior from the Seven Islands, in a direction that appears to bend towards Lake St. John, and I am inclined to think that, where these blocks were seen, some of the Silurian strata will be found *in situ*, as in the case on Lake St. John. Where flat deposits of these rocks extend the country is almost certain to be capable of cultivation.

The northern ridge is much more elevated than the southern, and it is apparently destitute of soil on the summits, which are probably not under 2000 feet above the lake. The hills on the south were not supposed to be much over 700 or 800 feet above the lake. Their tops were generally rounded, and the growth of timber upon them, which was all composed of ever-greens, seemed to confirm the report of the inhabitants, that these hills were pretty well covered with soil. The range, however, gains in height towards Ha ! Ha ! Bay, and all the wood is there of a stunted growth.

The cultivable land of the valley of Lake St. John most probably occupies a very large proportion of its area, and, as in the settled parts of it good crops seem to be the general result, it appears to me very probable that the valley will hereafter support a very considerable population. There appears to be no doubt in the minds of the settlers that they are able to grow all the kinds of grain produced in the neighbourhood of Montreal, and in equal abundance ; and the unexplained superiority of climate in the valley over places more to the south renders the investigation of this part of the province a subject of considerable interest.

(James Richardson, 1857.)

RIVERS OUIATCHOUAN, BOSTONNAIS AND BATISCAN.

In conformity with your letter of instructions dated the 12th November, 1873, requiring me to survey the river Ouiatchouan, part of the Bostonnais and of the river Batiscan and its tributaries, the river Jeannotte and part of the river au Lard, the river Petite-Bostonnais and its lakes, the river Croche and Ouiatchouanishé, I have the honor to transmit you the final report of my operations, together with the field book and plan of the entire territories explored.

We commenced our operations at the post planted by Mr. Surveyor Blaiklock at the north east extremity of the line drawn from La Tuque to

the north west angle of the township of Charlevoix, surveying the shore of lake St. John to the mouth of the river Ouiatchouan. I established at this place the variation of the magnetic needle. On the west bank of the Ouiatchouan, I planted a square post to mark the point of departure of the survey of the said river, continuing the chaining upwards along its course. I surveyed the portage of Great Falls at the commencement of the 2nd mile to the 3rd exclusive, and then continued on the river to the south west extremity of lake Bouchette, where a new portage which I surveyed conducts us to Commissioners' Lake, on the 25th mile; with the exception of the 2nd and 3rd mile, where the land is uneven and rocky, the soil is well adapted for cultivation. The fire has destroyed almost all the timber, the best of it having been already taken away for trade and for the use of the settlers.

All this land gently undulating and composed of a good soil will be very valuable hereafter, and will advance the prosperity of the townships of Charlevoix and Roberval for purposes of colonization. The river is interrupted here and there with rapids, of which the most difficult is the Rapide du Diable.

Commissioners' lake runs from north to south and measures 21 miles in length by about a mile in breadth. More than three quarters of the land which surrounds it is fit for cultivation, well wooded with all kinds of Saguenay timber, which may be most profitable for trade.

Many small rivers, which flow into it from all parts, drain a large extent of territory. The largest, which I surveyed and which is a continuation of the river Ouiatchouan, winds, after leaving the south extremity of Commissioners' lake, through a valley of about a mile in breadth, very level, and composed of a rich and fertile soil.

On the 49th mile, the river takes an easterly direction and passes through rocks which form a succession of rapids, to lake Kouakouagamissis, a fine sheet of water forming the second and last plateau in the valley of this river. The land is generally level round this lake, the soil very fit for cultivation, and the principal timber is balsam, white birch, and some pine. The lake takes the main direction of the river, flowing towards the south west and receives, on both sides, small tributaries which swell its waters. The largest which we surveyed is composed of a succession of lakes, up to the height of land, the most considerable of which is lake Ecarté, formed of bays and windings which have given it its name. We perceive here, that we have reached, with but little effort, the summit of the Laurentides. On

the little mountain, to the south east of the lake, near the portage, are perceived the shores of lake St. John ; the valley of the river Bostonnais, and Batiscan is also in sight, as also a wide country to the east and west, gently undulating and well wooded.

The river Ouiatchouan from its mouth to its source has a surveyed length of 68 miles. The portage between the waters of this river and those of the river Bostonnais is 47 chains in length passing over a level and well timbered country as far as Partridge lake, where the 1st mile of the traverse of this river begins. The waters of these two rivers are here almost on a level. Partridge lake discharges itself by a small river passing by Mink lake into lake Bostonnais, at its northern extremity. Between the two first lakes, there is a portage to avoid the rapids which obstruct the navigation of its channel. The land on each side of this little river is elevated, and covered with tall and very heavy timber, such as spruce, birch and aspen : there is also a small quantity of pine.

Lake Bostonnais having been already sealed, I chained its length nearly on a meridian line, and also traversed Swamp river, discharging itself on the south side of this lake, at about the 63rd mile ; after having surmounted the first fall, at the commencement of the 14th mile, the river becomes still water, bordered with red and grey spruce, and white birch on the heights to the right ; the land to the left is level and of good quality ; a second fall occurs at the 15th mile and the last reach on the 22nd mile is formed by a rapid of about 12 chains in length, and on which the lakes à l'Etoile and Baptiste receive the waters of numerous small tributaries which drain a large basin bounded on the east by the heights on this side of Metabetchouan, on the south by the bank of the river Batiscan and on the west by the mountains north of lake Edward, the highest of this region. This basin, magnificently wooded, is gently undulating and very fit for cultivation, and may contain about 20,000 acres of arable land. From the heights of lake Batiscan are seen the chain of mountains on the west of the St. Maurice, the entire surface of lake Edward, the valley of the river Bostonnais, and that of the Metabetchouan ; the river measures upwards of 31 miles in length ; the portage to the Batiscan is a mile long ; the latter river is on a lower level than the preceding because the portage, not going from one source to another, falls into the Batiscan many miles below its source. Leaving the portage we find ourselves on lake Caribou, at the mouth of a stream which discharges itself therein ; this lake runs from the south west to the north east and discharges itself by the river Batiscan, passing through two other small lakes which flow into lake Edward. A range of mountains bounds

this river on the south east side as far as this lake, and continues beyond it on the north east side. This part of the river is filled with rapids between the lakes ; the last part is in dead water and bordered with the mountains mentioned above ; the soil on each side, for 15 or 20 chains back, is of good quality and well timbered.

Lake Edward is of a very irregular form, presenting at first the appearance of a large river it changes all at once its aspect, the deep bays which surround it often hide from view the road which the traveller ought to follow to reach its extremity, and the heights which command it form, by their regularity and their charming outline, covered with magnificent forests of all kinds of timber, one of the finest and most picturesque perspectives, and at the same time attractive sites for the foundation of a colony, with the advantage of possessing an excellent soil and of enjoying a climate as propitious and salubrious as possible.

The first discharge of lake Edward occurs at the 13th mile of the scaling of the river Batiscan on the east shore of the lake ; it is concealed, so to say, by the sinuosities of the shore, and requires to be known not to be passed by ; even at a chain's distance from its mouth it cannot be discovered. The entry is precisely like that of a key entering a ring. This entry, having a breadth of 30 or 40 links, becomes a lake two or three chains further on, and continues thus, for about a mile and a half, as far as the first rapid, where we ceased our examination before performing the survey, being assured that it was indeed a discharge. The discharge performs its office only when the waters of the lake rise above a certain level, at other times it may be said that all these waters go to feed the river Jeannotte. If the rapid mentioned above flows towards the south, it is the waters of small streams above the rapid which take this direction. It is true that when I was there the level of the water was at least three feet lower than usual ; there remained in consequence but 6 or 8 inches of water at the entrance of the discharge and without the least current.

Before surveying this first discharge, profiting by the fine weather and by the small quantity of snow on the lake ice, I took occasion to survey it immediately in place of doing so on my return from the other side of the river Jeannotte, which allowed me to send my packmen forward to carry the provisions to the first easterly branch of the Batiscan, and also to seek behind for the remainder of the deposit on the Ouiatchouan. The total distance scaled from lake Edward by my survey is by measurement 61 miles without including the survey of the large island which contains

acres in superficies; this isle is well timbered and forms, throughout three fourths of its extent a level of from 5 to 10 feet above the lake. The north part is much more elevated and is commanded by two small mountains, having their rounded summits covered with white birch, beech, spruce, balsam, and some pines; the soil of this island is composed, like the main land, of grey and yellow earth, mixed with sand, and well adapted for cultivation. Other small islands are also met with, all well timbered and of good soil; several tributaries flow into it, the largest coming from the north. At the 7th and 11th miles, two rivers which I explored discharge into it, with a chain of lakes, coming from the east. The north and west shore of the lake is more elevated than that of the south and east, but the land and timber are of the same quality.

The first discharge is tolerably level. The rapids are at long intervals, and as far as lake à la Croix, at the 20th mile, the ground is quite flat and of magnificent appearance. At the 21st mile post on lake à la Croix, the north east river flows in, which I scaled for a distance of more than 6 miles, where it is bordered in this place with high mountains and very broken rocks; it flows through poor land and is divided into many small branches which run in all directions, north east, east and south east, and with a lake on this river which I scaled, forms a total of eight and a half miles.

After having scaled lake à la Croix and another lake at the 24th mile, I continued the descent of the river Batiscan to the 34th mile, where the east river flows in. This latter part of the survey, in so far as regards the island of lake Edward, is altogether similar to the foregoing, but the east side of the river without being mountainous, is more uneven than the former part. Mountains nevertheless are met with at the 29th mile, but isolated and without continuance. The pine on these heights, rather abundant, appeared to be of good quality, and up the stream, at the confluence of the east river, we saw the site of the first lumber establishment worked on this river.

The river Batiscan, having a breadth of two to four chains, with a mean depth of three to six feet, forms here and there, by the irregularities of the ground, falls and rapids (magnificent water powers) which will be of use one day when this valley is colonized.

I scaled the east river to the upper extremity of the lake des Passes. The first two miles of this river is but one succession of rapids and falls from ten to twenty-five feet in height, and the plateau of the lake des Passes is more than four hundred feet in height above the river Batiscan. This

lake is well named, all the land surrounding it, with the exception of that part to the north east, where I terminated the survey, is very fit for cultivation and forms as it were a basin of two or three miles in diameter of level ground, well wooded and composed of excellent soil.

Returning to the 34th mile of the scaling of the Batiscan, I continued the chaining, descending its course, which is broken by a fall at the 35th mile and by heavy rapids at the 30th and 38th miles, and becomes dead water at the confluence of the river of lake Batiscan, with a breadth of three to six chains and a depth of four to eight feet.

The aspect of the east side is nearly the same. The mountains, although more distant from the river, (about half a mile) are more lofty and closer together; one might say that they are at this distance to make room for those which are at some chains from the river, on the side of "Ile Edouard", approaching the east river, and which are continued almost without interruption to the river Jeannotte; and thence to below the Trois Roches rapid, where I terminated my exploration. These mountains are from 300 to 400 feet in height and do not extend towards the interior of the island; they simply border the river, leaving between them easy passes through which are discharged the water courses which rise from the numerous lakes of the interior. The soil is good, though uneven, and the timber which is seen on all the uplands is of remarkable length and size. The pine and grey spruce have been worked for lumber, but there is still much remaining.

I scaled the river of lake Batiscan, whose confluence is at the 41st mile; its banks are hilly; there is a fall of 35 feet at the 5th mile, and another of 30 feet at the 10th mile, forming the two steps by which we rise to the heights among which lies lake Batiscan. It might be said that we have a glimpse of the river Saguenay, with its gigantic hills, its masses of granite from fifteen to eighteen hundred feet perpendicular, and its smooth and deep waters; (there are places where no ice is formed.) Along its course one third of the land is fit for cultivation and the timber is of good growth; chiefly white birch, long and heavy. At the south east extremity of lake Batiscan, a large stream comes in and a portage passes by the side of the latter to the line of the Quebec and St. John railway. Passing thus by its side it rises over a height which I estimated at 900 feet above lake Batiscan, in the space of a mile at most. I terminated the scaling of this river just at the south east extremity of the small lake which lies on the upland in the neighborhood of the post of the 20th mile, according to what we have determined by the plan furnished from your department. This post has probably fallen down, or the depth of the snow (five or six feet) on the bank

of the mountain where the line passes concealed our stopping place from our researches. We planted a post at the inlet of the small lake where the line of road, mentioned above, intersects it, and we explored the land in the vicinity, ascertaining at the first glance the impossibility of constructing a railroad there, with the means which the country affords at our disposition. This point is at an elevation of about 1,500 feet above lake St John, and I thought I perceived that the line had not yet reached the height of land. The scaling of this river, including lake Batiscan, amounts to 30½ miles of chaining.

I then continued the scaling of the river Batiscan, left off at the 40th mile. Descending from the forks, there is a large rapid which finishes by a fall, where improvements have been made to facilitate the descent of timber. At the 44th mile a small river coming from the west has also been worked for lumber; a camp is built at its mouth, but it was not used for cutting timber last winter, nor was that above mentioned. The river then continues, as dead water, for several miles: the land on both sides has a good appearance; the mixed timber such as birch, white birch, balsam, spruce and pine, is of large growth: the land, of yellow and grey loam mixed with sand, is of excellent quality, if we may judge from the length and size of the timber. There are some rapids and a fall at the 50th mile, and we then reach the fork or junction of the two discharges of lake Edward into the river Jeannotte. The two arms form at their meeting a fall of about 30 feet, at the close of the 51st mile, and some chains lower down another fall of 25 feet, followed by the great rapid, is the last which is found on our line of exploration of this river.

There is an old lumber camp in ruins on the discharge of the river Jeannotte, and another at that of the river Mequik, which discharges on the south east side of the Batiscan at the 50th mile. I terminated the scaling of this river at the line of prolongation of the township of Rocmont to the Trois-Roches rapid. This line runs magnetically.

Above this spot, the river descends for nearly a mile in rapids, as far as I could see. I planted a squared post at the Rocmont line, marked with the number of miles, 56, as also the date and the year. From the forks, the heights which border the river approach nearer to it and are steeper, especially on the west side; the soil, apart from the mountains of rock, is good and cultivable; the timber is composed of birch, white birch, aspen, spruce, pine, some elms, alders, &c., &c. On the south east side, approaching the river Mequik, the land is more level, and appears to continue so in this

direction for a certain space ; all this land is very fit for cultivation and of an agreeable aspect. There is a beginning of cultivation at the mouth of the river Mequik, and also some buildings ; but no one resides there.

Returning to the river Jeannotte or second discharge of lake Edward, I made the survey of it by following it upwards to the said lake. I established the drawing of two limits or exploration lines, one at the 1st mile and the second at the 7th mile. A lumber concern has made some operations on this river at the 3rd mile ; from the discharge to this camp the river forms, as it were, one continuous rapid. Three other rapids above this place up to the great rapid near lake Edward are the only obstacle to be met with on this river. The land on each side is generally level and well wooded, fit for clearing, and advantageously situated.

I explored, on my way, a part of the river and lake au Lard, and having ascertained that the direction of this water-course kept me at a distance from, instead of bringing me nearer to, the Little Bostonnais, I thought it prudent to make use of the old portage. The land, watered by the river and lake au Lard, is of magnificent appearance, covered with hard timber, white birch, and birch, and gently undulating ; it is composed of sandy grey and yellow loam, covered with a very rich humus.

The lac au Castor, connected with the river Jeannotte, receives the waters of another river which comes from the north, whose tortuous banks interlaced with alders and underbrush, bordering waters where no ice had formed, decided me to pass on without scaling it. The last miles of the Jeannotte were scaled on the bank, from want of ice.

After having terminated the scaling of the river Jeannotte as far as lake Edward, I explored the environs of this lake, to discover the portage mentioned in your instructions, and after many researches I found its point of departure at the south west extremity ; I followed the marks and old blazes which have almost wholly disappeared beneath the growth of the trees, as far as the river des Aulnais mentioned above, after having passed a succession of small lakes, and reached the height of land between the river Jeannotte and the north west branch which discharges itself into lac au Castor. Ascending the course of this tributary, I scaled it to beyond the first lake, seeking, with the plan in my hands, the continuation of the portage of the Little Bostonnais. Having ascertained that there was an error either in the plan or on the ground, I decided, after due consideration, on taking the shortest line to reach the waters of the St. Maurice. As the provisions were now rapidly failing, though given out by rations, it was

prudent not to lose any time in seeking a portage whose marks or indications had now disappeared.

Taking a south west direction on the discharge of a stream on the bank of the little lake Ecarté, I fortunately arrived just at the head of the principal branch of the Little Bostonnais.

The land along the entire length of the portage is more or less uneven, without being mountainous. The soil on the north side is more elevated than that on the south which is comparatively level ; although broken here and there by rocks, it is not the less fit for cultivation : the timber is the same as that already described for the heights ; the low lands are generally wooded with grey, black and red spruce, balsam and alders. The post of the 9th mile stands on the height of land, and the descent is easy and gradual, passing by a chain of small lakes of little importance and forming a narrow valley limited by a range of low hills on either side which disappear at the 16th mile to give place to a wide plateau, level and bounded on the east by the little Wayagamack, and on the west by the large lake of the same name.

Continuing the scaling of the river I passed, on the west side, a branch coming from the north west, at the 16th mile, and met, at the 17th mile, the discharge of the little Wayagamack. I there perceived that we had not followed the latter part of the portage, otherwise we should have arrived at the little lake Wayagamack by the inlet at that place. I was enabled to assure myself, however, that the branch which I had just scaled was longer and of greater size than that which should have followed if we had not missed the portage. This did not however prevent the scaling of the little Wayagamack which is a fine sheet of water, abutting towards the north east on an isolated chain of mountains separating this valley from the Batiscan and running from north to south ; it is well timbered, being covered with pine and spruce. The shores of the lake are generally undulating and consist of good yellow and grey loam ; some rocks project forward into the lake, forming masses of granite. This lake abounds in fish ; the trout taken there are brought to the Three Rivers' market. It is for the most part very deep, excepting at its discharge, which is filled with aquatic plants, whose growth also covers the bed of the lake.

I then continued the descent of the river to the great lake Wayagamack which I scaled throughout its entire extent, planting mile posts on the north west side as far as its discharge, and thence by the portage au Goeland on the south west side to the St. Maurice, where I terminated the scaling

of the Little Bostonnais, planting, on the south bank, a squared post marked for the 37th mile.

The country around great lake Wayagamack is composed of a soil like that of the little Wayagamack. The timber is of the same kind and the entire tract presents all the advantages required for the opening of new settlements, which may be extended without obstacle as far as the St. Maurice on the south side of the Little Bostonnais. The north side is mountainous and only fitted for taking out building timber, such as pine and spruce. The pine groves of this river have been already worked, the lake has been dammed at its discharge, and an embankment and slide constructed. The river St. Maurice is approached by a plateau at least one hundred feet in height above the river, and composed of sand and yellow loam superposed on the bed of clay which forms the bank. Points of the river which have been cultivated by the lumberers, serve to supply the lumber farms with hay and oats. These farms are kept with care, and the animals for breeding purposes, to be seen in their stables, present a magnificent appearance.

The plateau mentioned above is covered with a recent growth of small white and red pine which the fire has spared.

I chained the St. Maurice upwards to the river Croche, so as not to interrupt the continued course of my operations. The La Tuque rapid, shut in between two rocks, reduces the width of the river to a few chains, while, above and below, it measures more than a quarter of a mile in width. The rapid is about eighty feet in height, and, during the high waters of spring, there is a depth of water of fifteen or twenty feet. The west bank of the St. Maurice is steep and mountainous; part of it has been swept by fire, but there are still to be seen several pines which have escaped.

Above the rapid, the river Bostonnais flows in. Before arriving here, it follows a winding course in a level country composed of alluvium and clay, covered with elm, ash, willow and alders, bordered on each side by a chain of mountains, throughout its length, in a north east direction.

The chain on the north side separates the river Bostonnais from the river Croche, which flows into the St. Maurice a few miles higher up, and on the same side. A magnificent tract of country extends from the St. Maurice to a certain distance in the interior, leaving the chain of mountains of which I have just spoken as a summit-ridge between the rivers Croche and Bostonnais.

A large part of this fine territory belongs to Mr. G. B. Hall, of Beauport, who has had considerable clearances made in the neighbourhood of his lumber farm, which is well kept and largely supplied with cattle.

The only inconvenience is the rise of the water in spring. Dammed up, as it were, by the narrow rapid of La Tuque, the mass of waters of the upper part of the St. Maurice rises rapidly, driving back the waters of the Croche and Bostonnais, and then extending over its banks which it covers entirely. In the spring of 1873 the rise was remarkable; the water rose almost above the windows of the house occupied by Mr. Elliot, agent of Mr. Hall, and it was solely owing to the stone chimney that it was not swept away by the torrent like the other buildings of the farm.

I am indebted to the kindness of this gentleman and of Mr. McGregor, Mr. Ritchie's agent at La Tuque, for important information respecting this river, and especially for the opportune aid which they afforded us by placing at our disposition the stores necessary for the continuance of our operations; to say nothing of the generous hospitality offered us with warm sincerity and which we accepted with gratitude.

Having been able to take an astronomical observation only at the mouth of the Croche, I commenced the scaling of this river, taking for my point of departure a large elm on the south east bank, which I marked for this purpose, being more fit to serve as such than a post, which might be removed. The Croche is certainly a fine river, winding with pleasing undulations through a level and richly wooded valley.

At the 4th mile a large farm turns to advantage the riches of this inexhaustible soil. To beyond the 60th mile, the same might be said, if this fine country were open to colonization. The valley varies in breadth from three quarters of a mile to one mile and a half, and is wooded with elm, ash, white birch, aspen, poplar, birch, spruce, balsam, willow and alders; the soil is alluvium reposing on a bed of clay; natural prairies replace the forest in those places which have suffered from fire.

Along its course, there are here and there to be met with, small tributaries which descend from the heights, on both sides, after having taken their rise in the numerous lakes in the vicinity, which serve to irrigate this luxuriant valley. The principal is the little river Croche at the 50th mile, very rich in pine of the first quality, and which produced last winter from fifteen to twenty thousand saw logs. At the 42nd mile a pile of three thousand saw logs on the north west bank is the only one which we saw on this river.

The first rapid at the 33rd mile, and the second at the 49th mile, are only a few chains in length, and the high waters of the spring cover them entirely. The first fall at the 55th mile is formed by a rock which traverses the valley completely and closes the passage of the river which here descends with three falls of 40 feet each. Then resuming its peaceable course, the valley, narrowed for a moment, continues unbroken to the commencement of the rapid and of the uneven ground at the 55th mile. These irregularities form a crevasse in the mountain two or three hundred feet in depth, at the bottom of which enormous rocks have rolled from the summit and cause the torrent to roar in its narrow bed. Above this rapid the land changes its aspect; the soil is gently undulating and the mountains disappear. The great rapid, at the 69th mile, is rather a succession of falls, varying from 10 to 25 feet, to the first lake. After passing the great rapid, the elevated plateau which follows affords a pleasing and grateful subject of contemplation to the wearied traveller.

Lake Lequerre is surrounded by a gently undulating country raised but slightly above the level of the lake. To the right, to the left, and in front, are perceived passes which leave us uncertain of the direction taken by the river, when, on suddenly turning a point to the right, the river comes from the east and changes its appearance, taking the form of lakes more or less wide, with passages where the current is scarcely perceptible, to the 85th mile, where is situated the last fall to be met with in this part of the scaling which I performed. I should have said the last falls; the river here, 8 chains in width, is filled with small islands, which form so many different arms, all making the same fall, but with more or less difference in height and volume of water.

These last steps being surmounted, the lakes follow continuously to the portage Ouintchouanish. Leaving at the 89th mile the river Croche, on the north side, we take the portage on the south east side of the last lake at the 90th mile. This river has still a moderate width, where we left it, of about one chain, and appears to come from the north west, falling in with these lakes on the same heights as those of the Bear and Salmon rivers.

From the first lake to the portage, the land is generally undulating; a few mountains of moderate height relieving the monotony of the scene and giving it some variety by their picturesque appearance. The soil is composed of sand, loam and gravel. There is a succession of rocks along the points of land and the passages of the lakes, leaving, between, flats of better land. The timber is smaller, and of inferior quality: cypress, black spruce and white birch are the predominating kinds

The tributaries are unimportant ; a circumstance arising from the vicinity of a river which flows, by its side, in a parallel direction, at a few miles distance from the St. Maurice on the west ; the river Ouiatchouanish, which passes through these lakes, being at a little distance on the east.

The portage of the river Ouiatchouanish is longer than I expected ; the Indians, not being able to use this river in winter from the badness of the ice, follow along its bank to the first lake. I followed this portage, scaling it carefully, estimating as closely as possible its distance from the river, exploring the land, and scaling the lakes along its course.

The space between the two rivers Croche and Ouiatchouanish is filled with small hills of sand and loam, covered with cypress, balsam and white birch of recent growth ; fire has committed some ravages ; it would be possible, with but little expense, to bring the waters of the Croche into Lake St. John.

The river Ouiatchouanish, which I scaled, from its first lake to the upper outline of Roberval, flows peaceably in a large and level valley, having but one rapid throughout its course.

The soil is generally good ; the land of varying quality, the timber fine, and the fall of water sufficient. Pine is only found lower down ; here grey and red spruce, balsam, white birch and some birch are the more abundant kinds.

I planted at the termination of my labors a squared post marked 168 $\frac{1}{2}$ miles, the date, &c., &c., as required by the instructions.

CONCLUSION.—The ensemble of the explorations performed in this part of the territory of Lake St. John and of the St. Maurice gives a sufficiently accurate idea of the relative importance of these two valleys, so that it may be said that the one is almost a continuation of the other, so insignificant are the objects interposed between them. The secrets of geology might perhaps tell us the precise date of their separation, for Lake St. John must in a far remote time, have discharged its waters into the St. Maurice by the river Croche.

It may certainly be supposed, that the lands which we now cultivate in the county of Chicoutimi were formerly the bed of this lake, and that the beautiful and fertile valley of the Croche served as a passage for these waters towards the St. Lawrence, by a channel quite different from that which they now follow, and joined the waters of the St. Lawrence more directly than they now do at Tadousac. This may suffice to show clearly

that the valley of Lake St. John is not a basin with no outlet towards the west, as was at first thought, and surrounded on all sides by the lofty chain of the Laurentides, which made the opening of communications very difficult and indeed impossible for a railway, and isolated this fine valley from that of the St. Lawrence and of the St. Maurice by a space of more than a hundred miles of unfruitful and barren land, altogether unfit for purposes of colonization.

We ourselves crossed the Laurentides several times in those places which are known to be the least difficult and the most accessible, but each time we became convinced that this immense country was only fit for hunting and fishing, and that it was impossible to construct a railway through it, unless at the expense of millions.

At present, taking into consideration the past explorations which we have made, and that just completed, the contrast is reassuring; I now perceive a gentle descent, with hardly any obstacle, towards the St. Lawrence, passing by the side of those mountains and precipices which we used to regard as our only possible passage.

We see also a territory but little broken, fit for cultivation, and covered with magnificent timber, with every facility for transport; a territory capable of receiving and settling a population of many thousand souls; numerous water powers placed here and there for the utility and industry of this population; a territory which will permit the location of a railroad more than a thousand feet below the present line, and above all traversing a fertile region which requires only arms to work it, to become rich and prosperous.

The valleys of the Ouiatchouan, Bostonnais, Batiscan, Little Bostonnais and the Croche, which I have explored, contain nearly a million acres of arable land, with half a million acres included in the county of Chicoutimi. This is much more than sufficient to interest the Government and the friends of colonization to favor, and at the same time to help, the settlement of this vast domain comprised within the province of Quebec, and which may so largely contribute to its advancement and prosperity.

(*P.-H. Dumais*, 25th July, 1874.)

I have the honor to inform you that the exploration and scaling of the rivers Ouatichouan, part of the Grand Bostonnais and Batiscan, comprising the island of lake Edward, and other tributaries to the east, the Little Bostonnais and part of the rivers Croche and Ouatichouanish, have, owing to the winter having been unusually favorable for such operations, been brought to a successful termination.

The result of my operations far exceeds the hopes which I entertained that it might be possible to open up to colonization a part of the vast domain lying between us and the valley of the St. Lawrence. There can now be no doubt that the isolated colony of Lake St. John will in a very short time be connected by a long chain of settlements with the fine parishes along the St. Lawrence between Quebec and Three-Rivers and also with the St. Maurice. The Laurentian range has, so to speak, been effaced from the region which I have explored; the highest lands not rising six hundred feet above the level of Lake St. John. After passing the first hill which rises south of the lake on the second mile, a slightly undulating plain presents itself extending from north to south for a long distance. Above Commissioners' lake, another rise, less than the first, leads to the level of the height of land and forms the second and last plateau. The descent towards the St. Lawrence is almost imperceptible. The valley is wide and the view magnificent. As for the soil and timber, the essentials of the region, they are at least satisfactory. The land is not, certainly, composed of alluvion and clay like that of the greater part of the valley of Lake St. John, but gray and yellow earth, mixed in some places with sand, and covered by a very rich mould, which promises much, if the luxuriant forests of every sort of wood to be found in the province, which cover this part of the country from one river to the other, may be considered a favorable indication.

The island of lake Edward is the key, or rather the hyphen, connecting the valleys of the St. Lawrence and the Saguenay.

The soil in the valley of the river Croche is richer. Flat lands, so to speak, nearly half a mile wide, covered with a luxuriant vegetation, among which elm and ash predominate, stretch away on each side of the river for a distance of at least fifty miles.

There are several settlements along these strips, on which abundant crops of hay and oats are raised. These rivers are all well timbered. Pine is to be seen all the way from the township of Charlevoix on Lake St. John to La Tuque. The river Croche is rich in pine of the best quality. Mr. Hall

makes 25,000 logs a year on it, and at the same rate there is a supply for many years to come.

I was rather agreeably surprised by the appearance of the St. Maurice. It is almost a miniature of the Saguenay with its steep banks and bare rocks. To state that there is no practicable road along the St. Maurice, that the lumbering firms operating on the Upper St. Maurice, have not yet succeeded in opening up communication with the Piles, is tantamount to saying that the advantages of this part of the country do not quite justify the descriptions and encouraging reports we have so often read of this interesting valley.

It would appear from the statements of competent parties, agents of the lumbering firms referred to above, who have lived more than twenty years in this section, that it is almost impossible to run a railway through the St. Maurice valley except at enormous cost. The most natural route and the cheapest, being at least 600 feet below the line run Mr. Sullivan on the heights, and which would traverse large tracts of good land and magnificent forests, is to be found only in the valley of the river Batiscan. A branch could be made to connect the St. Maurice and the river Croche, by the valley of the river Bostonnais, the river au Lard and Jeannotte.

(*P.-H. Dumais*, 4th September, 1874.)

RIVERS OUIATCHOUAN, BATISCAN, BOSTONNAIS AND ST. MAURICE.

In order to carry out the supplementary instructions contained in your letter of the 29th October last, relating to the survey of certain lines of exploration to verify the exact position of some of the branches of the Ouiatchouan, Batiscan, Bostonnais and St. Maurice, we proceeded to the northern extremity of lake Najaulonk to the post of the third mile of the scaling of part of the river Bostonnais

Circumstances preventing us from making an astronomical observation on the spot, we proceeded to the survey of the line J. K., starting magnetically from the post above mentioned to the sixth mile, where an observation of the pole star established the course as north 65° 30' west, astronomical, the variation being 16°. We prolonged the line on this course to the intersection of Mr. Blaiklock's exploratory line traced from La Tuque to Lake

St John in 1857 and 1858, and running north $20^{\circ} 30'$ east, astronomical, to an undefined point, having found no post on either side, but at an angle of 20° of difference from a right angle and at a distance of 8 miles, 79 chains and 50 links from my starting point, establishing the correctness of the preceding survey of the rivers Ouatichouan and Bostonnais, and scaling on the course of this line lake Kapinitikamack or lake Travers, of the little river Croche.

We next proceeded to the verification of the distance between Cedar or Kiskisink lake, which discharges into the river Bostonnais, and the line run by Mr. O'Sullivan, P. L. S., for the Quebec and Lake St John Railway.

After scaling the north eastern bay of Cedar lake from the post of the 62rd mile of the survey of the river Bostonnais by Mr. John Bignell, P. L. S., we ran the line L. M. on a course $26^{\circ} 50'$ east, astronomical, from the post which we planted at the north west of the said bay, crossing the height of land between the waters of the Bostonnais and those of the Metabetchouan river, and continuing on the east side of the said river to the intersection of the O'Sullivan line, which we struck at an angle of 68° and at a distance of 38 chains, 60 links north of the post of the 67th mile of the said O'Sullivan line. This verification line measures 2 miles, 73 chains and 70 links. Along the course of this and the preceding line, the soil generally is good and composed of yellow and grey loam mixed with sand. The timber consists of white spruce, tamarac, grey spruce, fir, white birch, birch, aspen and a few pine.

On the completion of this operation, we went towards the Island of lake Edward, to there prolong the meridian line run by surveyors Legendre and Casgrain. At the northern extremity of this line, we continued it in the same astronomical direction to the intersection of the north eastern branch of the river Batiscan near the discharge of lake Edward, scaling on its course lake aux Orignaux and exploring on both sides to the limits of the Island.

This line E. C. traverses rolling and good quality land. The timber is large and tall and of all kinds. The pine and spruce can be easily worked. The distance traversed with the chain measures, from the 14th mile to the north eastern branch, 6 miles, 50 chains and 79 links.

Returning to the post of the 16th mile planted on the line E. C., in order to run a transverse line to the east and west of this post, we were obliged to go further to the south to avoid the steep flank of a mountain near the line to the west and a start at right angles was made at 27 chains

and 16 links on the 16th mile, that is to say, to the east astronomical and we prolonged the said transverse line to the north east branch of the river Batiscan, a distance of 2 miles, 53 chains and 75 links from the said centre line to 29 chains to the north of the post of the 25th mile of the survey of the said branch

We then prolonged this same transverse line to the west astronomical, from the centre line aforesaid to the western bank of lake Edward, a distance of 3 miles, 51 chains and 75 links.

The land and timber, in this section, are the same as in the part just hereinbefore described.

We next proceeded to run another transverse line from the post of the 4th mile of the same meridian line of Legendre and Casgrain

On the east side, this transverse line, running east, astronomical, had been partly chained and marked to lake Trompeur on the 6th mile, as far as we could judge from the posts found along its course, and it was by error probably that this chaining was not prolonged further, taking the lake where it terminates for the north-west branch of the river Batiscan, which occurs at 15 chains on the 8th mile as verified by us on this survey. This line traverses a tract cut up with mountains from north to south, with narrow, intervening valleys composed of good land and wooded with all the kinds of timber before mentioned. Birch, especially, is found in greater quantity. The pine and spruce have been partly worked for years.

Returning to the centre line, we prolonged this transverse line and partly chained and picketed it to lake Raccourci to the west astronomical, from the post of the 4th mile of the original survey, for a distance of 1 mile, 24 chains and 40 links from the centre line. This lake has been taken for the north west branch of the river Batiscan, although it discharges its waters to the north, away from the river, which is found at 23 chains and 20 links on the 3rd mile. We continued the survey of this line, carefully scaling the lakes on its course and terminating it at the waters of the Little Bostonnais river represented by a stream discharging on the east into that river at about 30 chains to the north of little lake Wayagamack.

This line measures 9 miles, 36 chains and 45 links from the centre line and is marked C. D. E., crossing a fine tract of arable and well timbered land, but broken here and there by mountains and rocks especially near little lake Wayagamack.

Not knowing if we could strike the north east outline of the new township of Malhiot, before our provisions ran out—for greater safety, we continued, scaling the stream above mentioned, as far as the Little Bostonnais, and from the latter as far as little lake Wayagamack and then to its discharge into the large lake of the same name. We stopped at the south east outline of the township of Malhiot, at about 23 chains from the post of the 8th mile of the chaining of this line by Mr. DeLachevrotière, P. L. S.

In the scaled part of the Little Bostonnais river, the land is well suited to cultivation and the wood is well grown and of remarkable size. The pine and spruce might be profitably lumbered, the river being free from obstructions to great lake Wayagamack.

The survey of this part of the Little Bostonnais river and of its tributary from the western end of the transverse line C. D. E. to the south east outline of the township of Malhiot is 6 miles, 9 chains and 17 links long.

Returning to the river Jeannotte or north west branch of the Batiscan, we descended it to the forks and thence the course of the principal branch to the line of the Three Rocks rapid, run by Mr. Dery, P. L. S., between the townships of Colbert and Gosford and prolonged to the river Batiscan.

A. B.—This line runs north 45° west astronomical (the variation being 15°). We prolonged it for 4 miles, 62 chains and 30 links, being unable to push it further on account of a heavy thaw threatening and of our provisions rapidly running out, as well as of the dilapidated condition of our snow-shoes, &c.

The surface, in this last part, is very broken, the mountains very high and rocky, and the merchantable timber, such as pine and spruce, has been lumbered for years. Some lakes were scaled and the line marked with numbered mile-posts.

We here terminated the survey after encountering difficulties of all kinds and undergoing a great deal of bad weather, rain especially, which was far from favoring the despatch of our work.

Before closing this report, we should mention a verification made last autumn, at the demand of your department, between the river Bostonnais, starting from the group of islands on that river, and lake Edward at the mouth of river au Rat, which falls into the north-west bay of the said lake, scaling that river along its whole course, as well as the lakes, the portage of the height of land and the lakes thereon.

This survey measures 21 miles, 27 chains and 42 links, including the lakes, and embraces an arable tract in great part suited to cultivation, although a little broken here and there by small heights. The merchantable timber on the banks of the Bostonnais river has been mostly cut off by the lumberers, but there still remains some on the shores of lake Edward.

In fine, this exploration has once more shown that the whole of this still uninhabited region, extending to the north-west from Quebec to Lake St-John, is well adapted to colonization and only needs a railway to open it up to settlement.

(*P.-H. Dumais*, 4th July, 1876.)

COUNTRY BETWEEN CEDAR LAKE AND LAKE ST. JOHN.

In compliance with your verbal request that I should give you a report on the nature of the country between Cedar or Kiskisink lake and Lake St. John *via* the Metabetchouan valley, I have the honor to state as follows :

From Cedar lake to the lower end of lake Naguagami or Metabetchouan lake, a distance of about four miles, the country is rocky and hilly, and there is very little soil or timber worth speaking of. Below Metabetchouan lake, the country is decidedly better and some excellent flats of lands are found, particularly on the west side of the river. Forest fires have swept a considerable portion of the east side of the river and part of the west side has been burnt over also, which is now overgrown with white birch and poplar. In a few places the mountains close in, but the greater part of the land along the river from lake Naguagami, down to the rear line of the township of Metabetchouan, a distance of about thirty miles, is fit for settlement. About midway between lac à la Carpe and lake Neguagami, there appears to be a considerable extent of very good land. The soil is exceedingly rich on both sides of the river, being generally a heavy clay bottom covered with a rich loam of darkish brown colour. In the township of De Quen the soil is very good along the river and the unsurveyed land on the opposite or east side appears to be very good also. The hunters, who worked with me on the survey, say that the land is fit for cultivation for four or five miles deep on each side of the river, but I am afraid that a good deal of it will be found rather stony.

TIMBER —There is a considerable quantity of spruce, and some excellent groves of tamarac on either side of the river. The old *brûlés* are covered with a thick growth of white birch, poplar and fir, and as there is no scarcity of water-power, there would be no more promising site for the manufacture of pulp or the different other manufacturing purposes for which the above mentioned varieties of timber are sought, if the railway were built by Metabetchouan valley.

(Henry O'Sullivan, 8th March, 1887).

RIVER METABETCHOUAN AND ITS TRIBUTARIES.

Beginning my operations at the west end of lake St. Henry, on the river Metabetchouan, I scaled this lake, which is at least three miles long and three quarters of a mile wide, with banks rising at different places almost perpendicularly from the water. The timber surrounding it is composed of grey spruce, tamarac and white birch. The lake is contracted at its southern extremity to a width of only one hundred and fifty feet. Here a fall of thirty feet, or rather two falls of fifteen feet each, separate it from lake Hugh. This lake is almost three miles long, by thirty chains wide. I scaled it completely, up to the entrance of the river Metabetchouan. Thence I continued the scaling of the latter upwards, meeting, thirty chains from lake Hugh, a strong rapid, a mile long, and a fall of fifteen feet in height, then some thirty chains of still water, before arriving at its confluence with the river Métascouac. Thence, leaving the Metabetchouan for a time, I scaled the river and lake Métascouac up to the fifth lake, and a portion of the two branches flowing from the east. This river and its branches flow in a serpentine course, with scarcely any current, through a level tract which has been devastated by fire, similarly to the nearest mountains. Some dry trunks of tamarac are still to be seen where the fire passed. The land is not rocky, and, if cultivated, would make fine meadows. I then descended this river, and continued the scaling of the Metabetchouan, the lake A as shown on the plan, lake à la Place, and other small lakes, up to river No. 2, one of the tributaries coming from the east, which I scaled for a distance of five miles and a quarter.

I then again resumed the scaling of the Metabetchouan, and continued without interruption up to lake aux Rogons, a distance of about ten miles,

meeting three rapids, the first three-quarters of a mile long, with a fall of twenty-five feet ; the second, a mile long, and the third, a succession of falls and rapids of a total height of over two hundred feet in a length of nearly two miles, completely shut in by high mountains on both sides. For the first eight miles above lake à la Place, with the exception of two rapids, the river, swarming with trout, winds with an almost imperceptible current, through magnificent natural meadows, where wild hay grows luxuriantly, affording splendid feeding grounds for the moose and caribou which abound in these parts. The mountains, of no great height, are covered with white birch and poplar, while black spruce, tamarac and balsam grow on the lowlands.

This river takes its rise in lake aux Rognons, which is fed by the discharge of lake des Males and that of lake des Iles, the two uniting about half a mile above the lake.

I first scaled this lake, the circumference of which is about eight miles and a quarter. The mountains which enclose it on the east and west sides are wooded with spruce, balsam and white birch. On the south is a plain, through which the stream falling into lake aux Rognons flows. I finished my operations with the scaling of a portion of the discharge of lake des Iles, flowing from the north east for a distance of four miles, thirty-one chains ; and that of lake des Males, flowing from the south east, eleven miles in length. Their courses are capricious, on account of their sinuosity, but easy, and of an average width of thirty-five feet. The soil is of medium quality ; where it is not mountainous, it is rocky or sandy. Merchantable timber is scarce : the woods are of the same species, black spruce and poplar of small size.

(*E. Casgrain*, 25th April, 1887)

REGION BETWEEN LAKE LACROIX AND THE METABETCHOUAN.

I began my work on the 14th March last at lake Lacroix, forming part of the river Batiscan, at the 20th mile of Mr. Dumais' line, making north westwardly towards the height of lands and thence, following the rivers, lakes and portages, as far as the river Metabetchouan, to the exploratory line of Messrs O'Sullivan and Casgrain, where I connected, according to

instructions, my measurements as shown on the plan accompanying the present report.

I met no timber limits line in the course of my operations — at least. I saw no traces of any ; but I did meet the O'Sullivan and Casgrain exploration line, which I followed and chained for three miles in order to make sure of the point where I should make my connection. I carefully noted all the remarkable geographical features which I came across, namely : the water falls, rapids, islands, &c. I also made detailed notes of the quality of the soil and timber, the general aspect of the land on each side of the rivers and lakes, the fishing grounds, &c., &c., the whole as indicated on the plan.

Most of the lakes met with on the course of the survey swarm with fish ; red trout is abundant, especially in lakes aux Biscuits, Travers, Trois Cariboux, Brulé, &c., &c., judging from the results of the fishing trials I made in passing.

The prevailing timber is white and grey spruce, tamarac, white birch and sometimes birch. Alder is common in the river bottoms. Pine is so scarce that I do not recall having seen any.

Apart from the surroundings of lake Brulé and the small lake des Chicots, I did not see any ravages committed by fire, as the wood is green and of fine growth.

The mountains are neither high nor steep. The lands which I noticed in passing and consider suited to cultivation lie on both sides of the river Sauvage and in the valley of the river Metabetchouan. As for the land elsewhere, I am of opinion that it is too poor and rocky for cultivation.

(*T.-C. De LaChevrotière*, 8th July, 1887.)

BLOCK F.

The third exploration embraces the tract lying between the Quebec road to the east, the exploratory line starting from the discharge of Otter lake and joining lake Bouchette to the north and lakes Bouchette, Commissioners' and Quaquagamack, to the west ; the 43rd parallel of latitude and the line starting from the 72nd mile on the Blaiklock line and joining the Quebec road to the south.

From the discharge of Otter lake, going towards lake Bouchette, for a distance of four miles, the land is very rocky and bad, and the wood principally balsam and spruce of small dimensions. The soil is generally flat and cut up by numerous brooks, one of which has a width of 15 feet. On the fifth mile, I crossed a tract of wind-fallen trees, 14 acres long. The size of the timber seemed to increase a little. From this point for a distance of 19 miles the soil is rocky and barren, though generally little broken. The timber, composed especially of balsam, aspen, white birch, white spruce and tamarac is almost everywhere of medium size. On the 14th, 15th and 17th miles, however, it is very small. On the other hand, I remarked some very fine tamarac and white spruce on the 14th and 15th miles. On the 6th mile, there is a large tract of wind-fallen trees, which extends over a part of the 7th mile, on which I also met a swamp, a hill covered with white birch and a *brulé*, which ends on the banks of the river aux Ecorces on the 8th mile.

On the other side of this river, all traces of the *brulé* disappeared; the woods are everywhere green as far as the 15th mile, where there is a large *brulé* fully a mile wide.

On the 16th mile, the green woods reappear. This section is traversed by the river aux Ecorces and several large and small brooks. I also met some small muddy lakes on the 20th mile; the land is good and the timber chiefly white spruce of good size. This region continues to the 21st mile as far as the banks of the river Metabetchouan which, at this point, is about 300 feet wide. On the 22nd mile, the land is very good, being in part a loam of excellent quality. The timber, which is composed of poplar balsam, white spruce and tamarac, is very large. There is also some alder.

The good soil and timber continue to the 25th mile at the end of which there is an alder grove interspersed with large tamarac. From this point to the 32nd mile, the soil is rocky and poor. The timber, composed of balsam, white birch, tamarac, white and grey spruce, is of medium size. I met a few scattered pines also on the 25th mile and an alder grove on the 32nd, among which I remarked very large tamarac. I also saw some large spruce on the 27th and 30th miles; but they were not numerous. Generally, the ground in this part is not much broken and only by slight ascents and by the brooks and small lakes which intersect it.

From the 32nd mile to lake Bouchette on the 31st mile, the soil and timber again become good. The land, nearly loamy all over, could be very advantageously cultivated, with the exception of the 35th mile, where it is

rocky. The bulk of the timber, which is generally of good size, is composed of spruce, balsam, white birch, some yellow birch and alders

I then followed lake Bouchette and afterwards Commissioners' lake, but, at 4 miles from the head of the latter, I ran an exploratory line for three miles towards the east; all along this line, the land is of excellent quality. Grey spruce, tamarac, balsam and pine predominate nearly everywhere. On the banks of Commissioners' lake alone, it would be easy to make 12,000 logs. There is also an alder grove and some very small black spruce there.

Beyond the third mile, the soil and timber seem to maintain their good quality. I then returned on my steps and proceeded to the first portage of lake Quaquagamack on the 48th parallel of latitude, passing through a country of which the soil seemed good. Thence, I went eastward, following the said 48th parallel to the river Metabetchouan.

On the first six miles, the land is very good; it is mostly loam, with some patches of black mould; but it is not rocky. The predominating woods are tamarac, grey and white spruce, white birch and fir. Some of the spruce measured 20 inches in diameter.

On the fourth mile, there is a flat of 600 acres in width, covered chiefly with wild hay, alders and tamarac. This flat is succeeded by a swamp of four acres.

On the first and fifth miles, I met pretty large alder groves, the soil of which is excellent. This part is not mountainous, but it is pretty rolling and intersected by some small rivers and numerous brooks.

From the sixth mile to the river Metabetchouan, the land and timber leave much to desire. The soil is mostly a yellow loam of mediocre quality, and the prevailing timber is balsam, grey spruce and white birch, the whole of medium size.

On reaching the river Metabetchouan, I met a pretty extensive brûlé.

On this same exploration, I followed for some time the river aux Ecorces at the beginning of the 8th mile on my exploratory line north. At my starting point, I remarked a great brûlé on the east side, grown up again with balsam, grey spruce and tamarac of medium size. On the west side the land is level. All this first section shows a soil of mediocre quality and consequently unprofitable for cultivation; but after this the land improves and becomes very workable. Here the wood is still balsam and spruce.

Further on, the land becomes of superior quality and the timber assumes large dimensions. Here, there is a branch of the river coming from the south-east, with a very rapid current. The banks of this branch show fine white spruce scattered and growing on a pretty good soil.

To sum up, the tract of country comprised in my first exploration is of bad quality both from the standpoints of colonization and timber. The tract embraced in my second exploration, although preferable to the preceding, still does not possess the qualities calculated to recommend it either for lumbering or tillage — in a word, it is only very mediocre land. But the tract examined on my third exploratory survey offers real and unquestionable advantages in all respects. True, some parts of it are little suited to cultivation; but they are of small extent. As for the quality of the timber, it is sufficiently good to amply repay its working.

I must, however, note that the part of block F, which I have explored, only gives an imperfect idea of the lands which adjoin Lake St. John to the west and north west. The value of block F cannot form a basis of calculation for the company, which will undertake to build a railway connecting Quebec with Lake St. John. What this company should above all consider is the exceptional fertility of the lands to which the railway would afford an outlet. Around the lake and along the course of its tributary rivers, stretch immense tracts of a richness with few parallels in the other parts of the province. The Metabetchouan, Ouatichouan, aux Iroquois, à l'Ours, Chamouchouan and Mistassini, all drain the finest lands in the world. Some settlements have already been formed in this valley. Here also are St. Jérôme, Pointe Bleue, Pointe aux Trembles, &c., born, so to say, of yesterday, yet already very flourishing, notwithstanding disastrous fires.

But what are these settlements as compared with the immense region which only awaits the axe of the settler to produce a hundred fold. They do not form the one hundredth part of it. Thus, between the Mistassini and the Chamouchouan, there stretches a tongue of land of inexhaustible fertility and measuring 15 leagues in depth; then, from the last named river to the Metabetchouan, there is another tract of land not quite so long as the preceding, but equally as fertile.

The prevailing soil throughout this region is clay of excellent quality, whose fertility has become all the greater since it has been exposed to the air and ploughed and worked ever. In some places, small areas of black mould very easily prepared for cultivation are met with, as well as some patches of light loam, whose utility in farming is highly approved.

All this extent of land is covered with a heavy forest, in which the predominating wood is spruce of large dimensions, and the lumbering of which, I am convinced, would prove very lucrative.

(*E. Casgrain*, 7th November, 1872).

As instructed, after arranging with Mr. Casgrain, P. L. S., in charge of the exploratory survey of the eastern part of the same block, I proceeded to the exploratory line run by Mr. Blaiklock, in 1847, and endeavored to find the 9th mile post, which was to serve as my starting point to fix the south-east limit of said block. I succeeded in determining with enough accuracy its position and thence ran my base line on a west course and continued it for 16 miles, the measuring being done by stepping.

From this line merely blazed as an exploration line and taking for a base the Casgrain line of 1870, I ran, according to the nature of the ground, at every five miles, cross exploratory lines as far as the 48th parallel, along the general course east and west and varying in length, according to the nature of the ground, from 4 to 6 miles, noting as I proceeded the general aspect of the country traversed by these lines.

Mr. Casgrain instructed me to also examine the shores of lake Edward and the Island of lake Edward. To save time and transportation, I chained the bay and followed the course of the river Ouiatchouan to lake Quaquagamack or Commissioners', whence, taking for base the line from LaTuque to Lake St. John, run by Mr. Blaiklock, I laid down the north-west outline of the block to the river Croche on a western course as indicated on the plan.

The tract comprised between the south-west boundary and the 48th parallel is irregular, broken and rocky; steep mountains and hills running in all directions render unfit, so to say, for colonization, at least in the present, if not also in the future, the few level valleys wherein, notwithstanding a barren sand, there are some thousand acres suited to tillage.

Numerous lakes, rivers and brooks drain this region; but unfortunately the plateaus which they form are so disconnected that, without other resources, only isolated settlements could be counted upon.

Generally speaking, the timber is of little value ; on the low grounds, black spruce prevails ; elsewhere, it is a mixture of white spruce, balsam and white birch. Pine is in small quantity and of little value. Fire has committed some destruction. The burnt woods have been replaced by an undergrowth of white birch, poplar and aspen. The quantity of wind-fallen trees shows that heavy storms have passed especially in a south-westerly direction.

The river Metabetchouan, so to say, divides this part of block F into two parts. Its width varies between 1 chain, 50 links and 9 chains, and there are some splendid water powers on it, which would become valuable in a better agricultural region.

Its navigation is broken at intervals by rapids, falls and cascades, necessitating portages of from 10 to 80 chains.

In the part circumscribed by the 48th parallel, Commissioners' lake, the river Croche, and the north-west limit, the timber is larger and more mixed. Pine is more abundant, though still scattered and consequently of less value.

As elsewhere, the mountainous nature of the ground will prevent the arable lands on the banks of the river Croche, Commissioners' lake and other tributaries from being utilized for many years.

Following the river Pequagasoui which forms part of the western boundary of said block, the tract, especially in the narrow part, seemed to me very well suited to cultivation, but, where the bed of the river widens out, the soil is rockier.

The exploration of lake Edward was more satisfactory. Large hard and soft wood indicate a richer soil. A few mountains, it is true, jut out to the lake, but their slopes are pretty gentle. Adding to the valleys which they form a superficies of from two and a half to three miles, which the Island of lake Edward can give, and we get in this region several thousand acres of arable land. The breadth of the lake varies from half a mile to three miles, and the water is very deep at a few feet only from the banks.

(*R. Tétu*, 12th November, 1872.)

RIVERS MISTASSIBI, AU RAT AND WASSIEMSKA.

In obedience to instructions, dated 18th January last, relating to the survey of the rivers Mistassibi, au Rat and Wassiemska, I have the honor to make the following report :

The Indians of Lake St. John are of opinion that the river Mistassibi is larger, having several large tributaries more than the Mistassini, and I have myself observed that its volume of water at this season is quite as considerable as that of the latter. It drains that vast plateau, stretching northwards from Lake St. John, and which, from the neighborhood of the Ouiat-chouanish, has the appearance of a boundless plain. At the mouth of the Mistassibi this plateau is 75 feet above the river, but this elevation decreases as the rapids and falls are surmounted. The largest of these is found at the end of the first mile, and brings us thirty feet nearer to the level of the plateau ; on the second mile those that there form islands and rocks in the middle of the river are shorter in the northwest arm, but steeper than in the south-east branch, where they take the form of a long cascade. On the fifth mile, a fall, also divided by islets, mingles its roar with that of another one separated from it by a distance of only a few chains. The appearance of this latter is remarkable. Running lengthwise of the river, it traverses the latter by a diagonal about three-quarters of a mile long in a place where the Mistassibi is only seven chains wide, and presents the appearance of an immense timber slide whose surplus water is flowing off at one side.

On the sixth mile another fall raises the river nearly to the height of the plateau above mentioned ; and from there to the eleventh mile the land is generally level or slightly undulating in some places, and no obstacles are met with in the passage up the river. From this point, two falls and two rapids, following the steps of the plateau, raise up to about 120 feet above Lake St. John, a height which is increased by 30 feet more on the 16th mile. The current of the river here is gentle, its width from ten to eighteen chains, and its depth ten to twelve feet—during freshets, reaching twenty feet. No further obstacles are encountered in ascending the river as far as the thirty-fifth mile, where, hemmed in between rocks and broken up by detached masses of stone, its peaceable course is more brusquely interrupted by a fall of ten feet on the 37th mile, a small rapid on the 38th mile, and then we arrive at the last one in the part of the river scaled by me. Here the water comes covered with froth from a fall of 20 feet in height some fifteen chains further on, after passing through a narrow defile of only

ten feet in width, in escaping from which the river describes a sharp angle, and by its impetuosity, contrasting with the preceding falls. Above this fall the river resumes its peaceable course in a nearly northerly direction, and maintains a width of eight to fifteen chains for a long distance. The country appear generally level towards the north-west and hilly towards the north east, with intervals of burnt land.

I there ceased my exploration of this river, and returned to its mouth, in order to ascend the Mistassini and that part of the river au Rat already explored.

Judging from the explorations already made here and there on one bank or the other of the river Mistassibi, I have come to the conclusion that at least three-quarters of the land watered by it is fit for cultivation, being largely composed of gray and yellow earth and clay mixed with sand at the surface, with an alluvial subsoil of great depth, not rocky except in a few places where the rocks rise through the surface to break the nearly uniform level of the plateau. These rocks are higher and of greater extent above the 30th mile, and seem to disappear above the 40th mile, on the west side of the river. The ground is covered with timber of all the varieties found in the valley of Lake St. John, except cedar. The age of the forest is about eighty years, and the remarkable size and height of the trees indicate a very rich soil. There remains no trace of the old forest, destroyed by fire.

For these reasons, there is not much merchantable timber near the banks of this river. A few hundred pine and a few thousand spruce trees are about all that could be got there at present. In about forty or fifty years, if not ravaged by fire in the interval, this new growth will furnish a large supply of timber. But the advantages which these splendid lands offer to settlers are not likely to remain long unknown ; and I have no doubt that, were there better means of reaching them, the young forest would soon give place to fine fields of wheat.

The river au Rat, another tributary of the Mistassini, flows in from the same side as the Mistassibi (the north-east) at a distance of a mile above the latter. From the starting point of the scaling which I made of the river au Rat, to about ten miles from its mouth, it runs only a short distance east of the Mistassini, viz : sixty-one chains, by the measurement of a line drawn for this purpose and which served as a base of operations on this river.

After taking an astronomical observation at my starting point, I scaled this river in ascending its course for a distance of thirty miles, as directed

in your letter of instructions. I measured the angles of the courses and chained their lengths, marking the number of each mile on a squared tree, as well as on a post, and explored the banks from time to time to a certain distance from the river in order to form an idea of the quality of the timber and the nature of the soil. From its mouth to our starting point, the aspect of this river is magnificent, and its level and well wooded banks are composed of rich and easily cultivated soil. Three falls and some rapids are placed at nearly regular intervals over these ten miles. At the beginning of the first mile of the scaling, a large rapid in cascades about a quarter of a mile in length, divided into two parts by a rocky islet of sandstone, marks a descent of thirty feet. Near the end of the fourth mile, and, on the first few chains of the fifth, two falls are met whose aggregate height is about forty feet. The largest of all, and the last on the portion of the river I scaled, is found on the seventh mile. It falls from a height of about sixty feet in a distance of a few chains. A rapid twenty-five chains long on the ninth mile, and another of six chains on the first part of the tenth mile, complete the series of obstacles which obstruct this river in the thirty miles explored.

The river then, at the tenth-eleventh mile, widens into a lake which extends to the 19th mile, varying in width from a quarter to three-quarters of a mile. It then continues its course, as varied as unforeseen, in a direction generally north-east, winding about through level banks of alluvial soil, covered with fine timber, which stretches away to the west, by the tributary which debouches on the twenty-first mile, and continues to the north-east on a strip of several chains in width far beyond the thirtieth mile post, which is marked according to my instructions.

Two tributaries flow in from the west side of this river; the one above mentioned and the river Au Foin, (Hay river) at the beginning of the eighth mile. Those coming from the east are better described as streams than rivers.

After having thus finished the scaling of this part of the river au Rat and explored the bank on each side to a sufficient distance to gain an idea of the nature of the soil and the quality and value of the timber, I retraced my steps as far as the verification line at the starting point. Ascending the course of the Mistassini by this line, I arrived at the mouth of the river Wassiemska, another tributary flowing in from the south west side on the fortieth mile of the scaling of the river Mistassini.

The astronomical observation having been made as usual, I began the scaling of the river Wassiemska at the post I had planted on the point formed by the junction of the two rivers ; measuring the angles and chaining the courses over the authorized distance of thirty miles. This river is nearly as considerable as the Mistassini, and parallel in course for a distance of fifty miles. The land between the two is higher and more hilly than that extending to the south towards Tikouapee. The soil is composed of clayey grey and yellow earth and sand, with here and there rocks varying from fifty to a hundred and fifty feet in height.

The fire of 1870 destroyed the fine forests which had covered the banks as far as the fifteenth mile. Beyond that point, the woods comprise the same varieties as are found on the Mistassini. On the thirty-first mile the forest again disappears, for a distance of about ten miles as well as I could make out ; but the fire which ravaged this section took place previous to 1870.

The only obstacles to the navigation of the part of this river scaled by me are a few rapids, which are not noticed in running down the river during the freshets. There are five of these rapids in the first sixteen miles ; the water being unbroken for the remaining fourteen miles, and as much further above. On the seventeenth mile a branch from the south west, as large as the main river, communicates directly with a lake nine miles long, which I scaled on my return. From this point, proceeding upwards, the appearance of the country is changed : the soil is more level and the rocks disappear for a distance of six miles, then recommence and continue increasing in height far beyond the thirty miles explored, but leaving large level plateaus on each side of the river of greater or less width, following the sinuosities of the shores.

At the end of the thirty miles explored, I planted a post, duly inscribed, on the right bank, ascending ; each mile of the scaling having also been marked on the same side.

Returning to the lake above mentioned, I scaled its whole length. It is bounded on the west by rocks, with spaces of land of good quality, but of small extent. This chain of rocks ends at the head of the river Tikouapee. On the east side the heights are not so great and end about the middle of the lake. From there the land continues at the same level, and extends towards Lake St. John without interruption, and to the south as far as the river Ashuapmouchouan. The ground is slightly undulating, and the soil

is a mixture of clay, yellow earth and sand. There is no growing timber, all having been destroyed by fire in 1870.

From the lake à James, so called, I followed a portage as far as the river Ashuapmouchouan, along which I proceeded to Lake St. John, and then to Hebertville by the Kenogami road.

I cannot close this report, Mr. Commissioner, without submitting to your serious consideration the fact that the work I have just finished on these three rivers has fully confirmed me in the opinion which I entertained at the entrance to this valley of the Lake St. John, during the first explorations which I made by order of the Government of this province. This opinion, timid at first, but which gained strength as I penetrated further into the interior in the prosecution of my work, is now nothing less than an unalterable conviction, which I should like to see shared by all, for the greater advantage of the country.

I am firmly convinced that the greater part of this region comprised within the vast basin surrounding Lake St. John, especially on the north side, that is to say, a tract of at least four millions of acres in superficies, is composed of lands of the best description for agricultural purposes as well on account of the richness of the soil as the mildness of the climate.

In order to establish a sufficiently close comparison, I think I may say, without fear of being taxed with exaggeration, that we have in the valley of this lake an area of fine rich land of sufficient extent to support in comfort as large a population as that inhabiting the finest part of the valley of the St. Lawrence—that occupied by the counties of Richelieu, Yamaska, Verchères, Bagot, St. Hyacinthe, Rouville, St. John, Napierville and Laprairie. The alluvial lands of Lake St. John are as large in extent and of greater depth than those watered by the rivers Richelieu and Yamaska ; while the climate is not inferior to that of those old districts.

With your indulgent permission, Mr. Commissioner, I shall make here another comparison. For several years endeavors have been made to direct the surplus population of the older French Canadian parishes to a distant province, and the idea appears to be spreading among us here that Manitoba is the settler's paradise. I wish I could make my voice heard in the remotest corners of the province of Quebec. I would make everyone understand, that, all well considered, the valley of Lake St. John is much more advantageous for my countrymen, for those who have no means as well as for those who, more favored, have a few hundred dollars of capital in hand.

In regard to the first especially there cannot be the least doubt. Let the owners of farms on the borders of Lake St. John be asked, if when they left their native parishes on the St. Lawrence, they had any other capital than their nervous arms and their axes with which to make their homes and win their bread in the forest. How far could they have got with the same possessions on the route to Manitoba? Would they ever have arrived at their destination? As for those who have some money to start with, there is also a greater certainty of success for them in our own province than in Manitoba. To begin a settlement in the latter, it is necessary to have at least from six to eight hundred dollars. With this sum of money, and energy and labor not wanting, the industrious settler may hope to make his way, provided the grasshoppers do not forestall the sickle. Having the same capital to begin with in the valley of Lake St. John, the settler, bringing the same labor and energy to bear, will be independent in a shorter time than he could be in the North West, even with the grasshoppers left out of the question. For there is one source of danger in Manitoba that need never be feared at Lake St. John, under similar circumstances be it understood, that is, with equally available means of communication for both, and it is certain to be encountered, sooner or later by the settlers in the Canadian North West as it has been several times by those in the contiguous States of the American Union.

Is it not well known that the latter, instead of taking their crops of Indian corn to market, have frequently found it preferable to use it as fuel with which to warm their houses. Is it because the settlers in the North West of the Dominion are still further from a market for their produce that they may consider themselves safe from a similar alternative? Would the settlers near Lake St. John ever have the shadow of such a danger to fear? No, if the means of communication, such as are lavishly provided in the North West, even in advance of settlement, be not totally refused to the brave habitants who have been settled for five, ten, fifteen and twenty years on the borders of the lake. Notwithstanding the advantages offered by the country of their adoption, these settlers cannot forget that the sole obstacle which now opposes their progress is perhaps a greater drawback than the scourge of grasshoppers and the remoteness of their locality are to those of Manitoba. It cannot be too often repeated that the one hundred and twenty-five to one hundred and fifty miles of forest separating us from a market will always be an insurmountable barrier to the development of colonization in this beautiful valley, unless it be decided to proceed with the construction of the railway so long promised.

Without this great work, which our settlers are still waiting for, though with shaken confidence in view of the inaction of the company which has been so generously subsidized by the Government of the province and the city of Quebec, without this work, I say, the ten counties, which might be laid out in the magnificent country of the Lake St. John valley, will not be opened up for perhaps two hundred and fifty or three hundred years. By pushing it forward without delay, the desired result may be attained in twenty-five or thirty years.

(*P.-H. Dumais*, 24th June, 1878.)

LITTLE PERIBONKA RIVER.

Taking as our point of departure a post planted on the north bank of the said river, we chained it from its mouth to its source, taking note of all its windings, marking the miles throughout, meeting very few impediments, and not losing a single day.

We encountered on the 8th, 12th, 14th, 16th, 23rd, 56th and 78th miles, falls varying in height from 10 to 30 feet; the principal rapids are on the 11th, 13th, 25th, 36th, 40th and 78th miles, measuring from two to eighty chains in length. The lakes are of small extent, the largest of which I explored, supply the small tributaries, which flow into the river on each side. On the 51st mile a *brulé* commences and extends to the 78th mile; fire has destroyed all the primitive forest, but a new growth of scrub pine, poplar and white birch is scattered over the mountains and clothes a great part of the flat lands.

The mountains appear on the 34th mile, bordering the river on both sides as far as the 57th mile; they then diverge from it principally on the west side, approaching it again on the 74th mile, and terminating at the height of land in small round hills which surround the borders of the lakes and small islands sloping down to the level of the horizon in a north-west direction.

The species of lumber which predominate here are the grey spruce, the balsam, white birch, scrub pine or cypress, birch, poplar, white and yellow pine, cotton wood, poplar, ash willow, alder, white wood, nut hazel, mountain ash and soft maple.

The land, generally flat or slightly undulating for the first forty miles, is composed of grey and yellow clayey soil, alluvion mixed with sand on the banks of the river, and covered with a rich mould on the principal plateaus.

Those mountains which are rocky and covered with yellow sandy soil are clothed with black spruce, white birch and balsam, with a few pines here and there ; the loftiest do not exceed a thousand feet in height.

On the 57th mile the mountains increase their distance from the river, the valley widens by degrees and forms a basin from three to five miles in breadth, terminating at the foot of the great rapid on the 77th mile.

This basin was formerly full of water forming a large lake, but since the excavation of the natural dyke which was formed by the mountain on the 56th mile, it has become empty and nearly dry with the exception of some small lakes and winding streams flowing from them, which vary the uniformity of the land now slightly undulating.

Were it not for the old burnt trunks of trees, here and there, overtopping the forest, the new growth of cypress only twenty to thirty years old, of vigorous growth, and closely packed along the two banks of the Peribonka as far as the mountains enclosing the basin, we should be inclined to believe that these young trees were the first production of a virgin soil newly fertilized.

The sources of this river are situated on the height of land overhanging on the east the valley of the Great Peribonka, and on the west those of the rivers aux Rats and aux Foins, both tributaries of the river Mistassini.

The principal fork of this river is situated at some chains' distance on this side of the 14th mile post, at the starting point of a line which measures eight miles and thirty-two chains, running due west as far as the western bank of the Mistassini, at a point $11\frac{1}{2}$ chains from the post between the 13th and 14th ranges of the township of Parent, on its north-east outline ; this principal fork measures 75 links in breadth at its confluence and flows in a north-westerly direction.

The other tributaries are merely brooks ; on the course of one of them about two miles from the river, there are three or four hundred pine trees fit for trade ; this stream flows into the river on its east bank at the beginning of the 43rd mile.

At the 61st mile, on the heights bordering a stream flowing from the west, some scattered pine trees overtop the clumps of green woods spared from the fires.

The pine trees on the proper course of the Little Peribonka river, are scarce and can only be made use of by those who will, at the same time, require the spruce.

The quality of the soil on the first forty miles, though not superior, is still worth cultivating. The land is level and covered with all the species of timber found on the south bank of Lake St. John.

Should the valley of Lake St. John ever be crossed by a railroad, this northern part of the lake would soon be sought out by settlers and become as flourishing as the localities already settled.

The traverse line at Mistassini crosses a country perfectly level and fit for clearing, with the exception of two or three marshes extending northward, and the bottom of which is composed of sand covering clay; the remainder is well wooded and of good quality. The pine trees on the borders of the Mistassini have been mostly cut, and nothing now remains but the new growth.

The variation of the compass on the height of land, from astronomical observation, is $21^{\circ} 15'$ west. I further discovered a slight increase in the variation by the angles of the courses, as I ascended the river.

In conclusion, I have to mention that at the entrance to the Great Peribonka river, the natural meadows cultivated last autumn by the settlers of Roberval and Ashuapmouchouan gave a return of several thousand bundles of hay of very good quality for cattle, and which horses do not reject. One of these meadows is situated at the entrance of the Little Peribonka, and has also been cultivated.

(*P.-H. Dumais*, 22nd June, 1875.)

RIVER SHIPSHAW.

I have completed the scaling of the river Shipshaw from the rear line of the township of Simard for 150 miles going northwards, including the lakes forming its extensions.

The rear line of the township of Simard according to a bearing which I took on the spot runs north $59^{\circ} 15'$ west, astronomically, or $76^{\circ} 75'$

according to the compass, the variation being $17^{\circ} 15'$ west. This line, with the first course of the scaling formed an angle of 56° on the theodolite, which was used for the triangulation and our geodesic calculations.

Ascending the river from the starting point, its general course is north-east for a distance of five miles. Then turning abruptly to the east, it keeps that direction, taking in the expansion of a narrow lake for ten miles. This lake is a small sheet of water, dotted with some islands, bordered by a very irregularly shaped bank, and indented by several bays which form boldly defined promontories. Above this sheet of water, the upper course of the river is nearly northwards to the intersection of the rear line run by us of the limit No. 64. The river in some places narrows like a brook, but with a very strong current.

To this point, the land on both sides of the river is occasionally rough and bare. However, there are extensive intervals of better soil, at different distances from each other, on which white pine of fine growth abounds and may have great commercial importance. Attempts are being made at present to work it, and it is not improbable that before long lumbering establishments will extend into this region, because the river offers great natural facilities.

Ascending as far as the 24th mile, the river passes through a rich alluvial plain producing pine and white spruce in abundance. This part of the river occasionally flows through narrow gorges, dashes over heavy rapids, or hurls itself over steep falls. Then taking a more easterly direction, its course to the thirty-third mile is almost everywhere abrupt, rocky and steep. Precipices, with inaccessible sides, rise to great heights and, at moderate distances, we measured some from 400 to 500 feet high. This perspective is very picturesque, but is hardly one which will recommend this region for colonization or permanent improvements.

In ascending the river, we perceived that its course was formed by a chain of small lakes or an enlargement of about 20 chains. At the head of this sheet of water on the 38th mile, we entered upon a large lake which was soon recognized as the one designated under the name of Ouatchiway, on the descriptive plan accompanying my instructions.

The scenery of this part of Shiphaw is very picturesque; game and fish of all kinds abound all over. The beaver, otter, mink, marten and fox find in this remote and unfrequented region a safe repair. The principal tributaries are the river Napash and the discharge of Spruce lake.

We found the variation of the needle, at this place, to be $19^{\circ} 0' 60''$.

The scaling of the shores of lake Ouatchiway was begun at the 38th mile, that is to say, at the point where the regular course of the river ceases. Longitudinally, the great lake trends from south west to north east.

A portion of the eastern shore is open and exposed to all the winds. Its naked and shelterless cliffs and its rocky soil have produced a stunted growth of wood, which seems to choose the poorest soil on which to grow and to attach itself to the fissures in the bare rock. The north-eastern end of the lake spreads out into a deep bay, which forms irregularities in every direction. At the 50th mile we reached the discharge of the lake, which has an average width of two chains and which we scaled for three-quarters of a mile to the west to there take up again the continuation of lake Ouatchiway. This detached section has a lozenge form. A pretty large island cuts transversely the current, which is powerfully attracted towards a small fall on the 50th mile.

From the shores of this lake, the mountains recede and the banks fall away ; but sometimes they come down to the water's edge in wide, low beaches. These beaches have long, gentle slopes. West of the great eastern bay, the bank becomes more regular and presents an unindented shore line. As far as this, there are few spots which could be reasonably claimed as worthy of attention for agricultural purposes. Portions of the lower part of the valley produce good white pine, but the upper parts, and especially the country surrounding the lake, is exclusively made up of a succession of bare rocky headlands, where the forest growth is chiefly composed of stunted black spruce and dwarf cypress.

The waters which form the discharge of lake Ouatchiway creep slowly through an immense swamp, winding like a serpent's folds, as far as the 67th mile. This valley is very characteristic, because it is uniformly bordered on each side by a ridge with a little arable soil on it and sparsely clothed with small stunted trees. At some distance in the rear, the country is made up of broken and rocky bluffs, intersected by narrow valleys. In these valleys there is an immense quantity of tamarac.

Beyond these valleys to the 70th mile, we remarked several spots susceptible of tillage ; these spots are occasionally pretty long and wide, the soil supporting a growth of good ash, birch and white pine.

In ascending this valley, we scaled by mistake fourteen miles of a branch running westward, which our guide took for the main river. This branch, navigable for canoes, traverses a mountainous country with steep

and abrupt hills. At the upper extremity, the mountains are bare and rise to a height of 700 to 800 feet above the river.

According to the scale of the plan accompanying my instructions, we should have reach great lake Pomouscachiou, and moreover we noted that the waters had apparently very much diminished. After much uncertainty as to the real course of the survey, we made an exploration to the eastward through a rich level valley supporting a growth of all kinds of timber, which led me to the beginning of an immense lake dotted with islands, which we recognized as lake Pomouscachiou. After a laborious crossing, we rejoined our expedition next day. We had previously scaled a mile of the eastern branch, and it was ascertained that the two branches carried about the same volume of water at their forks.

On the 82nd mile we reached lake Pomouscachiou. In its general aspect, this lake does not materially differ from the others in the valley described in this report. The country along its lateral shores is nearly everywhere rocky and bare. The banks are in part steep and abrupt and often mountainous. We noticed, however, some patches of excellent land, with a pretty level surface and covered with a vigorous vegetation, but nowhere of large size in the immediate vicinity of the lake

The continuation of lake Pomouscachiou is a fine sheet of water surrounded by picturesque hills. Its shore line is very regular and broken by no projection or promontory. The banks at the northern end are less regular, as they form there numerous coves and deep narrow bays. The extreme length of the two sections of the lake, including the small depression which separates them, is 58 miles.

The river above the lake, after leaving ground pretty broken at its mouth to the 150th mile, winds through a great alluvial plain almost exclusively covered with red pine. We saw no mountains or hills in this quarter. The banks of the river are generally low and the stream, after traversing a flat, wet tract, spreads out into marshes at the northern end of the 150th mile, where we planted the last marked post of our survey.

The general aspect of this last portion of the survey presents nothing attractive. Vast swamps covered with tall rushes stretch away for long distances and swarm with aquatic birds. As these swamps are on the level of the river, we think it would be possible to artificially drain them. There are less repulsive spots—rich plains, the soil of which should be valuable, judging from the abundance and variety of its vegetable and forest growth.

The calculation of the latitude showed that the last point reached by our survey was by linear measure 84 miles in a direct line from our starting point. According to the same calculation, the last station should be 35 miles to the east of the starting point.

In conformity with your instructions, the last part of my survey consisted in the running of a line connecting the river Shipshaw at the 150th mile with the river Peribonka.

The route which I should follow as the likeliest to traverse a country more or less unknown promised to be difficult, and I decided to strike across at the narrowest and most advantageous point, which, according to my calculations, was at the 150th mile.

Tracing a meridian, I took from it an angle of 75° to the west and ran a line parallel to the township of Simard for 11 miles and 4 chains, where we intersected the river Peribonka. We then searched for a post on that river, but found none.

As in other parts of the country where the Laurentian system prevails, the region traversed in this exploration is rocky and sterile.

(*Geo.-B. DuTremblay*, 15th July, 1875.)

RIVERS VALIN, BETSIAMITS, SHIPSHAW AND PERIBONKA.

I scaled the river Valin to its principal source, and part of the river Betsiamits, besides performing other surveys between the rivers Shipshaw and Peribonka in the county of Chicoutimi, and I have now the honor to report my operations and the results of my examination of the principal geographical features of the ground adjoining the rivers surveyed.

We first reached the intersection of the rear line of the township of Tremblay on the river Valin, which we had not followed until then on account of the steepness of its banks and the inaccessibility of its rapids.

Having no exact knowledge of the region I was about to visit, I hired a guide, who took me up the river Valin to its source, beyond which a short portage brought us to the headwaters of the river Betsiamits, by which we descended to great lake Pipmaukan, whence we ascended another large tributary of the river Betsiamits, the river à l'Épinette, to a portage well

known to the Montagnais under the name of the Portage à l'Aviron on the river Shipshaw, and thence by another great portage which finally brought us to the river Peribonka. It took us three weeks to clear a passage for ourselves and to ascend the river to its source.

We took levels at different points, which showed that the river falls in the average proportion of 100 feet per 14 acres, that is to say, 3,800 feet in 18 miles, as far as the height of lands dividing the waters which flow to the Saguenay and those which flow northwards towards lake Pipmaukan. We had daily falls of snow which rendered travelling sometimes exceedingly difficult, until we reached the highest point of this region, where the snow was 10 feet deep at the beginning of February.

The general vegetation to this point has taken root in a rocky soil, composed of limestone and poor sand. The prevailing timber denotes a poor, barren country; nevertheless, I remarked some growing pine of good quality, varying in dimensions between 10 and 24 inches in diameter. White spruce is the predominating wood in this region.

The river Valin is bordered by steep, rough banks, which, with the succession of mountains that adjoin it and which seem piled one upon top of the other, present the most picturesque effects; and, although the country is barren, the scenery is very attractive. The hills rise to a great height. I measured some of 540,300,607 and 720 feet.

The summits of these mountains are generally smooth and white, and their steep flanks offer a striking contrast to the small plateaus which surround them. The forest growth everywhere is stunted, but it is only on the summit of the headlands and in places exposed to the high winds, that it is sickly-looking.

Near the township, the forest is more open and the timber of good quality and comparatively large. The steep hills show the same varieties of rocks; we saw some streaked, coarse-grained masses, composed of white and dark feldspar and quartz. Among other substances of economic value, the rocks just mentioned contain limestone and schists which in some cases may be used as whet-stones.

The sources of the river of which I am speaking are on the crest of the mountains which border the Saguenay, and its principal forks are on the first, third, eighth and tenth miles. All its tributaries are large enough to float saw logs, but are not navigable for canoes on account of the rapids and falls.

On the 2nd February, we crossed a portage of a few chains to the sources of the river Betsiamits which we descended by following its course and taking all the angles possible along the same to the 83rd mile, where we intersected lake Pipmaukan after crossing lake des Isles, lake Maucouche, lake Istamanie, &c.

My operations on the Betsiamits were begun on the 2nd February and terminated on the 19th March.

The lakes which form the headwaters of this river are shallow and are fed by several small streams or brooks which take their rise in the heights forming the watershed of the Saguenay and the north. The chief tributaries are on the third, fifth, tenth, twelfth, fifteenth, sixteenth, twenty-fourth, forty-first, forty-fifth, forty-sixth, forty-seventh, seventy-ninth, eightieth, eighty-second and eighty-third miles. We met no falls along its course. The ground slopes slightly towards the north and gives the waters only a quiet flow. Some small rapids occur on the twenty-fourth, thirty-second, thirty-third, thirty-eighth, forty-first, seventy-second and seventy-fourth miles. We measured falls

At the 18th mile, of.....	17 feet
At the 41st mile, of.....	19 "
At the 75th mile, of.....	22 "
At the 79th mile, of.....	79 "

We then endeavored to strike the river Portneuf, but found it impossible to do so, before reaching lake Pipmaukan, where we took an astronomical observation and ascertained the variation to be 16° west.

To identify a point included in the survey of the river Betsiamits, I scaled the south-west point of lake Pipmaukan and ran a secondary line to the Portage à l'Aviron, which I reached on the 10th March. Along this river I crossed several lakes. This section of the region is furrowed by steep mountains covered with stunted black spruce. The land is altogether barren. The predominating timber is black spruce, cypress and balsam, of small growth.

Conformably to your subsequent instructions, I devoted my closing operations to running a verification line between the rivers Shipshaw and Peribonka. Taking advantage of the most accessible ground, I chained

westward to the post of the 60th mile of the river Peribonka, which I reached on the 1st April.

Like the remainder, the region traversed during this exploration is rocky and barren and will never be valuable for farming or lumbering.

(*Geo.-B. DuTremblay*, 14th June, 1876.)

RIVER VALIN, NORTH BRANCH.

Conformably with my instructions for the survey of the north branch of the river Valin, dated 17th January, 1887, I have the honor to submit herewith my report of the work done :

Starting from the confluence of the said river, I followed the windings of its course up to its source, planting mile posts along the route. I found falls, on the 1st, 6th, 13th and 14th miles, of from 10 to 30 feet in height ; the principal rapids are on the 1st, 2nd, 5th, 6th, 13th and 14th miles. These rapids are very long. Several streams flow into this tributary ; the chief of them is the discharge from lake Charles, in the middle of the 2nd mile. The land through which I passed is generally unsuitable for agriculture, the soil is part yellow and part of whitish color, yet a rich green forest of primitive growth covers the country. At the point of departure between the 1st and 2nd miles, fire has destroyed a quantity of pine and other useful woods, leaving the land rough and bare. Between the 17th and 22nd miles, only black spruce and other small size woods are found, which are the production of a poor soil.

Very high mountains line the river, on both sides, between the 7th and 13th miles. All the mountains, on which a deposit of soil is found, are timbered with red birch and grey spruce. The highest mountains are found between the 11th and 13th miles.

The richest tract of land, as regards soil and productions, lies between the 13th and 17th miles. There, the river after having left a broken and uneven country, winds through a section of land whose surface is pretty even and is covered by a vigorous vegetation. The principal kinds of wood are pine and spruce ; there is also considerable tamarac suitable for commercial purposes. Everywhere else the soil is broken and poor, and is covered by stunted black spruce and balsam. On the 20th mile, on an

elevation bounded on the west by a stream coming from the north, I saw a quantity of tamarac and the trunks of old trees.

In conclusion, I believe that lumbering could be carried on with profit on this branch of the river Valin; but it is not possible to settle it as a farming country.

(*Geo.-B. Du Tremblay*, 7th May, 1877.)

RIVERS À MARS AND HA ! HA !

From the point of departure to the third mile, the general aspect of the land is undulating and very easy to cultivate. The soil is adapted to culture; the only wood met with being young white birch on the banks of the river. It is of divers species further on. From the third to the seventh mile, fire has completely destroyed the timber. The general aspect of the land, however, is precisely the same as that previously described and the same may be said of the soil. From the seventh to the thirty-fourth mile, spruce, fir, white birch and cypress are to be met with in abundance. From the twentieth mile, the timber diminishes in quantity, and fir, spruce and white birch are only encountered.

The soil seemed to me suitable for cultivation to the neighborhood of the twentieth mile. From this point to the headwaters of the river, it is of inferior quality. The area comprised between the thirty-seventh mile and lake à Mars is a swamp supporting a sparse growth of tamarac, mixed with a few firs and white birches. Towards the twenty-fourth mile, the river is bordered by high mountains, which continue to its headwaters. They are about a mile back from the river, but sometimes they close in upon it so much that only its waters separate them. These mountains, with the exception of a few in the upper part of the river, are wooded with white birch, spruce and fir. I met no pine; but a few stumps of this timber seen on the first mile satisfied me that it grew there formerly, but not in large quantity.

On the seventeenth of February, I completed the survey of the river à Mars, and, on the following day, I started to descend the latter, reaching the south west line of the township of Bagot (the point of departure) on the twenty-fifth. On the twenty-seventh, I proceeded to the south-east line of Bagot in order to immediately begin the survey of the river Ha ! Ha !

On the following day, after having found the point of departure, I began the survey of said river, and in the evening, I took an astronomical observation at the first station to find the variation of the needle. From the point of departure to great lake Ha! Ha! the prevailing timber is spruce, white birch and cypress, and in abundance. I also saw a few elm and ash, but not in any great quantity. The spruce is good. The general aspect of the land is undulating and the soil of good quality. The banks of great lake Ha! Ha! gradually rise to a considerable height.

From the great lake to the twenty-seventh mile, the timber is the same as in the previous section. The appearance of the land is undulating, and, starting from this last mile, a chain of mountains borders the river to its sources. From the twenty-seventh mile upwards, there is not so much timber; and, as on the river à Mars, I met no pine, the little that was ever on it having been removed long ago.

(*F. Vincent*. 16th May, 1882.)

RIVERS UPIKAUBA AND AUX ECORCES.

Starting from lake Kenogami, at the mouth of the Upikauba, I scaled that river for a distance of about 60 miles and the river aux Ecorces for 50, going generally south-east on the Upikauba and south-west on the river aux Ecorces. The average breadth of the Upikauba is about $2\frac{1}{2}$ chains, and that of the river aux Ecorces about 3 chains.

The aspect of these rivers and their banks is very picturesque. The lower ten miles of the Upikauba are all rapids. This portion of the river is bordered by steep mountains, from which the timber has been all burnt off. In rear of these mountains, however, the soil is covered by a magnificent forest, consisting of merchantable white spruce, black spruce, balsam and white birch. Higher up, as far as I went on the river, rapids and still water alternate and contrast with each other. Here, too, the river is bordered by mountains, but of lesser height and at greater distance. There is also a rich growth of timber, especially of merchantable white spruce, but this wood exists in still greater abundance on the banks of the chief tributary, the Little Pikauba. The land here is less mountainous; there are only a few slight elevations rising above generally level ground.

The course of the river aux Ecorces presents about the same appearance. Five miles of rapids, from the mouth up, after that still water, a

few small rapids, and a lake bearing the same name. The land on each side, generally level, though a few small elevations may be seen, is covered by fine forests of merchantable timber of the same kind as on the river Upikauba.

This part of the country also offers advantageous features. There are almost as many mill sites as there are rapids. Fish abound in these rivers. Already there are a number of lumbering establishments begun on the river Upikauba and its tributaries, the Little Pikauba, the Upika, the Little Pika and on the river aux Ecorces and its tributary, the river aux Canots.

For a long time yet, there will be timber there for lumbering purposes. Lastly, the land, being in some places of excellent quality, is well suited to colonization and we may hope when communications are more developed in a future more or less distant to see many prosperous settlers there.

(*J. Mallais*, 18th August, 1886.)

COUNTRY AROUND LAKE ST. JOHN.

I have the honor to transmit for the information of the Government a report on the explorations which have been made under my superintendence :—

1. Of the lands comprised within the western limit of the township of Delisle, prolonged to the river Peribonka, on a depth of ten to twelve miles, north of Lake St. John.
2. The tract lying between the rivers Metabetchouan, Caron, Mesy and Plessis.
3. The residue of the township of Demeules.

After having traversed the above-mentioned tract No. 1, in every direction for nearly a month, I became firmly convinced that it is, in every respect, most advantageously qualified for colonization. It also offers great facilities for carrying on every branch of industry by means of the power supplied by the numerous streams, falls, &c.

The tract lying between the mouth of the river au Cochon and that of the Peribonka rivers, as far as the falls on these latter, is so flat that in some places, when the snow melts, the water remains a long time on the ground

and even, on some few patches of considerable size, retards the growth of the timber. It is on this account that it has been said by some that these lands are swampy, but this idea is erroneous. Notwithstanding the heavy rains which had fallen during the month of July, the water, at the time of my visit to the locality, had completely disappeared, or remained to a depth of only two or three inches in the moss. These lands may even be drained with facility. In these so-called swamps there is an average thickness of only seven to ten inches of turf, overlying excellent alluvial land. I established this fact by examinations at several different places.

Apart from these low grounds, the rest of the tract in question may be easily drained. The soil is entirely alluvium, a rich yellow earth, suitable for any kind of crops. The part near the lake is nine or ten feet above high water-mark, and there is consequently no danger of inundation from that side ; while the banks of the rivers Peribonka are from eighteen to twenty-five feet in height. I found here many different species of wood ; balsam, spruce, white birch, yellow birch, elm, ash, mountain ash and alder, the white spruce predominating. They are all of very fine growth, indicating a rich soil. Wherever I went throughout the whole tract, I did not find a single rock.

Both the Grand and Little Peribonka rivers are quite navigable up to the first falls. The lands bordering on them for a distance of ten miles above the falls bear the same general aspect as those above described. The soil there also is in a great part alluvium. There are, however, some slight elevations, where the soil is richer, though of the same composition. In the portion adjoining the township of Delisle, these elevations are more marked, and contain a lighter rich yellow soil, upon which pine grew plentifully in former times. The woods now standing are the same as those mentioned above, the merchantable timber being chiefly spruce. There are no rocks to be seen. From the rivers au Cochon and à la Pipe, going towards the east the land is still of the same character, except that the elevations are still greater ; and, while the soil upon them is fit for cultivation, they will always remain an obstacle in the way of farming operations. It will be readily perceived that this tract offers great advantages to colonization ; it is, in my opinion, the finest part of the country around Lake St. John.

2. Leaving the Peribonka rivers, I proceeded to the south of the townships of Plessis, Mesy, Caron and Metabetchouan. The north east portion of these lands, between the discharge of the lake Belle rivière and the river aux Ecorces is very hilly and rocky. The soil in the depressions between the hillocks is of good quality, fit for cultivation. The hillsides themselves

are partly covered with earth, and are, like the dales, well timbered with wood of fine growth, balsam, spruce, white birch, poplar, black birch, tamarac and alder; the spruce being the most plentiful. These slopes are not susceptible of cultivation, on account of the small depth of the soil upon them. I do not think that farming could be carried on with advantage in this locality at present. I would recommend, however, that the lands be surveyed, as they would make excellent firewood lots.

There are four settlers established on the east of the discharge of the lake Belle rivière, on the Quebec road. The land in this neighborhood, and for a distance of two miles in an easterly direction, presents a more favorable aspect, being less hilly and rocky, and may be advantageously divided into farm lots.

South of the townships of Caron and Metabetchouan, from the discharge of the lake Belle rivière as far as the river Metabetchouan, the land is almost level and the soil a rich yellow earth of good quality, very suitable for cultivation, though somewhat rocky. The environs of lake à la Carpe are very fine in every respect, covered with many varieties of timber, among which the spruce largely predominates. The roads required for the settlement of these lands would be the continuation of that now being made along the east bank of the river Metabetchouan, and another starting from the Quebec road and following the central line of the township of Caron as far as lake à la Carpe. These routes are shown on the plan annexed hereto.

3. The residue of the township of Demeules is generally stony and unfit for cultivation, except only at the eastern and western extremities; that is to say, that about eight square miles at each end of the township might possibly be divided into farm lots. These portions, although hilly and stony, contain good land. The part unfit for cultivation is covered with young cypress, while the extremities are well timbered with various kinds of wood. I think that in subdividing this residue it should be laid out as firewood lands.

4. On the 22nd of September, I had completed the explorations, which by your instructions dated 14th June, you had directed me to make. I then received from the Rev. Mr. Lizotte, curé of Roberval, the new instructions by which you directed me to go and explore the lands in rear of the townships of Charlevoix, Roberval and Ouiatchouan.

I shall treat first of the parts above the townships of Roberval and Ouiatchouanish, as the lands in that quarter are alike in character. This country

is not absolutely level; it rises somewhat in the shape of an amphitheatre, not very marked, on each side of the river Ouatouchouanish, but more distinct in the portion to the south-west of that river. The soil in the neighborhood of the river is an alluvial earth, while in the higher parts it is a strong, rich, yellow earth, of good quality. There are very few rocks. This land is well covered with various kinds of wood — spruce, balsam, black and white birch, poplar, ash and mountain ash, the spruce prevailing. I observed no natural water power in this part of the river Ouatouchouanish. In the part above the township of Charlevoix, west of the LaTuque line, and for a depth of about seven miles, or as far as Commissioners' lake, the country is very hilly, but suitable for cultivation. The hollows between the rocks and mountains contain good land; even the hillsides are to a large extent cultivable, but the soil upon them is inferior, being a very compact yellow earth.

In the valleys, and especially in the immediate neighborhood of the township of Charlevoix, the timber is of fine growth and various kinds. That upon the heights has been completely destroyed by fire.

I would strongly recommend the survey of these lands, which are especially favorable to colonization, both on account of the richness of the soil and their proximity to the settlements already formed. I have shown, with care, on my plan, the manner in which the lots should be laid out and the positions of roads.

(*John Langlois*, 13th November, 1883.)

REGION ALONG THE "DES MARAIS" ROAD.

In obedience to your instructions addressed to me from Quebec on the 22nd October, 1863, I have the honor to forward you my report of the exploration of the land adjoining the colonization road of Charlevoix, commonly called the "Des Marais" road.

This road, besides being the only means of easy communication between the new but already very prosperous settlements of L'Anse St-Jean and the older centres, is also the most direct route for the population of the lower part of the county of Charlevoix to communicate with the Upper Saguenay.

The line of the road, as laid down by the people of Murray Bay, during the fall of 1862, starts at about four miles from the village of Nairne and connects with the Queen's highway which follows the eastern side of the Murray river. Thence, it inclines to the east for about $1\frac{1}{2}$ mile and then follows a general north-west course for about 4 miles to reach an old lumber camp occupied at the time of my passage by *habitants* of Murray Bay engaged in getting out tamarac knees. At about 4 chains beyond this camp, the survey intersected the rear line of the seigniorie of Mount Murray, distant 5 miles and 7 chains from the settlements.

In the portion of the seigniorie crossed by the line, apart from the first and a part of the second concession, where the soil is of superior quality, the lands are taken up for about a third of the distance; but they are only used by their owners for their supplies of firewood and the soil, though inferior to that of the first concession, is not without advantages for cultivation as soon as the firewood will have been removed.

From the starting point, the ground is somewhat broken; but, at about the middle of the third mile, it becomes more level, although still broken in several places. Towards the fourth mile, it is level to the intersection of the line of the seigniorie, and continues so for two-thirds of the first mile counting from the seigniorial line aforesaid, whence my remarks as to the quality of the soil suited to colonization along this road more particularly apply.

The level part of the first mile just referred to seemed to extend for over two miles both to the east and west of the road. The timber, which consists chiefly of white birch, fir and some grey spruce, is of fine growth and bespeaks a subsoil, which, if not very rich, is at least well suited to tillage, when compared with the bulk of the cultivated lands in the counties of Charlevoix and Saguenay. It is composed of a sandy yellow loam on the surface, with a richer subsoil as proved by the vegetation. From this point, the land is not suited to cultivation as far as the post marked 1st mile on the west side; but on the east side the necessary depth could be obtained for the lots by laying out their frontage perpendicularly to the road, which, in its ascent, slowly follows a slope forming an angle of 5 to 12 degrees with the horizon. This is the "Passe-des-Monts", so difficult by the St. Agnes road.

From the top of the hills to midway on the 3rd mile, the land seemed to me to present all the qualities desirable for cultivation. The soil, though somewhat rocky, is composed of a good yellow loam supporting a generally

fine growth of white birch and fir. But, from the middle of the 3rd mile, the land is hardly adapted to tillage, the pass which the road follows being only about half a mile wide and hemmed in between the mountain on the east side and the first lake des Marais on the west.

On reaching the 4th mile, the mountain recedes to the east and the plain opens out on both sides of the line to about a mile to the east and two miles to the west. The white birch and fir are of fine appearance and the soil, not so rocky, seemed well suited to cultivation. As for the climate, in this place, I did not note anything more rigorous than in the other parts of Murray Bay. There was no snow there yet, though in the inhabited concessions of Murray Bay, especially at St. Agnes, the snow already covered the ground at that period of the fall. At 19 chains 80 links from the 4th mile post, the line skirts a swamp of 9 chains in length running in the direction of the road. This swamp, which was dry when I passed, showed a rich subsoil of loam overlaid by a bed of yellowish earth. The timber, chiefly spruce and fir, indicates a strong soil. The mountain disappears to the west, but, on the east side, its base approaches the line to within a distance of 8 acres. After leaving the swamp, the ground presents the same uniformity for about 20 chains, when the line, after crossing a brook of 50 links wide, ascends a sort of hog's back for a distance of about 10 chains at an angle of 35° . Then following the eastern brink of a deep ravine, at the bottom of which flows the brook just crossed, the line emerges upon ground which widens rapidly towards the west, while, on the east side, it continues to skirt the ravine to the 5th mile, where it also widens until it forms a plateau clothed with a rich forest growth consisting of white birch, balsam, spruce, &c. The soil is good and seemed to me well fitted for settlements on one range on each side of the line. The surface is generally level, only presenting here and there some slight undulations in this side of the 8th mile post. Thence, it slopes rapidly to the west approaching the 3rd lake des Marais and the line descends at an angle of 12° to 20° to the eastern bank of the lake just named.

From this point, the ground presents no remarkable feature and is hardly suited to tillage, being hemmed in between the lake on one side and a mountain on the other. In this spot, the line deviates abruptly to the east to avoid a mountain at the head of the 3rd lake and runs towards little lake à la Truite, on the banks of which a good camp has been built for travellers and their horses. Near this camp, the cultivable ground would not have the necessary depth for lots between the bases of the two mountains; but at 10 chains further on, at the most, it slopes towards the west,

grows level at about 10 chains further to the west, and would easily give the depth of two ranges to the base of the mountain.

I may mention that lake à la Truite discharges into the 3rd lake des Marais, which in turn discharges towards the Saguenay river, so that the highest point above the level of the St. Lawrence is at this spot, all the streams previously crossed or followed by the line flowing towards the south-east or south-west. Towards the middle of the 9th mile, the line crosses the discharge of the 3rd lake, which discharges, as already stated, towards the north-east. From this point, the ground is a plain for about two miles on each side of the road. The soil seemed suited to cultivation and the timber, composed of white birch, balsam and spruce, is of good growth. At 36 chains, the line crosses a stream of 50 links wide flowing to the north east. All these brooks would afford sufficient water power for mills of all kinds, and the spruce is capable of abundantly supplying all the timber wants of the settlers. This remark applies equally to the entire tract explored from my starting point at the line of the seigniority of Mount Murray. The road, which had previously followed a direction almost north north-west, bends more to the west on leaving the 12th mile and going towards Cedar lake.

At about 30 chains on this side of the 13th mile, the cultivable ground extends no further except towards the west, and the distance between the line and the head of lake des Sables, to the east, is barely 50 chains, a distance which diminishes gradually to 6 chains 20 links on reaching the 13th mile. The road follows the west bank of the lake, keeping the same distance from it for about half a mile. Thence, the ground is not fit for tillage and is alternately level and rolling. The line follows, at a distance of 15 links to 6 chains, a discharge coming from lake Fraser and forming a pond around which, and at several points along its course, there are alder groves.

At 20 chains from the post of the 14th mile, the line traverses a brulé which extends to 50 chains beyond the 15th mile post, crossing at the same time the discharge of lake Fraser and forming a portage which leads to lake Fraser. This lake, which is followed in the direction of its length for a distance of 34 chains, is separated from Cedar lake by a portage of 20 chains.

Cedar lake, which the line follows on the east side the same as the preceding lake, is a sheet of about 160 acres in superficies, encircled by three mountains in the form of a tripod, leaving a pass to the north-west and another and easier one to the north-east. The last was followed to

emerge, on a generally north-east course, at a small lake of 25 acres in superficies called lake Ourson.

The road is clear on the west bank and resumes an almost north-west direction to the intersection of the line with the 48th parallel of latitude, which forms the dividing line between the counties of Charlevoix and Chicoutimi. This line, determined by calculation only, intersects the road at a distance direct north of 16 miles and 12 chains from my starting point at the rear line of the seigniory of Mount Murray, and at 19 chains 60 links on this side of the 19th mile of the survey.

At 29 chains 26 links beyond the post marked 18 and 19, the ground becomes more uniform; the pass extends about 30 chains to the west and about a couple of miles towards the east; and the soil is well adapted to cultivation. The timber is of good growth, and consists chiefly of white birch and balsam. At about 60 chains from the last mile, the road descends an incline at an angle of 5° to 15° for a distance of about 16 chains. The ground shows a great depression towards the east. The 19th mile post is planted at the north side of an alder grove extending to the eastward and crossed by the line in the direction of its length to its northern extremity. On the other side, the land is wooded with spruce and balsam, and the soil is a yellow loam, slightly rocky, but well suited to tillage over an area of about one mile in width on the east side and two miles and a half on the west. The same distance between the base of the mountains is maintained, the ground being slightly rolling and of the same quality to the 24th mile, where the hills approach each other to a distance of half a mile on the east side.

The line crosses Beaver lake in the direction of its greatest length, for a distance of 21 chains 9 links and the road is clear on the east side. From the middle of the 22nd mile, the road skirts the western bank of a brook flowing on the same course as the line for a distance of 36 chains 96 links.

At the point reached by the line, namely, from the post of the 24th mile, the road turns abruptly to the west upon an angle with the meridian of 56° astronomical to enter the pass known as the *Passe-des-Roches*. Here the mountains, distant about $1\frac{1}{2}$ mile, come together gradually, and, at the 25th mile the pass is barely half a mile wide, the road following the foot of the mountain to the west. At 57 chains 49 links beyond the 27th mile post, the pass is so narrow that its width is no longer more than 6 chains. This is the most difficult spot on the whole line, as well as the most serious obstacle to the opening of this road for the colonization of the

lands adjacent to the line and those of L'Anse St-Jean. Nevertheless, I do not hesitate to say that, with an expenditure of \$1,200, the Government could open an easy passage for vehicles at all seasons, and the completion of the entire road to the intersection of the St. Agnes road would scarcely cost more than \$6,000 to \$7,000.

From the 28th mile post, the valley again opens out rapidly towards the west and more gradually towards the east. The soil is excellent, and the timber, chiefly white birch, birch and fir, is of vigorous growth; but it would be difficult to get more than one township range between the bases of the mountains.

At the 29th mile, the pass widens out to 60 to 80 chains and continues to open out to the 30th mile, when it spreads out into a plain extending to the right and left as far as the eye can see.

This line of road does not follow a regular course in general. From the rear line of the seigniory of Mount Murray, as far as about 60 chains from the 12th mile, its astronomical direction is generally north $4\frac{1}{2}^{\circ}$ west for a distance of 11 miles and 37 chains, in a straight line, giving about 8,295 acres of arable land between the base of the mountains, divided into 79 lots of 105 acres each, including the road. Thence, the general course inclines to the west and runs north $36^{\circ} 45'$ west, astronomical, for 2 miles 74 chains, upon which settlements could be formed over a superficies of 2,520 acres, divided into lots of 105 acres each, including the road. From the southern end of lake Fraser, the line follows a course generally north $46^{\circ} 45'$ west, astronomical, for 75 chains, then turns abruptly to north $20^{\circ} 15'$ east by an interior angle of 112° to the 18th mile, and lastly runs north 13° west to the intersection of the 48th parallel of latitude. From this point, the line takes a direction north $25^{\circ} 15'$ west, astronomical, for about 2 miles 63 chains, returns to a course north $10^{\circ} 45'$ east for 1 mile, 74 chains and 90 links, and lastly runs north $56^{\circ} 15'$ west, astronomical, to the point of intersection with the St. Jean road, where I ended my operations.

From the intersection of the 48th parallel, the country shows some cultivable patches, but few and small owing to the limited space between the mountains, which come together as close as 6 chains at the narrowest point of the Passe-des-Roches. Still, beyond the line, 1,000 to 1,100 acres of settling land could be found, which would assure a permanent communication between Murray Bay, l'Anse St. Jean and the Upper Saguenay, the want of which is becoming more and more felt as the relations increase between the populations of those different localities.

(J.-C. Desmeules, 4th April, 1864.)

REGION ALONG L'ANSE ST. JEAN ROAD.

After determining by a good astronomical observation the course of the line of the Reserve, I prosecuted my operations by beginning the survey of the road at its intersection with the line of the Reserve which I continued to the north-west outline of the township of St. Jean, entering in my note book the course of the survey at each station, together with the variation of my instrument. The laying out of the road being finished, I continued my operations along certain range lines, along which I planted numbered posts corresponding to those on the road and showing the frontage of the lots. To ascertain the superficies of the lots of a part of the first range, I was obliged to also chain the depth of this range to the southwestern outline.

Along the line traversed, I found the soil poorly adapted to cultivation, except along the road, where it is of fairly good quality, especially from the Reserve to number 35, almost wholly composed of clay and alluvion and, on some of the plateaus near the Reserve, of vegetable mould. On the beaches of the river, there are some water-worn stones carried down by the rapidity of the current during the freshets.

From lot 35 to the outline, the land is not so good or so favorable to vegetation, although pretty fair. It is partly composed of yellow and black soil and is slightly rocky.

I made no special examination of the other parts of the township which I did not survey, but the surface seemed mountainous.

The lofty headlands which border the Saguenay and which, in separating, form the deep bay known as L'Anse St-Jean, extend across the township in a southwesterly direction, for a distance of two and a half leagues, maintaining about the same height for about a mile and a half, and then falling away gradually until they disappear entirely. There are other small mountains which cross each other in all directions and which are connected with the ones already mentioned. These mountains are covered with growing timber, except a few summits which are entirely bare of wood, but covered with other vegetation. They are composed of rock overlaid by a light bed of turf. These stratified rocks dip generally towards the east and are mostly composed of granite, feldspar and quartz. Very little good land is seen among these mountains, except a few small valleys on the mountain slopes, and some narrow ravines.

The tract comprised between these mountains forms the valley of or settlements of l'Anse St. Jean. This valley is about two miles wide on the shore of the bay, but its width varies a good deal and it is much narrower in some places. The river St. Jean, which empties into the bay, winds through the whole extent of the valley; it is one chain and a half to two chains wide, and two to three feet deep; but it carries a more powerful body of water during the freshets. There are three mills on this river: a grist and two saw mills. The grist and one of the saw mills are built on the Reserve, near the mouth of the river, and belong to Mr. Simon Boudrault; the other is built on lot 37 and belongs to Mr. D. Girard.

The river St. Jean takes its rise in little lake St. Jean, at a distance of 18 miles from its mouth. The river du Portage, the river du Moulin and all the other little streams which drain the valley of l'Anse St. Jean are its tributaries. It also receives the waters of great lake des Islets, lakes à la Balle, à l'Ours and Grenouilles, which discharge into lake St. Jean, with several other streams which fall into the same lake. From the course of the rivers, it can be seen that the great valley, in rear of the township of Otis, which extends to l'Anse St. Jean, slopes towards the east.

The timber, in the valley of l'Anse St. Jean, is of remarkable size and of much superior quality to that of the Upper Saguenay, as already noted in my report of the survey of the township of Perigny last spring.

(*G. O. Tremblay*, May, 1867.)

SAGUENAY DISTRICT.

FROM THE SAGUENAY TO THE BAY OF SEVEN ISLANDS.

In the month of May last, I was instructed by Sir W. E. Logan to make a geological examination of the north shore of the Lower St. Lawrence, from the river Saguenay to the Bay of Seven Islands, a distance of about 220 miles: I was also directed to ascend one or more of the principal rivers on the coast. Those selected were the Manicouagan and Bersimis; the former was surveyed for about forty miles up, while the latter, which had already been surveyed by Admiral Bayfield, was ascended for a distance of thirty miles.

In addition to the economic materials already mentioned, the iron sands of this region, which have attracted considerable attention, may be noticed. The deposits of these sands at Moisie have been examined by Dr. Hunt, who has shown that they belong to the stratified silicious sands of the district, which here overlie the old marine clays, at considerable heights about the present sea level. In many places I observed beds holding so much iron ore as to show dark or nearly black layers among the grey and brown silicious sands. They were seen, of this character, at various places along the coast, at heights up to 100 and even 200 feet above tide-level, while on the Manicouagan river, twenty-four miles from its mouth, where it attains a height of 256 feet above the sea, the banks of sand exhibited the same dark-coloured bands of iron sand, from forty to fifty feet above the water.

On the coast between Portneuf and Sault-au-Cochon, and also between the river St. Margaret and the Bay of Seven Islands, hills of post-tertiary clays, containing marine fossils, and attaining heights of from 50 to 150 feet, are often seen to be capped with from forty to fifty feet of similar fine and coarse brown sand, banded with dark layers likewise charged with black iron ore.

The rich accumulations of ore which are seen along the beach appear, as Dr. Hunt has remarked, to result from a natural process of concentration by the action of the water upon these sands; they were observed in a great many places on the coast, about high water mark, in strips from three to nine and twelve feet wide, and from two inches to two feet in thickness.

often extending, without interruption, for miles. It is said that the visible extent and the richness of these local deposits is somewhat affected by the varying action of the wind and water. The places at which I noticed these belts of iron sand along the portion of coast examined are as follows, viz :

1. The vicinity of Tadousac, for a distance of three miles downwards.
2. From Jeremie to Bersimis, and thence to the Papinachois, a distance of twelve miles.
3. The peninsula at the mouths of the Outarde and Manicouagan rivers, for forty miles.
4. From English Point to Pentecost river, for eight miles.
5. The coast on both sides of the St. Margaret river, for ten miles; making in all sixty-six miles.

In all these places except the first named, near Tadousac, I think that the quantity of ore is such that it might be collected with profit, especially by the aid of proper concentrating machinery. Water-power, if needed, is accessible in several localities near the iron sands; among others, at the falls of the river Baude, on the coast, three miles below Tadousac; at the falls of the Papinachois, also on the coast; at those of the Outarde and Manicouagan, at the head of tide-water (respectively twelve and fifteen miles from the general trend of coast); at a fall in a stream, on the coast, half a mile north east of Pentecost river; and at the falls of the St. Margaret, three miles from the coast.

The mouths of the Bersimis, Papinachois, Outarde, Manicouagan, Pentecost and St. Margaret, all afford safe harbours, with sandy bottoms, which vessels drawing twelve feet of water may enter at high tide, although the access is somewhat difficult, on account of numerous sand-banks. In any of them a wharf extending from forty to fifty feet from the shore would be sufficient to reach the channel.

The surface of the whole region examined, with the exceptions mentioned below, is broken and irregular. The hills of hard rock occasionally attain a height of upwards of 2,000 feet, besides which there are hills of stratified clays, capped by sand, often rising 200 feet or more; and in one instance near Tadousac, 400 feet.

A very thin soil occasionally occurs on the rocky hills, but generally, over large tracts where fires have destroyed the vegetation, little remains but a bare surface of solid stone.

On the portion of the coast between the Saguenay and the Outarde, where the soil permits, there is timber of fair size, consisting of yellow pine, spruce, balsam, fir, tamarac and white birch. Yellow pine was formerly cut on the Portneuf river, and considerable quantities still remain on the rivers Escoumains, Sault-au-Mouton, Sault-au-Cochon, Bersinis and Papi-nachois. Pine logs, as I saw them at the mills, and in the forest, were from twelve to twenty inches in diameter. Beyond the river Outarde no yellow pine is met with, and from thence to the Seven Islands, the other trees are smaller, and the barren portions are more extended.

From Tadousac to the river Baude, a distance of about three miles along the coast, there extends a belt, less than a mile in width, of yellowish brown sand, mixed with layers of the iron sand already noticed. Following the river just named, for about two miles northwardly, the clays gradually come out from beneath the sand, and afford an excellent soil. The Hon. David E. Price, senator, informed me that this kind of soil stretches northward towards the St. Margaret river, and is of considerable extent; but it is not accessible for want of a road. On the Little Bergeronne cove and river, there is a strip of similar good soil, four or five miles long by about a mile wide, and on the Great Bergeronne cove, there are from 1,000 to 1,500 acres of excellent land, yielding good crops of vegetables and all kinds of grain.

From the cove last mentioned to the Escoumains, a plain extends from the shore to a bare ridge of reddish gneiss, from two to seven miles inland, and occupies an area of forty to fifty square miles. The soil of this plain is a coarse brown sand, with patches of moss, probably in depressions, and sustains a growth of blue-berry and other shrubs, with a few stunted spruce, balsam, fir and white birches. Some attempts have here been made at farming, but with very little success, except at a few spots on the coast just to the west of cape Bon Désir, where the clay, which underlies this sand, has been uncovered by land slides.

From the village of Escoumains at the mouth of the river of that name, to Mille Vaches bay, a distance of about twenty miles, extends a belt of sand like that just described, and from one to two miles in breadth, with occasional protruding spurs of gneiss rock. Here, as before, the only successful attempts at cultivation are confined to spots where the underlying clay has been exposed by the cause above mentioned.

From Mille Vaches Bay to Sault-au-Cochon, a distance of twelve miles, a similar sand plain prevails along the coast, also extending about two miles inland. From the last mentioned point to the Portneuf river, cliffs of clay

capped by sand, rise boldly up from the shore to heights of from 100 to 200 feet. These cliffs, which have already been mentioned in speaking of the iron sands, have in their lower part from fifty to probably one hundred and fifty feet of fine blue clay, in which the fossil remains of the *mallotus villus* or capeling, and several species of recent marine shells, were found imbedded. The brown sand, often forty or fifty feet in thickness, which overlies these clays, presents alternate coarse and fine layers, and is banded with others holding black iron sand. Beyond Portneuf to Jeremie, a distance of about fourteen miles, the coast is rocky, and affords only a few isolated patches of sandy soil; but from Jeremie to Point St. Giles, at the mouth of the Manicouagan, a distance of nearly forty miles, there is a recurrence of the sandy plains, with occasional protruding masses of hard gneiss rock.

Along this coast considerable portions of land are covered with moss, as may be seen just to the east of the Indian village and Hudson Bay Company's post at Bersimis. These sandy tracts include a part of the Bersimis Indian reserve, together with the peninsula between the mouth of the Outarde and Manicouagan rivers, and have an extent which may be approximately estimated at 200 square miles. In ascending the Bersimis river for about thirty miles, occasional patches of from 200 to 1,000 acres of sandy soil are met with, lying between rocky ridges.

In ascending the Manicouagan river from a point twenty-four miles from its mouth to the Forks, fourteen miles further, is a reach of deep water, with a gentle current, between banks from ten to fifty feet high, composed of brown sand, with layers holding the usual black iron ore. The river here, as already mentioned, is 256 feet above the sea, and the valley, which is about a mile in width, is walled in by ridges of gneiss rock, rising above it to heights estimated at from 300 to 1,500 feet, often bare of vegetation. This sandy valley supports in most places a stunted growth of spruce, balsam, fir and white birch, but at the Forks, and for about four miles below, the soil is a loam, and produces a growth chiefly of poplars and white birches, which attain a fair size; one of the latter, which I cut down, was eight inches in diameter at the base, and 102 feet high; its age, judging from the rings of growth, was between sixty and seventy years.

From Point St. Giles to the Godbout river, a distance of twenty-six miles, the coast is mostly rocky and barren, with the exception of about 600 acres of sandy soil at the mouth of the river, surrounded by rocky gneiss hills; thence to English Point, a distance of thirty-five miles, the

country is still mostly barren and rocky. From English Point to Pentecost river, about eight miles, another belt of similar sandy soil occurs, with an average width of from one to two miles.

From Pentecost river to Point St. Margaret, twenty-seven miles, it is again barren and rocky; thence to Seven-Island Bay, a distance of twenty-four miles, and also to a few miles beyond the river Moisie, a further distance of thirty miles, a similar sandy soil occupies a belt of country, varying in width from one to about twelve miles; the whole giving an area of about 500 square miles. In the rear of the belt between Point St. Margaret and the Moisie river, bare rocky hills are seen, having an average height of nearly 1,000 feet.

In the interior, areas not observed, of the same kind of soil, may be met with; but they are probably small in extent and difficult of access. Although these sandy soils are capable of being cultivated, a superior knowledge of their management is required to do so successfully.

(*James Richardson*, 18th April, 1870.)

RIVER SAINTE MARGUERITE.

I began the scaling of the north-east branch of this river at its mouth. I scaled it to the 48th mile. At 41 chains from the 45th mile, the river divides into two branches, and I continued the scaling along the north-east branch. At 50 chains from the 34th mile of this survey, I met on the north-west side the main branch of this river, with a width of 100 feet. I also met several falls in this part of the scaling; the highest, on the 21st mile, 40 feet. The river is full of rapids from the 29th to the 34th mile. A house and other dependencies have been erected on the south west side of the river on the 5th mile, for the accommodation of tourists during the salmon fishing season, from the mouth to the first fall on the 5th mile.

From the mouth to the forks, there is no resident settler, and the clearings met with at different points to the third mile of the survey are small. The part of the river Ste. Marguerite, comprised between its mouth and the 8th mile, is well suited to cultivation.

From the 8th to the 16th mile, the river is bordered by burnt mountains as far as the eye can reach; there is consequently no merchantable

timber there. The bottoms, on each side, vary from 15 to 20 chains and are adapted to tillage, but not beyond that.

The north-east part of the river, from the 16th mile to the 30th, is less mountainous than the south-west part. Although white pine is not abundant on this stretch of the river, it is nevertheless the part which shows the most. Beyond the 30th mile, pine is very rarely seen. White spruce, however, is abundant on both sides of the river, but not large enough to be merchantable. The chains of mountains which border the river in this direction leave barely room enough for the portages and are steep almost from the river banks. The tract between the 26th and 30th miles is less mountainous, but the land is equally unsuited to tillage. I saw no hard wood after leaving the 8th mile.

Between the 35th and 50th miles, white spruce is abundant in many places and of large size. The spruce found there is merchantable. There are also some white pines on the tops and sides of the mountains.

From the 40th to the 47th mile, the surface is generally less mountainous, but the soil is everywhere sandy and rocky. A level strip for a distance of 15 to 20 chains, on the last ten miles, seems susceptible of cultivation at different points on each side of the river

On the last ten miles of the survey, I noted no merchantable timber; small grey and white spruce being the prevailing woods on the flats and ravines; the mountains are moreover nearly bare.

I then went to the west lateral line of the township of LaBrosse at the point of intersection of the river Ste. Marguerite, at the post planted during the survey of that township, and thence, after ascertaining the variation of the needle, I proceeded to the scaling of that river, which I followed to its source on the height of lands, as also its principal tributaries.

From the west line of the township of LaBrosse, to the 30th mile of the scaling of the river, there is no portage, but from the 36th to the 45th, four falls of from 70 to 80 feet high each are met with, the river being broken by rapids between these falls. From the 45th mile to its source there is a chain of lakes and still water between these lakes.

At different places from the west line of the township of LaBrosse, to the intersection of the north line of the township of St. Germain, there are several houses constructed for the accommodation of tourists while salmon fishing. This river abounds with the finest salmon and trout.

From the west line of the township of LaBrosse, south-west of the river Ste. Marguerite, to the 17th mile, there is a range of mountains covered with hard and soft wood of good growth and running almost parallel to the river. The bottoms on this side of the river have a depth of from 40 to 50 chains and are formed of rich soil, their depth being sufficient to make a fine range. Elm, ash and birch are of fine growth.

All the northwestern part from the mouth of the river to the 33rd mile is bordered by the mountain chain of the river Ste. Marguerite. There is, however, a strip of level and cultivable land, of 50 to 70 chains, richly clothed with soft and hard wood. Elm and ash are the predominating kinds. Beyond the 33rd mile on the north-east side of the river, there is no ground susceptible of tillage. All this region, as far as the eye can reach, is nothing but a succession of mountain chains extending to nearly the mouth of the river and mostly inaccessible on account of their height. The summits and flanks of these mountains are completely bare.

From one of the mountains which border the river Ste. Marguerite on the north-west side, in the township of Champigny, I noted that these mountains are on a level with the chain bordering the Saguenay. All the tract—four or five ranges—comprised between the townships of St. Germain and LaBrosse, is generally adapted to cultivation although mountainous around the lakes. But these mountains are splendidly timbered with hard and soft woods, which proves that the extent of uncultivable land in this region would not be an obstacle to the colonization of this part of the Saguenay country, as one might be led to think at the sight of the mountains along the Saguenay. The unsurveyed tract between the townships of St. Germain and LaBrosse contains about 50,000 acres of cultivable land, allowing for the space occupied by the mountain range bordering the Saguenay, which is unsuited to settlement.

From the mouth of the south-west branch of the river Ste. Marguerite to about the 15th mile, fire has destroyed almost all the timber, especially on the north-east side; nothing but brulés can be seen; the fire has spared nothing. The few trunks of pines still standing show that this section was once well covered with merchantable timber, especially pine. Fire has also ravaged the south-west side along the whole distance from the Saguenay and Ste. Marguerite to the east side line of the township of LaBrosse; consequently there is no merchantable timber there.

Near the west side line of the township of LaBrosse to the north-east of the river Ste. Marguerite, white spruce of 15 to 20 inches is fairly plen-

tiful in all the cuts between the surrounding mountains. Some clumps of white pine are also observable in different directions to within a few chains of the west side line of LaBrosse, but they are few and small. On the 7th mile, there are some clumps of white pine, at a distance of about a mile to the north of the river, but they are of limited extent; I also noted white pine on the 12th mile in a northerly direction, but in small quantity, for a distance of three or four miles. In addition to the birch, elm and ash already mentioned, along the whole plateau traversed by the south-west arm of the river Ste. Marguerite, between the 1st and 30th miles, there is also a sufficient quantity of white spruce from 15 to 20 inches in diameter for profitable lumbering, especially to the north-east. The south-west side of the river, along the same distance, is richly wooded with hard wood, with a few white pines here and there and easily got at, to form part of such lumbering.

At the 36th mile, on the south-west side of the first fall, known under the name of the fall of the Fraye-au-Saumon, I crossed several miles in a northerly direction and noted from the heights a considerable stretch of good land in rear of the townships of Harvey and Tremblay, well timbered with hard wood, among which white birch predominates. There also pine is scarce and the spruce grows smaller after the 33rd mile.

Between the 33rd and the 43rd mile, the river is bordered by mountains which are insurmountable and clothed with soft wood of a medium growth, unsuited to trade. The river descends in rapids between four falls; the first of 75 feet occurs at 34 chains on the 35th mile; the second of 80 at about one chain below the 37th mile; and the third of 70 feet, at 24 chains above the 42nd mile. There is no white pine between the 43rd mile and the source of the river; all this section is wooded with medium-sized grey and white spruce—merchantable spruce being rare. There is no hard wood beyond the mountains to the north-east of the river after the 43rd mile.

I also scaled the north-west branch of the river Ste. Marguerite from mouth to source. The mountain chains which border this stream from its mouth to the 14th mile are mostly bare, and everywhere, as far as the eye can see, the soil is poor and wooded with balsam and grey and black spruce of stunted growth. Ascending from the 14th mile, the aspect of the ground changes and the mountains both recede from the river and diminish in height to beyond the 19th mile. There the timber is better and the surface generally level.

The river is broken by rapids along this last stretch ; the highest fall is 100 feet and occurs at 33 chains from the 18th mile post. Another fall of 75 feet occurs at 8 chains below the 17th mile post, and 32 chains above the same post there is still another of 30 feet. From the 19th mile, the river to its source, is formed by lakes, the largest of which is only about a mile in extent. At 31 chains from the 19th mile post, the river forks into two branches, which are about of the same length. I continued the scaling along the north west branch. The soft wood is better as far as the source of this river. Tamarac is plentiful and of good size.

One of the tributaries of the south-west branch of the river Ste Marguerite falling in at the 25th mile is broken by rapids and cascades for five miles from its mouth. The aspect of the land is everywhere the same, that is to say, broken in different places, mountainous and rocky.

CONCLUSION.—On the south-west branch of the Ste. Marguerite to the 30th mile, white spruce, large enough to be merchantable, exists in fairly large quantity for advantageous working and the river presents no obstacle to the drive. There is a small quantity of seemingly sound white pine. In the last six miles of the survey of the north-west branch, large tamarac is abundant. There is no cultivable land along this tributary. Beyond the 16th mile of the survey of the north-east branch of the river Ste. Marguerite, there is no cultivable ground. From the 16th to the 40th miles, white spruce is the only timber worth working ; there is no hardwood and very little pine.

The extent of cultivable land comprises about a range on each side of the river Ste. Marguerite from its mouth to the east line of the township of Harvey, forming about 60,000 acres of excellent soil richly wooded with elm, ash, birch, spruce, pine and fir.

The continuation of the Tadousac road to the river Ste. Marguerite along the south-west branch of that river until it meets the east side line of the township of St. Germain, and then in a direct line to L'Anse à Vellot, would give a considerable impetus to the settlement of this part of the Saguenay country. The townships of St. Germain, Champigny, LaBrosse and Albert offer to colonization about 200,000 acres of good land, richly wooded, deduction made of the uncultivable part occupied by the mountain chain bordering the Saguenay.

(*Gédéon Gagnon*, 19th July, 1875.)

REGION ALONG THE MARITIME ROAD.

TOWNSHIP OF TADOUSAC.—The road known under the name of the road à Baude traverses along its whole extent land that is uncultivable. Except some thirty acres of good yellow loam, the remainder is composed of fine sand, which the slightest breath of wind shifts from place to place. Settlers, who formerly cultivated 30 to 35 acres, can only raise now a little potatoes and a few bushels of grain, and even these, only from the sand, with the help of enough manure. I took the trouble to go with my men to the head of the lots to see if really it was not better than near the road; but, with the exception of a few patches, which are not moved by the wind, the condition of things with the rest was not better. On the line of lots H and I, the settlers have now put up their third fence, the two previous ones having been buried by the sand; they are covered by at least fifteen feet in height of sand carried by the wind. The settlers live partly by fishing and hunting and partly by lumbering for Mr. Price, and others. On lots B, C and D, the land is a little better, at least in spots, but these are not large enough to support the families. Most of these settlers have other lots in the concession of the mill à Baude, where the soil is better; but their clearings are not yet sufficient to produce food enough for them during the winter, and they are too poor to clear them all. In time, they will, doubtless, manage to improve upon their present situation.

TRAVERSE DES BERGERONNES. — The road known as the Traverse des Bergeronnes or crossing of the Bergeronnes from the first range of Tadousac to the crossing of the Little Bergeronne river, on lot 7, is constructed across the mountains and steep rocky headlands. There is not one acre of land suited to cultivation, as far as the Bergeronnes range, in the township of Tadousac; and except a mile and a half of green wood, the remainder of the timber has been destroyed by fire and the bleached trunks threaten to fall with the slightest wind and crush the traveller as he passes. The road is very disadvantageous for the settlers, and the traveller, who should be caught on it in a storm in winter, would be nearly certain to lose his life. When there is a heavy snow fall, the settlers abandon it and take to the Ballantyne road which is deeper in the forest and less exposed to storms. Then, when the spring thaws set in, the water rushing down from the hills washes away the little earth on the road, and the settlers are obliged to work for ten or twelve days, with their horses, to replace the earth, only to have it washed away again during the following spring.

TOWNSHIP OF BERGERONNES.—In the Little Bergeronne, the soil is clayey and very flat, and the road from lot 13 to lot 7 is bordered by trees on both sides. In the Great Bergeronne, the soil is sandy and very rocky in some places. This road is very well built for the place and slightly undulating to the spot called the Plaine de Bon Désir, where the land is very flat. This immense plain is sandy and, in general, unsuited to cultivation, except some scattered patches. Although, this land is sandy, there is, however, no rock. The timber is composed partly of white birch, balsam, spruce, &c, in some places; in others, there is none whatever. The quality of the soil is the same from the crossing of the river de Bon Désir to the river Escoumains, where the land is better to the township of Iberville, being well wooded with white birch, balsam, spruce, ash, cedar and birch.

(*P.-Th. Desmeules*, 19th September, 1876.)

RIVERS PETITE AND GRANDE BERGERONNES, ESCOUMAINS, SAULT-AU-MOUTON,
PORTNEUF AND SAULT-AU-COCHON.

In conformity with your letter of instructions dated the 12th November, 1872, directing me, in my capacity of Provincial Land Surveyor, to make a scaling of the rivers Petite and Grande Bergeronnes, Escoumains, Sault-au-Mouton, Portneuf and Sault-au-Cochon, situated on the north shore of the river St. Lawrence, below the river Saguenay, in the county of Saguenay, I proceeded, immediately after the receipt thereof, to organize my party. As soon as these necessary preparations were made, I started for the scene of my operations, taking advantage of the last trip of the St. Lawrence Company's steamer Clyde to reach Tadousac. I here procured vehicles to carry myself and my men to our destination, it being impossible to go by way of the St. Lawrence on account of the ice therein and the high winds then prevailing, and in due time we found ourselves safely arrived at the Petite Bergeronne, the starting point of my operations.

The river Petite Bergeronne being still open, and not being able to scale it correctly from the banks, I employed the time while waiting for it to freeze over, in exploring the surrounding country and scaling several lakes of considerable importance such as lake à Gobeil, lake Paradis, lake Patrix, lakes Bergeronne and des Sables. As soon as the ice on the river

was safe to travel upon—(this river very seldom takes with good ice, and there are many places in it which never freeze over at all)—I began the scaling, after having ascertained the variation of the compass of my instrument, verified the length of my chain, &c

This river offers a harbor of refuge of easy access to vessels of light draught, which can pass up as far as the bridge built by the Government on the Tadousac road. Its real mouth is bounded by high, well timbered mountains to the south-west, and to the north-east by rocks bare of all vegetation. But after having penetrated half a mile into the interior, the valley by degrees becomes wider, and soon forms a beautiful basin, which nature has been pleased to shelter on all sides from the high winds so frequent in these regions. The soil is composed of clay and alluvial earth in the meadows, and of gray and yellow earth mixed with sand in the uplands; the wood on the heights is of several kinds, among which white birch, balsam and spruce predominate, with a few white, red and yellow pine. The rise and fall of the tide are visible nearly three miles from the mouth of the river, making the latter navigable for this distance by vessels of middling size.

The narrow strips of land at the foot of the mountains on each side of the river are cultivated with success by some few habitants, but all signs of cultivation disappear at the end of the fourth mile. There is on this mile a remarkable water-power, capable of supplying motive power for manufactories of all sorts, especially since the execution of some important work upon it.

Within a few chains of the beginning of the fifth mile is an almost perpendicular fall of over two hundred feet in height. Here the proprietor of the mill has been obliged to construct a second slide for saw logs, which must have cost a considerable sum of money. The natural difficulties of the upper part of this river have been overcome by the building of a dam about 150 feet wide and ten or twelve feet in height, by which the water is backed up as far as lake des Sables. The river hereabouts is, so to speak, walled in as far as the lake des Sables on the seventh mile; a rather narrow strip of land on the western bank, widening more or less in different places, affords just sufficient space for a road by which communication is had with the interior. The greater part of the timber thus far has been removed; a few pines and some grey spruce and tamarac are still to be met with, but cedar, balsam and white birch, poplar and black spruce are the most plentiful. Of land fit for cultivation there is not sufficient to settle upon, but enough to remunerate any who might clear it. The lake des Sables, the

most important on this river, is thirteen or fourteen miles in circumference being about four miles in length by two and a half wide. There are several lumbering camps located in its neighborhood, but the greater number of the saw logs are procured on the upper part of the river to the north-east of the lake. The high mountains surrounding it are well covered with every variety of timber to be found in the Saguenay district ; spruce, white birch, balsam, white and red pine, yellow birch, poplar, cotton wood, cedar, alders and basswood are all to be met with either separately or growing together.

With the exception of Point des Sables and of a narrow strip of the valley following up the windings of the river to its source, none of the land hereabouts is fit for cultivation, being for the most part very mountainous or covered with almost inaccessible rocks. Lake Paradis discharges towards the north west into lake des Sables by a stream of a few chains in length. Lake Patrix does the same to the north-east, as well as a number of other small lakes which feed the streams flowing among the mountains which surround the main lake. The course of the river above lake des Sables is interrupted by several falls of no great importance ; one in particular, which might be considered a large rapid, would not at all interfere with the running of logs.

On the sixteenth mile, the river divides into two branches, the principal one going towards the west, the other in a northeasterly direction, The aspect of the country is everywhere the same ; the wood is less and less leafy as we penetrate further into the interior ; pine and spruce are more plentiful and of excellent quality. On the nineteenth mile a new branch takes its course towards the S. S. W. and, extending as far as lake Bergeronnes, serves to discharge its surplus waters. There is a small lake on the twentieth mile, and passing through a small piece of burnt land on the west bank we arrive at the source of this river in a lakelet, supplied by a stream from the north-east which is soon lost in an almost impenetrable ravine.

At the twentieth mile post, on the headwaters of the river Petite Bergeronne, a narrow gorge extends to the westward, and at a distance of two miles may be seen the chain of mountains bordering the river Sainte Marguerite, while still further, just visible above the horizon to the south-west, are the summits of the Saguenay hills. Pine and spruce are found as far as the source of the Petite Bergeronne, down which they may be floated without any other improvements than those already made.

I then explored the north-east arm, with a view to gaining the source of the Grande Bergeronne, passing lake Caribou and an other small lake until I reached the source of this branch, and continued my course to the north-east, but instead of falling in with the waters of the Grande Bergeronne, I came upon those of the river Polette, a tributary of the Escoumains. Changing my direction more to the east, I still failed to intersect the waters I was seeking, but met instead with those of the river à Cassette, another tributary of the Escoumains. Having procured some information from the lumberers working on this river, respecting the probable position of the source of the Grande Bergeronne, I decided to go and begin the exploration of this latter from its mouth. I therefore at once returned down the Petite Bergeronne, taking up the scaling of this river from my first point of departure going down towards the St. Lawrence. This done and having rounded the Point des Sauvages, I began the ascent of the river Grande Bergeronne. But considering that I had several large rivers to explore in the course of the winter, and fearing that if I continued the exploration of the Grande Bergeronne which is the shortest, the approach of spring would prevent me from completing the longer ones, I reserved the Grande Bergeronne for my last operation and continued my route to the Escoumains and began the exploration and chaining thereof, after being delayed some days to renew our snowshoes and get our provisions and baggage in order. I could not verify the variation of the needle at starting: time would not permit.

I therefore fixed my starting point at the north-east corner of the centre pier of the bridge which crosses the river near its opening into the St. Lawrence opposite the S. W. end of the saw-mill.

The village of Escoumains is situated on the shore of the small bay into which the Escoumains river flows. The village is of no great size; a church stands in the middle of it, overlooking the country. Farming of a good class is carried on, but on a small scale. The land is very good for several miles along the river, especially to the north-east. It is composed of clay, marl, gray and yellow earth and sand mixed with fine gravel. The wood is a new growth of balsam, poplar, cotton wood, white birch, spruce, willows and alders. On the second mile, several settlers have made considerable improvements on their land, deriving therefrom sufficient produce for their own wants and having a surplus to dispose of. On the third mile the river is crossed by a bridge constructed by the Bureau of Colonization, and the road continues along the west bank, following its general course

upwards, but at more or less distance according to the necessity for avoiding hills and curves.

On leaving the fourth mile, the land rises gradually and the valley becomes narrower, so much so that in several places there is no room for a passage on either side of the river.

On the tenth mile the river à Cassette flows in from the west-north-west. On the eleventh mile the forest has been almost completely destroyed by fire, only a few clumps here and there having escaped. All over the land as far as the eighteenth mile over which the fire has passed, a few small patches of under growth, willows, poplars and alders, growing in the low grounds and ravines, and the charred trunks and stumps of pine and spruce trees which have been cut down on the sides of the mountains and the surrounding rocks are almost the only objects that catch the eye. The river à Polette, coming from a direction north-west by west on the sixteenth mile, gives a view of the forest in its natural aspect, a few miles distant on the sides of the mountains among which it flows. The Messrs. Têtu have re-established the old lumber camps on this tributary, where they procure pine and spruce. This branch of the Escoumains takes its rise in a series of lakes which extend on the north-west to the waters of the Petite-Bergeronne. On the seventeenth mile the river Parent, a small stream flowing from the east, falls in about half a mile above the river à Polette. I made an exploration and scaling of this stream as well as of the lakes. A large part of the timber which grew on its banks has been carried away; the remainder has been burnt. The mountains, as they recede, attain a considerable altitude, measuring eight to nine hundred feet in almost perpendicular height and approaching so closely to the Escoumains as to leave no space for a road on its eastern bank, this latter and part of the river's bed being encumbered with heaps of fallen earth and stones. To the west the mountains, as they extend back, reach a height of about twelve hundred feet. I made an ascent of one of these, from the top of which I had a magnificent view of the St. Lawrence from St. André de Kamouraska to Ste. Flavie de Rimouski, and of all the islands between these two points.

I could also make out the sources of the rivers Petite Escoumains and Parent to the east, and of the two Bergeronnes, the Cassette and the Polette to the west, as well as the valley of the river St. Marguerite; the Saguenay mountains extending beyond the horizon towards the west.

On the eighteenth mile is a stream of about a mile in length by which the surplus waters of the Little Escoumains lake are at the time of the

spring freshets discharged into the river Escoumains. At the end of the twenty-first mile the river has worn itself a passage through the soil to the rock, the numerous obstructions giving rise to a series of rapids, falls and cascades, which render navigation impossible. I nevertheless continued the exploration over its whole length ; the men on their part taking the baggage over a portage by which much trouble and difficulty were avoided. These obstacles disappear on the 24th mile, whence the river continues tranquil as far as the 25th mile, where a contraction of the banks gives the water a current of extraordinary swiftness. A small river coming from a north easterly direction, discharges itself at the foot of this last rapid. A lumbering camp was established here a few years ago, and some of the old huts still remain as they were when occupied, furnished with all the materials required in lumbering operations.

The little river Maclure, coming from the south west, falls into the Escoumains on the 25th mile. The lake of the same name which I scaled as well as the river is not large and has furnished its share of timber : there are still a few spruce and pine trees there. The mountains are more distant on the south-west, but on the north-east they follow closely the course of the river and maintain a height of seven to eight hundred feet above the level of the water.

At the 28th mile, they suddenly change their direction, those on the south-west disappearing to the west, whilst those on the north-east form a right angle as the river does, their height diminishing by degrees as they follow its course.

The small river Chatignie takes its rise among the hills to the west, in a series of lakes which aid in rendering it navigable. All the timber of any value on these lands has been cut by Messrs. Tétu's lumbermen. The river after flowing tranquilly for several miles, becomes broken by rapids which have to be climbed, so to speak, as far as lake Gorgotton on the 43rd mile. Two water courses, already examined, make their appearance, the first called river à Jos. Boucher on the 37th mile and the other, on the 38th mile, named river à la Savanne. There is little or no timber in this section remaining to be cut, except some pine and spruce above lake Gorgotton. A great part of the forest was long ago destroyed by fire, and the new growth will never be of any value ; there are, however, a few clumps of fine-looking timber, but the quantity is insignificant. The rising grounds present very much the same appearance. Black spruce and balsam are the principal woods. Immense rocks cover the land, rising in some places to a height of

four or five hundred feet. A branch of the Portneuf passes to the west of the river Escoumains, heading it off and limiting its length to sixty-six miles, taking in all the windings of the lakes and the river. Upon the ridge I planted a post marked 66th mile with the date and my signature.

I scaled the principal lakes through which the river flows and some of its most important branches, exploring them from time to time as opportunities presented themselves.

I then returned down the river as far as lake des Cœurs, and from there struck off in a south-easterly direction and ascended a stream and some lakes leading towards the hills, in hopes to fall in with the waters of the river Sault-au-Mouton, but the first watercourse encountered on the slope opposite the Escoumains to the eastward was a branch of the river aux Ours, a tributary of the Portneuf. Then taking a new course to the south-east we soon found the upper waters of the river Sault-au-Mouton which I chained from its source downwards to its mouth where it joins the St. Lawrence.

The whole length of the Sault-au-Mouton is fifty-four miles and a quarter. Its principal branches are the rivers aux Castors, à Roussel, the rivulet à Martel and the small streams de l'Est and de l'Ouest. The lumberers who began work last fall on the river Saut-au-Mouton took out logs from as far as the borders of the lake de la Petite Montagne, and the remainder of the forest above the lake has been explored with a view to cutting the timber as far as the source of the river if possible. The improvements made in this river allow of timber being floated down nearly its whole length with tolerable facility. At the discharge of the lake de la Petite Montagne, a dam eighteen feet high by at least a hundred feet in length backs up the water for six or seven miles, and is of great assistance in driving logs, by creating a very strong current when the sluices are opened.

The varieties of wood which predominate are spruce, white birch, balsam, scrub pine, tamarac and pine; the land is generally undulating and rocky. The mountains on the upper part of the river are not very high, but below the grand rapid on the twenty-fourth mile their height above the water is about doubled, owing to the fact that the stream makes a sudden descent of about three hundred feet while their summits maintain their previous level. There are several remarkable water powers at different places on this river: a glance at the plan accompanying this report will show their position and enable you to estimate their height.

There is very little land fit for cultivation in the valley of the Sault-Mouton; a few narrow strips at two or three places below the grand id and at the mouth of the river contain all that is susceptible of clearing and improvement. The bay of Mille Vaches near the discharge of the river offers a good location for settlement; a chapel has been erected at the St. Lawrence and there has been a priest residing there for several years. The farms are small but of excellent quality, immense natural meadows extend round the bay, and are of great advantage to the farmers who occupy themselves in raising cattle.

The post of Sault-au-Mouton, situated at the entrance of the river, forms a pretty little village neatly and well built. A cascade of sixty feet height falling into the St. Lawrence is the last of a great number in this river, which well deserves its name. Regarded from the St. Lawrence, this imposing water-fall imparts a certain grandeur to the appearance of the scene; the picturesque mountains of the vicinity forming an admirable background and framing to a very charming picture.

Having completed the required operations on the river Sault-au-Mouton, I immediately proceeded to the mouth of the river Portneuf and began the scaling of that river, taking for my point of departure the chapel at the post of Portneuf on the south west bank. There is not much done the way of farming at Portneuf, the number of residents being very small; there is however sufficient good land to allow of the formation of a small parish, with all the necessary elements of success, as soon as a road is opened to connect the posts lower down the river with that coming from the Bay of Mille Vaches and Tadousac. The rise and fall of the tide are perceptible nearly three miles up this river, where it is from fifteen to twenty chains wide and three or four feet deep at low water. The banks of the river are steep and reach a hundred feet in height. The land is composed of sandy yellow and grey earth, resting on a subsoil of clay. The first rapid considerably diminishes the breadth of the river, which is nowhere for fifty miles further more than two or three chains wide.

On the seventh mile the river has worn itself a deep narrow channel in the rock with perpendicular sides through which the water dashes with extreme swiftness. Before reaching still water, a fall of thirty feet in height presents itself, over which the water is precipitated in three equidistant streams into the channel above mentioned. The portage is on the west side of the river and is about a mile in length. Above this fall the river maintains a width of two, three or four chains, up to the second fall.

on the twentieth mile. The burnt lands on the river begin on the south-east bank of the Black river (rivière Noire), on the sixteenth mile, to the east. At the 18th mile to the west, the river Portneuf receives the discharge of the river des Cèdres; the burnt lands do not extend more than a mile along this last mentioned river, and from its mouth the timber-clothed heights which border it are seen stretching away to the Sault-au-Mouton. On the east the brulé extends about half way to the Sault-au-Cochon.

The forest hereabouts having been considerably thinned out by the cutting of a large quantity of pine, the stumps and débris supplied fuel for the flames which have completely swept the soil, leaving only the charred trunks, which bear sufficient testimony to the extraordinary richness of the primitive forest. Above the second fall, a contraction of half a chain in width for the length of a few chains has given this part of the river the name of "Cran Serré."

A third fall of some twenty feet necessitates a portage of a few arpents to the east of the river. The burnt lands are dotted here and there with small patches of growing timber, in which some large pine and spruce trees are to be found, while the rest are chiefly balsam, white birch and black spruce. The land on the flats is composed of sand and pebbles. The hills on both sides display to view the rocks of which they are formed and bear no timber of any value.

The burnt lands come to an end about the thirtieth mile; the valley here is narrow and hemmed in by high mountains. A ravine on the east side gives passage to the river à la Loure on the thirty-eighth mile, and another on the west does the same at the forty-third mile for the river "aux Ours", the source of which I explored at the head of the Sault-au-Mouton when operating on that river. The mountains run parallel with the river and are from five to twelve hundred feet in height. Their varied forms and jagged peaks, with the deep ravines which give passage to the tributaries above mentioned, combine to render the scenery of this locality the grandest and most picturesque of the whole region. The table lands covered with scrub pine, which border on the river and extend to the base of the mountains, are composed of sand, yellow earth and small rounded pebbles. Their height varies from thirty to a hundred feet, and their width, according to the direction of the mountains, from twenty to forty chains. They cease altogether at the fork of the river on the fifty-sixth mile.

The appearance and character of the river Portneuf proper here undergo a change; for the space of five long miles, it is one series of cascades and

rapids flowing between two walls, one or two chains apart and as high as those of the Saguenay. The depths of this ravine have never in winter been lighted by the sun's rays.

At the sixtieth mile post the river, for a space of five or six chains, was perfectly impassable, obliging us to make a detour of fully two miles.

On the sixty-second mile the river resumes, as it were, the appearance it presents near its mouth. Its width varies from two to eight chains, while the current is hardly perceptible. Its banks, which rise gradually to a height of five or six hundred feet, were ravaged by fire many years ago: a growth of small poplars, white birch, scrub pine and willows cover both the uplands and the meadows, except in some spots that are quite bare of vegetation.

The snow which covered the hills and mountains to a depth of eight to ten feet at the time of making this exploration in February, doubtless, hid from view the shrubs and underwood which would naturally grow there, shading the little valleys and level banks of the river during the summer season. The first serious obstacle to the navigation of this part of the river presents itself at the eighty-sixth mile in the shape of a cascade which rises by degrees to a height of forty feet over which fall the waters of lake Caché, which is situated immediately above. Access to it is had by a small portage on the west side. A series of lakes then succeeds, extending without interruption as far as the ninety-ninth mile and the brûlés disappear on the hundred and third mile, measured on the upper north-east branch which I took for the principal one on account of its width. The north-west branch, coming through a narrow inaccessible ravine to join the other, gives no idea of the different appearance it presents a mile further up and of the large interior lakes by which it is fed.

On the hundred and fourth mile part of the timber on the north-east bank has been destroyed by fire, but is in general at this height of an inferior quality, being composed of black spruce, white birch and balsam. The eastern bank of the lake à l'Isle Verte has escaped the fire as well as the north-east part of its feeder, which I explored as far as the hundred and eleventh mile, where I ended my operations on this part of the river.

I then descended the Portneuf to the chief fork on the fifty-sixth mile; from there I scaled this branch as far as the heights, keeping always towards the east in order to reach as soon as possible the river Sault-au-Cochon, to procure some provisions which I had had transported half-way for the exploration of the last mentioned river.

In the whole course of this exploration I met with no change in the nature of the soil. Pine, spruce and scrub pine were met with along the first seven miles, but, after passing the Grande Chôte, black spruce and white birch cover the greater part of the land watered by this branch, which receives several small tributaries from the western side and the outlets of a number of lakes.

After reaching the height of land between the Portneuf and the Sault-au-Cochon, I encountered, on descending the opposite slope, the waters of the little river au Bouleau, and scaled it and the lakes on its course down to its discharge into the Sault-au-Cochon on the sixty-fifth mile according to the measurement of the latter from its source downwards. The little river bears very appropriately the name which it has borrowed from the immense forest of white birch covering the mountains among which it and its tributaries flow, and which bears so close a resemblance to the fine sugaries of the Eastern Townships as to be taken for immense maple groves.

Having renewed my stock of provisions, I immediately ascended the river Sault-au-Cochon to its source in order to chain it coming downwards. On reaching the heights, I met with several families of Indians from whom I received full information respecting the principal branch of the Portneuf, and, finding that I was in the vicinity of this river, I took upon myself to go and make a hasty exploration thereof and of its long lakes in order to make as exact a plan as possible, to serve in the compilation of the general plan. Beginning operations at the north end of the lake forming the head of the river Sault-au-Cochon, I scaled this lake and a succession of small ones, following their direction down as far as lake Kakuskanus or lake des Pêcheries, of which I made a complete scaling, and exploring only the west part which forms a lake by itself, called for a good reason lake des Baies. On this upper part of the river, the country is all one rocky and mountainous tract covered with spruce, white birch and balsam of middling length and size.

The lake Kakuskanus is a magnificent sheet of water of a very irregular and capricious form, surrounded by hills and mountains whose outlines are as varied as their elevations. The scenery is at once new and pleasing, rivalling that of the smaller Canadian or American lakes as much with regard to general effect as to the details visible from the many different points of view.

Leaving this charming prospect behind me with regret, I continued my progress down the river, scaling it and the numerous small lakes through which it passes, to the Grand Portage on the forty-fourth mile. A large part of this tract was traversed by fire some years ago; the new growth of poplar, scrub pine, white birch, willows and alder which clothes the plains and surrounding hills gives it a peculiar appearance, agreeable to contemplate after passing through a stretch of the primitive forest where the density of the foliage and the height of the trees prevent the windings of the river and the outlines of the neighboring hills from being seen.

Not wishing to risk the descent of the river by the Crans Serrés and the Grande Rapide, I scaled the Indian portage and the lakes by which it passes, to its foot on the fifty-sixth mile. This path, which the Indians have traversed for centuries, skirts the sides of the mountains, arriving imperceptibly at the summit, and from there descends the other side by similar ingenious windings without causing fatigue or lengthening the road.

The hills are clothed with black spruce, white birch, poplar and balsam; in the ravines the timber is larger, especially the white spruce, but the quantity is small compared with that of other kinds.

Having made this portage without much difficulty, I continued the scaling of the river which winds and turns in a very capricious manner, but is not troublesome to navigate, being from two to ten chains wide, and free from rapids or perceptible current as far as the sixty-second mile. Here, a fall eighteen feet in height and a rapid a mile and a half in length obliges the *voyageur* to forsake the river for the slightly undulating portage on the western bank, after which the river resumes its previous character. The timber below the Grand Portage is of superior quality, but the prevailing varieties are white birch, scrub pine, spruce and balsam. The mountains are from six to seven hundred feet in height and the valley between them including the river is from a quarter to half a mile wide.

The ground is sandy on the banks of the river and the table lands, (plateaus) but rocky on the heights. At the foot of this rapid is the northeast fork, which is nearly as large as the main river, and flows in a northeasterly direction to join the sources of the river Laval.

From the sixty-third to the hundred and second mile the river is not interrupted by any rapid, but flows peaceably between the two parallel chains of mountains rising above it, crossing the narrow valley at intervals to bathe the feet of those on one side and immediately returning to do the

same for those on the other. The river des Bouleaux discharges itself from the west side on the 65th mile. Several other small rivers do the same on one side or the other, and the mountain gorges which give passage to these tributaries are generally better wooded than the valley of the river proper; spruce, pine, white birch, scrub pine, cypress, balsam and poplar are found of a good size and excellent quality; the best of the pine, however, has been cut.

The firm of Price Brothers & Co. sent lumberers in here last fall to work from the river or lake à Cassette on the eighty-eighth mile down towards the falls on the hundred and first mile. Notwithstanding the extraordinary quantity of snow which fell during the course of last winter and that the men employed at the beginning were few, the number of logs made was very considerable. I scaled the lake à Cassette, and I think that the best part of the pine and spruce are to be found in its neighborhood, although these lands were worked nearly twenty years ago, but trees that were small then have had time to become fit for cutting. On leaving the hundred and first mile the mountains disappear altogether, the river has worn a channel eighty to a hundred feet deep in the plain (*plateau*) which extends from the base of the mountains on the north to the St. Lawrence, running to the east until lost to sight near the river Betsiamits, and to the west as far as the Bay of Mille Vaches.

This plateau is nearly a perfect level and is composed of sandy soil mixed with gray and yellow earth, resting on a subsoil of clay and marl. The varieties of wood which predominate are scrub pine, black and gray spruce, tamarac, balsam, white birch, poplar, cottonwood, pine, *bois bock* and alder. A series of magnificent water powers extends all the way down the river. The soil is of the best quality and the timber of length and size common only in the best lands. This tract is admirably suited for farming, and should very soon become a fine settlement if the lumbering operations now being carried on along the north shore of the St. Lawrence attract to their vicinity any number of those sturdy settlers such as are scattered over the Upper Saguenay country.

On the hundred and eleventh mile is the large boom and dam for enclosing saw logs just above the last fall, which at a height of forty feet overlooks the little village of Forestville with its chapel and mills.

A great drawback to the different posts on this part of the north shore, especially in winter, is the want of a good road on land. It is very dangerous and often impossible to travel on the beach, as the ice on which the

road is marked out is frequently detached and carried away in stormy weather, and the traveller is obliged to return, often after a long journey, in the course of which both himself and his team have encountered much hardship and fatigue.

I completed my operations on the river Sault au-Cochon at its discharge into the St. Lawrence, and on a small islet there I planted a post marked 111 $\frac{1}{2}$, with the date and my name according to my instructions. Having been detained some days by contrary winds and ice, we did not immediately re-ascend the St. Lawrence to the Grand Bergeronne. I profited by the delay to explore the neighborhood, and found that it was quite possible to locate a road through it.

We then continued our journey, partly by water and partly by land, up to the Grande Bergeronne. There I resumed the operations begun in January last, and scaled this river as correctly as possible, following along its banks on one side or the other according to circumstances. This river seldom or never freezes over, and being much encumbered by alders, wind-falls, and other obstacles, I was obliged to give up chaining above the falls on the ninth mile. The melting of the snow, the great difficulty attending the work, and the slight importance of this stream, joined to the fatigues of the long tramps made during the winter and the diminution of our stock of provisions, forced me to refrain from exploring the river beyond the above mentioned point.

At the beginning of the first mile, i. e., at the Government bridge on the Tadousac road, this river divides into two branches; the north-west one, or river à Bas de Soie, is twelve miles in length; and the north-east branch, the one I scaled, bearing the name of river à Beaulieu, is considered the main branch of the Grande Bergeronne.

The country watered by these rivers is nearly all good farming land; a considerable part of it is already well cultivated; the settlers make a very comfortable living, and the missionary who visits them receives most liberal contributions. As far as the ninth mile on the river Beaulieu the soil is of the best quality. The lake à Beaulieu within that distance is surrounded by natural meadows which are of great advantage to the settlers of that locality. A large part of the timber has been cut and lumberers are again at work on the upper part of the river à Bas de Soie. I explored a portion of this country and found that it contained a magnificent tract of good land, well suited for settlement and advantageously situated to promote the Grande Bergeronne mission and to make it before long one of the

best parishes on this part of the North Shore. A flour-mill is in operation near the bridge above mentioned, and the chapel is built on the hill to the east of the river. The tide rises as far as the mill, permitting small vessels to reach the bridge.

(*P.-H. Dumais*, 23rd August, 1873.)

RIVERS BETSIAMITS, LOUP-MARIN AND OUTARDES.

We left Betsiamits on the 11th February and ascended the river as far as the falls, distant from the St. Lawrence about forty miles. The Betsiamits is a very considerable river, both as regards its great volume and the depth of its waters. A large number of lakes and streams, which may be classed as large rivers, empty themselves into it, but along the whole course of the main river the country is very hilly; mountains succeed one another without interruption, being mostly of some height, many measuring over eighteen hundred feet. This long chain of mountains has, of course, a great influence on the flow of the river, which is interrupted by numerous falls often of great height, some exceeding a hundred feet. As a general rule the soil is of an inferior quality; along the river it is almost universally composed of rocky yellow mould, presenting a very poor appearance; in some few localities, however, I found a little clayey land, but soil of first quality is even still more scarce.

Considered as a forest for the supply of marketable timber, the region drained by the Betsiamits and its numerous tributary streams is of very little value; it appears to have been frequently devastated by terrible fires, which have destroyed everything in their way, though in some places which the fire has spared, and where pine, spruce, birch and ash are found of an excellent growth, there is no doubt that the utilizing of these forest treasures would prove extremely profitable.

The climate of the region we explored is very severe; the winter is very long, cold and subject to snow storms, as a proof of which facts, I will simply state that, on the 10th of June, there was still a great depth of snow in shady places, the trees were bare of leaves even in the most open spaces, and the cold so intense in winter that we could not sometimes leave our tents. On one of the numerous lakes on the river Betsiamits, called by the

Indians lake Pipmaukan, the ice disappeared as late as the 20th of May, which delayed us a little in our work of exploration.

The above general statement of facts is the result of information acquired during the exploration as will be shown below.

At my starting point at the falls I planted a post. Thence I followed the river Betsiamits, a distance of ninety miles, at which distance I planted a post indicating the termination of my exploration on this part of the river.

From the falls to the sixth mile, the river flows almost continuously through steep mountains. Six streams and rivers empty themselves into it, two from the east and four from the west. These waters are similarly enclosed by mountains. Within this space along the Betsiamits and all its tributaries, valuable wood is found, viz pine, spruce, bass wood, birch and ash; the forest continues to be equally good as far as the eighth mile, that is to say, to about fifty miles from the St. Lawrence. This small forest is surrounded by burnt spaces as far as the eye can reach. The soil is a yellow loam, and stony even where the mountains diminish in height.

From the eighth to the eleventh mile the mountains continue of great height and very near the river on the west bank, but more distant on the east.

We here found extensive plateaus, but the valuable timber had all disappeared; nothing is to be seen but immense burnt spaces, the new vegetation on which is exclusively composed of small white birch and poplars, with some spruce.

The river follows a north-westerly course to about the middle of the 18th mile, and is closely confined between the mountains which border it on both sides. Between the fourteenth and eighteenth miles is a pretty long portage of four miles, to avoid the numerous falls and rapids at this point. Through all this region the mountains are very close to the river, and the country is one immense burnt clearing, covered with new growth, such as white birch, poplar and some small spruce. In the middle of the eighteenth mile a small stream enters the Betsiamits; from this point also the river takes a new direction of about N. 30° W., which course it keeps to beyond the 27th mile, diverging more and more to the north. Through this distance of nine miles, the mountains are lower and more distant from the river. The tributary streams and rivers of the Betsiamits are six: three from the west and three from the north-east. There are also some falls which obliged us to make three small portages. The land about here is very poor

and quite unfit for cultivation, even if the climate would allow it; at this time it is simply a vast brûlé, with a fresh growth of white birch, poplar and spruce.

On the 29th mile is a small lake, into which on the east side flows a large stream. To the south of this lake, is a second one a mile and a half long and a mile wide from east to west; it falls into the former lake by a small channel; it is bounded on the west by high continuous mountains. The land between the lake and the river Betsiamits is not mountainous but very rocky. At the 29th mile stone we leave the river, and begin the ten mile portage which is caused principally by a series of small lakes, which flow into the Betsiamits. The starting point from this portage is on the left bank of the latter. From thence we proceed towards the south-west for five miles, and then to the north-west for five more miles, where the portage reaches the Betsiamits. Along the portage the land is very rocky, but not mountainous. Some sandy soil is found near the thirty-second, thirty-third and thirty-seventh miles, and on the thirty-ninth a small marsh. Through the whole length of the portage, the forests have been devastated by enormous fires which have destroyed all the serviceable wood; the new growth consisting of poplar, white birch, with some black spruce and cypress, from the 32nd to the 35th mile. From the beginning of the portage the land ascends gradually to the thirty-first mile, at that point the surface is level, after which it becomes very hilly presenting declivities of 30° or 50°. The land along the thirtieth mile is perfectly level. The portage follows the banks of seven lakes of different sizes, the largest not measuring more than a mile; many other small lakes situated on either side of the exploratory line flow into the lakes bordering the portage.

From my exploratory line along the portage, I took several bearings northwardly so as to verify the course of the Betsiamits, which I had been obliged to deviate from at the 29th mile, as already stated.

The river, from the beginning to the end of the ten mile portage, follows a most irregular course. For two miles and a half, it tends towards the north-west. The whole of that distance is strewed with steep rapids which make navigation impossible. One fall is 25 feet high; from there the Betsiamits makes a curve and diverges to the west till it meets the portage. The distance between these two points is about six miles in a direct line, but the numerous windings of the river at this place almost double the distance. At about a mile before reaching the portage, the Betsiamits is interrupted by a very narrow fall of about a hundred feet.

At the fortieth mile we return to the river which we follow as far as the forty-first mile ; the river at this point is ten chains wide. Along the route we have just followed, the mountains are very near to the river, and the country appears very barren. We found here a very large lake and of great depth, it measures thirteen miles at its greatest length, besides numerous wide bays which we were obliged to go round and explore. The lake is called Natuakimiu by the Indians. We made a sketch of all its contours both on the east and on the west, so as to arrive at an exact idea of its configuration and of the nature of the timber and soil.

The chief exploratory line, that on which the mile posts are planted, follows the east bank of the lake ; at the forty-third mile, it strikes the narrow mouth of a very deep and wide bay extending northwards ; the line crosses this mouth.

Quitting the main line, we follow the sinuosities of the bay and return to the lake which we continue to follow as far as the 48th mile. At this point our course is interrupted by a second bay, not so long as the preceding one, but much wider particularly at the mouth ; the exploratory line follows its whole countour a distance of three miles. We arrive here at the 51st mile and we follow the lake to about the middle of the 55th mile, at the point where the Betsiamits flows into Lake Natuakimiu. From thence we continue the exploration along the west bank, following all the capes and bays ; the deepest and widest bay is opposite the forty-seventh mile post planted on the east bank of the lake.

With the exception of the Betsiamits, very few large streams enter lake Nataukimiu ; the most voluminous is on the west bank. There are but two small islands in this lake, both situate on the west bank, the first opposite the middle of the fifty-second mile, and the other about three miles and a half further north, both very close to the banks. The borders of lake Natuakimiu are pretty, surrounded by mountains of middling height ; the soil is bad, sandy and rocky. The aspect of the country round the lake is extremely dreary ; it is an immense brûlé (burnt clearing), the new growth on which is miserably poor ; the prevailing products are cypress, black spruce, with some poplars and very small white birch. There is no timber for any useful purpose whatever.

From the point where it empties itself into lake Natuakimiu, a distance of nineteen miles, the Betsiamits is interrupted by some rapids, of which, one very deep is opposite the 63th mile post ; it is about an arpent in length, and, to avoid it, a short portage must be made by the south bank of the river.

After this we resume the course of the river which we follow to the middle of the 69th mile ; here the rapids begin again and continue for about a mile and a half. All this distance has to be portaged, and the river course is resumed only at the 70th mile. This portage is on the north bank of the river.

The bed of the Betsiamits is occupied by several small islands, some of which are comparatively of some extent.

This region is very hilly, high mountains surrounding the Betsiamits on all sides, as well as its tributaries. In some parts, the mountains are very near the river. The land is rocky and gravelly almost everywhere, when it is not mountainous. It is perfectly bare of all useful timber, fire having devastated the whole country. At this point, nothing is to be found but small white birch, poplars and black spruce, with a few cypress ; on some parts of the Betsiamits and its streams, this new growth is very stunted, and in every respect this locality is so wretchedly bare as to be painful to contemplate.

Before reaching the 74th mile, the river suddenly widens and continues to do so as far as the 78th mile. There we discovered an immense sheet of water, over which the astonished spectator has an uninterrupted view as far as the eye can reach, penetrating into vast cavities which appear of immeasurable depth. Its aspect is that of an inland sea placed in these regions to afford a well earned repose to the mind harassed by the scenes of desolation it has witnessed in the country just traversed. This is the lake Pipmaukan so called by the neighbouring Indians

The lake Pipmaukan is of a very irregular form : the north shore in particular presenting bays equal in depth to the length of the lake itself ; its general shape, however, is that of an arc of a circle very strongly developed. The south shore, on the contrary, exhibits a few indentations only, which cause no deviation from its perfectly circular appearance. In its greatest length from the middle of the seventy fourth mile to the bottom of the bay most distant from its discharge, the lake measure thirty miles ; but its breadth is much less, not exceeding three miles and a half at the broadest part, not taking into account the bays or promontories which extend far into the lake.

It was only on the 27th of May that we could commence the survey of lake Pipmaukan, as up to this date it was so covered with floating ice that navigation was quite impossible, so that we had to wait a fortnight

for this immense field of ice to clear away. During our forced delay, an Indian assisted by other men completed a canoe which we found necessary for our descent. The remainder of the party was employed in exploring the east side of lake Pipmaukan and a small portion of the Betsiamits from the point where it enters the lake as far as the 90th mile post, going north-east.

This post marks the extreme limit of my operations in this locality ; on it I engraved the following inscription : 30. M. E. Casgrain. 27th May 1873. The great height of the waters obliged me to terminate the exploration here. The river rose 24 feet vertically and completely covered our camping ground which we were obliged to quit.

According to the Indian account, the 90th mile post does not indicate more than half of the total length of the Betsiamits, the distance to its source being as great as that we had traversed from the St. Lawrence ; this would make the river two hundred and sixty miles long. According to the same account, the river takes its source from a number of lakes, some of which are of great extent. From this station we proceeded the same day to the great inlet of the lake, on the eighty-ninth mile, which was appointed as a *rendezvous* for all the men of the expedition. From thence we traversed the entry to the grand inlet to continue the scaling of lake Pipmaukan, following the north shore.

At six miles and three-quarters from our starting point, on the north shore of the lake, near the grand inlet, we found a wide bay bearing northward, going round all its banks ; its total length is about fifteen miles, the width of its mouth about two, and at the head its breadth is under three-quarters of a mile. The total length of this bay, scaling all its shores and comprising the depth of some small indentations, is over thirty miles. In the above bay we found four scattered islands, the largest measuring twenty chains by twenty ; it is situate near the western shore, from which it is distant about twelve chains. There is but one single island near the eastern bank, ten chains in length and breadth ; on the same shore, three miles short of the head of the bay, is the beginning of a portage bearing north-east ; on the western shore, about half the depth of the bay, is an enormous rocky hill projecting into the bay, and being at least eight hundred feet high and about half a mile long. Returning to the mouth of the bay on the western shore we direct our course towards the north-west, to continue the scaling of the lake. Our navigation was here made through a large number of islands and bays of curved shapes each more fantastical

than the other, sometimes we crossed great sheets of water for miles, resembling rather lakes than bays, and, after having followed these shores, we find ourselves almost at the point we started from.

At length after a navigation of several days through an almost inextricable labyrinth of islands and bays, after having gone in almost every imaginable direction, we find ourselves opposite a bay more regular in shape than the preceding ones, but of much greater extent. This bay is really but the continuation of lake Pipmaukan, at its south-western extremity; its direction is south-east, its width at the mouth is over two miles, but three miles further it narrows suddenly to half a mile; its total length in a direct line may be taken at seven miles; on its eastern shore, about a mile and a half from the head, is a cape of rock, four hundred feet high, and about fifty chains long. We coasted along all the shores of this bay; we then directed our course northwards, and sailed the south shore of the lake to its discharge into the river Betsiamits on the seventy-fourth mile.

Lake Pipmaukan is studded with a large number of islands mostly on the west side; they are generally not very extensive. Over sixty water courses empty themselves into the lake or into its bays. All the measurements of lake Pipmaukan, of its bays and islands, were made with a micrometer with great success. The total distance travelled over, around the lake, without reckoning the line of mile posts on the eastern shore, was one hundred and sixty miles, which added to the length of the exploration of the western shore of lake Natuakimiu, which is thirty-four miles, and to that of several other little lakes, amounts to two hundred and forty-four miles. Through the whole course of my exploration, at the most remarkable points, I have taken numerous astronomical observations, and determined the variation of the needle and the latitude of the place.

The lake Pipmaukan is very deep and navigable all over; its banks generally bounded by mountains of middling height. Its soil is poor, rocky or sandy. There is no timber for commercial purposes, and on all sides it is surrounded by immense brulés covered with white birch, poplar and spruce, with some cypress of poor appearance. All the lakes and rivers we have visited are abundantly supplied with fish of all kinds. The most common are the pike, touladi, white fish, trout and a kind of eel very large and differing from the queue d'anguille by its taste which is more like that of codfish. The salmon does not ascend the river Betsiamits beyond the fall, forty miles above the St. La vrence, which was our starting point. On the other hand game is wanting altogether. With the exception of a few beaver, the breeding animals have quite abandoned this region, to plunge

more deeply into the colder countries of the north ; the caribou, for instance, is of the past. The Indian ranging the forests no longer expects to meet the larger animals nearer than two hundred and sixty or three hundred miles from the St. Lawrence.

Excepting the first part of the exploration, which is well stocked with serviceable timber, all this immense country is a desert in every sense, rigorous climate, barren land and mountains, without timber.

The starting point of the second exploration is on the discharge of the lake à l'Eau Morte, at the point where it joins the lake des Iles. This lake derives its name from the stillness of its waters ; it generally empties itself into the river aux Outardes, but in the spring and autumn, when the waters are very high, the eastern outlet is not sufficient, and a part of its waters flow westward and fall into the Papinachois lake. The outlet of lake à l'Eau Morte is very narrow, it being a small stream not more than five feet wide, and the bed being very rocky throughout its whole length. The lake des Iles enters the lake du Brûlé. Its discharge flows at first on a general north-westerly course ; it then makes a long bend towards the north-east, and finally towards the south-east, to pass into the lake du Brûlé. The ground we have just gone over contains nothing worthy of notice ; it is nothing but a long series of hills and mountains denuded of all valuable timber.

The lake du Brûlé, called Kanittagamak by the Indians, is of moderate extent, measuring about a mile and three quarters in length, by half a mile in width ; its general direction is south westerly. The discharge of lake du Brûlé is, properly speaking, a long series of rapids separated by small lake ; it has a very sluggish current.

The whole of the tract we have just explored is a succession of hills and mountains ; it is very desolate in every way, being completely devoid of useful timber, the whole forest having been consumed by fire. The new vegetation consists of white birch about three inches in diameter and of miserable black spruce.

Leaving the river of lake du Brûlé at the point where it joins the Loup-Marin, we continued our survey, following the latter till it meets the river aux Outardes. The Loup-Marin is a more considerable river than the lake du Brûlé, both as regards its breadth and its depth ; it has a mean breadth of forty feet. Before meeting the river last surveyed, the river du Loup-Marin issues from the lake of the same name, and for which it serves as a discharge, running north-west, then after receiving the waters of its tribu-

tary, it proceeds towards the north-east, for a distance of eighteen chains, then it inclines towards the south and south-east till it meets the river aux Outardes. The regularity and tranquillity of its course are but little interrupted, only one small rapid occurring near the mouth of the river of lake du Brulé, and a fall of thirty feet, about two miles and a quarter further down.

The land watered by the Loup-Marin is the natural continuation of that we have just left; the absence of good timber and the poor vegetation being the same. However, on arriving at its mouth, we found some level lands covered with some well grown but small poplars.

On the north point of the angle formed by the junction of the river du Loup-Marin, with that of the Outardes, we planted a post marked "1. Juillet 1873. E. Casgrain, A. P." This post marks the length of the survey from lake des Iles to the mouth of the river Loup-Marin, which is twenty-eight miles long. From that post, we descended the river aux Outardes a distance of twenty-five miles, taking as usual in our progress all the necessary observations to distinguish the locality.

The river aux Outardes takes a general south-west course, though this direction is far from being regular. At our point of departure on the river aux Outardes, its breadth is eleven chains; a mile further, it widens to eighteen chains; at the end of another mile it is fifteen chains wide and there receive the waters of a stream coming from the east. Nine streams and two rivers join their waters to those of the river aux Outardes, over the space we have travelled. Some flow from the west, but the greater number from the east. Further, we observed seven islands of different dimensions. The largest about a mile long by six chains wide situate near the seventh mile. The next is on the sixteenth mile and is only ten chains by five; on the twentieth mile is a very small one, on the twenty-first mile, a fourth island two chains by four, on the twenty-second, a fifth island larger than the preceding one, on the twenty-third, a sixth, ten chains by eight, and a seventh of twenty chains by eight. Two falls occur on this part of the river aux Outardes, the first at the commencement of the twenty-third mile; it is about ten feet high; and the second, at the point where we closed our operations.

The soil on this part of the river aux Outardes is of very middling quality; wherever there are no mountains it is rocky and sandy; however,

a small tract of clayey mould is found near the middle of the twenty-third mile.

Marketable timber is as scarce as on the other rivers, and there is the same vegetation of white birch, spruce and poplar of small growth.

(*E. Casgrain*, 8th Sept., 1873.)

RIVERS OUTARDES, BETSIAMITS AND PERIBONKA

In obedience to instructions, dated the 27th July 1876, for the survey of the rivers aux Outardes, Betsiamits, Peribonka, &c., flowing from the north into the Lower St. Lawrence, I beg to report as follows:

I left Bersimis with my own immediate party on the 4th September, entered the Outardes, and arrived at the mouth of the river au Loup-Marin, at the point where I commenced operations, on the 11th.

This river is from 7 to 15 chains wide, with an average depth of about 8 feet. The bed of the river is a coarse sand, and the strong current causes numerous shoals to form, which are constantly changing their position. There are several falls and rapids, which of course involve portages. The bed of the river is elevated considerably above that of the Manicouagan, although distant from it but a very few miles, and the mountains are not as high, rocky and precipitous as they are on that river. The banks are sandy and not generally high; land fit for settlement may be found along the whole river, for a distance of two hundred miles, in tracts varying in area from 50 to 5,000 acres, and in the aggregate upwards of 70,000 acres might be made available.

The climate on the lower part of the river is not severe, and frost does not set in early. As a proof, we travelled in canoes until the 4th of November; although it is true that, on two occasions, we found the rivers barred by ice for an extent of about half a mile; but we were then in latitude $51^{\circ} 26'$, and at an elevation above the sea of 1,100 feet. As we ascend the river from the coast, the growth of timber is fir, spruce, bouleau, aspen and cypress. At the distance of 200 miles, the quantity of bouleau and aspen diminishes very much, and a few miles further they entirely disappear, and we find only small spruce, tamarac and cypress, and at the head of the river and height of land, only small stunted black spruce is found.

At 200 miles from the mouth of the river au-Loup-Marin, at a place named Tee-wa-te-lui (the confluence of rivers), where a large branch comes in from the west, we were stopped by the ice on the 4th November; we, therefore, abandoned the canoes and prepared for winter travel. We here made snow-shoes and sleighs, having to go back from the river two days, march to find bouleau suitable for the purpose. When all our preparations were completed we commenced our scaling on the ice, measurements being made with the chain (all previous work having been done with the Rochon micrometer), and, at the distance of 19 miles, we fell upon the large lake Pletipi (which we afterwards scaled). We now ascended the inlet, and at the distance of 42 miles, the river divided, the main branch coming from the west, which we left for the present, and followed the other branch leading northeasterly to the height of land, and, at the distance of about six miles, reached the head of this branch. From this point the height of land is distant northerly only four miles, and, in traversing this distance, we intersect the river Moosh-a-u-la-gan, which is here a considerable stream about 40 feet wide, skirting the height of land and leading into a lake 12 or 15 miles to the west. This river is the west branch of the river Manicouagan, and heads in close proximity to the west or main branch of the Outardes, and the head of the Peribonka.

The Otish mountains, which form the height of land, are here bare, rocky and desolate; we ascended them and found the height to be 1,300 feet above the pass, and 3,700 feet above the sea. We were disappointed in having a view from the top, as we were in the clouds. At their base to the north is a small lake, the head of one of the branches of Rupert's river and at about 30 miles is the Hudson Bay post Nitsequan, on Rupert's river. This post is supplied from Hudson Bay and is frequented by about thirty families of Nascapsee Indians. We now returned from the height of land to the forks and ascended the west branch to its source, and thence, in an almost southerly direction, crossed to another branch flowing into lake Pletipi. In making this crossing we intersected several small streams and lakes, tributaries of the river Peribonka, and arrived at lake Cawashagamits (or, Clear Water). This lake has two outlets, one flowing west into the Peribonka, and the other southerly into the great lake Pletipi; this last we scaled down to over 150 miles. We then went down to Teewatelui and ascended a tributary, coming from the south, called Owl river, which heads in a small lake; this lake, also, has two outlets, the other being the river Manaouanis flowing southwesterly to a lake of the same name, which is about 15 miles in length, and is the head of the river Betsiamits. About

six miles to the west of lake Manaouanis, lies lake Manouan, said to be much larger than lake Pletipi, and the head of the river Manouan.

The country is frequented solely by Indians, the Montagnais from the coast, and a few Nascapées, from Nitsequan ; in the hunting season they are occupied in trapping fur-bearing animals, *i. e.* beaver, otter fox (black, white, red, silver and cross), marten, mink and muskrat ; they rely for food upon fish, hares and partridges, but principally upon caribou, and when game is scarce, they are put to great straits and often starve. Four years ago no hares were to be found in the woods, and several families (comprising 42 souls) banded together for the pursuit of caribou, but failing to find them, all died of starvation.

On arriving at the head of lake Manoauanis, I found that I had completed the scaling of 600 miles, to which I was limited in my instructions, and although told therein to scale also the Bersimis down to lake Perimakan and the Peribonka, it being supposed that these three rivers would not exceed 600 miles, I hesitated to do so without previously having your sanction.

(*J. Bignell*, 18th August, 1877.)

RIVERS BLANCHE AND COLOMBIER

RIVER BLANCHE.—On the 2nd April, I began the scaling of the river Blanche. As on the river Laval, I planted a post at the starting point. The work did not proceed as rapidly as I could have wished, because the river was very much obstructed. It was so much obstructed with branches, that I was compelled to have it cleared along its whole length.

This river, also very irregular, flows over a less mountainous country than the river Laval ; no mountains are met with piled one upon the other ; the country is only rolling. The stream is bordered by rich forests of spruce and red, yellow and white pine of good quality, and the soil is a grey or yellow clay.

Although this river is very narrow, it must carry a pretty large volume of water, as it acts as the discharge of lakes with a depth of as much as 18 fathoms. At four or five miles from the coast, there are a number of small falls, which would be advantageous for milling purposes.

RIVER COLOMBIER. — I explored for the best portage from the river Colombier to the river Betsiamits. By chaining, I ascertained that the distance between the source of the Colombier and Pine island, of the river Betsiamits, is $2\frac{1}{2}$ miles. The tract between these two rivers, opposite the head of the Colombier, is very mountainous. Still, by following the valleys and ravines, an easy communication can be found between the two rivers.

On the 14th April, I resumed the scaling of the river Colombier, having, as upon the others, planted a marked post at the starting point. This river is not less capricious in its course than the other two; nevertheless, it flows through a generally level region, but the soil is poor in timber—grey spruce and bouleau being about the only kinds met with, except towards the head of the river, where there are some pine and tamarac. On the 8th mile of the river, there is a fall 20 feet high.

(*P.-E. Lavergne*, 16th July, 1873.)

RIVERS MANICOUAGAN, PENTECOST, TRINITY AND GODBOUT.

I left Betsiamits on the 10th September following and, entering the river aux Outardes, portaged across to the river Manicouagan above the falls. The weather being unfavorable, I was unable to take an observation there, and accordingly proceeded up the river to the forks, being the confluence of the river Toonustook or Elbow river from the east with the Manicouagan.

The country from the falls up to the forks is rough and hilly, and in some places mountainous; the soil, where elevated above the freshets, is dry sand, overlying a bed of clay, and the growth is fir, bouleau and spruce, with occasional pine. The banks of the river in many places for some distance up are bold and rocky, rising perpendicularly to a height varying from three hundred to five hundred feet, and, in other places, these hills lie back from the river fifteen or twenty chains, leaving a strip of rich alluvial soil between their base and the river.

Whilst at the forks, I ascertained that the Toonustook or east branch is comparatively short, heading up in the neighborhood of lake Ishimanicouagan; I therefore thought it advisable to follow up the west or main branch leading to the height of land, the position of which it is desirable to ascertain, as it is much further than generally represented.

As we ascend, the valley of the river becomes wider, the mountains set further back and give a greater breadth to the level space between their base and the river, varying from twenty chains to upwards of a mile; much of it is alluvium, but, where the banks are too high to be covered by the freshets, the soil is a light sand covered with a layer of vegetable mould. The growth is fir, spruce, bouleau and aspen, with now and then a pine.

At the distance of 119 miles from the lower forks or (Tootnustook) are the upper forks being the confluence of the river Mooshaulagan (from the west) with the Manicouagan.

About twenty miles from these forks, on both of these rivers, begins a lake, that on the west branch being named Mooshaulagan and that on the east Ishimanicouagan, both being of about the same extent, from 45 to 50 miles.

It was my intention to scale both of these lakes, going up one of them and crossing from its head to the head of the other, and thence down to the forks, but as the season was late I was apprehensive that the ice might form at the outlet and cause great inconvenience. I therefore scaled up to the outlet of Ishimanicouagan on the east branch and returned to the forks and thence scaled up to the head of Mooshaulagan, intending to cross from the head of the latter lake to the head of the former, but found on my arrival there that all the small lakes and rivers were frozen over. I therefore returned down lake Mooshaulagan and portaged from below the outlet across to Manicouagan, proceeded to the head of the lake and there abandoned the canoes; we there and then made sleighs and snow shoes, hoping to begin the ascent of the inlet on the ice in the course of a few days, but were disappointed; a heavy freshet was then subsiding which prevented the ice from holding, and the ice driving down the river prevented the ascent of canoes; this river, at the best, is seldom ascended in canoes, on account of the numerous rapids.

From the lower forks upwards, along the river, there are about seventy thousand acres of good land suitable for raising grain or root crops, and frost does not set in early. About the two great lakes mentioned the soil is sandy and the growth is fir, spruce, bouleau, aspen, cypress and tamarac, but, beyond the lakes, spruce of an inferior quality predominates, and where we turned back in latitude $52^{\circ} 12'$, the only growth is small black spruce and tamarac.

Finding our cache in good order at the lower end of the lake, we cut out a portage towards the Tootnustook over a hilly country and through

a mixed growth of fir, spruce, bouleau and aspen, and struck the head waters of that river in a small lake at the distance of eleven miles from lake Ishimanicouagan. We followed this river down for about seventy miles passing through a number of lakes varying in extent from one to nine miles; the country through which it flows is mountainous and sometimes rocky; the soil on the low lands near the river is good, and the same growth of timber prevails, viz: fir, spruce, bouleau and aspen. We then left the river, ascending a small stream coming in from the east, and at the distance of about nine miles struck the headwaters of the Pentecost in a growth of spruce and tamarac; the stream flows hence tranquilly for about nine miles passing through several small lakes, and then begins rapidly to descend, falling, in the distance of fifteen miles, as many hundred feet, being occasionally broken by falls and rapids.

The country along the Pentecost is rough and mountainous; good land is found along the river, and the growth of timber is better than along the Manicouagan; considerable spruce (some of it of a very fine quality) and tamarac are found along its entire length, a distance of eighty miles, and, on approaching the coast, a little pine may be found.

On reaching the mouth of the Pentecost, we proceeded up to the river Trinity which we scaled from the mouth up to the source, then crossed over to the river Godbout, which we also scaled from lake Pesetone, at the head, down to the mouth; the same description as already given will apply to both of these rivers, viz: mountainous country, good land near the river, the same unvarying growth of fir, spruce, bouleau and aspen, with occasionally cypress and tamarac, and some pine on nearing the coast, there being however a little more pine on the Trinity than on the other rivers, and on the Godbout near the coast may be found some cedar, which is not found elsewhere.

Along these four rivers may be found altogether about (150,000) one hundred and fifty thousand acres of good land, from which hay and root and grain crops may be raised.

In travelling up the coast, I was much surprised to find that so few people were settled, considering the great advantages there offered them, and can only account for it by supposing the place to be unknown. Although the soil is sandy, light and easily exhausted, it may be readily enriched from the sea, and the produce of the fisheries before their doors would

always be an easy and unfailing source of profit to them. I have no doubt that, if a colonization road were opened up there, in a short time a number of flourishing parishes would be erected.

(*John Bignell*, 12th September, 1873.)

RIVER MOISIC.

I scaled the river Moistic on the east side, starting from the point A on the plan to the brook near Spring-Portage, where I planted a duly inscribed post, and I levelled the river from the same starting point to point B, where I found the surface of the water five feet higher than its ordinary stage. The water was so high that I was unable of myself to ascertain where the influence of the tide ceased to be felt. I had to refer for information on the subject to the Indians accompanying me. According to their story, the tide drives back the current of the river when it is low and makes itself felt as far as point C.

The width of the river is from 10 to 20 chains. The banks are sandy and generally high. The timber consists of fir, white spruce, white birch and aspen. Along the first 12 miles, the wood has been all cut off, leaving nothing but firs and small white birch. The bush is so thick that notwithstanding the work of the wood-cutter, labor was performed very slowly; moreover, the rains were very frequent.

(*E. Casgrain*, 10th August, 1882.)

RIVERS STE. MARGUERITE, A LA TRUITE AND MANITOU.

RIVER STE. MARGUERITE. — The river Ste. Marguerite is navigable for schooners and barges up to the first rapid. A tributary falling in near the mouth of this river affords a good water-power, which will facilitate the manufacture of lumber. The banks of the river Ste. Marguerite and its tributaries are well covered with merchantable timber, such as white spruce of good quality and in large quantities, of thirty to forty inches diameter at the stump. This heavy growth of timber continues from the mouth of the river up to the Grand Portage, a distance of fifty-two miles, except a

space of nine miles by one and a half in depth, between the river au Canard and the river Ochogan, which has been ravaged by fire.

The soil throughout nearly the whole of these fifty-two miles consists of clay covered by a thick layer of sand. The mountains, in different places, are quite close to the river, and in others recede to a distance of twenty arpents.

The deposits of iron ore begin at the river au Fer and cease at the river Ochogan, a distance of eighteen miles.

Between the first rapid and the Grand Portage, there are twenty-five salmon-pools, which are indicated on the map.

Along the Grand Portage the timber consists of hard and soft woods mixed, of medium size. The soil is sandy and rocky.

Besides salmon, the river Ste. Marguerite contains grey trout, pike, shad, white-fish, carp, capelin, &c.

From the river au Gougeon to the river à Gamache, a distance of twenty-one miles, the mountains are generally steep and the timber of small and middling size.

Beds of magnetic sand are found at different places along the whole course of the river Ste. Marguerite.

From the river à Gamache to the river Kamalatshinekikatest, a distance of twenty-four miles, the mountains disappear, heaps of sand are seen in all directions and plateaus of twenty to thirty arpents in extent at different places, well timbered with hard and soft woods, including considerable quantities of merchantable white spruce of good growth. The sides of the mountains in the distance were swept by fire about fifteen years ago.

From the river de la Montagne Blanche to the forks, a distance of thirty-three miles, the greater part of the forest has been destroyed by fire. Some isolated spots bear trees of large size, of both hard and soft varieties; in others the growth appears to be that of fifteen or twenty years.

The last lake on the river Ste. Marguerite is surrounded by high mountains, containing iron ore.

At the forks, near the height of land, the climate is favorable to agriculture.

RIVER A LA TRUITE.—The timber on this river, from the mouth up to lake à la Truite, was in great part destroyed by fire some four or five years ago.

The land along the principal stream is well covered with merchantable timber, such as white spruce, and is suitable for cultivation on both sides for about a mile. Elsewhere the timber is of middling and small size.

Iron ore is to be found on the north-west and south-east sides of the lake à la Truite, as indicated on the map.

Salmon do not pass above the falls at the mouth of this river.

RIVER MANITOU.—The Manitou is a river on which timber may be manufactured to great advantage. With the exception of about two-thirds of the land north-east of lake Manitou, which has been ravaged by fire, there is a tract of fifty miles in length by four or five, more or less, in breadth, well timbered with white spruce, from thirty to forty inches in diameter at the stump, around the lakes and tributaries and along the Manitou itself.

This river flows through lands of a sandy nature, fit for cultivation, extending from fifteen to twenty arpents on each side, especially between the lakes Asec and Manitou. The land surrounding these lakes is mountainous and rocky, and unfit for cultivation.

The salmon-pools are indicated on the map. Trout of the finest quality, twenty-five to thirty inches in length, abound in lake Manitou and in the river between the two lakes.

The river is navigable at high tide for schooners and bateaux up to the first rapid, where there is a good mill-site, which should be of great advantage in lumbering operations.

CONCLUSION.—As the manufacture of iron seems likely to be in future of great importance to Canada, I beg to direct the attention of the Government to the foregoing remarks. On the rivers which I have surveyed, especially the river Ste. Marguerite, there are fine deposits of pure iron ore, and, as there is an abundant supply of wood in the neighborhood, the working of these deposits and the manufacture of iron ought to be a profitable undertaking, seeing that iron made with wood charcoal is of a much better quality and commands a higher price than that made with coal. The comparatively small quantity of fuel required in the new methods of manufacture and the fact that for the production of gas to be employed as fuel, turf

and other cheap materials can be used with equal advantage, are further considerations which should not fail to receive the attention of those interested in developing the resources of the country. Thanks to the advantages of the new methods of manufacture, these deposits of iron ore may become sources of national wealth, while, by the use of the ordinary methods, it would be hardly possible, at the present price of iron and the cost of manual labor, to compete with the products of inferior ores worked in the vicinity of coal mines.

(*Gédéon Gagnon*, 1887.)

RIVERS ST. JOHN, MINGAN, NATASHQUAN AND ESQUIMAUX.

I have completed the survey of certain parts of the rivers St John, Mingan, Natashquan and Esquimaux, and submit the following report:—

The river St. John flows through the Laurentides mountains and falls into the Gulf of St. Lawrence about seventy miles below the river Moisie. It is navigable by canoes for a distance of thirty miles, at the end of which navigation is interrupted by a high fall. The shores, for about three miles from its mouth, are clayey cliffs, covered by a layer of sand mixed with black earth, suitable for the growth of potatoes and oats. Mr. Sirois and a few other settlers have gathered a fair crop this year. The thickness of this layer of earth varies from ten to fifty feet. From this up to the fifteenth mile, the banks are of the same character, but the earth overlying the clay is not quite so good. The woods which I remarked were white spruce, balsam, white birch, alder and willow. The diameter of the trees varies from three to eight inches. In all the rest of the distance over which I explored the river, the banks are composed of granite hills from one hundred to nine hundred feet in height.

The climate is quite salubrious, but the summer is short. This summer the temperature was milder than usual. With the exception of the 29th, 30th and 31st of July, which were a little colder, the season was, so to speak, hotter than in our latitude. There was not so much fog as usual during the months of August and September. The summer was generally very dry. The 21st, 22nd and 23rd were remarkable for a strong easterly wind with rain. During the tempest, several fishing boats, which were out on the St. John banks, were driven on shore and wrecked, but without loss of

life. Others were carried, with more or less damage, as far as Magpie harbor. The take of codfish this year has been very fair. Mr. Sirois has got about a thousand quintals for his share, and the Robins four thousand.

With regard to agriculture, I remarked that the fishermen might, without losing any of the fishing season, cultivate vegetables such as potatoes, cabbage, &c., which succeed well. It would be an excellent thing for these people, who during the winter have scarcely any provisions but fish, for which they pay three dollars a barrel. Unfortunately, as I was told by one of the fishermen, who was well informed upon the subject, they are devoted to fishing and think they would incur great loss by spending an hour in the cultivation of the soil. The authorities would render these people an immense service by providing them next spring with potatoes and vegetables for planting, and obliging them to attend to their cultivation.

Although I was not specially instructed to procure information respecting the fishing to be done in these rivers, I shall take the liberty of recording the observations I made during the exploration.

The information which I received from different parties respecting the value of this river in regard to salmon fishing was not always to the same effect. But I have reason to believe, from what I saw, and from the opinion of a man who accompanied me, who understands such matters, that this river is much frequented by salmon. The pools are marked on the map submitted by me to the department. There is no obstacle to prevent salmon from entering this river. I was not, however, able to establish their presence myself, as the season was too far advanced; they had all gone above the falls. Some anglers, who have leased the right of rod-fishing at the falls, have taken as many as twenty-seven salmon in two days. This is sufficient to indicate that the fish must have been plentiful.

Although it is usual elsewhere to lease a river by pools, I do not recommend this method, because the expenses involved in this fishery are too great. It would be better to lease the whole river to one person or to a company. I did not hear any one say that this river is poached, as is the case in many other places. Chambers, the guardian at the falls, maintains a good watch.

The river Mingan, like the river St. John, traverses the Laurentides from N. E. to S. W., and falls into the St. Lawrence. It is navigable for light canoes up to the foot of the Grand Rapid, a distance of about nine miles. It is impossible to go further, the navigation being interrupted by impassable rapids. The shores, from the mouth of the river to the foot of

the first rapid, about five miles, are formed, as on the St. John, of steep banks of clay, covered by a layer of sand mixed with black earth. The thickness of this layer is from ten to twenty-five feet. I remarked that the character of the clay is the same as that on the St. John. It also appears in the same form at Natashquan.

The timber, growing near this part of the river, is composed of balsam, spruce and white birch, from three to seven inches in diameter. From the first fall up to the tenth mile, where my survey ended, the banks are formed of granite rocks. Here and there are seen the blackened trunks of trees, burnt in a fire which occurred some years ago. The height of the mountains is from one hundred to five hundred feet above the level of the sea. The climate and temperature are the same as at the St. John.

During my stay in this locality, a fine whale, ninety-eight feet in length, was caught, making the third taken this year. It yielded eighty barrels of oil. The others were both smaller than this one.

The salmon fishery was good this year, although the license-holders do not occupy the best stations

Agriculture is not neglected here as it is at the St. John. The fishermen give it all the attention possible. Potatoes, cabbage and other vegetables succeed very well. The Hudson Bay Company's officer had a fine crop. He owns several head of cattle and a very fine horse. I mention this because it is unusual on this coast. There are very few people living at Mingan, not more than three or four besides the Hudson Bay Company's officer.

Judging from what I could see, salmon are very abundant in this river. I cannot say how many were taken this year, for the fishermen seem interested in not letting the truth be known. From the mouth of the river to the first fall, the pools, marked on the plan, are not first class, but those higher up are superexcellent. The reason is obvious. The salmon, having overcome the first fall, seek a resting place. The height of the smaller fall is only from four to six feet, while that of the first fall is over forty-six (46.18) feet. From the number of falls mentioned, it might be supposed that little would be gained in going as far as the Grand Rapid. The portages, however, are so easy and so short as to form no serious obstacle. This is one of the finest salmon rivers in the country. At the spawning season, the fish run up the Grand Rapid, and, according to reports, push their way as far as twenty leagues into the interior. The fishery laws are strictly observed, as on the St. John.

The part of the Natashquan, which I explored, runs almost parallel to the Gulf of St. Lawrence, falling into it north of Point Natashquan. This portion is navigable for boats of light draught up to the foot of the first fall, about twelve miles from the mouth. A fine house has been built for the accommodation of the anglers who have permission to fish at the falls.

As I have stated above with respect to the land through which the river Mingan flows, it is of the same geological composition; the bed of clay is visible only on the islands, but exists in small thickness on the banks. The land on the banks is composed of sand mixed with a mould of dead leaves and the moss which grows here in great abundance. It is of little value for cultivation. The timber on the banks is of good growth, but that on the islands seldom attains a diameter of five or six inches. The prevailing varieties are spruce, white birch, balsam and a few poplars; there are also alders and a few cedars.

The climate is not so healthy as at St. John and Mingan. During the three weeks of my stay, there was a great deal of fog and it rained most of the time. The wind blows very strongly from the N. W. at the mouth of this river. There has been only one storm this summer that did any damage in the harbour; five fishing boats were blown on shore and two of them wrecked.

I beg leave to mention a fact which I observed, namely, the complete destruction of the herring in these latitudes. To what is this due? Assuredly not to the unfortunate fishermen of the locality, whose only resource consists in the fishery. The Abbé Côté, missionary at the place, informed me as to how their bread is, so to speak, stolen from before their eyes. The next day, I saw some fishing boats cruising about the harbor in all directions. Whenever any of them met with a school of herrings, a seine was thrown out and the whole school captured. In this way, sixty barrels of herring were taken at a single cast of the seine. Of these only twenty barrels were fit for curing, the remainder, that is, two-thirds of the whole catch, were thrown away. If, instead of seines, nets had been used, the small fish would have escaped, to become a resource for subsequent years. The Abbé Côté, who displays all the ardor of a true missionary, has several grievances to lay before the authorities; for instance, is it advisable to issue licenses for the sale of liquor in a place where the inhabitants can barely procure the necessaries of life? Last year, the use of liquor caused the loss of two lives. If the fishing industry is to be promoted, I think more energetic measures should be adopted.

The cultivation of the land is very difficult, not to say, impossible on this part of this coast. I saw, however, some small fields of potatoes which had succeeded very well, but they required much care. Success was due to patience and love of cultivation rather than to the quality of the soil.

Besides the fishing which is done in summer, seal hunting is also prosecuted. This begins about the end of March or 1st of April, and lasts until the end of May. It was very arduous, but not successful this year. The salmon pools in this river are for the most part, near the falls. Captain Joncas, who has had this river for four years, has generally been very successful. This year however he has not done as well as usual. The average number of barrels taken each year is about one hundred and twenty-five. This river is generally well stocked with salmon. I think the department has already leased to some anglers the pools at the foot of the falls. Large numbers of seals frequent this river.

The river aux Esquimaux, otherwise known as river St. Paul, falls into the harbor of Bonne Espérance. At about four miles from its mouth, it divides into two branches, the eastern being known as the Rapide Champagne, and the western as Rapide à la Perche. It is navigable for vessels of considerable tonnage for a distance of five miles. From there to the point at which my exploration terminated, ordinary canoes can easily pass. Mr. Chevalier informed me that from the foot of these rapids to the falls, the distance is from eighty to ninety miles. This river is bordered by granite mountains. A few trees seem to grow from the moss by which the rocks are in some places covered. There is no place in which vegetation is possible, except a few patches of meadow not worth mentioning.

The only varieties of wood growing there are balsam, spruce and white birch. The nature of the soil prevents these trees from attaining a larger diameter than three or four inches, though, further up the river the quality of the timber is a little better.

The temperature, though healthy enough, is severe; it is generally cold, though we had some very fine days. During a great part of the time I remained in this locality, the weather was bad; either foggy or rainy with fog. The heat, even on the finest days, is not intense.

There is no cultivation. The only occupations of the inhabitants are cod-fishing in summer and seal-hunting in spring. This year, the hunting and fishing were both successful, but I cannot state the number of barrels filled. This is one of the best fishing stations on the coast.

The information which I obtained respecting the salmon fishery, which is or may be carried on in this river, is of the most favorable nature. The river is more frequented by salmon than any other on the coast. Mr. Chevalier, the lessee, does not work it to as great advantage as he might. This brave fisherman is too poor, not to accuse him of negligence, to derive all possible benefit from his occupation. He never puts up more than sixty to eighty barrels a year, while five hundred barrels might certainly be taken without doing the river any harm whatever. Each pool indicated is a good fishing station. Mr. Chevalier does not fish the station near his residence, so the department might well lease the remaining stations to other parties, without interfering with Mr. Chevalier. This river is much frequented by seals.

(*C.-E. Forgues*, November, 1885.)

RIVERS MUSQUARRO AND KEGASHKA.

The river Musquarro flows through the Laurentian mountains and falls into the Gulf of St. Lawrence about forty miles below the river Natashquan. This river is navigable by wooden canoes up to the point at which our survey ended, as shown on the plan transmitted by us to the department. There is no land fit for cultivation on the banks of this river. The only woods are black spruce and balsam, which rarely exceed seven or eight inches in diameter. Having attained that size, it appears to dry up for lack of nourishment, and does not grow at all except in ravines on the banks of lakes or rivers.

The only fish frequenting this river and the lakes connected with it are trout and salmon. The latter have not been plentiful this year, but trout, on the other hand, have been very abundant. There is found in the lakes a fish which I could not identify; it is about the same size as the trout, and equally good for food.

The climate is very salubrious, but somewhat cold.

The Hudson Bay Company has an important post on this river about three miles from the mouth. The Indians who visit it number several hundred families.

The position of the salmon pools is shown on the plan.

We began our operations at the head of tidal water, where those of captain Bayfield ended.

At the river Kegashka the soil and climate are in all respects the same as at the Musquarro; the distance between the two rivers being only fifteen miles. The timber is the same also, except that it grows a little larger and is more plentiful.

Mr. W. Fournau has had this river under lease for several years. His catch of this year amounted to only twenty-five barrels of salmon and trout. It is more largely frequented by salmon than the Musquarro.

The mountains along these rivers are very much alike. They vary in height up to five hundred feet.

C.-E. Forgues, } 1886
N.-P. DeTremblay, }

RIVER WASHECOOTAI.

The river Washecootai flows through the Laurentides and empties into the St. Lawrence about 59 miles below the river Natashquan. It is navigable by canoes to the foot of the great rapid, a distance of 15 miles from its mouth. There is a fall, 47 feet high, at about 7 miles from the St. Lawrence. This river is remarkable for its large lakes. I had soundings made at several points, but never reached the bottom, my sounding line being only 17 fathoms. The banks are formed by mountains of granite, sometimes covered with soil composed of vegetable mould on a bed of granite. I only met 25 or 30 chains, formed of ordinary sand. The timber growing on them consists of spruce, fir and white birch and rarely attains a diameter of more than 7 or 8 inches, generally drying up when it reaches 4 or 5 inches. The mountains run up to 500 feet in height.

The climate is generally salubrious. In summer, the nights are cool and the days hot. The season this year was pretty rainy. There is no cultivated land in the entire region which I traversed.

From the fisheries' point of view, I may state that salmon did not run much up this river this year; but I am inclined to think that they got above the rapids and falls before the nets were set. Trout swarm in the lakes, attaining as much as 24 inches in length. There is also another fish,

of which I could not identify the species. It is about the same size as the trout, with this difference that the flesh is whiter. I also caught a smelt while fishing with the line. I cannot explain how this fish got up over the falls into these large lakes.

(*C.-E. Forgues*, May, 1886.)

NORTHERN HEIGHT OF LAND DISTRICT.

THE MISTASSINI EXPEDITION 1884-85.

In the month of May, 1884, I received instructions to make a survey of Lake Mistassini, connecting it with some survey on this side of the height of land and within this province. The route selected was the river Betsiamits, which had been surveyed as far as the falls, a distance of thirty-six miles by Admiral Bayfield, and thence a farther distance of ninety miles (four miles up the inlet of lake Peet-ma gan) by Mr. Casgrain. This route was chosen mainly in order to make a connection between Mr. Casgrain's survey of the Betsiamits and a previous survey of my own of the river aux Outardes which terminated at lake Manouanis, the head waters of the Betsiamits. Although it is double the distance of that by Lake St. John, either by the river Chamouchouan and its tributary, river du Chef, or by the river Mistassini, still it was preferred as both of those routes had already been traversed to Lake Mistassini, but the region between the Betsiamits and Lake Mistassini was quite unknown.

On the 15th of that month, I began making necessary preparations, procuring outfit, having canoes built, &c, and keeping up a communication with Bersimis in order to learn when the spring freshets had subsided sufficiently to admit of our going up the river with heavily laden canoes, also to learn of the arrival, from their winter's hunt, of those Indians whom I intended to engage to accompany me on the expedition. In the month of June I sent my winter's supply of provisions in charge of Mr. F.-H. Bignell *via* Lake St. John and the river Chamouchouan to the H. B. Co's post at Mistassini. No favorable news was received from Bersimis until the middle of July, when I was notified that the river was sufficiently low and that nearly all the Indians had arrived and the remainder of them would soon be in. I accordingly shipped all our effects by schooner, which sailed from Quebec on the 18th July and was to call for us at Rimouski, where they expected to arrive on the morning of the 20th. On the following day (19th July), I accompanied by Mr. A. P. Low, (the geologist of the party,) my assistant, and two others went down by Intercolonial R. R. to Rimouski, where we arrived at 10 P. M. and expected the schooner on the following morning. We were, however, disappointed, as a strong east wind and bad

weather set in, and the vessel was delayed and did not arrive until the 25th. We then embarked and crossed to Bersimis, arrived there on the following day (Saturday) and camped.

I immediately took occasion to visit such of the Indians as had arrived and make arrangements with them to accompany me, (the others were expected in a few days.) I directed them to prepare for an early start, but knew that it would be next to impossible to induce these men to leave their friends in a hurry for an eighteen months' trip, after being absent all winter. Moreover, their annual religious festival was at hand, and that was to them the greatest possible inducement to be in Bersimis. They, however, began making snow-shoes, moccasins and winter outfit, and I procured other canoes, besides those already built for me, and finally, on the 19th August we embarked in four heavily laden canoes, Mr. Low having preceded me by a few days in a canoe with two men, promising to wait for me at the falls (the first portage). I also sent up two extra canoes with provisions as far as lake Peet-ma-gan.

On my arrival at the falls, where the portages began, I found that Mr. Low had gone on with the two men; as he took nothing with him but his own personal baggage, he travelled rapidly, and we were left to portage all the provisions for both parties, which caused a delay; we finally fell in with him a little below lake Peet-ma-gan. The ascent of the river to lake Peet-ma-gan was tedious and difficult, the current was strong and the portages numerous, varying in length from a few hundred yards to ten miles. We arrived at the lake on the 10th of September.

As I now had to ascend the upper Bersimis (or Betsiamits) northwardly in order to connect the two above mentioned surveys, I sent the bulk of the provisions in charge of Mr. Low by a shorter route north-west to lake Manouan, where I instructed him to wait for me at the portage leading from that lake to the river Peribonka. We were wind-bound by the equinoctial gales at lake Peet-ma-gan from the 10th to the 15th September, and at 3 P. M., on that day (the wind having abated,) we parted, four of the canoes going north-west (having hired another man with his canoe on our way up) and I, with two canoes and four men, going up the river, taking with us only what we required until we joined the other at Manouan.

From Peet-magan to Manouanis, the river bears the name "Isa-shats," i. e., the main inlet (of Peet-magan). It varies in width from two chains to twelve, with a strong current and numerous rapids which involve portaging. The volume of water is very considerable, the depth of the river

varies with the width between the banks and the velocity of the current ; sandy shoals are often met with. The banks are generally low and on the west side level, although a small hill is occasionally seen. On the east bank at a distance of from one to two miles from the river, the country is more hilly. The soil in most places is a coarse dry sand, unfit for cultivation, although in some places there is a subsoil of clay, but at a depth of many feet. The growth of timber is spruce, fir, bouleau, aspen, tamarac and cypress, different kinds predominating in different localities. There are also many brûlés, some of them extensive.

On the 4th of October we arrived at lake Manouanis and connected the two surveys ; the distance from Peet-ma-gan is 126 miles. We now continued our scaling southwestwardly towards Manouan, where we arrived on the 11th, having passed on our way over lakes Ka-pi-to-ga-mat, Opi-toon-is and Opitoon. The first named flows into Opi-toon-is which is, as is also Opi-toon, on the Manouan river below lake Manouan.

From Manouanis to this place, the country is level, the prevailing growth of timber is spruce, cypress and tamarac, and the soil is sandy, gravelly and poor ; we were for two days and a half windbound on the lake, but on the 16th arrived at the portage leading to the Peribonka waters where we expected to find the others of our party, but Mr. Low had gone on in a wrong direction, leaving a letter in which he stated his intention of pushing on as far as possible before winter should set in, forgetting that, when the ice stopped him, it would stop us also and we would be far behind with no provisions except a small bag of flour which he left for us on the portage, and no snowshoes ; the consequences of this grave mistake (to term it mildly) were felt throughout the winter, as it necessitated a return for baggage abandoned along the route from want of provisions, and later on, a return to resume the work where I had been compelled to drop it (for the same reason) and a return for the canoes. All this loss of time and extra walking (over six hundred miles) would have been avoided if my instructions had been obeyed.

We continued on, crossing the portage to a small lake whose outlet we followed down, making occasional portages to a larger stream coming from the north, which we followed down to the Peribonka river at the outlet of lake O-nish-ta-gan where we arrived on the 23rd. The country from Manouan to here is level, nearly all burnt, and the soil is stony and poor.

As the weather was cold and there was every appearance of the rivers being soon closed by ice, and as we were on the eve of running out of pro-

visions, I dropped the work there for the time, and at noon on the 23rd crossed lake O-nish-ta-gan, and proceeded up the Peribonka in pursuit of the other party. The night was cold and on the following morning we encountered a good deal of ice in the river, and, a few miles farther up, found the ice stationary and the river closed. We then left the canoes and a part of the baggage, to be sent for on the following day, and, seeing an Indian lodge about a mile higher up, we proceeded there and camped close by.

We were told by this Indian (a Nascapce named Benjamin or Ne-po-shu) that the other party was encamped at a small lake about forty miles ahead and were making sleighs, &c., for winter travel; they had been stopped by the ice which always makes earlier on small lakes than on large or than on rivers. The next day (25th) we brought up the canoes and baggage, along the battures, and, on the following one, I sent a man off through the woods (as the ice was not strong enough) to bring four men from the other party to assist us in transporting our canoes and effects to their camping place; in the meantime we were occupied in making sleighs. It was fortunate that we fell in with this Indian as he supplied us with some beaver meat and was able to loan us some flour and lard until we joined the other party. On the 29th the men returned at night and reported that the ice on the lakes which they crossed was weak, and that some of them had fallen through. We remained at this camp making sleighs until the 3rd November: on the morning of that day, we moved off and in three days joined the other party. Before leaving I made arrangements with Benjamin to guide us to the post at Mistassini, as he knew all the passes, lakes and portages, but he said that he could not join us before two weeks as he would have to make provision for his family during his absence, besides making snow-shoes and moccassins. We remained at this camp until the 27th of November waiting for the guide, having in the meantime, made all the toboggans for the transport of baggage and provisions, and placed the canoes in winter quarters. On that day, our guide having joined us, we proceeded on and on the 9th of December crossed the height of land, and on the following day reached Temiscamie, a large lake with several deep bays, the extent of which we could not see.

We travelled down the outlet of this lake for some distance and then left it, striking off for Little Mistassini, where we arrived on the evening of the 13th, being almost out of provisions. We continued down the lake until the 17th when we left all superfluous baggage in order to travel more rapidly, and on the 19th sent two Indians on to the post for supplies from

our store which had been sent to Mistassini by way of Lake St. John. These men walked day and night, and we met them on their return on the 21st.

On the 23rd of December, when within a few miles of the post, we were met by Mr. Miller, the gentlemen in charge, attended by a number of his employees; they escorted us back and we arrived at 2 P. M. We remained at the post until next day when we encamped, having in the meantime been hospitably entertained by Mr. and Mrs. Miller.

We remained in camp for a week, the men repairing snow-shoes, moccasins and clothing, and on the 30th they went back to Little Mistassini or Mistassinis for the baggage, and returned here with it on the 12th of January, 1885.

Although my instructions were to winter at Mistassini, I preferred bringing on the work from the Peribonka as far up as possible before the spring.

Towards the end of January, I began preparing despatches, which I sent off by couriers to Lake St. John on the 2nd of February.

Mr. Low accompanied the couriers, although I forbade him to abandon his duties.

I now determined to resume the work at the Peribonka, and as a considerable amount of provisions would be required for the work, we would have to make double loads for the first hundred miles or so; accordingly on the 5th, I sent the men off with the first load, and, after their return, we started with the second, and continued on thus, until we arrived at the inlet of Little Mistassini on the 23rd. Instead of going on to the Peribonka, to work thence westward, I determined to work from the inlet of Mistassinis eastward, as I thus would, on my arrival at Peribonka, be enabled to free some of the men to go for the canoes. I began at the mouth of the inlet and scaled about eleven miles up the river, going somewhat out of my course in order to visit and mark the position of a marble cave which is laid down on an old map made by "Le Père Laure, Jésuite, missionnaire, 1733," with the following inscription: *Antre de marbre en forme de chapelle, gicheche manitou outchouapi, maison du grand génie.*

A description of this cave which I had from an Indian had made me curious to see it; he said that there was an anteroom and an inner room elevated three steps above the other, that both rooms were oval-shaped, and the walls beautifully smooth and white.

He also said that old men reported that they had always been told that, in old times, a stone in the form of a bell had projected over the entrance. The cave is a remarkable one, but did not come up to my expectations in any way except in size. The outer room is about eighteen feet wide and sixteen deep; the door or rather opening is of the full width of the room and about eight feet high. The inner room is about ten feet deep, eight wide and six high. They look as if they had been rounded off by boulders under the action of water; the walls are not marble but spar. The cave is on the side of a steep hill about sixty feet above the river, and fifteen chains distant from it. Lapse of time (152 years) has no doubt made a change and there are appearances of the face of the cliff, where the door was, having parted at a fissure and fallen outwards down hill. We cached some provisions in the cave to serve us on our return, and here left the river (which is the outlet of lake Temiscamie, going in an easterly direction.)

From here we had to cut our way through the woods to the Peribonka, being however frequently relieved by falling on luges, which were numerous, and on brulés, many of which were extensive.

On the 11th of March we crossed the height of land, which is here 2,115 feet above the sea, and reached the Peribonka, making a connection with our work on the 20th. Several of the party were suffering from snow-blindness. On the following day, I sent four men off up the Peribonka for the canoes, and with the remainder of the party began retracing our steps along our line towards the post. We recrossed the height of land on the 25th, and arrived at the post on the 8th of April, expecting to find that our couriers had returned from Lake St. John, but they did not arrive until the 26th at 2 A. M. accompanied by two men who said they belonged to Mr. Low's party who was returning to Mistassini, and that they had left him about sixty miles back in want of provisions. As these men were too much exhausted to return quickly, I immediately sent off two fresh men with relief. On the 29th Mr. Low arrived with the remainder of his party and handed to me a "letter of recall" in which I was instructed to close my work and return to Quebec by the shortest route, via Lake St. John, and to transfer to Mr. Low all articles of equipment, the property of the Government, including provisions, stores and canoes, except such as I might require on my journey to Lake St. John. The alleged reasons for my recall were "loss of time and little work done." The distance measured was 316 miles, which involved a travel of over 1500 miles, not of course in one continuous line, but in repeated crossings of the portages with our supplies, and in repeated trips with the canoes, where double loads had to

be made. Of these 1500 miles, about 400 were made in canoes, the remainder was gone over on foot, each man carrying over the portages from 200 to 400 lbs on his back, and after the setting in of winter every thing was drawn on sleighs over lakes and across mountains as far as the post at Mistassini,—and as to loss of time, I now state emphatically that it was due entirely to the wilful obstinacy and disobedience of Mr. Low in not following my instructions.

On the 30th of April the men returned with the canoes, reporting open water at the Big Narrows, which are about fifteen miles from the post. As Mr. Low's party numbered six, and he had brought no provisions with him, I sent out some of the men to hunt in order to eke out our supplies and enable me to furnish him with a portion ; they returned in a few days, bringing four beaver and a bear.

The post at Mistassini is in charge of Mr. Wm. Miller, who resides there with his family ; he has with him three or four permanent employees, some of them married. It is a cluster of four or five buildings, including the company's store ; Mr. Miller is about erecting also a small chapel. The post is supplied from Rupert's House on James Bay where Mr. Miller goes annually in June with the furs collected during the year, and returns with the requisite supplies for the year ensuing.

Good potatoes and other vegetables are raised at the post, although the land has received anything but fair treatment, as the same ground has been cropped over and over again for many years without ever having been enriched. A number of Esquimaux dogs are kept, which are employed only in winter in drawing in the year's supply of wood for fuel and in visiting the nets, some of which are set at a distance. They are fed exclusively on fish during the winter and in summer they forage for themselves.

On each side of the height of land and running parallel with it are several ridges varying in height from 150 to 300 feet and distant apart from four to six miles ; between these ridges are numerous lakes, some of them very long and comparatively narrow, running parallel with the ridges. The land on the south-east side of the lake, as far as I saw it, (somewhat over a hundred miles,) is low and level, and would no doubt be equally as productive as that around the post. The growth of timber is principally bouleau, (or silver birch,) spruce and fir. Timber is more abundant and larger on the north side of the height of land than it is on the south ; plenty of spruce can there be found suitable for building purposes. It is called "pine" by the people at the post (who all come from Hudson Bay) and I

suppose that this misnomer will account for the occasional reports which we hear of pine being abundant in that region.

Extensive tracts of good land can also be found between the S. W. end of Mistassini and Lake St-John. The country here is not so elevated, and the height of land on this route is several hundred feet lower than where I first crossed it, that is, about 150 miles farther to the N. E.

The temperature at Mistassini runs to extremes. The thermometer in winter is often down to 50 or 60° degrees below zero, (Fah.) but the cold is not severely felt, as the air is very dry. Ice frequently forms to the depth of six feet, and the snowfall is generally heavy; last winter its depth was five feet. Ice forms in the bays in October or November and in the big lake not before January, and breaks up in the bays about the end of May and in the lake about the middle of June. The summers are said to be very hot, and thunderstorms are of frequent occurrence.

It used to be a practice with the Indians during a thunderstorm to run out of their camps, and with guns, axes and knives defy the storm, but, on one occasion 12 or 15 years ago, when a large party were on their return to the post from Rupert's House with the year's supplies, a storm came on at night, the lightning fell in amongst them, killed seven and wounded and mangled eighteen others. The remainder of the party narrowly escaped as there were several hundred pounds of powder amongst the goods, which were untouched. Since then, the practice has been discontinued.

Indians here are not numerous; they are Nascapées and nominal Christians, and are occasionally visited by a Protestant clergyman from James' Bay. Only about twenty-six hunters frequent the post for trading purposes, and the only time at which they can all be seen there together is from about the middle of June to the middle of July, or as soon as the lake is free from ice. They then bring in their furs to trade, and each one does his utmost to bring with him something to contribute to the general feasting which then goes on continually until their stock is exhausted.

This stock consists of bears' meat and grease, beaver, (fresh, smoked or dried,) caribou, porcupine, hares, partridges, fish of all kinds and anything else they can catch. After remaining about a month at the post, they disperse, each going to his own hunting grounds.

There is a great variety and abundance of fish in Mistassini whose waters are deep and cold, and in many of the other lakes, such as lunge, trout, jackfish, whitefish, pickerel, carp, and what is there called "Maria".

a fish somewhat resembling the cod. It would be an easy matter for the Indians to lay in a supply sufficient for the winter, but they are naturally improvident and moreover superstitious on that score. They say that if they provide for future wants, they will meet with some mishap and probably die, and then their labor would be lost.

The fur-bearing animals are abundant, particularly beaver, otter, marten and black bears which are very large. Caribou are very scarce, so are wolves, and the wolverine has not been seen in that locality for the last three years.

As regards the size of the lake, nothing positive is known except that it is very large, and I consider its being unknown a proof of its great size, as these people, who are in the habit of roaming in all directions for hundreds of miles, do not know its extent. A very intelligent Indian to whom I spoke on the subject told me that some years ago he had met with an old Indian who informed him that from what he knew and from what he had heard, he thought that a good walker, carrying nothing but what he required for the trip, could in the spring, on the crust, go from end to end of the lake in ten days. Now, under these circumstances, as fifty or sixty miles per day would be considered but moderate, we may form an idea of the approximate extent of this lake, and, if we accept only half of this estimate, we may still call the lake an immense one. The general opinion was that it could not be sailed around in less than one summer.

From the date of the return of the men with the canoes, 30th April, until the 28th of May, we remained in camp at the post awaiting open water, and on that day, the bay being sufficiently clear of ice, we embarked for Lake St. John, and on the 30th crossed the height land and reached Grindstone lake (lac à la Meule) improperly called File Axe.

We reached the Chamouchouan river on the 5th of June, and on the 10th arrived at Lake St. John, where I left with Mr. Cummins, the gentleman in charge of the Hudson Bay Company's post, my canoes, tents and various other articles subject to the order of Mr. Low, according to my instructions. On the next day we left Lake St. John for Chicoutimi, where we arrived on the day following, took the steamer at 3.30 A. M., on the 13th, and arrived at Quebec on the afternoon of the 14th, having been detained on the river by fogs.

(*John Bignell*, 3rd November, 1885.)

We proceeded up the river Betsiamits and reached the first fall on the 11th August (1884), the distance being about forty-five miles in a north-west course. The river has been navigated to this point by a small steamer belonging to the lumber mill situated at its mouth.

The river valley, cut in the surrounding table-land, varies from a quarter of a mile to one mile in width. Its sides are formed by Laurentian hills elevated from two to six hundred feet above the stream. These hills are well wooded with white and black spruce, tamarac, balsam, poplar and birch, and quantities of valuable timber are taken out every year, and cut up by the steam mill at the mouth of the river. The valley has been partly filled up by deposits of glacial drift, as the banks of the river are, for the most part, of sand and clay, often upwards of fifty feet high. Much of the clay shows distinct evidence of stratification, and the different beds are seen highly crumpled and folded.

Between these banks, the river, varying from one to two hundred yards in breadth, flows with a swift and even current, and is joined by a number of small streams on either side, the chief one being the Neepee river, which flows from the eastward and joins the main stream at the head of tide, seven miles from the sea. This tributary descends into the valley by a beautiful fall, over 100 feet high.

About thirty miles up the river and northwards, the country has been traversed by frequent and extensive fires, which have left very little of the original forest, the region being, for the most part, covered with second-growth timber of aspen, poplar, white birch, Banksian pine, and spruce, none of which has attained a large size. The first fall is formed by two chutes, each being about fifty feet high, with a whirlpool between them, into which a large number of logs have, from time to time, been carried, and, before escaping from its influence, having been so broken and bruised as to be unfit for commercial purposes, remain piled up on the shore. Above this fall the river runs N. 30° W., and continues in this direction for ten miles, with a sluggish current. The hills on either side rise to elevations from 800 to 1,000 feet above its level, being for the most part bare or covered with small second-growth timber.

The river now flows from the west for nine miles, in the lower four of which it is very rough, having four chutes of fifteen, ten, ten and twenty feet, respectively, with strong rapids between them, necessitating a portage of canoes for that distance.

From here to Waweashton, distant ten miles, the course is N. 35° W., with two short portages, passing falls of twelve and thirty feet.

At Waweashton, a large branch comes in from the eastward, and the main stream, turning westward, falls in the next ten miles fully 500 feet from the general plateau into the river valley, and is quite impassable for canoes, so that a portage, over a mountain upwards of 1,000 feet high, must be made. A week was spent transporting canoes, provisions, &c., over this distance. Beyond this, the river turns to the north, and for sixteen miles widens out into lake Natuakimiu, with a width of from one-half to one and a-half miles; lying very little below the general surface of the surrounding country, which is here comparatively flat, and characterized, by low hills only which seldom rise more than 200 feet above the water-level.

The river next runs from the west for fifteen miles, having become narrow and rapid, with a mile and a half portage at the end of the course. The banks and country are similar to those on the last course. Next turning to the north-east, the river, for a distance of eight miles, breaks in a straight line through the Labradorite hills, which form almost vertical walls on either side, rising from two to four hundred feet above the water and producing the finest scenery met with on this route. Above this is lake Pipmaukan, which was reached August 25th, and is distant by the river 135 miles from the sea.

This lake is very irregular in shape, being full of deep bays, and has an area of over 100 square miles. The Betsiamits river flows through it on the east side, the distance between inlet and outlet being nine miles. Several other smaller rivers and numerous brooks also empty into the lake.

The shores of the lake are principally low, but in places are rocky and rise in elevations of one to two hundred feet above the water, the whole being covered with a fair growth of white spruce, balsam, spruce and white birch.

The waters of the lake and the Betsiamits river are well stocked with fish, the principal kinds being lake and river trout, white fish, pike and sucker and, below the first fall of the river, salmon and sea-trout.

Leaving Mr. Bignoll, September 15th, we proceeded by a bay running to the north-west, to Pipmaukan river, a small stream discharging into the lake at the head of the bay, and distant twenty miles from the outlet. In crossing the lake, we were much delayed by wind, and did not reach the river until the 19th.

Having proceeded up the Pipmaukan river, through low, swampy country, a distance of twelve miles, the general course being N. 15° W., we left it, and, passing over four portages and three smaller lakes, the total distance being five miles, direction north-west, we reached a small lake called Otáshoao, which discharges, by a small river two miles long, into the Manouan river. This river is a branch of the Peribonka, which flows into Lake St. John. and takes its rise in lake Manouan.

At the point where we entered, it has a breadth of 200 yards. Proceeding up the river a distance of sixteen miles, course N. 20° W., a fall of fifty feet was reached. The stream below this flows with a slow current, varied by several short rapids, and passes through hills with from two to four hundred feet elevation, the whole having been burned over by frequent fires.

Beyond this fall the river narrows, becoming rapid, and continues so for eight miles, while the surrounding hills reach elevations from six to eight hundred feet above its level, and form a ridge extending from north east to south-west. The river then flows with a slow uniform current for ten miles, course N. 10° E. through a country covered by low rounded hills, lying apparently in ridges, having a north and south direction. Beyond this the river spreads out, becoming very rapid and shallow for a distance of three miles. Here we left it, and proceeded by a portage route for nineteen miles, course north, through several small lakes and brooks to avoid a long bend in the river full of rapids and impracticable for canoe travel.

The river was again reached about one mile below lake Manouan, and continuing up it we entered that lake October 3rd.

On arriving at lake Manouan we passed around the north side, making a time survey of the lake, which was completed on the 8th.

This is another very irregular lake, being about twenty-two miles long from east to west, with several large deep bays on either side running north and south. Over most of its area it is studded with many islands, both great and small. The country around the lake is almost flat, being broken by ridges of hills only to the south and west. These rise not more than 300 feet above the lake, but have the appearance of high mountains from their contrast with the general flatness of the surrounding country. About one half of the timber is destroyed by fire ; what remains consists of white and black spruce, balsam-spruce and white birch, few trees exceeding eight inches in diameter at three feet from the ground.

We awaited the arrival of Mr. Bignell on lake Manouan until the 14th, when, fearing that we would be frozen in before reaching the Peribonka river, we started by a portage route from the west side of lake Manouan and passed through several small lakes connected by a small brook flowing into a branch of the Peribonka about twelve miles from lake Manouan. On reaching this branch we descended it about sixteen miles, reaching the main river one half mile below lake Onistagan; general course, south-west. This lake is several miles long by two miles broad. Crossing it on the 16th, we continued up the Peribonka river and reached a stream from the west, which enters the river about two miles below the main forks, being distant thirty miles from lake Onistagan; course a few degrees east of north.

The Peribonka, for the first twenty miles, varies from two to three hundred yards in width, and has little current, but for the remainder of the distance is narrow and full of heavy rapids. The country along the river is similar to that described around lake Manouan. The forests here have also been devastated by fire. What remains of them shows a larger growth of trees than the last mentioned.

We ascended the tributary from the west six miles to a small lake, which, being found partly frozen over, we were compelled to discontinue our canoe voyage on October 23rd. A permanent camp was then formed, and Mr. Bignell joined us on November 4th, he having been stopped by ice on the Peribonka, about fifteen miles from lake Onistagan.

After making toboggans for the transport of provisions and outfit, and as none of our party knew the route to lake Mistassini, awaiting the arrival of a guide, we left the camp November 27th, and arrived at the height of land, December 9th. The route travelled follows the branch, which flows through a chain of large lakes lying between ranges of low hills stretching from north to south. These hills have an average elevation of not more than fifty feet above the water-level. The land near the lakes, which cover the greater part of the surface of the country, is of a swampy character, clad with a thick growth of small black spruce and larch, and is wholly unfit for purposes of agriculture. The distance from the lake camp to the height of land is about forty miles, course nearly west. The lakes are well stocked with fish. Game is not abundant. Few ducks were seen on account of the absence of proper feeding grounds and no traces of moose or caribou were met with.

On crossing the height of land, we descended about 300 feet in twelve miles to lake Temiscamie, a long lake running north and south, varying

from one to three miles in width and very deep. An outpost from the Mistassini establishment was formerly located here by the Hudson Bay Company, but was abandoned some years back, as the Indians formerly trading here have either died or become accustomed to take their furs to Lake St. John for sale.

Following the Temiscamie river flowing out of the lake, which empties through lake Mistassinis (Little Mistassini) into the great lake, for a distance of six miles, we passed through a very crooked lake about four miles long, and then continued down the river six miles, where we followed a portage route two miles long, and, thus reached the north-east end of Lake Mistassini on December 13th. The general course from lake Temiscamie to this point is west-north-west.

The river continues almost parallel to the lake and empties into it on the east side about thirty miles from its north end, running out again on the opposite side some distance farther north.

Lake Mistassinis, or Little Mistassini, is about fifty miles from north-east to south-west, lying parallel to the great lake, and is from one to eight miles wide, six miles being near the average breadth.

We passed down the east side to near the south-west end, where we crossed, and, following a portage route through two small lakes about four miles long in all, thus reached lake Mistassini at a point about thirty miles to the north east of the Hudson Bay post. By passing down the east shore we arrived at the post on December 23rd, thus finishing a long and difficult tramp on snow-shoes, having walked for the last ten days of the journey on very short rations, with the thermometer ranging to forty degrees below zero.

Shortly after our arrival, I made arrangements with Mr. Miller, the gentleman in charge of the post, by which I obtained quarters in his house, and there set up the instruments and took regular meteorological observations during the month of January. At the end of this time, having had several disagreements with Mr. Bignell regarding the operations of the party, I determined to return to Ottawa, and having arranged with Mr. Miller to continue the meteorological observations during my absence, I left on the 2nd of February, accompanied by two men whom Mr. Bignell was sending to Lake St. John with letters. On leaving the post we proceeded to the south-west end of the lake, crossing the height of land near that point, and, after traversing several small lakes, reached a branch of the

Chief river, followed it to its junction with the Chamouchouan river, and continued down the latter, reaching Lake St. John, February 21st.

Two heavy snow storms occurred while we were on the way, making the walking so difficult that our tent and sheet-iron stove had to be abandoned, and we were obliged to sleep in the snow for more than a week.

The country passed through is very similar to that seen on the Peribonka river and is described by Mr. W. McOuat in his report on the Mistassini river (report of progress, Geological Survey, 1871-72).

Since Mr. McOuat's exploration, the country has been wholly burned over and few clumps of green woods remain.

LAKE MISTASSINI —The first person who has left any written account of his explorations of Lake Mistassini was Père Charles Albanel, a Jesuit missionary, who crossed it, in 1672, on his way from Lake St. John to Hudson Bay, which he reached by descending the Rupert river.

The following account of his exploration is taken from the "Relations des Jésuites dans la Nouvelle France," vol. iii, pp. 49-50, entitled "Voyage de la Mer du Nord par terre, et la découverte de la Baie de Hudson. Mission de Saint François-Xavier, en 1671 et 1672. Père Chas. Albanel":

Le 18 (June) nous entrâmes dans le grand Lac des Mistassiniens, qu'on tient estre si grande qu'il faut vingt jours de beau temps pour en faire le tour. Ce lac tire son nom des rochers dont il est remply, qui sont d'une prodigieuse grosseur: il y a quantité de très belles îles, du gibier, et du poisson de toute espèce, les orignaux, les ours, les caribous, le porc-épic, et les castors y sont en abondance. Nous avons déjà fait six lieues au travers des îles qui l'entrecourent, quand j'aperçue comme une éminence de terre d'aussi loin que la veüe se peut estendre; je demandai à nos gens si c'estoit vers cet endroit qu'ils nous falloit aller? Tais-toy, me dit nostre guide, ne le regarde point, si tu ne veux périr.

"Les sauvages de toutes ces contrées s'imaginent que quiconque veut traverser ce lac doit se soigneusement garder de la curiosité de regarder cette route, et principalement le lieu où l'on doit aborder, son seul aspect, disent-ils, cause l'agitation des eaux, et forme des tempestes qui font transir de frayeur les plus assurés."

The above is all that Père Albanel has written concerning the lake, and as he must have crossed only the southern end on his way to the Rupert river portage, he could speak only by hearsay of the remainder of the lake.

He probably obtained his idea of the lake, and the number of days required to make the tour, from the Indians living around it, and, if they were not more truthful than their present descendants now are, their testimony was not to be relied on. Six leagues is about the distance he would have had to travel down the south-east bay before reaching the islands off the point, at the present crossing place, and here the islands are about six miles distant from either shores. He could not have remained long at Mistassini, as he arrived at lake Nemiskau, on the Rupert river, on June 25th, and six days are required to canoe the distance.

The name Mistassini is formed from two Algonquin words "mista," signifying big, and "assine," a stone; and is so called because of the large boulders of gneiss strewn along the west shores.

Lake Mistassini is a long and narrow body of water, stretching from north-east to south-west, with a perceptible curve between the ends, the concavity of the curve being towards the south-east. It lies between N. latitude 50° and $51^{\circ} 24'$, W. longitude $72^{\circ} 45'$ to $74^{\circ} 20'$. The length, in a straight line between the extremities of the north-east and south-west bays, is nearly one hundred miles, the average breadth of the main body being about twelve miles. At either end of the lake, a long point stretches out, dividing the ends into two deep bays. Between the points, and seemingly a continuation of them, is a long chain of rocky islands, which, by overlapping each other, almost divide the lake into two parts, so that a view of the opposite side is rarely obtained in going around the shore. A slight decrease in the present level of the lake would result in the production of two separate lakes, as the water between the islands is quite shallow and forms a contrast in this respect with the great depth between the islands and shore on either side. Here the lake is very deep, an isolated sounding, made in crossing, having given 374 feet at a point which, I was informed, was not the deepest part of the lake.

The bay at the south-east end of the lake is called Abatagoush. This bay, sixteen miles from its mouth, is again divided by a long point into two other bays. About four miles from the end of this point, and on it, the Hudson Bay post is situated.

The eastern part, called Cabistachuan bay, runs slightly east of south, in an irregular course, for about twelve miles, the Little Perch river coming in at its head. The western part is much larger and more irregular. It stretches south for sixteen miles, a small river from lake Wakiniche falling into it at that distance. A side branch of the bay runs to the westward for

upwards of ten miles. The general width of Abatagoush bay is one and one-half miles. The south-west, or Poonichaun bay, for a distance of twenty miles from its entrance, has an average breadth of about five miles. Its shores are broken by smaller bays, and its surface is covered with islands, varying from six miles long, by one and one-half wide, to mere boulders. After the first twenty miles, the bay narrows to an average breadth of less than one-half mile, and continues in a south-westerly course for a long distance, as the end was not reached after ascending it fourteen miles. The Indians say that a large river empties into the lake at the head of this bay, The north-east and north-west bays are not so deep as the southern ones; the distance from the end of the point to the mouth of the Papasquatsatee river, a large stream coming in at the head of the north-west bay, being fifteen miles, with an average breadth of rather more than four miles. From the mouth of the Toquaoco river, which enters the north-east bay at its head, to the end of the point, the distance is nineteen miles, the average breadth being under four miles. By this river a canoe route goes to the Hudson Bay post, called Nitchicoon, situated on a branch of the East Main river, to the north-east. This stream falls rapidly during the dry season, being an exception to the other rivers running into the lake, which, taking their rise in large lakes, are not greatly affected by local rainfall.

Beside those above referred to, the large river flowing out of lake Temiscamie, and passing through Lake Mistassini, enters the lake on the east side about twenty miles from the head of the north-east bay. Almost directly opposite this river, on the west side, a smaller stream, called the Wabassinon river, enters.

The shore of the lake is indented by a number of smaller bays, and many islands also occur along its margin.

The shores of the lake are mostly rocky, with no marshes or beach, a fact accounting for the absence of any great numbers of wading birds or graminaceous ducks. The western bank rises from thirty to sixty feet above the surface of the water, and is in many places perpendicular. The eastern bank is not so elevated, and rises more gradually.

To the south of Mistassini, and running north of east, is a ridge of hills forming an escarpment about 300 feet high, and constituting the height of land between the waters flowing to the St. Lawrence and those draining to Hudson Bay, and the division line between the province of Quebec and the North-East Territory. To the north is another range, passing within ten miles of the lake, and trending away to the westward. The

highest of these hills does not rise more than 500 feet above the level of the lake.

The country in the vicinity of the lake is generally slightly rolling, with rounded hills, rising from thirty to sixty feet above the water, and interspersed with numerous small lakes and marshes.

As will be seen from the following summary, compiled from the daily meteorological observations taken at the Hudson Bay post on Mistassini, which are given in detail in Appendix (II), the climate unfits the surrounding country for purposes of agriculture, as frosts occur during every month except July.

I am told that the season of 1885 was a good average of the climate here, except that the rainfall was excessive.

SUMMARY of Meteorological Observations, Lake Mistassini, 1885.

	January.	Feb.	March.	April.	May.	June.	July.	August.
Mean temperature.....	18.5	- 00.1	01.9	25.3	42.3	53.1	59.9	56.7
Highest temperature.....	16	39	35	51	85	79	76	81
Lowest temperature.....	-56	-46	-47	19	08	30	39	31
Monthly range.....	72	85	82	73	77	49	37	50
Mean maximum temperature.	-05.1	11.1	16.6	30.6	53.6	67.7	67.0	68.1
Mean minimum temperature.	-31.6	-09.2	-18.0	16.0	29.3	39.4	49.8	45.7
Mean daily range.....	26.5	20.3	34.6	14.6	24.3	25.3	17.2	22.4
Number of days' rain.....				4	17	20		21
Number of days' snow.....	13	10	13	8	2	2		
Number of fair days.....	12	16	19	16	12	12		9
Resultant direction of wind...	N. 45° E.	N. 56° E.	N. 74° E.	N. 20° E.	N. 48° W.	S. 80° W.	S. 108° W.	S. 67° W.

Snow covers the ground about the middle of October and remains until late in May, all the smaller lakes being frozen over during that time.

The main body of Lake Mistassini is an exception, as, owing to its depth and consequent slow change of temperature, it does not generally freeze over before December 20th, and opens a couple of weeks later than the other lakes in spring.

During the summer months, the sky is clouded a greater part of the time, accompanied by drizzling rains and heavy thunder storms. The soil of the country overlying the limestone basin on and about Lake Mistassini is a sandy loam with clay subsoil, and would yield good crops in a more favorable climate.

On the main body of the lake, and to the northward, the summer season is shorter and colder than in the vicinity of the post. During the month of July, the low lands bordering the lake were frozen solid within one foot of the surface in all places where the trees were at all dense. This marked difference is undoubtedly due to the proximity to such a large body of cold water, which lowers the general temperature of the air during the warmer portions of the years. The soil overlying the Laurentian gneisses and schists is light and sandy, only a thin layer generally resting on these rocks.

At the Hudson Bay post, the most favorable point on the lake for agriculture, a poor crop of potatoes is raised yearly. They are small, as the tops are always frozen before reaching maturity. In the spring, as soon as the frost was out of the ground, I sowed garden peas, beans, corn and turnips. On August 20th, the peas were beginning to fill the pods, the beans were in flower, and the corn only eighteen inches above the ground; the turnips alone were growing nicely. I believe that barley has been sown here, but would not ripen. A full list of trees and plants, with their distribution, is given in appendix (I) by Mr. Macoun, and I will only add that no timber of commercial value was seen near the lake.

Covering the higher ground, at the southern end, white spruce, poplar, balsam, spruce and white birch trees were found, some of which have a diameter of eighteen inches, three feet from the ground. The swamps are covered with a thick growth of small-sized black spruce and tamarac, and the small areas of burned land are generally clad with a second-growth of Banksian pine.

Mr. Macoun, in his report, also gives a list of the birds found about the lake. The waters of Mistassini and all the adjoining large lakes are full of fish. The principal kinds are lake trout, river trout, white fish, pike, pickerel, and sucker, all of large size and fine quality. These fisheries would be of considerable commercial value, if access could be had to them by railway.

Fish is the chief article of food of the Indians around the lake. During the spawning season in the autumn, when the fish come into the shallow water, large numbers are caught in nets, then cleaned and smoked for the winter supply. In the winter, the fish are caught on hooks through holes in the ice. The Hudson Bay Company's people also catch and salt a large quantity.

GENERAL DESCRIPTION OF THE RUPERT RIVER.—As the journey from Lake Mistassini to Rupert House was hurried, and consequently large areas of country were passed over in a short space of time, I will, in the following, give extracts from my daily journal *en route* :

August 22nd.—Mr. Macoun and myself left the Hudson Bay post at Mistassini at 4 p. m., in a large canoe, with ten men paddling, and camped for the night at the "Big Narrows," eighteen miles from the post.

August, 23rd.—Started at daybreak, and crossed the lake to the west side, proceeded up the shore to Portage bay, distant ten miles from the outlet of the river. Here, passing over a low rocky ridge, by a portage two hundred yards long, we entered the Rupert river, and descended it a distance of ten miles, in a course of N. 16° W., to a short portage, crossing a long point, made to avoid heavy rapids in the river. Camped on the portage.

The outlet of Lake Mistassini is about one hundred yards wide. Immediately below this, the river spreads out and forms numerous channels between the islands with which it is covered. The river is so covered, and has a breadth varying from one quarter to two miles, as far as the last portage. The surrounding country is almost flat, with low, rounded hills, never exceeding fifty feet elevation above the level of the river. The timber is principally black spruce and white birch, with poplar, tamarac and Banksian pine, all of small size, never having a diameter exceeding six inches, three feet from the ground. Timber burnt near the portage.

August 24th —Continued down the river, now narrowing to a breadth varying from one hundred yards to one mile, having a swift current, with several small rapids which are passed by portages in ascending the river. The river continues full of small rocky islands. Distance travelled to-day thirty miles in a general northerly course. The country passed is not so flat as yesterday, some hills rising from seventy-five to one hundred feet above the river. The prevailing timber is black spruce, birch, Banksian pine and tamarac, all of small size.

The greater part of the south-west side has been burnt and is covered with a second growth of white birch. The north-east shore is unburnt, and black spruce predominates.

Heavy gale, from the west, with showers of rain, all day, making it very cold and disagreeable to travel.

25th.—Continued down the river eleven miles to lake Miskittenow, through the east end of which the river flows.

This lake is seven miles long, course west, with an average breadth of one and one-half miles. On the north side of the west end is a hill of about three hundred feet elevation, forming a conspicuous land-mark and called Miskittenow mountain.

Leaving the river, we passed to the upper end of the lake, and thence, by a portage of 1,100 yards, to lake Kanataikow. Passing through this lake, which is very crooked, for nine miles, we crossed a portage, one quarter mile long, to a small lake called Kakomenhane, and then through it three miles to the portage at the opposite end, where camp was made for the night. General course of travel for the day, N. 55° W. The country passed through was rougher than yesterday, with rounded hills rising from one to three hundred feet above the general level.

The timber consist of small spruce, birch, Banksian pine and tamarac, mostly of second growth.

26th.—Left camp at daybreak, and, crossing the portage, 250 yards long, entered Wabistan lake, the head of the Marten branch of the Rupert river. We followed this lake eight miles to its outlet by a small brook 300 yards long, then across a small lake one and a quarter mile, and down the river two and a-quarter miles, to another small lake, and on through lake Mok-how-as-took for thirteen miles. Thence through seven small lakes connected by the river. Total distance, forty-seven miles; direction, N. 60° W. Timber very small and mostly of second-growth Banksian pine, with black spruce and birch.

27th.—Continued down the Marten river, passing three small lakes in thirteen miles to Jacob's lake, and through it eleven miles. Its shores are burnt and covered with large boulders. From here down the river ten miles to Robert's lake, camping at its outlet, five miles from the inlet. Total distance, forty miles; course, N. W. The country was flatter than yesterday, no hills exceeding one hundred and fifty feet elevation. Much more burnt land was seen than on previous days. The timber was very small, no trees exceeding six inches in diameter, three feet from the ground, and consisted principally of black spruce. A few small balsam-spruce were seen on the low river bank during the afternoon.

28th.—Heavy frost last night. Travelled all day on the Marten river, passing through four lakes, called respectively, Ka-we-wat-in-ou, Te-say-

kow, Cooper's and Gull; also made portages past several small rapids in the river. Total distance, thirty six miles; direction, N. W. Country flatter than yesterday, and densely wooded with black spruce and tamarac, with little birch. Not much burnt land. Soil poor and swampy or bare rock.

29th.—Continued down the Marten River, passing five small chutes by portages, the aggregate fall in seventeen miles being one hundred and ten feet.

Here the Marten enters the Rupert river. Passing down the Rupert, which here has an average breadth of one-half mile, the Nitchicoon branch was passed, two and a half miles below.

By this river the canoes bound for the Hudson Bay post at Nitchicoon, on the East Main river, leave the Rupert, and reach that river through a system of lakes similar to that passed on the Marten.

Continuing down the Rupert, with a swift current, for six miles, a fall and rapid of twenty feet is passed by a portage one-half mile long; thence the river runs with a swift current three miles, to the entrance of lake Nemiskau. Passing down the lake eight miles, we camped on a small island, where the Hudson Bay Company have stored a supply of provisions for the Indians wintering in the vicinity. The country passed through to-day was much lower than yesterday, being nearly flat; the timber much the same, with more second-growth birch and poplar of small size. Lake Nemiskau is silted up by the detritus brought down by the river for a distance of two miles beyond where we camped, and is characterized by low islands and sand-banks, clad with willow-bush and reeds, through which a channel half a mile wide runs.

30th.—Proceeded down the lake to an encampment of Indians from Rupert House, who were engaged netting and smoking small sturgeon for winter use. Left again at 2 30 p. m., and followed the north-east bay six and a half miles to the small discharge.

Lake Nemiskau is made up of three deep bays, forming a Y; each being about fifteen miles long, with an average breadth of three miles. The Rupert river flows in by the south-east bay and out again about half way up the north-east, having two outlets, the larger being several miles farther north than the smaller. A large river flows into the south-west bay, and forms the canoe route to Washwanaby, a Hudson Bay post on the Notaway river. Several other large streams flow into the lake.

The surrounding country is comparatively flat, being highest to the south-west, where the hills probably have an elevation above the water of 200 feet. To the north and east is much lower and swampy. The waters of the lake are shallow.

Père Albanel says, in the Relations des Jesuites, that ten days are required to make a circuit of the lake, and that it is surrounded by high mountains, forming a semi-circle from south to north.

Leaving by the smaller discharge, we descended it two miles to a portage 600 yards long, past a rapid and fall of forty feet. Camped at the end of portage. The timber was slightly better than yesterday, with bluffs of poplar and birch along the lake, and no burnt land.

31st.—Continuing down stream, the main discharge was reached by a portage one-quarter mile long, past a rapid with ten feet of fall, distant four and one-half miles from camp; the general course from lake Nemiskau to this point being N. 20° W. The river now runs with a swift current, and small rapids, twenty-six miles, in a course N. 50° W. to the Oatmeal fall. This, like the other falls on the river, consists of a chute, with heavy rapids at the bottom.

The Oatmeal fall is passed by a portage one and a quarter miles long. Below it, at a distance of two and three quarter miles, another fall, thirty-five feet high, called the White Beaver, entails a further portage of half-a-mile. Beyond this, the river flows rapidly for seven and a-half miles to where we camped for the night.

The country passed was very flat, until the Oatmeal fall was reached, below which the river flows in a valley, between banks from thirty to fifty feet high. Above this no distinct valley was observed. The timber becomes larger and better as we descend, and no burnt woods were seen, except on the portages and between the Oatmeal and White Beaver falls.

September 1st. — Proceeding down the river, between banks from twenty to fifty feet high, for six miles, the first portage of "The Fours" was reached. This portage, three-quarters of mile long, passes a heavy rapid and fall of fifty feet. One-half mile below is the second portage, over a chute of seventy-five feet; then three-quarters of a mile to the third chute of fifty feet, passed by a portage of half a mile and down heavy rapids to the last portage, over rapids with a fall of thirty feet in a quarter of a mile.

The country was higher to day and the soil better. The timber was much larger. Balsam-poplar was first seen since leaving Mistassini, also

balsam-spruce, with the exception of a few trees on the Marten river mentioned above. White spruce, having a diameter of twenty inches, three feet from the ground, was observed on the portages at "The Fours". Very little of the timber is burnt. The country seems to be descending in a series of low terraces, similar to those seen on the shores of the St. Lawrence river; each fall on the Rupert being caused by the passage of the river over an escarpment.

September 2nd. — For seven miles the river flows with a moderate current, with one small rapid, three-quarters of a mile long, to the Shekash portage, one and a quarter mile long, passing a rapid and chute of seventy-five feet. Beyond this, the moderate current continues for ten miles, when another chute of twenty feet is passed by the Cat portage, one quarter mile long. The river then again flows steadily for eleven miles to another rapid of twenty feet, where we camped. As far as the Cat portage, the river flows between clay banks from twenty to forty feet high, densely wooded with large poplar and white spruce; below this, the country became very flat and swampy, covered with small black spruce, tamarac and second-growth poplar. General course travelled during the day, N. 70° W.

3rd.—Started early to-day, running the Plum-Pudding rapid, one and a-half mile long, with fifteen feet fall, and thence two miles to Smoke Hill rapid, having a fall of twenty-five feet, and passed by a portage of one mile. Below, the river runs with a moderate current for ten miles, when the last rapid, one mile long, with ten feet fall, full of large boulders, was run, and Rupert House, one mile below, was reached.

Rupert House is situated at the mouth of the river, which empties into Rupert Bay, an extension of James' Bay.

At this point the river has a width of upwards of one mile, and discharges a volume of water estimated equal to that of the Ottawa river at Ottawa.

The country between Plum-Pudding Rapid and the mouth of the river is very flat and swampy, covered with only a fair growth of timber. The soil is chiefly a heavy clay, and is generally too wet and cold for agricultural purposes.

At Rupert House, garden vegetables are cultivated with fair success; barley is also grown, but seldom ripens owing to the shortness of the season and frost during the summer. At Rupert House our season's work was completed, and we hastened to return to Ottawa. We were not able

to leave, however, until the 9th, when we crossed the foot of James' Bay to Moose Factory, a distance of one hundred and twenty miles, in a large canoe, with six men. The water of the bay is very shallow; so much so that, when the tide is out, nothing but mud flats can be seen.

Having been delayed by high winds, Moose Factory was not reached until the 14th. Having here changed our canoe for a smaller one, with three men, we started up the Moose river next day, and reached Dog lake, at the height of land, on the 29th. Here taking the Canadian Pacific Railway, we arrived in Ottawa, October 2nd.

(A.-P. *Low*, October, 1885.)

EXPLORATION OF LAKE ST. JOHN AND LAKE MISTASSINI.

Leaving Lake St. John, as already stated, on the 13th of July, we ascended the Mistassini for a hundred and five miles, to a point bearing N. 13° W. from its mouth, and distant, in a straight line, eighty miles. At this point we left it on the west side, and here also we commenced our survey, the Mistassini river having been previously surveyed by Mr. Blaiklock, P. L. S. The distance from this point to Lake Mistassini in a straight line is sixty-one miles, on a bearing N. 50° W., although the distance actually measured was about ninety miles. We struck the lake at the end of a long narrow arm, called Cabistachuan bay, and about nine miles to the north-eastward of the southern extremity of Abatagoush bay, where Mr. Richardson's line comes upon it.

The first portion of our survey—that from the Mistassini river to the lake of the same name—may be conveniently divided into three parts. The first extends to the Chief river, mentioned in Mr. Richardson's report as the main branch of the Ashuapmouchouan, the distance, in a straight line, being twenty-eight miles, on a bearing N. 80° W. Rather more than half way the line in this part crosses the Wassiemska, which appears to be nearly as large as the Mistassini, into which it flows. The second part is from the last mentioned point to the height of land between the St. Lawrence and Hudson Bay waters, the distance being thirty-five miles, and the bearing N. 25° W. The Chief river, about a mile above where our line strikes it, divides into two branches, which are nearly equal in size. The most westerly of these we surveyed for above twenty miles above the forks.

The general course is nearly north and south. This is also the course of nearly all the small streams, tributary to the Ashuapimuchouan, between this and the height of land, many of which are crossed obliquely by the line just defined. Both this line and the preceding pass entirely over a Laurentian country. The rocks are mostly grey, moderately fine-grained, micaceous gneiss, with considerable dark green, hornblende gneiss interstratified, usually in layers from one inch to a foot thick. Red gneiss is rarely, if ever, seen. The dip is very uniformly east, or a little south of east, and the angle of inclination is always high, the strata being often nearly vertical. There is a very noticeable connection between this fact—the uniformly north and south strike of the strata—and the peculiar conformation of the surface. Over the whole region from the Mistassini river to the height of land, and two or three miles beyond it, as far as it could be seen from our line of traverse, the surface is broken by low, narrow ridges running nearly north and south, or a little east of north and west of south. These ridges are seldom more than three hundred and often not more than one hundred feet above the general level. The direction of the rivers generally conforms with this arrangement, and the small streams found in all the valleys frequently expand into lakes from a quarter to half a mile wide and perhaps several miles long. These are so numerous that from the top of Frog mountain, a hill rising to a height of about 350 feet, and situated about the middle of the second of the two lines referred to, I counted upwards of forty of them within a radius of six or eight miles.

The remaining distance from the height of land to Lake Mistassini is the last of the three parts into which the whole exploratory line is divided. The distance, in a straight line, is only five and a half miles, and the bearing N. 60° W. The ridge forming the water-shed is about ten chains wide, and, where we crossed it, is a small lake on each side, that on the south-east side discharging by a stream which is tributary to the Ashuapimuchouan, and the other sending a contribution to Rupert's river through Lake Mistassini. These two small lakes are nearly on the same level and only sixty feet lower than the highest part of the dividing ridge. We descended to within a mile of Lake Mistassini by a small rapid called Little Perch river. About three miles from the lake, this stream falls about sixty feet over an escarpment facing to the north-west and overlooking a comparatively level tract of country, extending in that direction as far as the eye can reach. The rock in this escarpment is grey gneiss, similar to that already described, and dipping about S. 65° E. 50°. About a mile to the westward, and within about two miles of the lake, hard bluish-grey lime-

stones are met with. These are the flat limestones of Lake Mistassini, mentioned in Mr. Richardson's report as the northernmost of the three successive groups of rocks crossed by his exploratory line.

About mid-way between the last exposure of gneiss and the first of limestone, a distance, as already stated, of about a mile, there are some small exposures of a reddish feldspathic rock, apparently of a brecciated character, with calcareous seams, and showing a considerable amount of a dull green steatitic mineral. This rock occupies as nearly as possible the position in which one might expect to meet with Mr. Richardson's second group, which includes the copper-bearing strata and may represent some of the conglomerates of that group; but, if it does not, no rocks of that series were observed. Nothing was seen at all like the chloritic slates of lakes Chibogomou and Wakinitchee, which, on the former lake, Mr. Richardson found to contain important deposits of copper ore.

The surveys on Lake Mistassini constitute the second of the two divisions into which our season's work naturally divides itself. We measured on this lake a coast line of about a hundred and fifty miles, including no bays less than a mile in width. The main body of the lake was found to be of a very elongated form, lying in a south-west and north-east direction, with a perceptible curve between the south-west extremity and the farthest point seen by us, the concavity of the curve being towards the south-east. A long, ragged tongue of land, upwards of twenty miles in length, running from the south-west end, divides that end of the lake into two parts; and, of these, the one on the south-east side divides into several long narrow arms, which are out of the general direction, having a nearly north and south trend. A series of long narrow islands, which were seen only from a distance, extends for many miles in the same direction, beyond the above mentioned point, being, like it, apparently parallel with the longer axis of the lake. We carried our measurements round the long point to the bottom of the bay on the north-west side of it, called Poonichuan bay, and thence along the main north-west shore of the lake, for about seventy miles from the extreme south-west point. As no land was visible from this position, looking in a northeasterly direction from a point about forty feet above the level of the water, the whole length of the lake cannot be much, if any, less than a hundred miles. It appears, however, to be comparatively narrow, being probably not more than fifteen miles wide, unless the width increases beyond where we saw it.

All the rocks met with on the lake are the flat limestones already mentioned. They seldom dip at a higher angle than twenty degrees, and,

although very much disturbed by minute undulations, the general strike appears to be with the direction of the lake. These strata appear to occur over the whole area occupied by the lake, but they are bounded all along the north-west shore by the Laurentian gneiss. They would appear not to extend for beyond the lake in a south-westerly direction, as it seems probable that they are there cut off by the meeting of the Laurentian gneiss with rock of Mr. Richardson's second group.

The character of the land being much the same as that described by Mr. Richardson, I have nothing to say on that head which appears worthy to be introduced into this preliminary report, although I made numerous notes both on this and other subjects, which will find an appropriate place in a more detailed report after further exploration.

(*W. McOut, 1871-72*)

BY THE SAGUENAY TO HUDSON BAY.

Father Albanel, in *Les Relations des Jésuites*, gives the following account of his journey to Hudson Bay *via* the Saguenay, in 1671-72 :

" On the 8th day of August, said he, I reached Tadousac, where I found myself obliged to overcome a good deal of opposition on the part of the Indians to this enterprise.

The affection of this good man did not stop there : he wanted to take us with our baggage into his boat as being more comfortable than our canoes and to convey us with his people for a distance of forty leagues from that point.

We had already travelled fifteen by the Saguenay when we met two canoes descending, in one of which was a man, who was supposed to know the routes to the sea, seeing that it was not more than eight years since he had been there. After explaining to him our design, I asked him to act as our guide, but the experience of the past caused him to fear the future, and he begged to be excused for a long time on account of the difficulty of the journey. However, he had in the end to yield to the persuasion of our conductor.

We therefore left together on the 22nd, and, as we were opposed by headwinds, it took us four days to get to Chegoutimit, where we remained three days.

On the 29th, after making a considerable present to these good Indians, who had conveyed us thus far in their boat, and thanked them for the services they had charitably rendered us, we embarked in the canoes to ascend the first rapids which presented themselves as far as lake Kenougami, where we arrived next day and where I found two wigwams of Sillery Indians, who were very happy to have the opportunity to perform their devotions, to confess and receive the holy communion.

On the 1st September, we slept beyond a small lake called Kinougamachis, famed for the multitude of long-tailed frogs which inhabit it and keep up a continual croaking; it is said that they are very venomous, although in this country the toads, snakes and vipers are not so.

On the 2nd, we camped at the entry of Lake St. John, named Pingagami, which is 30 leagues long and 10 broad; 12 rivers fall into this lake, but there is only one issuing from it, which forms the great and fine river called the Saguenay. This place is beautiful; the lands are very level and seem good; there are fine meadows; it is the country of otters, moose, beaver and chiefly of the porcupine; it is on this account that the Indians who reside there call themselves *Kakouchac*, taking their name from the word *Kakou*, which, in their tongue, means porcupine; it was formerly also the place where all the nations who are between the two seas, of the east and north, used to meet to trade; I have seen more than twenty tribes gathered there. The inhabitants have been greatly decimated by the last wars which they have had with the Iroquois and by the small-pox, which is the plague of the Indians; now, they are beginning to recruit themselves from the members of other tribes, who have been coming in since the peace. We stayed there three days to lay in provisions, which were already beginning to run short.

On the 7th, we reached the end of the lake. Good luck threw two Indians in our way, who accommodated us with two guns for hunting, four of our own being useless.

The season being too far advanced to reach the sea before the snow and ice, by which we were stopped on the last day of October, our Indians selected this spot to spend the winter on account of the game, which was there abundant.

But it is time to resume the narrative of our journey. The spring had already succeeded the winter, the rivers were open and the ice had disappeared, when it became necessary to enter into disputes with our guides as to our enterprise.

It was the 1st June, 1672, before we left Nataschegamion to continue our journey, our party numbering nineteen persons, of whom sixteen were Indians and three French, in three canoes.

We spent six days in ascending the rapids; the canoes had to be almost continually forced against the current, and very often we had to get out and travel through the woods, climbing over rocks, descending into ravines and ascending steep hills through groves of trees which tore our clothes, and, in addition, we were heavily loaded. Then, we were delayed two days by rain.

The 9th greatly taxed our patience, on account of a very difficult portage, as well by its length, which some place at four leagues, as by the badness of the roads, the water being sometimes up to our knees and sometimes to our waists in crossing and recrossing brooks traversing a vast region, which must be crossed to reach the river Nikoubau, which is to the south-west of that we had left. Even the Indians regarded this day as one of fatigue.

On the 10th, about six o'clock in the morning, we arrived at Paslistaskan, which divides the lands of the north and the south; it is a small tongue of land about an arpent in width and two in length. The two ends of this point terminate in small lakes, from which issue two rivers: one flowing to the east and the other to the north-west; one enters the sea at Tadousac by the Saguenay, and the other into Hudson Bay by Nemiskau, which is midway between the two seas. Towards nightfall, we met two Mistassinins in a canoe, which was in good condition; they were coming to meet us, having noticed the great smokes which we made from time to time in approaching this tribe to signal our arrival.

On the 15th, all the Indians feasted us in their way, and I continued to exercise the sacred functions and to instruct them.

On the 16th, after saying the holy mass, we started and arrived at Kimaganusis, and on the 17th, at Pikousitisinacut, that is to say, at the place where moccassins are worn out, being thus named to illustrate the difficulty of the roads.

On the 18th, we entered the great lake of the Mistassinins, which is said to be so large that it takes 20 days of fine weather to go around it. This lake takes its name from the rocks with which it is filled, and which are of prodigious size; there are a number of very pretty islands; game, and fish of all kinds; moose, bears, caribous, porcupines and beavers are

abundant. We had already made six leagues among the islands, which intersect it, when I perceived a height of land as far in the distance as I could see ; I asked my people, if it was towards that point they were going ? Keep silent, said our guide, don't look at it, if you do not want to perish. The Indians of the whole of this region imagine that, whoever wants to cross this lake, must carefully guard himself from looking in that direction through curiosity and particularly at the place where it is proposed to land ; its aspect alone, they say, causes the agitation of the waters and raises storms calculated to terrify even the boldest.

On the 19th. we arrived at Makoïamitikae, that is to say, at the Bears' fishery ; this is a flat place and the water is very low there, but fish are abundant, the little sturgeons, the pike and the white fish making it their home. It is pleasant to watch the bears walking along the water's edge and catching with their paws with admirable skill, as they pass, now one fish and now another.

On the 22nd, we went to Ouitataskouamiou : this was a hard day on us. We had to abandon the great river, the waterfalls and rapids being too violent, and to continue our journey through small lakes by means of seventeen portages before returning to the river. Here our guide lost his way twice, which obliged us to make a portage of two long leagues over rivers, descents and mountains, flooded plains and streams, in the crossing of which we had water to the waist.

On the 23rd and 24th, we reached a less mountainous country ; the air is much milder ; the country is finer and its lands would produce well and would be capable of supporting a great number of people, if it was properly used. This country, the finest met along our whole route, continues as far as Nemiskau, where we arrived towards noon, on the 25th June.

Nemiskau is a large lake, to make the circuit of which it takes ten days surrounded by great mountains from south to north forming a half circle ; at the mouth of the great river, which extends from east to north-east, there are vast plains which stretch even to the tops of the mountains of the semi-circle and all this country is so agreeably dotted with water that to the view there seems to be so many rivers, which form so many islands that it is difficult to count them. All these islands are so marked with the tracks of moose, caribou, beaver, deer and porcupines, that they seem to be the abode, where they usually roam. Five large rivers discharge into this lake, where the fish are so abundant that it formerly constituted the principal food supply of a great savage nation who inhabited

it only eight or ten years ago. The melancholy remains of their dwellings are still to be seen there, and the ruins on a rocky islet, of a large fort made out of big trees by the Iroquois, of which they guarded all the avenues and from which they frequently sallied to commit murders ; about seven years ago, they killed or carried into captivity eighty persons, which was the cause why this place was entirely abandoned, the aborigines having removed from it. There was a great trade carried on there, and those who frequented it came from all quarters on account of the great size of the river and the proximity of the sea. This river makes a great bend or elbow towards the north-east ; we had to make four long and bad portages, by little lakes, to strike it straight in the north-east and we slept at Nataouatikouan.

On the 26th, at Tehepimont, a very mountainous country. On the 27th, we finished getting over the portages.

On the 28th, we had hardly advanced a quarter of a league before we met in a small stream a rigged vessel of eight or ten tons carrying the English flag and lateen sail ; at a gun shot therefrom, we entered two deserted houses. A little further on, we discovered that the Indians had wintered close by and that they had not long left ; we therefore continued our route to a point about six leagues distant from the houses of the Europeans. There, the tide being low and the wind contrary, we entered through mud to the belly into a little river on the right hand coming from the north-east, where, after seeking around, we found two or three huts and a deserted dog, which indicated that the Indians were not far off, and that it had not been more than two days since they had gone away. We stopped there that night, firing off our heavily loaded guns to attract attention and amusing ourselves by gazing on the sea which we had so long sought and that famous Hudson Bay, of which we shall speak hereafter.

On the 29th, one of our canoes left for Miskoutenagachet, where our people thought the Indians should be.

Before issuing from the Bay of Hudson, I must give you a plan of it. But the short stay I made at Miskoutenagachet did not leave me time enough to visit it or to collect thorough information on the subject from the natives of the bay and adjoining country ; especially as I was mostly employed in teaching and baptizing seventy-two persons, adults as well as children. This is why I will not give here an exact description, which can be found on the maps that have been made.

I will only state that the river by which we entered the bay is called Nemiskausipiou and takes its rise in lake Nemiskau, of which it retains the

name ; this river is a very fine one. It is about half a league wide and more in some places, but it is not very deep ; it comes from the south east and extends to the north-west eighty leagues ; it is very rapid and broken by eighteen falls ; this is why, from fear of breaking the canoes and running the risk of losing all, they were portaged with all their contents through the woods. All these portages are long and difficult ; there are two or three of about three leagues each, others of a league, two leagues and two and a half leagues.

The rise and fall of the tide, which are here very regular, are felt for four leagues up this river, until they are arrested by a fall, which does not prevent the water from preserving its freshness during even the highest tides not only in the river, but for four leagues out into the bay.

The distance of the sea, at low tide, is hardly credible ; the Indians set it down at twenty leagues ; all the great space, as far as the eye can take in and which is mostly nothing but mud and rocks, remains almost completely dry, so that the river, which spreads over and loses itself in this mud, has no longer water enough to float canoes.

We ascertained that the mouth of the river is at the fiftieth degree of elevation, and we remarked that, from its entry, it cuts the bay by windings, which form islands fit for habitation.

At the west point, are lodged the Kinistinons and the Monsounik ; each tribe is separated by the great river. The coast people dwell on the north-east side on the river Miskoutenagachit, whither we went, going twenty leagues by sea : it is a long rocky point, situated at the fifty-first degree, where from time immemorial the Indians have been in the habit of gathering to carry on their barter. Further to the north-east, are located the Pitchiboutounibuck, les Kottackouikonesiouek and many other nations. At three days' journey to the north-west, there is a great river which some Indians call Kichesipion ; others, Moose river, Mousousipiou, on which there are many tribes, and, on the route, we leave to the right the famous island of Ouabaskou, which is forty leagues long and filled with all sorts of animals, but principally recommended for white bears ; it is said there is a small bay there where the water never freezes and in which ships can winter very conveniently.

I do not speak of the abundance of game birds in this country. On the island of Oubaskou, if the Indians are to be believed, it is so great, that at a place where the birds drop their feathers in the moulting season, the

Indians and the wild animals who get in among them are buried over their heads in feathers and are sometime unable to get out.

I say nothing either of the variety and abundance of the fruits which grow here, because it is not necessary to come here to seek for delicacies and tit-bits; what presented themselves usually to my view were little fruits called blueberries on account of their color, little red apples, little black paires and quantities of the goose-berries very common in all these cold countries.

I saw a great deal of large trees in different places, from which the bark had been stripped; and, asking my guide if these were not marks and writings such as they use, he replied that the Indians, driven by famine, had peeled these trees to nourish themselves out of their bark. God has given to warm countries the necessary refreshments, and, in these cold regions, the bears, the moose deer, the beaver and the porcupine are food which are better than figs and oranges to fortify the stomach in these countries.

They are mistaken who have believed that this climate was uninhabitable either on account of the great cold, the ice and snow or of the want of proper building and fire wood. They have not seen the vast and dense forests, the beautiful plains and the great meadows which border the rivers at various points, covered with all kinds of grasses suitable for the feeding of cattle; I can state that, on the fifteenth of June, there were wild roses in bloom as beautiful and as sweet-smelling as at Quebec; the season seemed to me even to be more advanced and the air very soft and pleasant. There was no night, when I was there; the evening twilight had scarcely ended before the dawn heralded the rising sun.

On the sixth, we began the journey up the river with much difficulty on account of the swiftness of its current and the frequent waterfalls with which it is broken. The Indians have then to get out into the water to drag their canoes by sheer strength, some of them drawing them with cords, others pushing them with long poles, and very often it was impossible to stem the impetuosity of the water which dashes over the rocks with startling rapidity. Then the canoes and all the baggage had to be carried through the woods, sometimes between lofty and frightful mountains, and sometimes over vast plains and shocking roads.

It took us four days to reach Nemiskau, where we hoisted the king's arms at the point of the island on the 9th July.

On the 18th, we arrived at the river of Minahigouskat, where two hundred other Indians were waiting for us, and who, after welcoming us according to the fashion of their country, entertained us each in their turn.

On the 18th, towards two o'clock in the afternoon, I planted the arms of our mighty and invincible monarch on this river, to act as a safeguard to all these peoples against all the Iroquois nations

On the 23rd, we reached Lake St. John after a good deal of hardship, I was astonished on my arrival to learn that the Mistassinins had been waiting for me for a month.

On the 29th, we started from the lake to go to Chegoutimik, where M. de Saint-Denis, captain of Tadousac, was waiting for us to take us aboard his vessel: we arrived there on the 1st August.

Down to this, it had been considered that Frenchmen were unable to make this journey. After trying it three times and failing to surmount its obstacles, they had been obliged to abandon it in despair of success.

It is true that this journey is extremely difficult and that all I have written is only the smallest portion of what one must suffer. There are 200 water falls and consequently 200 portages, where it is necessary to carry canoes and baggage together on the back; there are 400 rapids, which must be ascended by poling. I say nothing of the roughness of the roads, as it must be experienced to be understood. But one takes courage at the thought of so many souls who may be won to Jesus Christ. The distance going and coming is 800 leagues; we did more than 600 of these in forty days. Our rule was to start early in the morning and retire to rest late. We started as soon as the dawn of day enabled us to see the rocks in the river and continued until we could distinguish them no longer owing to the growing darkness.

HEADWATERS OF THE SAGUENAY, ST. MAURICE AND GATINEAU.

In the month of April last, I received your instructions to make an examination of the unexplored country to the northward from Lake St. John, on the Saguenay, with a view to ascertain the geological structure of that region, as well as its adaptability for agricultural purposes. From Lake St. John we ascended the Ashuapmouchouan. This stream, for a little over

ninety-seven miles from its mouth, had been previously surveyed topographically by Mr. Blaiklock, P. L. S., so that, with a plan of his survey, laid down on a scale of two inches to the mile, it was easy as we pursued our journey, to note accurately the geological and other features observed along the river. The general bearing of the course up the river from Lake St. John is about N. W. A little above the ninety-second mile the river divides into two branches, one of these comes from the N. N. E. and, being the larger, is called by the Indians the Chief river. The other which we ascended, although the smaller, retains the name of Ashuapmouchouan. At the end of Blaiklock's survey, our measurements commenced and were carried on in the usual way, the distance being determined by micrometer-telescope, and the bearings by prismatic compass, checked by opposite readings. The calculations for each day's work were made at night, and the measurements protracted in the tent as opportunity offered; so that we were able to ascertain, at any time, our position and rate of progress.

Except the first mile, which is N. W., the upward course of the river, from where our measurements began, is about S. W., and the distance from lake Ashuapmouchouan is about twenty-four miles. Leaving this lake, the upward course is generally northwesterly to the height of land which divides the waters of the Saguenay from those flowing to Hudson Bay. This portion of the river, which is called Nikoubau river, passes through several small lakes; the first is called Lower Nikoubau; the second, Nikoubau; the third, Perch lake; and the fourth, Branch lake. At the head of the latter, the river divides into two branches, one comes from the N. E., and the other, in its upward course, continues northwesterly, and passes and sort of double lake, called Narrow Ridge lake, whence the highest lake, called Whitefish lake, is reached by a portage of about one mile. This is close to the water-shed, which is also the boundary line between the province of Quebec and the territory to the north, and is nearly seventy-two miles from the beginning of our survey, or 170 miles from Lake St. John. Continuing in a northwesterly course, we passed through several small ponds, and descended for about two miles the stream called Two-Discharges river, which forms the outlet.

This brought us to lake Abatagomaw, traversing which advanced us a further distance of about ten miles, nearly in the same direction; thence our course was nearly at right angles to that hitherto followed, or northwesterly. Passing through some small lakes or ponds on a small stream which flows into the last mentioned lake, a height of land is reached which divides the waters of lake Abatagomaw from those of lake Chibo-

gomou. The latter lake is sixteen miles from the former or a little over two hundred from Lake St. John. Lake Chibogomou stretches in the same (northeasterly) direction, a further distance of twenty-two miles, and empties itself by two outlets, about three miles apart, with a fall of about twenty-five feet in from 100 to 200 paces, into another lake, running parallel with it. These two lakes and Abatagomaw are supposed to form the head-waters of the Notaway, which is said to be a large river where it falls into James' Bay.

Continuing in the same direction through several small ponds, and crossing another height of land, together a distance of a little over four miles, lake Wakanitche is reached. This lake extends in the same direction nearly twenty four miles farther. Following the stream by which it discharges, and passing through several small ponds, a distance of four miles brings us to Abatagoush bay, a part of Lake Mistassini. This bay was surveyed for thirty miles—thirteen miles to the Hudson Bay Company's post, and seventeen miles beyond it. At this point the lake opens out both to the right and left; and Mr. Burgess, the officer in charge of the Hudson Bay Company's post, told me that from this point the western shore trends north for about six miles, where a bay, twelve miles across, called Poonichuan, stretches south and south-west for a distance of about thirty miles. He further informed me that, across the bay, the coast-line continues in a northwesterly direction for forty or forty-five miles farther, and thence north for about sixty miles. In some part of the latter distance is the discharge of the lake, which forms the head-waters of the Rupert river. Thus, if Mr. Burgess's estimate of the distance is approximately correct, the length of Lake Mistassini, including the bays, would be about 150 miles, or but little less than that of lake Ontario. I have no information regarding its breadth. Besides the two bays already mentioned, there is a third on the east side called Cabistachuan, which runs to the south and west from a point about midway between the Hudson Bay Company's post and the end of our measurements, and is about twenty miles deep. At the south end of this, a stream of the same name, said to be of considerable size, enters from the eastward.

The whole distance from Lake St. John to the point where our measurements terminated on Lake Mistassini, by the route followed, is nearly 290 miles. It was my intention to have proceeded farther along the lake, but our provisions having failed to reach us, and being unable to procure any at the Hudson Bay Company's post, we were obliged to return to lake Nikoubau, where our supplies were stored. We therefore left Lake Mistas-

sini on the 13th of August and arrived at Nikoubau on the 20th of the same month. From the last mentioned lake, we resumed our survey. Ascending a stream called Foam-Falls river, we pass through lakes Askatiche, Kakaskapstethionisse and Normandin to a height of land which divides the waters of Lake St. John from those of the St. Maurice, a distance from our starting point, in a general south-west course, of forty-one miles; thence continuing on about the same course, we descended a tributary of the St. Maurice, called Clear-Water river, which passes through Clear-Water and Pemacachie lakes, and brings us in twenty-two miles to Sandy-Beach lake. About two miles from where we entered this lake, the river St. Maurice comes in front the north-west, and, at distance of about eighteen miles, it passes out by a narrow channel into lake Traverse. The total distance to this point from lake Nikoubau is about eighteen and a-half miles. As the St. Maurice had been already surveyed from this point downward, there was no need of continuing our measurements. We then descended the river as far as Kirkendatch, a distance of twenty miles, noting the various objects of interest met with as we went along. Having run short of some necessary supplies, and being unable to procure them here, I was obliged to send to Weymontachinque, a distance of sixty miles, where we got partially provided.

We arrived at Kirkendatch on the 7th of September, and the 13th started from that place with an additional Indian as guide, for the headwaters of the Gatineau. On this portion of the journey, the distances were estimated by time, except on the portages, which were paced, and some of the larger lakes, which were triangulated from a measured base. Passing from Kirkendatch through a few small lakes, we descended a stream which is the outlet of the last one, and which falls into a tributary of the St. Maurice, called Hair-Cutting river. This we ascended to its source, in Great Beaver lake, which brought us to the height of land between the waters of the St. Maurice and those of the Gatineau. This we crossed by a portage about half a mile in length to Light-Fire lake. The distance from Kirkendatch to this point is about thirty-five miles, in a direction about south-west. Light-Fire lake is on the south-east branch of the Gatineau, and several miles below its source. We descended the stream to the north-west branch; and thence to the river Desert, where we arrived on the 26th September, a distance of about 300 miles from Kirkendatch. From the Desert, Mr Leitch and myself travelled to Ottawa, about 100 miles distant, by land, as we could thus be better able to judge of the agricultural capabilities of the country than by following the river. The Indians, however,

went down the river with the canoes, and we rejoined them at Ottawa on the 30th September ; the whole party arriving in Montreal on the 3rd of October, whence the Indians returned to their home at Lake St. John.

The whole of the season's work has been protracted on a scale of two inches to the mile, and the accompanying map is a reduction from it to a scale of four miles to the inch. It must be remarked, however, that at some of the points, the distances are, for the present, only approximately given.

Economic minerals.

COPPER.—Copper-pyrites has already been mentioned as occurring in the neighborhood of Paint mountain, on lake Abatagonaw. At a point a little to the south-west of the mountain, on the lake shore, this ore is met with in specks, together with stains of the green carbonate, but no well-defined bed or vein was observed. The rock is a green, slightly calcareous, chloritic slate. These indications of copper are seen for nearly half a mile north-easterly along the lake-shore, where a bed or vein two feet thick, containing copper-pyrites is seen in chloritic rock for about twenty feet. Its strike is N. 31° E. and S. 37° W., the underlie not being determinable.

The portion of the vein exposed would probably yield four or five per cent. of copper throughout, while parts of it might produce ten or twelve per cent. For about three-quarters of a mile farther along the shore, specks of the yellow sulphuret and the green carbonate of copper are met with, wherever the rock appears. At the end of this distance, and just under Paint mountain, the rock is largely charged with fine-grained iron-pyrites and specks of yellow sulphuret, in a yellowish quartzose gangue. Here the iron-pyrites constitute as much as fifteen or twenty per cent. of the rock, while along the whole of the distance above described, about one and a quarter miles, it is never absent, though occurring in small quantities. At the last mentioned place is the depression described on page 293. As before stated, it is filled with drift, and no rock is seen in it ; but from the quantities of iron and copper-pyrites met with in the rock on both sides of it, it is quite possible that under the drift a valuable deposit of copper ore may exist.

IRON.—About half a mile south-west of the first-mentioned copper ore, and near the lake shore, there is a deposit of magnetic iron ore in chloritic slate, its breadth is fifty feet, and it is seen on its strike, which is S. 65° W. and N. 65° E., about 200 paces. The ore occurs in crystalline lumps and

grains throughout the rock. The whole fifty feet would probably yield an average of from fifteen to twenty per cent. of iron.

OCHRE.—The only place this was observed was in the north-east part of Paint mountain, where a small deposit was met with about half-way up the mountain, which probably derives its name from the presence of this ochre or paint.

LIME.—In all the localities where limestone has been described, it is abundant and suitable for lime-making.

BUILDING STONE.—It would be useless to take up space by specifying each locality where material of this kind could be got, as it is abundant throughout the Laurentian series, as well as in the flat limestone formation around Lake Mistassini.

VALLEY OF THE ASHUAPMOUCHOUAN.—The country around Lake St. John has already been described in the geological report of 1857, and its character for fertility is likewise well known from many other sources.

Ascending the river for thirty-six miles, the country differs but little from that around the lake, being underlaid with clay, which forms an excellent soil. In many places this becomes covered with sand and sandy loam, and, towards the thirty-sixth mile, the sand hills predominate, rendering the land less fit for tillage than lower down. The sandy ground, however, is small in proportion to what appears to be really good soil. Settlement has already ascended the river for about ten miles from Lake St. John, where I was told, and from observation have every reason to believe, that all kinds of grain and many vegetables yield well. A field of spring-wheat, five or six acres in extent, had a healthy and luxuriant appearance on the 23rd of June.

From the thirty-sixth mile upward, the country near the river becomes rocky, with but little soil. Occasional spaces of from a few acres to probably fifty or a hundred acres in extent are covered with sand, very often coarse, and abounding in rounded gneiss boulders of from an ounce to 100 pounds weight. The gneiss hills rise from 150 to 300 feet, and one, called Hawk mountain, close to the east side of the river, rises about 500 feet. As far as the Shecobish river, fifty-eight miles from Lake St. John, the country presents a similar aspect. The river itself is almost a continuous rapid; its height above the sea-level at the thirty-sixth mile is 512 feet, being a rise of 341 feet in twenty-two miles. Included in this are the Chaudière falls and rapids, 121 feet, which extend over somewhat less than one mile.

From the Shecobish to LaLoche brook, the aspect of the country remains the same, but the river is less rapid, the height being here 939 feet, a rise of eighty-six feet in twenty-three miles. From the LaLoche brook to the forks, the hills rise from eighty to 300 feet, but are still covered with a sandy soil and occasional sandy patches filled with gneiss boulders.

The whole of the country from Lake St. John to the forks was burnt over last summer, except some islands and patches of no great extent in low places near the river. The trees of this burnt district, so far as observed, appear to have been principally spruce, balsam-fir, white birch, poplar, mountain ash, and a shrub-like white cedar. The spruce is from twelve to eighteen inches in diameter, and from forty to eighty feet high, the other trees being of less size.

From the forks upwards to within six or seven miles of lake Ashuapmouchouan, the surface is comparatively level. Near the river considerable deposits of brown sand prevail, often filled with the usual rounded gneiss boulders. These boulder-sands have frequently a thickness of over one hundred feet. In many places where the surface is bare of vegetation, the finer sands are drifted into low ridges and hillocks by the winds. From one to three miles back from the river, on either side, rocky ridges of gneiss protrude through the sands, and rise from one to two hundred feet above the level of the river. On the sandy spaces but little vegetation is met with, and only a few small white birches and a species of pine, locally called cypress, grows on the gneiss hills. Although bare rocky spaces occur, considerable areas are covered with white birches, apparently of ten or twelve years growth. There are indications that a previous forest, but of no great size, has been destroyed by fire. The river along this stretch is full of rapids. In one place between the ninety-eighth and one hundred and second miles, there is a rise of 115 feet; the height above sea-level at the latter point being 1,115 feet, while in the next nine or ten miles the rise is sixty-five feet, reaching 1,180 feet above sea-level.

From this last place to lake Ashuapmouchouan, the country seen is low near the river and lake, the soil mostly a sandy loam and well fitted for cultivation. The wood is spruce and tamarac, both of which attain a good size, while balsam-fir and white birch are rarer and smaller. At this lake, on the site of an old Hudson Bay Co. post, in the clearing around the old buildings, as well as in open places near the lake and river, the coarse grass was from three to four feet high, while timothy-grass was two feet high on the 9th July. Blueberries were ripe by the 5th or 6th, and rasp-

berries on the 7th or 8th of July. The height of this lake is 1,184 feet above the sea.

The same character of soil and country prevails up the Nikoubau river from the lake of Pole rapids, a distance of about seven miles, but at these rapids, and above this to lake Nikoubau, the banks are composed of brown sand with gneiss boulders, the latter occasionally large, and often so numerous that the whole deposit resembles a coarse boulder-drift, with its interstices filled by sand. The country rises above the river from twenty to eighty feet, and the boulder-deposit is occasionally interrupted by gneiss hills of from eighty to two hundred feet high. Much of the forest appears to have been burnt from ten to twenty years ago, and these portions have a thin growth of small white birch and cypress, and often abound with blueberry bushes, which at the time of my visit were covered with ripe fruit. Where the woods have escaped the fire, they consist of spruce, balsam-fir, tamarac, poplar and mountain-ash. At lake Nikoubau, these all attain a good size.

GATINEAU RIVER FROM DESERT RIVER TO HEIGHT OF LAND. — The estimated height above the sea-level of the Gatineau at river Desert, about one hundred miles due north from Ottawa city, is 369 feet. At this point and for six miles further up the Gatineau, the soil is a sandy loam, the general level of the country being from twelve to thirty feet above the river, although rocky hills of a hundred feet are seen occasionally. Along this distance a considerable quantity of land was under cultivation with oats, barley, peas, and spring and fall-wheat. Several fields of the last looked healthy, and covered the ground well on the 26th of September. I was informed that the yield is from twenty-five to thirty bushels to the acre. Potatoes appear to yield well and were found to be of excellent quality. Above this there are no settlements, and the only cultivation is on the farms of lumbering establishments. One of these is Farm island, belonging to Messrs. Gilmour & Co.; the next and highest up belongs to Messrs. Hamilton Bros. Here I was furnished with the following facts by Mr. Grant, the superintendent: The clearing is about 400 acres in extent, producing 140 tons of hay, 3,500 bushels of oats, 200 bushels of peas, fifty bushels of buckwheat, 1,300 bushels of potatoes, with barley, turnips and mangold wurtzel, the quantities of which I did not ascertain. There are three other farms in the neighborhood, collectively of 350 acres, producing 180 tons of hay, 3,000 bushels of oats, 100 bushels of peas, and 1,400 bushels of potatoes. I am not aware whether wheat has been grown. These farms are chiefly for providing food for the horses and oxen used for drawing the lumber in winter.

It appears to me that the above facts indicate that the country is well adapted for settlement. The soil is very similar to that of the river Desert, a sandy loam, and, as far as observed, it is very much the same for a distance of over fifty miles along the Gatineau from the mouth of the Desert. The banks of the former river are from twenty to fifty feet high. Rocky hills from 100 to 150 feet high sometimes rise from them, but are oftener at some distance back. Besides the great quantities of pine, which this district is known to produce, it also contains spruce, balsam-fir, some black birch, as well as considerable areas of white birch, with occasionally white and brown ash. Curiously enough, where maple is met with, it is in groves on the most elevated points.

The river, excepting at the portages, is generally lake-like, and from 100 yards to not less than half a mile wide. There are in all ten portages, varying in length from fifty yards to about one mile. The total rise from the Desert to Hamilton's farm is 142 feet, making the latter about 512 feet above the sea. From Hamilton's farm to the junction of the north-east and south-east branches, a distance of about forty miles, the aspect of the country remains the same, except that pine timber gradually becomes smaller and more rare. There is reason to believe that, for a great portion of these forty miles, the forest was burnt seventy or eighty years ago, and its place is now occupied by a second growth of white birch. Pines are seen overtopping them; in many places these are numerous, and judging from their appearance, they are of comparatively recent growth, very few of them being more than a foot in diameter. It would be for the interest of the country to have these young forests protected from the lumbermen for many years to come.

The character of the river for about ten miles above Hamilton's farm is the same as below; in this distance four portages are passed, with a total rise of 114 feet. Above this the river becomes rapid, without portages, and narrower, the additional rise to the forks being 185 feet, making the latter 815 feet above the sea. For about twelve miles up the south-east branch, the river is rapid, and rises nearly 300 feet, reaching 1,015 above the sea. The river is from half a chain to two chains wide, with rocky banks rising into broken rocky hills from seventy to one hundred feet high, covered with a scanty sandy soil, supporting principally white birch, with here and there pines similar to those below the forks. I may here remark that no hardwood trees, such as maple, black birch, elm and ash were observed above this. One small ash tree was, however, seen at the end of the distance.

For the next twenty-five miles, the river is less rapid, the rise being only sixty five feet. The country is low, with few elevations over fifty feet. The soil is sandy, but supports a large growth of spruce, balsam-fir, white birch, tamarac and poplar, and a few pine trees of small size. Here, about 230 miles northward of Ottawa city, and 1,080 feet above the sea, appears to be the northern limit of pine on this branch of the Gatineau. The succeeding twelve miles is hilly, but well wooded with spruce, balsam-fir, tamarac, and white birch. The hills are from 150 to 450 feet high, shewing occasionally bare rocky summits and escarpment. This is succeeded for about ten miles by bare rocky hills, 100 to 500 feet high, with terraces of boulder sand from twenty to thirty feet high. Near the river, on both sides, small thinly scattered poplar, cypress and white birch are seen. To Marten river, three miles farther, the country is lower, rising above the river from twenty to 150 feet. The timber is of good size, the spruce and tamarac being from twelve to eighteen inches in diameter, and from seventy to eighty feet high. The country and the timber retain the same character to White Bear lake, about nine miles farther. The river up to this point is full of rapids, shewing a height above the sea of 1,450 feet. Beyond this to the height of land the stream rises to 1,500 above the sea. The aspect of the country is the same, except three or four miles to the south-east, where rocky hills are seen 300 or 400 feet in height, having a blackened appearance from recent fires.

The portage from White-Bear lake to Hair-Cutting lake is about half a mile; the summit is 1,514 feet above the sea, and only four feet above the latter lake, making here a difference of only ten feet between the waters of the Gatineau and those of the St. Maurice. Along Hair-Cutting lake, which is about seven miles in length and from two chains to about two miles wide, is a level plain rising over the lake from ten to twenty feet, composed of brown sand, and mostly bare of vegetation. Along the lake shore, where the waves have acted on the sand, iron sands like those of the lower St. Lawrence are met with. Proceeding down Hair-Cutting river to Great and Little Beaver lakes, the country continues comparatively level and consists of sandy plains, rising in terraces sometimes sixty feet over the river, and covered mostly with blueberry bushes and here and there remains of small burned spruces. From the lake to where the traverse leaves Hair-Cutting river, and thence to Kirkendatch on the St. Maurice, a distance of about eighteen miles, the country is still covered with brown sand, and the inequalities of the surface are from twenty to one hundred and twenty feet high.

The region as far as Loon lake is well wooded with spruce, tamarac, white birch and some balsam-fir. To the north of Loon lake and thence to Kirkendatch, there is a level space of brown sand of several square miles in extent. This plain, which rises sixty feet over the St. Maurice river, has been covered with a growth principally of spruce trees from six to nine inches in diameter, but these have nearly all been destroyed by the frequent fires which have passed over this district. On the St. Maurice below Kirkendatch, the country is more elevated and rocky and, for some distance at least, the wood seems likewise to have been destroyed by fire. The height of the St. Maurice above the sea at Kirkendatch is 1,275 feet. Following the St. Maurice upward to the upper end of lake Traverse, the country is comparatively level, and the river, for considerable distances, winds through extensive flats of sandy loam, which are covered by water in the spring-time and during floods. Some of these produce an abundance of wild grass, which would support many hundred head of cattle. Mr. Spence, the Hudson Bay Co's officer at Kirkendatch, told me that the few cows which he keeps thrive remarkably well, pasturing in summer on the flats, while in the winter they are fed on the wild grass cut and dried to hay.

The rise in the river from Kirkendatch to Sandy-Beach lake, which is immediately above lake Traverse, is fourteen feet, making the latter 1,289 feet above the sea. Lake Traverse, which is about eighteen miles in length and from a few chains to two and a-half miles wide, has banks of sand rising from ten to forty feet above the water. Some hills two or three miles from the lake rises from 100 to 300 feet, and others six or seven miles south-east from the lake, attain from 400 to 600 feet. The woods are spruce, tamarac, balsam-fir and white birch; the spruce and tamarac trees being from six to twelve inches thick at the base. The river St. Maurice, which, as already stated, falls into this lake one and a-half miles below the north-east end, is about five chains wide.

In ascending the Clear-Water river, a tributary of the St. Maurice, through Pemseachie, Watouche, Fishing and Clear-Water lakes, to the height of land portage, a distance of about seventeen miles, the country bears the same level aspect as on Sandy Beach lake. For nearly half this distance the woods have been burnt, considerable areas now producing only small cypresses about four or five feet high. Where the forest has not been burnt, the sandy soil produces a smaller growth of timber than on Sandy Beach lake. The river in this distance, to the height of land, rises only 131 feet, reaching 1,418 feet above the sea. The distance from the height of land down from Falls river, through lakes Normandin, Kakaskapstethiouisse, and Askatiche, to lake Nikoubau, is

about thirty-four miles. For the whole of this distance, the description given of the country along Clear-Water river is equally applicable. It presents the same alternation of green and burnt woods, as well as comparatively level, barren sandy soil. The height of lake Nikoubau is 1,266 feet above the sea, showing a fall of 152 feet from the height of land.

LAKE NIKOUBAU TO LAKE MISTASSINI. — The distance from the lower end of lake Nikoubau to the height of land, in a straight line, is about fifteen miles, but, by the river and lakes, it is about twenty-four miles; in this distance the woods are generally green, and in a few places, — one at the lower end of lake Nikoubau, a second at Perch lake, and a third at Narrow Ridge lake, — the timber is of good size. There are a few hills that rise from 100 to 300 feet. Patrick's mountain, to the west of Narrow Ridge lake, rises over the lake about 500 feet, and is covered principally with white birch trees, five to eight inches in diameter. The soil is still sandy, as far as observed, over the whole distance. The height of land, which is the northern boundary of the province of Quebec, is here 1,359 feet above the sea. It rises ninety-three feet above lake Nikoubau, but only fifty-three feet above its headwaters, and only twenty feet above the waters that runs to James' bay. The length of the portage which divides these waters is not quite half a mile.

From the height of land to lake Abatagomaw, about five miles, the country is somewhat more uneven, but still sandy and barren, supporting for the most part small cypresses, with some spruce and white birch. The fall to the lake is 153 feet, making the water 1,206 feet above the sea. This lake is crowded with low rocky islands, seldom rising above the water more than thirty feet. The timber, however, becomes larger, both on the islands and on the mainland. The lake is supposed to measure about twelve miles from north-east to south-west and about nine miles from S. E. to N. W. The outlet is said to be at the south-west part and to form one of the branches of the Notaway river, which empties into James' bay. From this lake to Chibogomou, a distance of about eight miles, the country is undulating, the highest part being about sixty feet over Abatagomaw, and thirteen feet over Chibogomou. It is rocky in some places, while ridges of sand are met with in others, for the first four miles. The rest of the distance presents a surface covered with large angular and rounded masses of white quartzose and granitic rocks, overgrown with from six to twelve inches of moss. Most of the wood has been burnt, and the surface is in many places covered with blueberry bushes, producing very large fruit. I may mention that on one of the portages a few bushes were found resembling the blue-

berry, but bearing a fruit only distinguishable from the blueberry by its colour, which was that of the white currant. I regret that, not having collected any specimens of this shrub, it is not possible to say whether it is of a species distinct from the blueberry.

Lake Chibogomou is about twenty miles long, on the line followed; but, on its south-east side, it is some five miles longer. A ridge, on which stands Sorcerer's mountain, 425 feet above the lake, projects to the south-west about twelve miles, between two arms. To the south-west of this ridge, the breadth of the lake is six or seven miles.

On the north-west side, it flows, by two outlets, into another and parallel lake, the waters of which are said to fall into the Notaway river. This second lake extends about twelve miles to a point opposite the west end of lake Chibogomou, and is from one to two miles wide. Lake Chibogomou is studded with numerous low and elongated islands, especially in its south-east extension. They are often rocky, and the shores of the lake, which are low, show either the solid rock or boulders, both covered with about a foot of moss. Towards the north-east-end and along nearly the whole of the south-east side, sandy loam prevails; and where openings in the woods are met with, a good growth of wild grass is found. Green woods surround the lake, except in the neighborhood of Paint mountain, where the forest has been burnt. This ridge-like mountain is situated between the two outlets. It rises 250 feet over the upper, and 275 feet over the lower lake.

Between Chibogomou and Wakinitche, the distance is about four miles. On the portages, and around the small lakes, burnt woods prevail, and the ground is mostly rocky and barren. The highest point in the last portage to Wakenitche is 1485 feet above the sea, and 240 feet above lake Chibogomou, but only 45 feet above Wakanitche, the latter being 1440 feet above the sea. Lake Wakanitche stretches northeasterly about twenty-four miles, and is from half a mile to three miles wide. On the south-east side, a considerable area has been run over by fire, while the remainder is dotted with green woods: the trees are of good size, and of the usual kinds, spruce, white birch, tamarac, and some balsam-fir. Along this side, as far as observed, the height over the lake is from 100 to 150 feet, and the soil is a sandy loam, well fitted for agricultural purposes. The north-west side and the south-west end of this lake are divided into bays running parallel to each other, and from one to four miles in length; these are separated by narrow rocky ridges from 100 to 250 feet high. One hill at the

south-west extremity and north-west side is supposed to be about 400 feet high. At the narrows, about six miles to the north-east, a bare rocky escarpment extends for about four miles on the north-east side, rising from 150 to 200 feet above the lake. Half a mile back, green woods are seen. Beyond the narrows, the shore is low, and the soil similar to that on the south-east side, except over Wakinitche mountain, which has been described on page 294. There is another rocky hill about seven miles to the south-west of the last, of about the same height, but apparently of less extent. Looking from the top of the first of these northward to the bays of Lake Mistassini, the country is a level plain, with here and there glimpses of the long narrow bays of the lake. Wakinitche lake empties into Abatagoush bay by a stream of about four miles in length. In this distance, there are three portages, with a fall of fifty-nine feet, which, deducted from the height (1,440 feet) previously given for lake Wakinitche, makes Lake Mistassini 1,381 feet above the sea.

About thirty miles of Abatagoush and Cabistachuan bays were surveyed, to where they open out to the main lake. The probable size of Lake Mistassini has already been stated. Along its whole extent, it probably presents much the same features as in the part examined. As before mentioned, the country soon after leaving Wakinitche is underlaid by comparatively flat limestone strata, the decomposition of which gives a fertile calcareous soil. The surface is level—in no place that I observed, rising more than thirty feet above the lake, thus rendering the region favourable for agriculture. What influence the climate may have on vegetation, I am unable to determine, and the only fact I can offer bearing upon this is that Mr. Burgess, of the Hudson Bay Company's post on the lake, furnished us, on the 7th August, with fair-sized new potatoes, these being the only crop at present cultivated here.

(*James Richardson, 20th April, 1870.*)

UPPER ST. MAURICE, GATINEAU AND OTTAWA.

In obedience to instructions from your department dated at Quebec, the 15th day of August, 1871, for the survey of the upper waters of the rivers St. Maurice, Gatineau and Ottawa, also for determining whether the waters beyond the height of land near Obijouan were those of the river

Chamouchouan (and consequently Canada waters) or waters flowing into Hudson Bay, and also for the placing of boundaries on the height of land between Canada and the Hudson Bay territory, I beg to report as follows :

After leaving the Piles, our progress was fair enough, arriving at La Tuque in five days, but between La Tuque and Weymontachinque we got on very slowly, as our canoes were heavily laden and the waters unprecedentedly low. The portages between those two places are numerous, but from the lowness of the water we were compelled to portage in very many places where it is not ordinarily done ; however, in the course of time we passed Weymontachinque and Oskisketak (Kirkendatch) and arrived at mile post 190 from Rat river. That being our point of departure, we there commenced operations, scaling with the " Rochon micrometer, " and made very satisfactory progress as long as the river and lakes remained open. We managed to reach with our canoes lake Onigamis, but our further advance was there stopped by the ice, which was firm ; finding on examination that there was not sufficient open water in advance of us to warrant our taking the canoes across to it, we placed them in " winter quarters " and there encamped to make sleighs and other preparations for land transport and winter travel.

From our point of departure to this place, the country is level, although an occasional hill is seen in the distance. The growth is inferior spruce fir, cypress, bouleau, aspen and tamarac. The soil generally is light and sandy. The severity of the climate and the early frosts would prevent the raising of any crops here. At Weymontachinque, which is much lower down, although excellent crops, both root and grain, are frequently raised, they never can be considered sure, and at Kirkendatch, which is sixty miles above Weymontachinque, potatoes seldom or never come to maturity.

In a few days our preparations being completed, we started off on the ice, which was then good, but did not remain so long, as a couple of days later it was submerged by a heavy fall of snow and rendered very unsafe. I do not know if it is a feature of these rivers, in consequence of being so near their sources, or whether it was caused by an exceptional season, that the ice was very unsafe during the whole winter.

On lakes and rivers further south, it is customary to travel in winter even over rapids with the greatest confidence, but here every attention had to be used in going on or off of a river, otherwise we were sure to go in and ice on rapids was particularly unsafe.

On arriving at lake Cawakabiskitee, I proceeded to the upper end thereof, and, leaving my party there to recruit during my absence, I took with me my chain-bearer and one man, and two Metiscan Indians, and thence ran a line across the height of land to waters flowing in the opposite direction, of whose existence I was aware from previous exploration; I had been informed that these were Hudson Bay waters, but other authorities stated them to be the waters of the Chamouchouan. I therefore followed the river down until I came to a Hudson Bay trading post called Metiscan.

This post is in charge of Mr. Thomas Moore, who received us with the greatest possible kindness (as is invariably the case at all the Company's posts.) Mr. Moore gave me all the information that I required, viz: that the river was called the Metiscan, a tributary of the Waswanepe flowing into Hudson Bay, and that the post was distant about twenty days' travel from the coast, that there were many falls and rapids on the river, involving, of course, portages, which would render travelling comparatively slow.

Whilst at Metiscan two Indians arrived who informed me that the waters of the Chamouchouan were distant about eighty miles in a north-easterly direction, and that the country was rough and mountainous.

The country from lake Onigamis to the height of land is level, the soil sandy, but the growth of timber is larger than it is below Onigamis, particularly aspen and tamarac; some of the latter kind about the height of land is of great size. From the height of land to the Hudson Bay post at Metiscan, the land is level or gently undulating and the soil generally sandy. About one third of it is brulé; the remainder is covered with a growth of spruce, cypress, fir, bouleau, aspen, and, near Metiscan, a few very small stunted cedars, which are not found within some distance below Weymontachinque.

The climate at Metiscan will not admit of the successful raising of crops of any kind; they have not time to ripen; there, potatoes are about the size of walnuts.

On my return to the height of land I there placed a boundary between Canada and the Hudson Bay territory, inscribing on the post the latitude and variation, also the distance from Rat river, &c., and also another post on the border of lake Cawakabiskitee (where I started my line across the height of land) inscribing thereon "portage to Metiscan," and the distance thereto.

Having thus satisfactorily established the position of the height of land, we resumed the scaling of the St. Maurice to its source, and the further we went the poorer we found the country; the growth, which is cypress, spruce, fir, bouleau and tamarac, is small and scrubby, and before arriving at the source we fell into a brûlé (the same extending from Metiscan) which reaches far to the west and south.

The St. Maurice, after skirting the height of land for some distance, takes its rise in two small springs, one being in a small savanna, and the other a quarter of a mile from it at the foot of a small hill, forming part of the height of land. A few steps will take one across this hill into the Hudson Bay territory. Chaining on from the source in a southwesterly direction, we immediately entered upon the territory, and there found several lakes forming the head waters of the river Kenusio, or Pike river, and, continuing on in the same direction a few miles further, we recrossed into Canada, and immediately, at the foot of the height of land, struck the headwaters of the west branch of the river Gatineau.

This portion of the height of land is exceedingly poor and barren; it is stony, rough and broken into a number of short hills, amongst which are found large boulders strewed about, and occasionally between the hills is found a small savanna. All this is an old brule, but the little hills are crowned with scrubby cypress a few feet in height. These hills on first coming into view appear to be high mountains at a considerable distance, covered with large timber, but both height and distance are exaggerated; a short walk brings you up to them, and the mountains and large timber dwindle down into small hills and scrubby brush.

I scaled this branch of the Gatineau down, until I made a connection with the already surveyed portion thereof, and then returned and resumed my original course, upon which I struck a second and a third branch of the same river, taking all these branches at their sources. I scaled them down as far as I thought advisable, that is, as far as they went upon the course which I wished to make. On finding that the third branch began to make easting, I left it, and made across for the Ottawa, which I took at its source and scaled down as far as a post planted at the end of the line between the districts of Ottawa and Montreal on the border of Kamechapegat or Big Stone lake.

All this portion of the Gatineau is barren and unprofitable; the upper part is all old brûlé, with many bald, rocky hills, which give it a very desolate appearance.

A little before leaving the Gatineau to cross to the Ottawa, we get into green timber, spruce, fir, cypress, bouleau, aspen and tamarac ; and the country between the two rivers is undulating. On coming to the head of the Ottawa, we begin to find a little pine, not having seen one since we left the neighborhood of Weymontachinque. A small quantity of this timber is found between the source of the Ottawa and about one mile below the outlet of lake Travers ; it then disappears and is not again found until about the fortieth mile from the source ; from there it increases in quantity and quality as we descend the river.

The country along the Upper Ottawa is comparatively level ; in many places along the river there are low alluvial flats, with high ground in the rear, and the country generally is susceptible of cultivation.

The Indians along the Upper Ottawa belong to the Algonquin tribe, and are very few in number, although game (such as moose and caribou) is more plentiful than on the Upper St. Maurice. The fur-bearing animals, with the exception of the beaver, are very scarce on the Upper Ottawa and Gatineau and as far as a little below the source of the St. Maurice, but from the height of land through to Metiscan and down the St. Maurice to lake Wesquatowcou, dark marten of very fine quality are particularly abundant, and from there down, and along all the lakes and tributaries, are found beaver, otter, mink, muskrat, marten and fisher, all of which bear very valuable furs.

(*John Bignell, 16th August, 1872.*)

GULF DISTRICT.

— MINGAN ISLANDS.

The Mingan group of islands appear to possess but little soil. Large Island, although 100 feet above the sea in some places, more particularly on the south and south-west sides, is marked by the levels of ancient sea beaches, composed of small limestone pebbles, and, except where the moss has spread over them, but little differences were perceived between the ancient beaches, and the one at present washed by the ocean. A succession of these beaches is well marked by a series of steps with a horizontal surface above each of an irregular breadth, not always following the sinuosities of the one below, as sometimes two of these steps will run into one. These terraces are elevated above one another from five to twenty or thirty feet.

The south-west portion of the island is a succession of such terraces still nearly devoid of soil. It is only in patches that vegetation occurs, and the patches have a very irregular contour, in no way that I could perceive dependent on the form or direction of the terraces. Sometimes they would shew an irregular outline on a terrace and then run up or down in an irregular strip to the next terrace, giving to the whole flight of steps a parti-colored aspect like that of a body partially deprived of its skin.

Another feature which marks strongly the change of relative level in regard to sea and land and tends at the same time to much picturesqueness of the scenery is the presence of what have been termed flower-pot-rocks. These, as the name imports, resemble flower-pots on a large scale. Hundreds of these stand up out of the rising tide to heights varying from ten to fifteen feet, with breadths from a few feet to thirty or forty, widening toward the top. They are composed of horizontal layers of limestone piled on one another, and are the remains of stratified masses that were once united, but have been gradually worn away by the destructive action of the sea, and while many of those standing in the water to various depths, according to the state of the tide, show the waves still at work upon them, some straggling ones are seen away high up on the island, showing a similar action when the relative levels of the sea and land were from fifty to sixty feet different from what they are now.

The strike of the Mingan group of rocks does not differ very materially from that of the strata of Anticosti, and the distance across the measures from the highest beds of Large Island to the lowest of Anticosti is about nineteen miles. Supposing that the inclination in this space does not differ from the average of those at the two extremes, which would not be far from ninety feet in a mile, the thickness of the measures cropping out in the water would be about 1,700 feet.

(James Richardson. 1st March, 1857.)

ISLAND OF ANTICOSTI.

Character of the Country and Coast.—A great part of the coast has a belt of reefs that are dry at low water, while they are covered according to the state of the tide at various depths at high water. The outer edge of these reefs forms a precipice, according to Bayfield, of twenty, fifty and even a hundred feet ; they occasionally shelve a little, but generally so little, that vessels approaching the coast have but small intimation of danger from soundings.

These reefs are composed of the argillaceous limestone of the island and extend out from the shore usually from a quarter of a mile to a mile, and, in one or two instances, to about a mile and a half. They conform to the bends of the coast, and, where bays occur, deep water may be expected to within a quarter or half a mile of the head of the bay, in a line up the centre, usually at about right angles to the general run of the coast.

From the west end, the reefs are continuous on the south side to St. Mary's river, for about six miles to the east of which deep water prevails close in shore ; from this the reefs again extend to South West point, with the exception of a mile before reaching it, and a mile on each side of Jupiter river. From South-West point they run about four miles to the east, beyond which, the Iron river, only a few points were observed where reefs existed ; but from Iron river to Heath point, and for two miles north-east of it, they are very general. On the north side, deep water prevails close in towards the beach, as far as Observation bay ; but from Observation bay to the West end, reefs are well marked, with the exception of about a mile, rounding North point.

On the reefs it is not uncommon to meet with boulders, but great distances may be seen without them ; where they occur it is generally in

considerable numbers, covering patches of from one or two acres up to half a mile; they are oftener seen in the bays than in less sheltered places; but North point would be an exception to this; they are there closely packed together for about half a mile, and some of them are of a large size; they belong to the Laurentian series of rocks.

The south side of the island, in its general aspect, is low; the most elevated points close on this coast are at the mouth of Jupiter river, where cliffs rise on the east side to the height of from eighty to a hundred feet, and on the west side to a hundred and fifty feet. On no other part of the south coast were they observed to rise more than from thirty to sixty feet, but the general height above the sea is from ten to twenty feet.

From the South-West point to the West end, the hills inland are more elevated than they are to the eastward; in general they rise gradually and more continuously from the shore, attaining the height of from a hundred and fifty to two hundred and fifty feet, at about the distance of from one to three miles. From this, however, are to be excepted certain localities on the coast, where plains are met with having a superficial area of from a hundred to a thousand acres underlaid by peat, partly bare of vegetation, but over considerable spaces supporting a heavy growth of wild grass from four to five feet high.

From a position a few miles east of South-West point to Wreck bay, which is at the east end of the island, between Heath point and East point, the elevation of the coast above high water is from seven to fifteen feet, with the exception of the neighbourhood of South point and Cormorant point, which rise to the height of from twenty to thirty feet on the shore; but very little rise takes place inland for from one to three miles, and this flat surface is bounded to the north by a gradual slope, rising to the height of from one hundred to two hundred feet, probably becoming more elevated still further inland. The low country is a succession of peat plains, occasionally bare, but often covered with wild grass; the whole being varied with strips and clumps of trees, as well as dotted with small lakes, on which ducks, geese and other wild fowl breed in considerable numbers.

The whole of the north side of the island is a succession of ridge-like elevations of from 200 to 500 feet above the sea, separated by depressions. From English Head, three miles east from the West end, to West Cliff, a distance of fifty-eight miles in a straight line, each successive ridge or valley occupies a breadth of from four to six miles; the ridges form a somewhat rounded end, facing the sea on the north; their rise is first well marked at

from a quarter of a mile to a mile from the shore, and, in about a mile more inland, they attain their greatest elevation; continuing this elevation to the south and widening, they narrow the intermediate valley, until, as far as known, the country becomes in appearance of a gently undulating character. The run of the valleys with some exceptions is from S. 10° W. to S. 30° W.

Macastey ridge or mountain, eleven miles east from the West end, rises upwards of four hundred feet at about a mile inland. High Cliff, eighteen miles further east, is probably 500 feet, one quarter of a mile from the shore; these are in some respects the most conspicuous ridges. High Cliff is a bold head-land, while Macastey mountain is separated by a broader valley than usual from its neighbour to the east, and is higher than any other to the west. Macastey mountain is a conspicuous object when viewed even from the south side of the island, in the neighbourhood of Ellis or Gamache bay; sailing up this natural harbour, it is observed in front a little to the right about five or six miles distant.

The succession of ridge and valley, from English Head all the way to West Cliff, is regular and characteristic, and produces a pleasing and beautiful effect. From West Cliff to Observation bay, a distance of about twenty miles, there is a similar succession, but on this part the ridges rise to their full elevation nearer to the shore. West Cliff rises immediately over the sea to an elevation of between 200 and 400 feet. Charleton point has an elevation of 100 feet over the sea, and a quarter of a mile inland rises to between 300 and 400 feet; from Charleton point to Observation bay, the coast is somewhat lower, Observation bay forming an indentation on the coast of a mile and a quarter deep, and five miles across; from the head of this bay a well marked valley bears S. 10° W.

From Observation bay to Gull cape, a distance of fifty-three miles, the cliffs become more prominent on the coast, rising almost perpendicularly at the points to the height of from 100 to 300 feet, and the indentations are more numerous, producing more sharply defined valleys.

Between Bear Head and cape Robert, a distance of five miles and a half, the greatest indentation from a straight line is about a mile and a half, but this is subdivided into Easton bay, Tower bay and White bay, the last being the largest.

Salmon river bay, east from cape Henry, is five miles wide, and its greatest depth is one mile. Salmon river runs through a well marked valley, of which the general bearing up stream is S. 65° W. for nearly six

miles, where a transverse valley, on the bearing N. 77° W. and N. 77° E. (about parallel with the coast) meets it, and gives it two streams running from opposite directions. From the middle of the valley the land gradually rises on each side to the height of from 400 to 450 feet, and the bed of the valley must rise pretty fast ; for though the current of the stream is without leaps, it is rather rapid.

Prinsta bay further east is an indentation of about one mile in depth, with a width of a mile and a half ; perpendicular cliffs surround this bay to the height of from 100 to 150 feet, except at the very head, where two creeks cut through the rock. On the west side of Prinsta bay is cape James, 150 feet in height ; and on the east is Table Head. Table Head has a face of from 150 to 160 feet perpendicular, and gains almost at once an additional height, from the summit of which there is a gradual descent on the opposite side, the surface, forming on that side a rough outline to the valley through which Fox river passes to Fox bay, which affords the second important harbour on the island. The upward course of the valley of the Fox river is N. 72° W.

From Fox point on the west side of the bay to Gull cape, upwards of a mile on the east side, there is a distance of six miles, in which the coast is low, Fox point, the highest part of this, not being more than from thirty to forty feet above the sea.

From Gull cape to Wreck bay, a distance of eleven miles, the cliffs are in general perpendicular, and from 100 to 130 feet high, gaining but little elevation inland, probably not over 100 feet, while the surface back from them gives, as far as observed, a slightly rolling country.

Excepting the valley of Jupiter river, there are no well defined valleys on the south side of the island.

In respect to the soil of the island, the plains on the south side, as has been stated, are composed of peat, but the general vegetation of the country is supported by a drift composed for the most part of a calcareous clay and a light grey or brown colored sand. The elements of the soil would lead to the conclusion of its being a good one, but the opinion of most persons, guided by the rules derived from the description of timber which grows on it, would not be favorable, as there is almost a complete absence, as far as my observation went, of the hard-wood trees supposed to be the sure indication of a good settling country.

The most abundant tree is spruce, in size varying from eight to eighteen inches in diameter, and from forty to eighty feet in length. On the north coast, and in some parts of the south, it is found of good size in the open woods close by the beach, without any intervening space of stunted growth; the stunted growth was occasionally met with on the north side, but it is only on the tops of cliffs, and other places exposed to the sweep of the heavy coastwinds, where spruce, or any other tree on the island, is stunted. In these situations there is oftentimes a low, dense and almost impenetrable barrier of stunted spruce, of from ten to twenty feet across, and rarely exceeding a hundred feet; beyond which open woods and good, comparatively large timber prevails.

Pine was observed in the valley of the Salmon river, about four miles inland, where ten or twelve trees that were measured gave from twelve to twenty inches in diameter at the base, with heights varying from sixty to eighty feet. White and yellow birch are common in sizes from a few inches to two feet in diameter at the base, and from twenty to fifty feet high. Balsam-fir was seen, but it was small and not abundant. Tamarac was observed, but it was likewise small and scarce. One of our men, however, who is a hunter on the island, informed me he had seen groves of this timber north from Ellis or Gamache bay, of which some of the trees were three feet in diameter and over a hundred feet in height. Poplar was met with in groves, close to the beach, on the north side of the island.

Of fruit-bearing trees and shrubs, the mountain ash or rowan was the largest; it was most abundant in the interior, but appeared to be of the largest size close on the beach, especially on the north side, where it attains the height of forty feet, with long extending and somewhat slender branches, covered with clusters of fruit. The high cranberry (*Viburnum opulus*) produces a large and juicy fruit, and is abundant. A species of gooseberry bush of from two to three feet high is met with in the woods, but appears to thrive best close to the shingle, on the beach, where strips of two or three yards across and half a mile long were occasionally covered with it; the fruit is very good and resembles in taste the garden berry; it is smooth and black-colored and about the size of a common marble; the shrub appeared to be very prolific. Red and black currants are likewise abundant; there appear to be two kinds of each, in one of which the berry is smooth, resembling both in taste and appearance that of the garden; the other rough and prickly, with a bitter taste.

Strawberries are found near the beach; in size and flavor they are but little inferior to the garden fruit; they are most abundant among the grass

in the openings, and their season is from the middle of July to the end of August. Five or six other kinds of fruit-bearing plants were observed, some of which might be found of value. The low cranberry was seen in one or two places in some abundance, but I was informed that it was less abundant than in many other past seasons. The raspberry was rarely met with.

The most surprising part of the natural vegetation was a species of pea which was found on the beach, and in open spaces in the woods ; on the beach the plant, like the ordinary cultivated field-pea, often covered spaces from a quarter of an acre to an acre in extent ; the stem and the leaf were large, and the pea sufficiently so to be gathered for use ; the straw when required is cut and cured for feed for cattle and horses during the winter.

But little is yet known of the agricultural capabilities of the island ; the only attempts at cultivation that have been made are at Gamache bay, South-West point and Heath point. South-West point and Heath point are two of the most exposed places on the island, and Gamache bay, though a sheltered position, has a peat soil, the whole being thus unfavourable.

On the 22nd July potatoes were well advanced and in healthy condition at Gamache bay ; but a field under hay, consisting of timothy, clover and natural grass, did not shew a heavy crop. At South-West point, Mr. Pope had about three acres of potatoes planted in rows three feet apart ; he informed me he expected a yield of 600 bushels, and, at the time of my arrival on the 5th of August, the plants were in full blossom, and covered the ground thoroughly ; judging from the appearance they seemed the finest patch of potatoes I had ever seen. About half an acre of barley was at the time commencing to ripen ; it stood about four feet high, with strong stalk and well filled ear. I observed oats in an adjoining patch ; these had been late sown, being intended for winter feed for cattle ; their appearance indicated a large yield.

On the day of my arrival at Heath point, the 23rd August, I accompanied Mr. Julian, about a mile from the light-house, to a piece of ground composed of yellowish-brown loam, which he had cleared in the woods and planted about the middle of June with potatoes and peas ; of the potatoes he procured a bucket-full of good size and middling good quality. The peas were in blossom, yet a few pods were found to be fit for use. In this patch I discovered three ears of bald wheat, the seed of which had been among the peas when sown ; they were just getting into blossom, and probably

would ripen ; the ear was an average size, and the straw about three and a half feet high.

I observed frost only once ; it was on the 18th September, but not sufficiently severe to do injury to growing crops ; and I was informed by Mr. Julian that the lowest temperature of the previous winter was only seven degrees Fahrenheit below zero. On the coast, as might be expected, the atmosphere is damper, and the temperature from ten to fifteen degrees below that of the interior, during June, July, August and September, and probably May and October.

During the three months of my stay on the island, fogs prevailed for ten days, six of which were the 31st July and the 2nd, 3rd, 4th and 5th of August, while we were at South-West point ; Mr. Pope told me it was an unusual occurrence. I observed that frequent openings in the fog were seen towards the land, leading to the idea that it was less dense in the interior.

I observed some cattle at South-West point, belonging to Mr. Pope and Mr. Corbet ; they appeared to be in good condition, although they had been left to provide for themselves in the wood openings, or along the shore. A horse belonging to Mr. Pope was in equally good condition.

Harbours.—Gamache or Ellis bay and Fox bay are the only two harbours on the island that are comparatively safe in all winds ; the former is eight and a half miles from West end lighthouse, on the south side ; the latter is fifteen miles from Heath point lighthouse, on the north side. From cape Eagle to cape Henry, across the mouth of Gamache bay, the distance is two miles, with a breadth of deep water of three-quarters of a mile, extending up the bay a mile and a half, while the depth of the indentation is two miles and a half. Fox bay is smaller and has less depth of water than Gamache bay. The distance across its mouth is a mile and a half, with half a mile of deep water in the centre, extending up the bay nine-tenths of a mile ; the whole depth of indentation being one mile and two-tenths. These two harbours occur in the same geological formation, while the rock presents a very regular and comparatively level surface, over which a road could be easily constructed from one harbour to the other, the distance being 120 miles ; by such means the whole island would be brought to within a moderate distance of a road having a natural harbour at each end.

It belongs to an engineer to say how far these natural harbours might be capable of artificial improvement. The belt of reef about a mile wide,

that lines the shore within them, is composed of argilaceous limestone in nearly horizontal beds, which are dry at low water of spring tides. Possibly one mode of improvement might be to make excavations in the limestone to the depth required, and to use the materials thus obtained partly to raise the sides of the excavations high enough for piers, and partly for the construction of break-waters outside. The depth of water on the reefs at spring tides is about six feet, and the strength of the break-water might be made accordingly. I have been informed that a vessel of 500 tons has been loaded with a cargo of timber in Gamache bay.

During a heavy wind from the east, while I was at Fox bay, a schooner ran in for shelter, and appeared to be quite safe. On account of the safety of this harbour, a provision post was established in it; but since the erection of Heath point lighthouse, seventeen or eighteen years ago, it has been discontinued; not a single house now remains, although they appear to have been numerous at one time. Provision post still remains indicated there; and it happened in one instance at least, that a vessel was wrecked within sight of Heath point, but the crew, instead of going to the lighthouse, went straight to Fox bay, where they confidently expected to find shelter; the consequence was that several of them perished with cold and hunger (the time being the beginning of December), before they could reach the lighthouse at Heath point. The indication cannot be erased from old charts that may be in the hands of mariners, but I am not aware what means have been taken to make navigators acquainted with the change.

I do not know of any other harbours on the island that are sheltered from all winds, and it appears to me that from every other position on the coast, any vessel near the shore, down to the size of a schooner, during the existence of one wind or other would be immediately obliged to put up to sea; for small boats of from three to ten tons burthen, there are scarcely ten miles of the coast where shelter could not be found by passing up the small rivers at high water; and there are many bays that might perhaps be made safe by excavations similar to those to which allusion has been made

Rivers and Lakes.—The streams that are met with along the coast are, considering the breadth of the island, very numerous. There is scarcely a mile that is not supplied with its clear stream of water, and every six or nine miles shew one of a size sufficiently large, and with a flow sufficiently constant, to keep machinery going. Waterfalls, near the coast, often present excellent sites for the purpose. The water of these streams is always more or less calcareous. On the south side the largest rivers are the Beccie, the

Otter, the Jupiter, (which is the largest on the island) the Pavillon and Chaloupe ; on the north, the Fox and Salmon rivers are the largest.

On the south shore numerous ponds and small lakes were seen just inside the shingle beach ; towards the east end of the island they occur in low swampy flats that there run along the shore. None were met with farther back, and none were observed on the north side of the island, except a few small ponds close to the beach.

Great Salt lake, Little Salt lake, Chaloupe lake, lake Lacroix, on the south side, and Fox lake on the north side, are in reality lagoons of salt water, the tide flowing in and out and mingling with the fresh water of the rivers.

Most of the streams and lakes swarm with the finest brook trout and salmon trout, and large shoals of mackerel were almost daily observed all around the island. But, in my tour, I saw no appearance of schooners employed in fishing, with the exception of one at South Point. The only operations I heard of connected with the trade were carried on at the mouth of a few of the larger streams on the south side and at that of Salmon river on the north by men under Mr. Corbet, the lessee of the island, and were entirely confined to the taking of salmon and salmon trout. Seals were extremely abundant, and but for a few Indians who come over from Mingan in July and August and take a few of them on the north side of the island, they would be wholly undisturbed. In the bays and more sheltered places round the island, these creatures are met with by thousands. It was not uncommon to stumble across one asleep on the beach, when generally it was despatched with a blow or two of our hammers.

Several species of whales were observed to be abundant towards the West end of the island. This must be a favorite resort as they were either seen or heard at irregular intervals day and night. One of them about sixty feet in length, and about fifteen feet above the water's edge, was found grounded on the reef in Prinista bay when we passed on the 3rd September.

The only fishing schooners I saw, with the exception of the one mentioned, were at the Mingan islands, where twelve or thirteen came to the harbor for shelter during a storm. I was informed by Mr. Henderson, the gentleman in charge of the Hudson Bay Company's post at Mingan, that they were all from American ports.

Wild Animals.—The wild animals met with on the island, as far as I am aware, are the common black bear, the red, the black, and the silver fox and

the marten. Bears are said to be very numerous, and hunters talk of their being met with by dozens at a time ; but on my excursions I only observed one at Ellis bay, two near Cormorant point, and one in the neighbourhood of Observation cape. I came upon the last one on a narrow strip of beach at the foot of a high and nearly vertical cliff. Seen from a distance, I took the animal for a burnt log, and it was only when within fifty yards of him that I perceived my mistake. He appeared to be too busily engaged in making his morning meal on the remains of a seal, to pay any attention to me, for although with a view of giving him notice to quit I struck my hammer upon a boulder that was near and made other noises which I conceived might alarm him, he never raised his head to show that he was aware of my presence, but kept on until he had finished the carcass, obliging me, having no rifle, to remain a looker on for half an hour. When nothing of the seal remained but the bones, the bear climbed in a leisurely way up the face of the naked cliff, which could not be many degrees out of the perpendicular, throwing down as he passed considerable blocks of rock, and disappeared over the summit which was not less than a hundred feet above the sea.

Foxes and martens are very abundant ; the marten was frequently heard during the night in the neighbourhood of our camp, and foxes were seen on several occasions. Of the silver-grey fox, the skin of which frequently sells for from twenty five to thirty pounds currency, from four to twelve have been obtained by the hunters every winter. Mr. Corbet, the lessee of the island, employs several men during that season to hunt these animals for their fur, and I understand he makes some profit by the trade.

I heard of no animals of any other description, with the exception of wild fowl, and I saw no frogs or reptiles of any description, and I was informed by the hunters that there were none.

Having in this report described the geological facts presented to my observation in Anticosti, I am desirous of drawing attention to the inferences that are suggested by the results as connected with the agricultural capabilities of the island. From the facts given in regard to the natural vegetation of the island, or the limited agricultural experiments of which mention has been made, little of importance can be gathered ; but these, when taken in combination with the considerations suggested by the attitude and mineral character of the rocks, appear to me to merit serious attention.

The strata of Anticosti being nearly horizontal cannot fail to give to the surface of the country a shape in some degree conforming to them. The surface will be nearly a level plain with only such modifications as are derived from the deeper wearing in a longitudinal direction of some of the softer beds, producing escarpments of no great elevation, with gentle slopes from their summits to a direction facing the sun, that will scarcely be perceptible to the eye. The easily disintegrating character of the rocks forming the subsoil can scarcely fail to have permitted a great admixture of their ruins with whatever drift may have been brought to constitute a soil, and it is reasonable to suppose that the mineral character of the argilaceous limestones must have given to those ruins a fertile character. It is precisely on such rocks, in such a condition, and with such an attitude, that the best soils of the western peninsula of Canada West are placed, as well as of the Genesee country in the State of New-York. I have seen nothing in the actual soil as it exists to induce me to suppose that in so far as soil is considered, Anticosti will be anything inferior to those regions; and considerations of climate only can induce the opinion that it would in any way be inferior to them in agricultural capabilities.

The three months that I was on the island were altogether too short a time to enable me to form any opinion upon the climate of Anticosti. But taking into view the known fact that large bodies of water are more difficult to cool and more difficult to heat than large surfaces of land, I should be inclined to suppose that Anticosti would not be so cold in winter nor so hot in summer as districts that are more inland and more south, and that it would not compare unfavorably with any part of the country between it and Quebec. While autumn frost would take effect later at Anticosti, the spring would probably be a little earlier at Quebec.

But such is the condition of the island at present that not a yard of the soil has been turned up by a permanent settler; and it is the case that about a million of acres of good land, at the very entrance from the ocean to the province, are left to lie waste, while great expenses are incurred to carry settlers to the most distant parts of the west. Taken in connection with the fisheries and the improvement of the navigation of the St. Lawrence, it appears to me that the establishment of an agricultural population on the island would not only be a profit to the settlers themselves, but a great advantage to the province at large.

(James Richardson, 1st March, 1857.)

MAGDALEN ISLANDS.

In the letters-patent granting the Magdalen Islands to Isaac Coffin, Esq., mention is made of only six islands; because at that time under the general name of Magdalen Islands, were comprised Amherst, Grindstone, Allright, Wolfe and Grosse Isle, as forming but one island. The group of the Magdalen Islands, however, comprises ten distinct islands, now designated on all charts and public documents under the names of Entry Island, Amherst, Deadman's, Grindstone, Allright, Wolfe, Grosse Isle, Coffin, Bryon and the Bird Islands. Four of these, namely, Entry Island, Deadman's, Bryon and the Bird Islands are absolutely isolated, having no communication with each other nor with the principal group, from which the most remote, the Bird Islands, are eighteen miles distant, and the nearest, Entry Island, three miles. Bryon Island is itself ten miles from the main island; and Deadman's Island eight miles from Amherst.

The six other islands, namely Grosse Isle, Coffin, Allright, Wolfe, Grindstone and Amherst, comprised in the letters-patent under the collective name of Magdalen Islands, are in some sort united to each other by banks of sand, which form lagoons of considerable extent: but these sand banks are traversed by gullies or water-channels which completely isolate these different groups and form of them so many different islands.

All these islands together, comprised within the parallels of forty-seven degrees, thirty minutes and forty-seven degrees, five minutes, of north latitude, and between sixty-one degrees eight minutes, and sixty-two degrees twelve minutes, of west longitude, are situate very nearly in the middle of the gulf St. Lawrence, at the distance of about one hundred and fifty miles from the coast of Gaspé, forming a very important part of this county, since of themselves they present an extent of coast line, of more than one hundred and forty miles, by the contour of their shores, being only about fifty miles less than the entire shore line of the rest of county.

Some idea may also be formed of their great extent, if it be considered that there is a distance of seventy miles from Amherst Harbour, the south, east extremity of these islands, to east point, the extreme north-east limit of the principal group. Nevertheless none of these islands exceeds three and a half miles in its greatest breadth; Grindstone Island being by measurement the widest across.

It would be difficult to give the exact superficies of all the Magdalen Islands, taken collectively, or of each of them severally, before they have been completely measured and surveyed. But from an approximate computation their superficial extent may be estimated at 55,400 acres of land; which, from the statistics accompanying the census of 1871, would be distributed as follows: 18,300 acres for Entry and Amherst Islands; 13,700 acres in Grindstone Island; 8,600 acres in Allright Island, and 14,800 acres divided among Coffin Island, Grosse Isle and Bryon Island. Of this general superficies it would appear that 6,000 acres are under culture, and if to this latter quantity there be added the same amount, that is, 6,000 acres, for natural meadows, sand hills, swamps, &c., there remains a balance of 43,400 acres of forest land, of which probably 5,000 acres may be included in lands already conceded. There would therefore still remain on these islands about 38,400 acres of forest land not conceded, and 6,000 acres of natural meadows sand hills, swamps, &c., which the proprietor may yet dispose of, and the average value of which may be, if not superior, at least equal to that of the timbered lands.

The timber which grows on the Magdalen Islands is, of itself, far from giving them any importance, since its variety is limited to only three kinds, balsam (*sapin*), spruce and white birch. And this last, the only one which formerly served for the construction of schooners, is now become very rare. The inhabitants therefore see with anxiety the rapid disappearance of those small forests of dwarfed and stunted timber which still cover the summit of their mountains, dreading the day when they will have altogether disappeared, either by clearing the land or by being taken for winter fuel, or still more rapidly by the destructive effect of a disastrous conflagration. This, then, is what gives the timber still found standing on these islands a value which it would not possess in any other part of the province. And therefore also it is not without motives of grave urgency that the municipality has passed resolutions, prohibiting the wanton cutting of timber, and has appointed guardians to watch over each district and prevent that unrestrained waste which takes place throughout the rest of the country. It is evident therefore that this article, so necessary to the domestic economy of the inhabitants, not only for warming their habitations, but also for enclosing their lands, will every year become more and more expensive on these islands, as it becomes by degrees more scarce, and as the population increases and the clearings become more extensive.

If, on the one hand, the scarcity of wood which even now necessitates the importation of coal from Pictou, in a locality where the inhabitants are

left to their own resources during six months of the year without any means of communication with the outer world, is already a hindrance to the rapid increase of the population resident on these islands, on the other hand, to counterbalance this disadvantage, the inhabitants of the Magdalen Islands draw from the soil of their lands, and from the depths of the sea which surrounds them, inexhaustible riches, which demand only a judicious and careful cultivation to produce an abundance of vegetables, grains and grass for fodder, and only strong arms for fishing, to take almost all kinds of fish which the waters of the Gulf supply.

Competent persons have not hesitated to assert that the soil of the Magdalen Islands is still richer than that of Prince Edward Island: and this latter is nevertheless considered as the garden of North America. If indeed the last census is examined, it will be found that for a population of 3,172 souls, there have been produced 19,143 bushels of grain and 68,876 bushels of potatoes, being six bushels of grain and twenty-one bushels of potatoes for each individual of the population. The inhabitants find also a still greater source of wealth in the produce of the natural meadows, where they obtain an immense quantity of hay, which allows them to rear cattle in such large numbers, that, in 1871, there were reckoned, for 555 families, 576 horses, not including foals, 2,591 neat cattle, and nearly 5,000 sheep, representing a value of more than \$100,000. We should still be below the real amount, were we to double this sum and estimate at \$200,000 the probable value of the quantity of animals which might be reared on these islands, when we consider the little care the inhabitants bestow on their pasture land and the immense amount of fodder which is lost every year in these vast natural prairies.

If it is now desired to go further and to form some idea of the value of the immoveable property, including the improvements made on the occupied lands, it is only necessary to consult the assessment roll, the total of which presents the very considerable amount of \$159,735: an amount which cannot be supposed to be exaggerated, and which might rather be carried to \$250,000, if we consider the aversion which the inhabitants generally have to magnify the value of their property, or rather the desire which they shew to have themselves assessed at the lowest figure, when the municipal or school tax is in question.

It is manifest from the preceding figures that, in an agricultural point of view, the Magdalen Islands are certainly not behind the rest of the country and might be advantageously compared with other and more

avored counties of the province. It is not, however, the soil alone which contributes to the importance of these islands: the sea which surrounds them on all sides is capable of supplying a variety of industries and of maintaining a commerce with all countries of the world to which the produce of our seas can be exported. The position of the Magdalen Islands, in the centre of vast fisheries, gives to the inhabitants of these islands incontestable advantages for making the most of them. The seal, the herring, the mackerel, the codfish, and a host of other fish, succeed each other according to their seasons, and, when one kind is wanting, the fisherman may almost always feel assured that another will make up for the loss by a greater abundance.

The produce of the sea is therefore for the inhabitants of the Magdalen Islands an inexhaustible source of wealth, which will every year augment their industrial and commercial prosperity, in proportion as their communications with the adjoining provinces and with the rest of the Dominion become more easy and frequent, and as their relations with those countries which consume their products become more intimate and more extensive.

It may, perhaps, be a matter of surprise that, with so many advantages and so many facilities for advancing their material welfare, there is but a small number of the inhabitants who are in a prosperous condition. It must be confessed that there are but few places where the fishermen have attained a certain degree of comfort and competency; but there is no other locality where they might arrive, in so short a time, at a condition of independence, if the onerous rents which the inhabitants have to pay for their lands, on the Magdalen Islands, were not an obstacle to their advancement in the road of progress. We cannot shut our eyes to the fact, that the present system of land tenure will always keep these people in a state of hesitancy, which renders them inactive, lowers their moral feeling, and prevents them from entering on a new career of progress and improvement. A large number of families have already sought a refuge on the North Shore, abandoning their farms in a fairly advanced condition, preferring to found a new settlement elsewhere than to continue improvements on lands which might some day be taken from them if the excessive rent of twenty cents an acre were not paid regularly every year. So long as the lands are subject to this rent, the proprietors will feel ill at ease, will remain in a state of indifference, and will preserve this feeling of unconcern, preventing them from laboring more actively to ameliorate their condition. Nowhere, besides, can there be found a race of men more intelligent, stronger and more robust, mariners more daring or more hardened in the exercise of their

calling, or a class of fishermen more capable of enduring all their privations and prolonged labors and more ready to encounter the perils of the sea.

We should therefore feel a desire to preserve intact a small population, born, so to say, upon the sea, and destined, in great part, to gain their living there. There are no sacrifices which we should not make to ameliorate their position, to attach them to the soil, and to improve their lot, by adopting such legislative enactments as would change the existing tenure and would give to each inhabitant a better title to the land which he occupies.

(*Ant. Painchaud*, December, 1875.)

GASPE DISTRICT

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DESCRIPTION OF THE MAGDALEN RIVER.

The Magdalen river falls into the St. Lawrence on the south side, in latitude $49^{\circ} 15' 32''$ N. and longitude $65^{\circ} 18' 36''$ W. nearly. Its mouth is about sixty miles above Cape Rosier, and about seventy below Cape Chatte. The entrance to it from the sea is on the west side of a not very deep bay, from which the right or east bank of the river is separated for about a mile by a narrow strip of fine gravel, but little elevated above the highest tides, while the left bank consists of an escarpment of stratified clay, about ninety feet in height, containing marine shells of the drift period. This escarpment continues out about a quarter of a mile beyond the mouth of the river, and, resting on black bituminous shale, forms Cape Magdalen. It extends up the coast for between two or three miles, and the clay of which it is composed, spreading for about a mile or a mile and a half inland, presents a gently undulating surface, well fitted for cultivation. Some patches of grain upon it, consisting of wheat, rye and barley, appeared to promise a fair average yield, and others of potatoes and turnips seemed to be in a thriving condition, though the style of husbandry was but indifferent. From the mouth of the river to the highest part reached by us, the distance in a straight line about S. W. is but thirty-one miles and a half, while following the sinuosities of the stream, it is sixty miles, and the distance actually measured by micrometer is 62 miles, 2 chains, 65 links.

The first stretch of the valley from the mouth of the river to Porcupine Bluff, (so called from our having killed the first porcupine upon its top) is about eleven miles, but the channel of the stream measures very nearly fourteen, the general upward bearing being $S. 25^{\circ} E.$ In this a serious impediment is met with in the ascent of the river about five miles from its mouth. It consists of two vertical cascades of twelve and sixty-two feet respectively, with a torrent above and between occurring in a narrow precipitous gorge, with banks so steep as to be impassable and rising to the height of 800 or 900 feet on each side of the stream. Over the summit of this height, on the eastern side, it became necessary for us to effect a portage, and the difficulties in transporting our canoes across were so great that seven days were consumed in the task, though the distance was not much over a mile. Not only had we to cut a clear road through very thickly

growing though not large spruce trees, but, after the road was opened, we were obliged to use ropes, and to hold on by the trees in ascending and descending the hill, as well as to excavate foot holes with a shovel to avoid slipping.

In flowing through this gorge, the stream makes a turn out of the general bearing of about half a mile to the westward, its course presenting rudely three sides of a parallelogram, below which the valley continues narrow to the flat land at the mouth, while the hills rise irregularly on either bank to heights not much inferior to that of the portage. Above the portage the valley is less deep and somewhat wider, the land presenting a more gradual fall from the hills, the sides of which appear to be but thinly covered with soil, while coarse gravel composes such flats as are met with at the foot. The timber on the flats consists of balsam-fir, white birch and cedar, with now and then ash and elm, but the last two are by no means abundant, while the mountain sides, all the way up from the sea present balsam-fir, spruce, white birch and pine, the last being in some abundance about the portage.

For the next four and a half miles above Porcupine Bluff the general upward bearing of the valley is a little west of south, in which the stream measures rather over six miles and a quarter, to the junction of a tributary falling in on the right bank; to this from its temperature, in the absence of any known name, we gave that of Cold Water brook. This tributary was the first of any importance met with; it comes from the south through a valley which is a continuation of that of the Magdalen up to this point, and just before joining the Magdalen, it flows between two prominent mountains, for which their shape suggested the appellation of east and west Terrace Mountains. On their north sides, particularly that of the west mountain, and towards the top, several perpendicular escarpments of from fifty to a hundred feet each rise at irregular distances behind one another, and sweeping round into the valley of the Cold Water branch they slope to the south and converge, gradually becoming less marked, until they disappear altogether. By a rough measurement the summit of the eastern mountain was computed to be 1375 feet above the river, or 1957 feet above the sea. The summit of the other, about a mile to the westward, was not ascertained by measurement, but it is probably about 200 feet higher.

The soil and timber above Porcupine Bluff differ but little from those below, with the exception of an increasing abundance of white pine. It

appears to me probable that between the portage and the Terrace Mountains about one-sixth of the wood seen on the slopes was of this species; most of it is large enough for saw-logs, and some may be of a size fit for square timber. How far back from the river it may extend, I am not prepared to say; but even what was in view would, in my opinion, be worthy the attention of lumberers. The only difficulty in getting it out would be the falls and rapids near the portage, but these might probably be improved, while they would afford unlimited water-power for mills; from the foot of the falls sawn timber might be sent with safety to the mouth, where there is a good harbour and deep water for two vessels, while, over the bar at the entrance, there is a depth of seventeen feet at the ebb of tide. From the Terrace Mountains, the upward course turns nearly west and continues so for very nearly five miles, presenting a succession of rapids, with a swift current the whole way. On the south side, west Terrace Mountain is continued for half the distance, but after the first mile it loses in elevation. On the north, for the same distance, the hills come close upon the river, presenting a height of about 500 feet. In the remainder of the distance the hills on both sides are more detached and less elevated.

The next stretch of the valley runs N. 25° W., and in this bearing, which continues for six miles, it presents a parallelism with that part between Porcupine Bluff and the mouth. The hills on each side are further apart than those lower down, and not so bold, the highest summits not exceeding 500 feet over the river. Just at the turn at the upper end of this part of the valley a tributary falls in on the left side; at its immediate junction, it is twelve feet wide, and its downward course south; but as it appears probable that it issues from a small lake, the position of which was described to me by one of the inhabitants at the mouth of the Magdalen, the general downward course of the depression in which it runs may be about south-west. In this case, it would be a continuation of the next and longest stretch of the valley of the main stream, and would apparently correspond with the depression on the south side of the portage mountain.

The next and longest stretch of the Magdalen valley has an upward bearing of about S. 55° W., and in this bearing a straight line of nearly twenty-four miles brings us to the end of our micrometer measurements. In this part of the valley, the only marked divergence from the bearing given is about six miles up, where the general course is nearly west for about two miles. The lower end of this divergence is marked by a tributary fifteen feet wide, which flows in on the right, and another half a mile above it, and twenty-four feet wide, falls in on the left, while the right side

two miles still farther up presents an additional branch. This is twenty-eight feet wide, and its transparency suggested the name of Clear Water brook. The only other branch of any importance in the twenty-four miles also falls in on the right, about three miles below the termination of our micrometer measurements; at its mouth it was thirty feet wide.

The hills along each side of this stretch of the valley, although not so high over the bed of the river as those lower down, are more regular in their outline. They run in ridges parallel to one another. Those nearest the river, which are at no great distance, appear to be between 200 and 300 feet high, and those visible farther back gain upon them but slightly in elevation. These ridges appear to agree in their direction with the general course of the river, with the exception of one on the right side, the escarpment of which is seen three miles east of the Clear Water, and just south of the bend mentioned, at the junction of the lowest tributary. Facing the north, this escarpment rises rapidly to a height of probably 700 feet, and the surface, then sloping more gently in a contrary direction, gives the aspect of an isolated hill. The escarpment resembles the north side of east Terrace Mountain, and, bearing exactly for the position of that mountain, it is probably of the same formation.

From the Terrace Mountains upwards the timber of the valley is smaller than lower down. It consists of spruce, balsam-fir, white birch and cedar. Only a few trees of white pine were observed. The soil is thin both on the hills and on the flats. On the latter it is supported generally on coarse gravel, in which pebbles of reddish syenite abound. These pebbles were small at the lowest point at which they were observed, but appeared gradually to increase in size as we ascended, and, towards the end of our measurements the river found its way with a rapid current among large rounded masses of this rock. These masses much resemble some of the syenites of the Laurentian formation, and may have been transported from the north side of the St. Lawrence.

About a mile and a quarter above the termination of our measurements a large tributary joins the main stream on the left. The valley in which it flows is not deep, and can be traced by the eye in its upward course, which is N. 25° W. for between nine and ten miles. For a mile above its junction, with an average breadth of forty feet, it presents a rapid and broken stream, and probably runs with a swift current the whole distance. Beyond this, according to the description given me by a hunter well acquainted with this part of the country, its upward course turns

west of south, and in about four miles reaches the base of a mountain which rises considerably above the table-land through which it flows; it is in several small lakes or ponds on the summit of this mountain, about two miles farther, that the tributary has its source.

About a hundred paces farther up the main stream than the mouth of the north branch, a tributary enters on the opposite side, shewing a breadth of about ten feet. It runs in a depression which appears to be a continuation of the previous one, its upward bearing being S. 10° E. The main stream from the end of our measurements to the junction has a breadth of from sixty to eighty feet, and its upward bearing is S. 70° W. or nearly at right angles to the two branches. This upward bearing it maintains until it reaches the base of the same mountain that gives origin to the north branch, the distance being about five miles. From this, as described to me by the hunter already mentioned, it bends round the southern base of this mountain, making an arc to which the last mentioned bearing of the main stream, if produced, would form a chord of five miles more, with a distance of about a mile and a half from the curve; about half-way from the western extremity of the chord the upward course is about north for three miles, when by a sharp bend it becomes east for about four more, the main valley splitting up into several subordinate depressions, each of which send a contribution from one or more small lakes at its source. These lakes are scattered among the tops of the same mountain in which originates the north branch, and the more southern of them are not far from its source, while the more eastern are not over one or two miles from the east end of the curve made by the main stream round the mountain's base.

This mountain rises boldly above the general level of the country around, its summits attaining a higher elevation by probably 1000 or 1500 feet. Approaching it, the size of the forest trees appear to diminish considerably, and occasional open spaces produce only short wiry grass. The sides of the mountain seem almost devoid of trees, and the top destitute of all vegetation whatever. Large areas below the summit appeared to be covered with huge detached masses of grey colored rock, and some parts were marked with stripes of red, while on the 20th of July along the whole length of the upper surface, as seen from the mouths of the north and south branches of the river, patches of snow were abundant. In a bearing parallel with the depression or valley of these branches, the measure of the mountain is about ten miles. According to Mr. Murray, the St. Ann river flows in a wide valley between Mount Albert of his exploration of 1845 and this mountain, which would therefore, from a favorable point of view,

appear to be a great isolated hill, and it evidently constitutes the abrupt eastern termination of the Shick-Shock range of mountains, which from the Matane, where Mr. Murray places its western limit, would thus have a length of about sixty-five miles.

While we ascended the Magdalen, an endeavor was made to determine the rise of the valley. The river is so rapid in the whole of its length that we met with scarcely any reaches of smooth water to aid us in carrying forward ascertained levels from one part to another; and as we had no mountain barometer, it would have been necessary, in order to attain any reliable result, to use a spirit-level the whole of the way. We did not consider it prudent to expend upon the task the time this would have required. I contented myself therefore with measuring by means of the spirit-level of my clinometer the rise of only the more precipitous parts, and estimated others by the comparative aspect of the current, and the greater or less resistance offered to the progress of our canoes. With the exception of two short intervals, in which the canoe-men could use their paddles, they were compelled to resort to their poles the whole distance, or jumping out into the water to drag or push the canoes along with their hands. On such occasions we were often obliged to land and scramble along the bank for considerable distances, and it was then I could sometimes ascertain the rise of parts by the clinometer. The result is given for what it is worth, without any great confidence in its accuracy, except as a very rude approximation to the truth.

This would give for the valley a rise of about thirty-two feet in a mile, but if from the result be deducted the mountain portage cascades and rapids, and the measured part of the Terrace Mountain rapids, both of which are perfect torrents, the rate of rise would be reduced to about twenty-five feet in a mile. On the St. Ann, though Mr. Murray met with no vertical falls, he ascertained by barometrical measurement that the rise in the part which he measured was about twenty feet in a mile, and from the description he gives me of its navigation, I am induced to suppose that his difficulties of ascent were by no means equal to ours, even when those of the mountain portage and Terrace Mountain rapids are excluded. The rise given to the Magdalen therefore does not appear extravagant. Taking the height of the valley at the north and south branches to be 2000 feet, and that of the mountain between the Magdalen and the St. Ann to be 1500 more, its summit would be 3500 feet above the level of the sea. Mr. Murray's barometrical measurement of Mount Albert made its summit 3778 feet above the sea; and as he states that, when standing on Mount

Albert, the mountain to the east of St. Ann river bounded his view in that direction, it would follow that its height must have been at least equal to his own elevation, which would correspond nearly with the conclusion arrived at by myself.

(*James Richardson*, 21st December, 1857.)

DISTRICT BETWEEN MAGDALEN RIVER AND GASPÉ BAY.

The distance from the mouth of Cold Water brook to York river where we struck it on our traverse is nearly eleven miles in a straight line, bearing S. 25° E. We followed the valley of the Cold Water, which bends more to the west, but our greatest distance from the straight line was not over a mile and a half. It occurred when we had proceeded up the brook about three miles and a half, where a tributary ten feet wide joins it on the right, with an upward bearing south of east. From this the bearing of the Cold Water valley again gradually approaches the straight line, and about a mile and a quarter farther up another tributary joins on the same side as the former and runs nearly parallel with it.

A third falls in about three-quarters of a mile farther, on the opposite side; and the source of the main brook is met with about three miles and a half above it. The source consists of a great multitude of copious springs which issue over an area of from thirty to forty acres, and collecting together from at once a considerable stream. These springs were on the highest ground of our traverse, and were estimated to be about 800 feet above the Magdalen at the junction, which would be nearly 1400 feet above the sea. Immediately beyond them the descent to the York river commenced, the distance to the river being about two miles and a half, to which there was a fall of probably 800 feet. In the valley of the Cold Water as in that of the Magdalen, there is evidence of a thin soil. The timber up to the first brook is spruce, balsam-fir and cedar, and there are large areas both on the mountain sides and in the lower parts of the valley, where the trees appear, from the slightness of their hold in the ground, to have fallen over into a confused net-work of prostrate timber, through which a subsequent dense growth has sprung, producing a tangled mass very difficult to penetrate.

The trees above the first brook are of the same kind as those below, but they are small, generally from two to three inches in diameter. The

woods are open, however, and afford good walking, and there is evidence of a previous growth having been destroyed by fire. Although pine was rarely met with standing, the charred and prostrate remains of good-sized trees were by no means scarce. From the position where we struck the York river to the settlements on the north-west arm of Gaspé Bay, the distance in a straight line about east is thirty miles, but the line we travelled was about five miles more. The position at which Mr. Barlow separated from us, which we called the Ponds, was about eleven miles forward on this line, and his traverse to the Magdalen, in which he kept a straight line N. 63° W., was seventeen miles and a half.

In the first part of our eastern traverse, we kept along the left bank of the York river for about three miles. The width of the stream was from a chain and a half to two chains; its current was rather swift, and its surface shewed broken water in several places. Its banks were often abrupt, presenting bare precipices of calcareous rock varying in height from fifty to 200 feet. In the three miles that we walked along its left bank, we crossed three considerable tributaries with a general northwesterly upward bearing; they joined the main stream through rocky, precipitous gorges of from 200 to 300 feet deep. Below the last one, the river gains rapidly to the southward, in its downward course, being turned in that direction by an elevation of from 300 to 500 feet, in which considerable vertical breaks of rock are brought to view.

This elevation forms a ridge which divides the York river from one we met with at the distance of four miles from the last of the tributaries mentioned. We supposed it to be the upper part of the Dartmouth river. It was twenty-four feet wide where we crossed it, and flowed north. In its upward bearing, it appeared soon to turn eastward, and farther in that direction it probably occupies the next valley north from the York river, and runs parallel with that river for some distance, but in a contrary direction. About two miles and a half exactly north from our point of intersection, Mr. Barlow crossed it on his return traverse. It was there still flowing north, but it probably turns to the east not far below, to gain the position where I subsequently left it at the north-west corner of South Sydenham township, and the point where our eastward traverse previously came out upon it, two miles farther down.

Proceeding on our eastern traverse, only two other streams of any importance were met with, and they were both tributaries of the Dartmouth. One of them occurred about nine miles from our first intersection

of the main stream. It had a breadth of twenty-four feet, and, flowing northward, it must join the Dartmouth some short distance above the west line of South Sydenham. The other was met with three and a half miles farther east. It goes among the settlers on Gaspé Bay by the name of Lady Steps brook. Where we crossed it, its breadth was twenty feet, and its flow was from the south-west, in which direction its source is probably near that of the main stream. On our course it occupied a deep gorge, with a considerable mountain on the west and a still more important one on the east. The latter may have a height over the bed of the stream of probably 1200 or 1300 feet, and we gave it the name of Mount Serpentine, from the fact of our having discovered on it a band of serpentine, which we traced for a distance of nearly a mile and a half. The stream turns eastward along the northern base of this hill, and joins the main river about three miles below our crossing.

Between York river and this brook, the inequalities of the surface did not appear to be many. One occurred three miles east of our first intersection of the Dartmouth. Here an escarpment of from fifty to a hundred feet of shaly limestone, facing the south-west, capped an elevation of from 300 to 400 feet, passing over which we descended as much in about a mile and a half to the ponds already mentioned as the position where Mr. Barlow commenced his return traverse. The rills on each side of this ridge flowed southward to the Dartmouth. The next four and a half miles, to the north flowing brook already mentioned, are indented with no more than a gorge or two of from eighty to a hundred feet deep, but in a mile beyond the brook we ascended 700 feet and kept at that height for a mile and three-quarters, and then descended from 800 to 900 feet in a quarter of a mile farther. This descent is within three-quarters of a mile of Lady Steps brook, and thus constitutes the flank of the mountain already mentioned as existing west of it. East of Mount Serpentine our way to the settlements of Gaspé Bay was marked to the right by a bold range of heights rising 1500 feet or more above the sea, cut by occasional transverse gorges, while on the left we had the valley of the Dartmouth at no great distance.

On our eastern traverse, the timber met with consisted chiefly of balsam-fir, tamarac and cedar. On the first part of the line it appeared to be small, but it increased in size when we came to within fifteen miles of Gaspé Bay. In damp bottoms, cedars were occasionally met with, measuring ten feet in circumference. Pine was not observed until we were within eight miles of the settled part. The most marketable portion of it seemed to have been cut down by the lumberers several years ago, and

what now remains appears to be of but little importance. Ascending the Dartmouth river from its mouth, the first nine miles, up to Lady Steps brook run nearly on the strike of the rocks, and, though the stream is rapid and broken, it is navigable for canoes. For two miles above this, it runs across the measures coming from the north, and the lowest half-mile of the distance is characterized by several vertical falls, varying from two to ten feet in height. Beyond these two miles a zig-zag upward course for four miles more is sometimes with and sometimes across the stratification, and reaches to the west line of South Sydenham township. This was as far as we continuously ascended the stream, but its course beyond has already been indicated.

A little above the South Sydenham line, the river is joined by a tributary coming from the north across the stratification. It is eighteen feet wide at its mouth, which constituted the starting point for our traverse to Grand Etang. Several tributary brooks and rills, running in deep dells oblique to the stratification, flow into this one on each side, and, crossing these in succession, the inequalities of the surface appear more marked on this traverse than on the east one further south, but there did not appear any important difference in the soil or timber. The traverse from Griffon Cove to Peninsula Cove was made on the new road in course of construction by the Government. In this part, there is generally a better soil and larger timber than I met with in any other locality visited. Considerable areas support a heavy growth of yellow birch and maple, with varieties of ash and elm, promising, in this instance at least, fertility to the agriculturist.

(*James Richardson*, 31st December, 1857.)

MAGDALEN RIVER.

We commenced our ascent of the Magdalen on the 20th of June, and at the end of four weeks we had reached the highest point to which canoes could be navigated. At this place the river, though shallow, was sixty feet broad, and still contained a considerable body of water. The only shell found in the river in the whole distance was *Limnea umbrosa* (Say). The shells were generally found adhering to stones in sheltered places. After passing the Mountain Portage, five miles from the mouth of the river, they were obtained in quiet pools always occurring on the right bank of the river. The river is subject to great freshets at the melting of the snows in

the spring, and we could perceive, by the injury done to the bark on the stems and branches of the trees by ice or floating wood, that these freshets sometimes raise the water ten feet above the level at which we saw it.

These floods extend through the woods on each side of the summer banks of the stream and often produce changes in the channel. It is estimated by Mr. Richardson that, in the sixty-two miles which we ascended, there is a rise of about 2,000 feet. The river, in addition to the falls, is rapid in all its parts, and the absence of shells is probably owing to these constant and periodical disquieting circumstances.

Land shells were met with in many places in the woods along the river, the species being *Helix hortensis*, *H. striatella*, *H. lucida*, *Succinea obliqua*, and *S. vermeta*. The *Helix hortensis* was a large specimen of the banded variety; it was obtained on the 29th of June, about 450 feet above the sea and five miles up the river, and had a number of eggs at the aperture of the shell.

The woods along the Magdalen consist of white spruce, pine, cedar, balsam, white birch and poplar, and, in smaller quantities, mountain ash, (which we saw in blossom on the 1st July), hard maple, yellow birch, tamarac and black ash.

The woods between the Magdalen river and Gaspé Bay are of the same description, and the species of trees are about in the same proportion to one another as on that river, with the exception of pine, of which we saw very little. Between Griffin Cove and Gaspé Bay some hard maple occurs.

(Robert Bell, 1st March, 1858.)

MONT-LOUIS, ANSE-PLEUREUSE, PIERRE AND CLAUDE RIVERS.

I began the scaling of the Mont-Louis river on the 9th August. I completed the west branch on the 29th September and I quitted the east branch, on the 11th October, at the point where it begins to separate into several branches.

From the forks on the west branch, the river is very rapid and hemmed in between banks nearly 500 feet in height. Further on, its flow is more quiet and the banks recede to come together again a little before reaching

the great lake, but their height falls away to about 100 feet. Around the great lake, the land is poor, being generally covered with cedar groves or black spruce swamps. The east branch was followed for seven miles to the south-west, when it turns abruptly at right angles and flows from the east. Along the first part, the land is rich in timber of all kinds and well adapted to cultivation. Last fall, a road was made along this part of the east branch to convey provisions to the lumbering camps on the Magdalen river. The bed of the river, for a distance of three miles, is obstructed by great jams of drift wood, sometimes attaining 15 feet high; there the banks, with a height of from 100 to 200 feet, approach the river to recede further on, leaving the shores swampy and very often covered with large flat rocks. There is a good deal of merchantable timber of all kinds along this river.

The Anso-Pleureuse river, scaled between the 17th and 28th October, is small, but remarkable for its falls, one of which, on the west branch, is over 100 feet high. The country above the forks is miserable, but contains considerable good spruce. At certain times of the year, the volume of water below the forks must be heavy, as a number of arms can be seen, which are dried up at this season, and in certain places the bed of the river is lost completely, to reappear a little further on.

I next began the survey of the river Pierre. From the coast, there is a cedar grove, in which the river divides into two branches, and, before reaching the forks, several good maple groves occur. I first scaled the west branch, which takes its rise in three lakes, one of which I was told was a mile long, but a fall of snow and the want of snowshoes forced me to abandon it at two to three miles before reaching the lakes. The land is little suited to tillage. From the forks, the course of the river is less rapid until the banks approach the stream, when it becomes more rapid and broken by falls of from ten to twenty feet in height. The east branch, which is not long, has its source in three or four small lakes adjoining two other lakes which discharge into the grand lake of the Mont-Louis river, and which I scaled in trying to scale the discharge of the Mont-Louis lake in order to check the river Pierre with that of the Mont-Louis. Provisions, however, failing, I was unable to do so. The land is swampy along the discharge of the lake of the Mont-Louis and of that of the river Pierre lakes. The timber is small and consists of balsam-fir, spruce and cedar. Between the two branches, there is a range of high mountains.

The Claude river, which I scaled in the beginning of December, empties into the Gulf near a cedar post planted on the line between the

township of Duchesnay and the seigniorship of Mont-Louis. The land is very good as far as the forks and shows several fine maple groves. From the forks to the lake in which the east branch originates, the banks are high and come close to the stream, whose course is very rapid and broken by many little falls. The prevailing woods are maple, birch, white birch, spruce and balsam-fir. Lumbering for spruce and pine was carried on some years ago. The soil, on the heights, is pretty good. To the east of lake Claude, the surface is mountainous and to the west low and swampy.

I only scaled the west branch for a couple of miles, my contract having terminated.

Although I passed several times along the branches of the river Pierre and Mont Louis in search of the lines bounding the seigniorship of Mont Louis to the west and south, I failed to find them.

(*E.-A. LeBouthillier*, 2nd July, 1888.)

MATANE, ST. ANNE, CAPE CHAT AND DOUGLASTOWN RIVERS.

The Matane river falls into the St. Lawrence in lat. $48^{\circ} 51' N.$, long. $67^{\circ} 33' W.$, according to captain Bayfield's chart, about six miles below Bic Island, and thirty-five miles above Cape Chat.

A lagoon, comprising an area of about forty-five acres at the mouth, is separated from the Gulf by a long and narrow gravel barrier, at the western extremity of which there is a channel, measuring 362 feet across, by which the water of the river escapes to join that of the St. Lawrence. Schooners and other small vessels can pass through this channel, and, when within, find a snug harbour, but the approach from without is dangerous in consequence of a sand bar which has formed nearly opposite the entrance.

About three-quarters of a mile south from the entrance, the basin contracts to a breadth of from 400 to 500 feet, the river falling rapidly into it, and at a little distance up from the head of the basin, a saw mill having been established there, the river is crossed by a dam, extending from bank to bank, which gives a fall of ten or twelve feet. Taking the mill dam as a starting point, the total measured distance on the Matane, including three lakes at its head, was a little over sixty miles; the upward course of the stream, without attending to the minor turns, with the measured and

straight distances to the different and most remarkable points, being as follows :

		Measured Miles. Chains.	Straight Miles. Chains.
From mill dam to Buteau's brook, left bank.....	S. 28° W...	9 31	6 54
From Buteau's brook to Little Matane, right bank.....	S. 45° E...	8 98	5 67
From Little Matane to Tawagadee, left bank.....	S. 20° E...	11 45	7 15
From Tawagadee to Trout river, left bank.....	S. 68° E...	12 75	8 53
From Trout river to foot of Lower lake.....	N. 80° E...	10 0	7 36
From foot of Lower lake to head of Upper lake.....	N. 7° W...	7 55	6 15

Buteau's Brook, Little Matane, Tawagadee and Trout river are local names by which the principal tributaries are known to the Indians and others who frequent this region ; they each join the river at one of its principal bends

The height of some of these points above the level of the sea, at high water mark, was approximately determined by barometrical observations and stands thus :—

	Feet.
Little Matane.....	176
Tawagadee.....	246
Trout river.....	438
Foot of lakes	634
Head of lakes.....	721

By this it would be observed that the average fall of the river amounts to about twelve feet per mile ; but, as these elevations are dependent upon observations by a single barometer, the results are not to be taken as precisely accurate. Judging from the general rate of the current, they may probably exceed the truth. The area of the three lakes at the head of the main branch of the Matane is about 667 acres, viz :—

Lower lake.....	400
Middle lake.....	91
Upper lake.....	176
	667

Taking its rise in the country to the north of the Notre Dame mountains, where the uppermost of the three lakes is situated, the main branch of the Matane flows south, cutting a deep gorge through the range, which is occupied by part of the middle and the whole of the lower lakes, with their connecting streams. It then runs westerly, between the southern base of the mountains and an escarpment of limestone, to the Trout river branch, which discharges into it a large body of water. Thence sweeping around the western extremity of the range, nearly opposite to the Tawagadee branch, it afterwards pursues a northerly course to the junction with the St. Lawrence. With its tributaries, the river probably drains an area of country extending over about 800 square miles.

The St. Anne river joins the St. Lawrence in lat. $49^{\circ} 19' N.$, long. $66^{\circ} 28' W.$, eleven miles below Cape Chat. The total measured distance up its stream was rather less than thirty-two miles, the river beyond that distance being found too broken and rapid to admit of a further ascent in canoes. The first general course from the mouth was $S. 5^{\circ} W.$ for a distance of thirteen miles, sixty-six chains (ten miles, thirty chains, straight), when it reached the base of the Notre-Dame mountains,—then $S. 70^{\circ} E.$ ten miles, eight chains, (eight miles, forty chains, straight), falling very rapidly along the northern base of the range. At the end of this distance, it is joined by a branch from the north called Murten river, and, then turning $S. 43^{\circ} E.$, it bears that course for seven miles and fifty eight chains, (equal to six miles straight), the end of the measured distance, where it splits into two streams of about equal size, one sweeping round the great mountain from which we triangulated the surrounding country and taking its rise from a lake about twelve or fourteen miles to the southward; the other, after an easterly course for three or four miles, bending round to the northward, and, after dividing into several minor forks, terminating among the mountains. The breadth of the stream below the junction of the two branches was about 190 feet, and the estimated height, at the same part, was 620 feet, giving an average fall of nineteen feet per mile, but by far the greatest part of the fall is included within the latter two courses, the first having comparatively a gentle current. The area drained by this river is probably upwards of 300 square miles.

One of the most remarkable features of the Gaspé peninsula, is the chain of the Notre Dame mountains. Its western extremity comes to within two miles of the eastern bank of the Matane, bearing from the mouth of that river $S. 25^{\circ} E.$, at a distance in a straight line of about twenty-one and a half miles. Its breadth does not here exceed two miles, while the summit

heights are on an average about 2,000 feet above the level of the sea. The mountain range runs nearly due E. and W. magnetic, and it increases between the Matane and St. Anne in width and elevation, advancing eastward. At the lakes of the Matane it occupies a width of four miles, and the highest summits are about 2,700 feet; while at the Chat, where this river intersects the range of the Old Man and South mountains, as ascertained the previous season, there is a breadth of six miles, the most elevated peaks rising to upwards of 3,500 feet. From this until striking the St. Anne, the highest summits on the northern crest maintain a pretty uniform elevation and still bear directly east; but beyond that point the range appears to split, and after the valley of the river takes its upwards turn S. of E., the highest summits on its south side recede from it three or four miles, while a range commencing on the north makes rather to the N. of E. for the lake at the head of Marten river, and appears to run ultimately to Mont-Louis, on the coast.

At the forks, where our measurement terminated, the deep valley, which cuts the chain, is rather wide. On the east, elevated mountains rise up, probably in continuation of the main chain, running on in that direction, and a spur from them, bounding the valley of the St. Anne in its southern turn, separates its waters from those of the Magdalen. On the west, a vast mountain rises over the forks, which, on ascending, was ascertained, by barometrical observation, to attain an altitude of 3,224 feet above the point where we left the river, or 3,778 feet above the level of the sea. This mountain was named Mount Albert, in honor of His Royal Highness Prince Albert, as it happened to be upon the anniversary of his birth-day, the 26th August, that we scaled its sides. The summit is a barren waste, extending over an area of between seven or eight square miles, the most elevated parts being on the N. E. and S. W. extremities, from each of which the surface slopes gently towards the centre, where it is frequently soft and boggy, producing a short wiry grass, almost the only trace of vegetation met with.

From the highest point on the southwestern extremity we had a commanding prospect of nearly the whole western range of the mountains, among which the lofty summits of the Flag-Staff Peak and Mount Bayfield, were distinctly recognizable. The valleys of the upper branches of the Chat and Cascapedia lay to the west and south of us; and, while many of the mountains of Gaspé and Bonaventure were presented to us on the south-east, the panorama was bounded on the north-east by the range separating the waters of the St. Anne and Magdalen. From the northeastern

station, the same St. Anne and Magdalen mountains bounded our view eastward, and the same peaks in Gaspé and Bonaventure were seen south-east and many of the same mountains to westward; but northward of west the St. Lawrence to its northern shore was spread out, and the valley of the St. Anne could be traced extensively, while immediately below us we could here and there distinguish its rapid torrent rushing along among the rocky cliffs.

Pools and springs of excellent water were observed in almost every direction over the bare surface of the great mountain, supplying numerous brooks and streamlets, several of which, uniting on the south-east side, form a considerable body, which flows rapidly in a deep gorge to the eastward and joins the main south branch of the river; others, running to the northward, empty themselves into the main stream below the forks.

Between Mount Albert and the eastern part of the high continuous chain from the Chat, the mountains do not appear generally to exceed from 2,000 to 2,500 feet in elevation, and have frequently small lakes on their summits; they stand at a distance of two or three miles south from the river. Crossing this part of the country from a point about two miles below Marten river, and pursuing a S. S. W. course along the banks of a small brook for a distance of about three miles, we came to a ridge separating the waters of the north from those of the south side of the peninsula. On the opposite side of the water-shed, we followed the course of a brook flowing southerly, and, keeping a parallel course for about one and a half or two miles, struck a lake which we supposed to be at the head of one of the main branches of the Cascapedia. This lake measures rather upwards of two miles in length, the general bearing down it being S. 60° W., and, with an average breadth of about seventeen chains, it contains an area of about 290 acres. A stream flows from the S. W. extremity, measuring about 60 feet across, probably belonging to the fork observed the previous year to fall into the Cascapedia, about six miles below the Conical mountain. The farthest point to which we could trace the valley of this stream by the eye bore, by compass, from the lower end of the lake, S. 65° W., and might be about three and a half or four miles from us. The position of the lake was ascertained from the summit of the hill that rises over its banks, by bearing to several different points already determined along the western range.

The whole of the range west of Mount Albert is covered with forest, except on the extreme summits of the highest mountains, which are bare rocks. The growth on the more elevated plains is chiefly dwarf spruce and

in smaller proportion white birch trees of diminutive size, standing widely apart, the intervals being generally carpeted over with a luxuriant growth of tall ferns. The mountain sides lower down are clothed with balsam-fir, spruce and birch, with a few white pine and black birch trees at wide intervals, and cedar in the moist places. Mount Albert itself is almost entirely, both on its summits and its sides, a vast bare rock, while the mountains to the east of it, lying between the St. Anne and the Magdalen, seem likewise for the most part to be destitute of vegetation.

The country generally to the north of the great mountain range consists of a series of ridges running parallel to it and to one another, which decrease in elevation as they advance to the westward and as they approach the shores of the St. Lawrence. These ridges are entirely covered with a dense forest, consisting of balsam-fir, spruce, white, black and yellow birch trees, white pine, and white cedar; maple, elm and ash likewise occur, but are comparatively rare. Pine trees of good size, and many groves of fine spruce, occur upon the hills, near the banks of the Ste. Anne and Chat, but on the main branch of the Matane such timber, although not altogether absent, is rare. This is the more to be regretted, as it affords facilities for driving far superior to any other river on the south coast of this part of the St. Lawrence, being easily accessible to the highest of its lakes.

Except on the flats and on the low lands near the shores, the soil appears to be of a very light description and holds out but few inducements for agricultural improvement, and of this the settlements at Matane, St. Anne and Cape Chat are examples. South of the mountain range, on the Matane, the size and character of the forest growth indicate a better description of soil than on the north, and the country being less broken or mountainous than that to the eastward might, were it less remotely situated, be cleared and cultivated. Hitherto it has been but rarely visited except by Indians or hunters in pursuit of fish or furs. Game abounds through the whole of these forests, and the rivers are amply supplied during the summer season with fish and water-fowl. The Chat and St. Anne abound with the finest description of salmon and sea-trout; but since the erection of the saw mill, being unable to get over the dam, they have entirely disappeared from the waters of the Matane, where they are said to have formerly been more numerous than in any other river on the coast.

The St. John or Douglastown river falls into the Bay of Gaspé, in lat. $48^{\circ} 46'$ W., long $64^{\circ} 30'$ W. At the mouth of the river, there is a wide, open bay, occupying an area of between two or three square miles, which is entered from the sea through a channel 365 feet across, between two sand

barriers, one joining the main line on the south, at the village of Douglas-town, the other on the north side, near the road to Gaspé Basin. A solid jam of drift wood has blocked up the river about two miles above the head of the bay, diverting the currents across the low flat lands of the intermediate shore, which it intersects with innumerable channels, cutting it up into a cluster of islands. Through this labyrinth, the experience of those acquainted with the river was found absolutely necessary for guidance; but, after passing the jam, there is no further impediment to the ascent of the river in canoes, so far as our survey extended. The total measured distance, from the coast, of the stream was forty-eight miles, seventeen chains, in a general bearing upon N. 71° W. Above this, the valley takes a N. W. direction, and I was informed by the Indians, who are acquainted with the country, that the river branches off into several small streams at a distance of four miles above the point we reached, ultimately terminating among the mountains near the sources of the Bonaventure and South-West river of Gaspé. Where we stopped, the river had a breadth of about sixty feet, but, increasing in its downward course proportionally with the supply from its tributaries, it was at a short distance above the jam upwards of 300 feet across. The estimated average fall in the whole measured distance was thirteen feet per mile, the height of the highest point being 643 feet above the level of the sea.

There are four considerable tributaries to the St. John, two joining it within the first seven miles from the mouth, the other two at the respective distances of thirty-nine and a quarter and forty-six and a quarter miles from the entrance, and all coming from the south, besides many smaller ones falling in on either side. The two upper forks are supposed to take their rise very near the sources of the upper N. E. branch of the Bonaventure, and the lower of the two sweeps past the western base of a mountain known by the Indians by the name of Mount Alexander, one of the high points fixed in our triangulation from Mount Albert.

The lower part of the river, for a distance of about thirteen miles, flows through a level country, producing white pine, spruce, and a species of larch frequently of considerable size and of valuable quality, balsam-fir, cedar, and three varieties of birch, with maple, elm, and ash in less abundance. But where the country has been denuded of its original timber by the ravages of fire, which has run over a very large area, a thick growth of small trees occupies the surface, chiefly white birch and pine.

A range of hills bounds the southern extent of this flat tract, commencing near the sea coast at Malbaie, which, running in a N. W. direction, and gradually approaching the river, strikes it at the end of about thirteen miles of its upward course. On the north side of the river, the country continues to maintain its level character across the South-West river of Gaspé; and, appearing to be covered with a good soil of sandy loam, it is doubtless well qualified to be brought into a state of cultivation, and might probably become as valuable an agricultural tract as any in the peninsula.

The whole of the upper part of the stream flows through a mountainous region; the valley in some places is wide, with extensive alluvial flats, which occupy the intervals between the river and the mountains, while at others it contracts to a deep narrow gorge, the hills rising precipitously over each bank to the height occasionally of 300 or 400 feet. The hills increase in elevation with the ascent of the stream, and the highest we ascended measured 845 feet above the level of the sea. From the hill which rose directly over the point where our survey terminated, we saw Mount Alexander bearing directly south, which, by its long and straight roof-like top, as well as superior elevation, was easily distinguished as one of the most conspicuous points seen on our eastern horizon from Mount Albert.

A vast portion of this region, including nearly the whole of that part of the river flowing among the mountains, and the eastern country between Mount Alexander and the upper forks, has been completely denuded of its forest by fire, and the hill sides, being covered over with bare poles and charred logs, among which no new growth has yet sprung, saving a few short shrubs and berry bushes, present a very dismal and dreary scene and render travelling almost impossible.

(*Alexander Murray*, 29th April, 1846.)

ST. JOHN OR DOUGLASTOWN AND DARTMOUTH RIVERS.

In order to complete if possible the survey of the St. John or Douglastown river, which had already been measured by Mr. Murray in 1845 as far as the forks, a distance by the river of forty-eight miles, or in a direct line from its mouth thirty-eight miles, an excursion was made to that point. It was found, however, after reaching the forks that, owing to

the low state of the water and the impossibility of traversing the wilderness without a larger force of men, further progress in that direction was impossible. Above this point, Mr. Murray says : (Reports 1845-46, p. 107-8) " The valley takes a north-west direction, and I was informed by the Indians who were acquainted with the country that the river branches off into several small streams at a distance of three or four miles above the point we reached, ultimately terminating among the mountains near the sources of the Bonaventure and South-West rivers of Gaspé (York). Where we stopped, the river had a breadth of sixty feet, but, increasing in its downward course proportionately with the supply from its tributaries, it was at a short distance above the jam (near its mouth) upwards of 300 feet across. The estimated fall in the whole measured distance was thirteen feet per mile, the height of the highest point being 643 feet above the sea level.

" There are four considerable tributaries to the St. John, two joining it within the first seven miles from the mouth, the other two at the respective distances of thirty-nine and a quarter and forty-six and a quarter miles from the entrance, and all coming from the south, besides many smaller ones falling in on either side. The two upper forks are supposed to take their rise very near the upper N. E. branch of the Bonaventure, and the lower of the two sweeps past the western base of a mountain known by the Indians as Mount Alexander, and one of the high points fixed in our triangulation from Mount Albert.

" The lower part of the river for a distance of thirteen miles flows through a level country, producing white pine, spruce, and a species of larch frequently of considerable size and of valuable quality, balsam-fir, cedar, and three varieties of birch, white maple, elm and ash, in less abundance.

" To the south this flat country is bounded by a range of hills, which, commencing at the sea coast near Malbaie, runs in a north-west direction, and, gradually approaching the river, strikes it thirteen miles from the coast. From the north side of the river the country continues to maintain its level character across to the South-West or York river, and, appearing to be covered with a good soil of sandy loam, it is doubtless well qualified to be brought into a state of cultivation, and might probably become as valuable an agricultural tract as any in the peninsula.

" The whole of the upper part of the stream flows through a mountainous region. In some places extensive alluvial flats occur between the river and the mountains, while at others the valley contracts to a deep narrow gorge, the hills rising precipitously from either bank to a height occasionally of

300 to 400 feet. The hills increase in elevation with the height of the stream, and the highest one ascended measured 845 feet above the level of the sea ¹ From the hill directly from the point where our survey terminated Mount Alexander bears due south. From its long and straight roof-like top, as well as superior elevation, it was easily distinguished as one of the most conspicuous points seen in our eastern horizon from Mount Albert."

The upper part of this stream, from the forks to a point about thirteen miles from its mouth, runs on the strikes of the Gaspé limestone series, and nearly the course of an anticlinal, which is doubtless the western extension of that which comes to the shore at Percé. The rocks displayed along the river are blue and grey silicious limestone, blue and grey thin-bedded limestone, and grey calcareous shales; the thin-bedded limestones are frequently nodular and shaly. The only fossils detected by Mr. Murray in these rocks were fucoids, probably *Coelagalli*. This would tend to place them on the horizon of the Oriskany formation. The lower thirteen miles are occupied by grey sandstones of the Gaspé sandstone series, with plant stems.

The Dartmouth river was also ascended to a point four miles above the upper north fork. On this stream the line of separation between the sandstone and the limestone series cannot be clearly defined; the former, which occupies the lower part of the river to the falls about three-eighths of a mile above Lady Steps brook, has a regular dip 20° - 25° W $<$ 35° 40° , and gradually becomes more calcareous. At the falls the bed contains plant stems, but, 100 yards below the second island above the falls, ledges of hard grey limestone contain abundance of fossils similar to those found on the Griffin Cove river and already mentioned. The dip of these lower beds, which represent the limestone series, is S. 15° W $<$ 60° . A short distance further up these rocks rest upon black calcareous shales and green-grey sandstones of Sillery aspect.

Thence up stream the river is occupied by calcareous shales, black and grey in color, with bands of limestone, conglomerate and sandstones, resembling the Levis formation, of which they are the undoubted equivalent, but, at a point two miles and a-half above the upper north fork, greenish grey Sillery sandstones are again overlaid by fine-grained limestones and shales in thin bands containing fossils identical with those noted lower on the stream, and clearly showing the westward extension of the Devonian

¹ The height of this hill should probably be given at 845 feet above the level of the stream as measured by aneroid last season.

basin. Above this, it was found impossible to proceed owing to the low state of the water, but an attempt will be made during the coming season to complete the traverse of the upper part of this stream, from the York river northward.

This series is exceedingly rich in fossils, large collections of which have been made at different times by various members of the survey. Those pertaining to the lower portion have already been mentioned on pages 8-9 D D, and for the sake of comparison other forms, which have been determined principally by Mr. Billing, are given.

(*R.-W. Ellis*, 1882.)

PABOS AND PORT DANIEL RIVERS.

As the ice on the Little Pabos river was breaking up from the basin to the bridge, at its estuary, I planted to the east of the bridge at high tide and near the road a large post to serve as my starting point, and I levelled and adjusted my instrument so as to be ready to take observations at the exact hour. After having satisfactorily determined the true meridian and noted the variation of the needle, which I ascertained to be $24^{\circ}45'$ west, I began on the 26th the scaling of the Little Pabos river from the post previously planted, first following the western side of the basin to the discharge of the river into the same; and then, taking the middle of the channel, when feasible, that is to say, when the operation was not interrupted by the opening of the river, and chaining at different places or each time that I seemed to note a change either in the widening or narrowing of the river, and also marking posts at each mile traversed to the source, which I found at forty miles from the mouth, in a swamp almost completely bare of trees and seemingly of great extent. Having by chance the evening before met an Indian hunter named Noel Dedam, who was coming from Douglstown and going to the Little Pabos, setting his traps by the way, I learned from him that I would find the source of the St John river a little beyond that of the Little Pabos, that he had hunted there almost every winter and that he knew it perfectly. In point of fact, after having planted the last post at the end of the forty miles, and while my men were seeking a place to camp, I proceeded on snow-shoes towards the east-north-east, and met the St. John river at about three-quarters of a mile from the last post already mentioned. This river flows at the base of high mountains stretching from east to west,

and almost totally bare of wood to their summits, from which circumstance they are generally called "The White Mountains." They also serve as a landmark in summer for the fishermen of Pabos, Grand River and Cap d'Espoir, when they lose sight of the shores in heavy storms. When they are cod-fishing on the distant banks, they use them as a guide by which to steer their course back to land. These great headlands seem also to have been placed where they are by nature to act as a watershed between the tributaries of the Gulf at the entry of the bay, and those of the St. Lawrence. I have no doubt that they form part of the Shick-Shocks.

From the headwaters of the Little Pabos, the land seems to slope towards the north; still this change cannot easily be noted except after walking some acres northward; but, from the St. John river, facing south, the slope of the ground can at once be perceived.

The Little Pabos, from its mouth to the thirty-third mile, is a splendid stream, with a strong volume of water and very rapid. There is but one fall of 12 feet high in all this distance. This fall, which occurs a little beyond the eighth mile, describes an angle of 40° , and the water passes over a bed of rocks cut on each side into the form of spouts or slides to such a depth that the largest logs can go down them without the slightest interruption. I was enabled to note that, after the breaking up of the ice and during the spring thaws, the water often rises to a level 20 feet higher; but this only occurs in places where the river is hemmed in by almost perpendicular rocks, which prevent the water from spreading, while, in the spots where flats prevail, the water extends over them and does not attain so high a level. To sum up, this river is one of the easiest and finest we have in the county of Gaspé. It is fed by a multitude of large brooks, the majority of which also offer an easy outlet for timber and several first class mill-sites.

I regret to state, however, that merchantable timber is wanting, generally speaking. Among the mountains there is a pretty large quantity of pine and spruce, but with few exceptions below the medium size and so difficult of access that few would be tempted to try and get them out. On the other hand, the land, on the mountain tops, though broken, is fertile; mixed hardwoods predominate and are of sufficient size to prove the good quality of the soil. According to an exploration made by myself, the west side is much the more preferable, the timber being generally larger and more abundant.

Having terminated the scaling of this river, I returned down it to the twenty-third mile, where we camped late in the night. On the following day, the 29th, we proceeded to the depot of provisions which I had left at the spot where I expected to meet Mr. Blaiklock's exploration line; but as repeated searches failed to find the latter and as it was — so to say — impossible to scale the mountains with loads at this point, I decided to continue until I met the rear line of the seigniory of Pabos and to follow it up to its junction with the north branch of the Great Pabos river, which we did the same day.

Having at last reached the stream which I took to be the north branch of the Great Pabos, as well by the distance travelled from the Little Pabos as by its large volume of water and its position on the plan B accompanying my instructions, I hastened to commence operations on that river. To this end, I first explored the whole woods from the rear line of the township of Newport to see if I could not discover the exploration line; but, not succeeding in so doing here any more than on the Little Pabos river, I established my starting point at the place where such rear line of Newport, which was no more traceable than the other on one side of the river or the other, should pass. I first planted a post and blazed a large spruce, and thence I carried on the scaling of this river to its source, which I met in a swamp at 11 miles 52 chains from my starting point and, although the distance thus traversed seemed to me short, nevertheless I was still under the impression that it was Pabos-North, and it was only when I reached its junction with the Great Pabos river that I perceived my mistake. This portion of the scaling brought to light much more timber than we found on the Little Pabos. Except the six last miles, which are in a swamp, all the remainder is well wooded with spruce and pine, and there are hills on which birch of the finest quality grows in abundance. The hills, too, being lower, the ground is less broken and much preferable to that on the Little Pabos. Timber can be driven down this fine river without any difficulty, as it carries a heavy body of water. There are several falls on its course, of more or less size, as appears by my journal, but, owing to their gradual slope, these falls are not an obstruction to the passage of timber.

After planting a last post to mark the completion of this part of the survey, I returned to my starting point and continued the scaling of the river downwards, marking at each mile the corresponding number until I reached the Great Pabos river. At the junction of the streams, I met one Patrick Hamilton, who resides on the west side of the basin of Little-Pabos, and who had a contract to cut the timber for the construction of bridges

on the Pabos rivers and was then cutting it. I learned from him that the stream I had just scaled was the Sèche or Dry river, so called from the fact that it was long unknown because at its point of junction with the Great Pabos, it passed under a bed of sand and thus failed to attract the attention of the inhabitants, who, moreover, seldom frequent these woods. However, at present, this river cannot be passed unnoticed, as at its mouth it is now as broad and deep as the principal branch of the Great Pabos river and rivals it in volume of water.

Having thus learned that I was only a few miles from Great Pabos bay, and as the season was advancing and the ice threatening to break up, I deemed it prudent to first scale this branch downwards. Accordingly, after planting a post at the western extremity of my last station in mid-channel of the north branch of the Great Pabos river, I performed this part of the scaling to its discharge into Great Pabos bay, marking the trees at each mile to number them from the basin or the bay upwards and thence, following the west side of the bay, according to instructions, to its mouth in the Bay des Chaleurs. This done, I marked my mile posts from the mouth aforesaid upwards, beginning with number one and so on, and, on reaching the post which I had planted the day before at the mouth of the south west branch, I scaled that branch to the mill erected by the heretofore Gaspe Fishing Company, a distance from the mouth of 38 chains 90 links. The fires which year after year have swept this place had completely destroyed the line deviding Newport from the seigniory of Pabos, so as to leave no trace whatever of it. Consequently, I could not ascertain its course. I planted a post near the north-east corner of the old wharf, on which I marked the number of chains so measured, after which I returned to the main branch of the Great Pabos river and hired a boat to ascend it. On reaching the river Sèche, at the post previously planted at its confluence, I continued the scaling of the north branch of the Great Pabos river to its source, at 59 miles from its mouth, marking as previously the numbers of the corresponding miles.

I am happy to state that I met a great deal of timber along this stream and on the height of lands surrounding it. I particularly noted a large quantity of cedar, remarkable for its enormous size and length. It generally grows on large alluvial flats, and is the finest in quality and most abundant in quantity that can be seen in the Gaspe district—at least, this is the general opinion. I myself saw one of these trees cut down and squared by the Patrick Hamilton already mentioned, which measured 28 inches square at 64 feet from the butt. And then it had already had to be

reduced several inches to render it more easily handled, and this cedar, like most of the others, was perfectly sound.

Apart from a few falls met with along its course, the Great Pabos river has a generally quiet flow. Its average breadth, to the foot of the falls, is nearly an acre, and its depth from 12 to 18 inches. Above the falls to its head, it is much narrower; but it still carries a pretty large body of water, because its banks are closer and cannot be overflowed, being much higher than below the falls. Timber can be floated down without interruption from its source to its mouth, the falls only increasing the rapidity of the descent.

How many fine settlements could be established along this river, on each side, if the lots had the river itself for their frontage! The numerous brooks, which fall into the river, are in most cases capable of running the largest mills, and, apart from this advantage, they also offer a free outlet for saw-logs for several miles from their mouths. Such among others are: Rocky brook, (the fishermen's resort," so called because strangers always fish at the mouth of this brook in preference to other places); Deep brook; the west branch, which for seven or eight miles from its mouth, is nearly as powerful as the north branch; Rat river, where hardwoods predominate; and Otter brook, on which pine and spruce abound.

At the head of the Great Pabos river, there is a large swamp, the same, no doubt, that I met at the head of the Little Pabos river, and in which the two rivers, as well as the St. John river, take their rise. As a proof that this swamp is one and the same—the same range of mountains which I saw at the head of the Little Pabos continues its course towards the west and passes near my last 50 mile post. Further, from this post, I could easily recognize continuing to the north-west the same mountains which I had seen on completing my survey of the Little Pabos.

Having thus finished the survey of this river, on the 25th April, and planted the last mile post, I explored the mountains in order to see what I could discover beyond them; I ascended to the summit of the highest, whence I embraced the panorama within the range of vision all around. I observed that there were on the north side several other mountains somewhat lower than the one on which I stood. I also noted that the swamp already referred to, after skirting the mountains for a distance of about two to three miles, stretches away to the northward to the foot of the others just described, where it seemed to end, giving place to higher ground. The mountains from which I took my observations were covered only with

stunted wood of no value. It seemed so short and its branches grew so low, that I determined to measure the depth of the snow. I accordingly cut a pole, which I drove to the earth and ascertained that the snow was nine feet deep. This great quantity of snow, burying, so to say, the trees, naturally shortened their appearance. Still they are stunted and worthless.

From the mountain top, I returned to the point I had left, and then, following a north-east course, I struck a branch of the St. John river, which I descended to the river itself, meeting it at about three miles from its source. I thence ascended the river to about half a mile from my last station to the east, where it disappears.

Having completed this part of the survey and being well aware from the advanced stage of the season and the character of the weather that it would be impossible for me to continue on the other rivers, I was obliged to suspend my operations, and, on Monday, the 28th April, we returned on our steps, except where the river was open. We descended the river to the west branch, and thence, on a course nearly south west, we reached Port Daniel on Monday, the 1st May. At the south-west branch of the Great Palos river, the snow became so soft and the ground so broken that it was easier for the men to portage the loads on their backs than otherwise.

(*E. H. Legendre*, 13th November, 1873.)

PABOS, PORT DANIEL, HALL, LITTLE CASCAPIEDIA AND NOUVELLE RIVERS.

From Nouvelle river to the forks, there is a great abundance of merchantable timber, cedar, poplar, elm, &c. This timber is generally very large, heavy and of excellent quality. The hills and mountains supply pine in small quantities and a great deal of spruce. The summit of the heights is almost everywhere wooded with birch and soft wood. I saw there birch which could furnish a log of thirty feet in length by twenty inches square. These forests have already been worked, but there still remain enough pine and spruce to give them a considerable value.

I commenced to work on the west branch, and on the 31st December I had finished my operations on this river. At this time I was in want of provisions. I went over different water courses, — the Smaragne, the river Trois Saumons, Deep Brook and Ruisseau Jaune. The Smaragne is the best water power among these streams: pine and spruce abound;

and the driving of the timber is easy, at least for the few miles which I saw. The west branch takes its rise in a magnificent lake 61 miles from the rear line of New Richmond. In this lake there is a tongue of land, half a mile long, trending towards the north-east and having an elevation of six feet. This tongue of land is intersected by a forked stream, the source of which is unknown to me. I believe that Ruisseau Jaune forms one of the sources of this branch. I was enabled to make these observations from the summit of a high mountain which is situate between these two rivers. The west branch of the river Little Cascapedia receives the waters of a large number of small streams. Its course is very broken and uneven. There are rapids, still waters on flat lands, swamps, &c.

The timber, which in these localities consists of cedar, birch, poplar, spruce and balsam, is of a remarkable size, and abundant in quantity. I saw several cedars from 18 to 20 feet in circumference and generally sound. This abundance gradually diminishes in approaching Trout lake. The land there becomes sandy and produces only stunted timber, unfit for anything. The valley of the west branch, although rich in timber in certain places and very picturesque in appearance, is altogether unadapted for cultivation. If there are fertile tracts, there are on the other hand so many mountains, hills, and swamps bordering on the river, that it would be exceedingly expensive to make practicable roads there, for colonization purposes.

On the evening of the 12th January, 1874, I began my operations on the east branch, which I terminated on the 31st. This branch is only 50 miles in length, from the rear line of New Richmond to its source, and is five miles shorter than the west branch; it is wider at certain points, and its water power appears to be more considerable. From the forks to the 32d mile, on the east side, there is a large quantity of spruce. There is also much cedar and poplar. I have remarked that in this country the low lands are generally well wooded with soft wood. From the 45th mile to the source, I saw nothing but swamps. The east side of this river is more elevated than the west side, and appeared to me devoid of vegetation. The lake which forms the source is surrounded by marshes and swamps, but there is, on the north, a ridge of white birch.

On the 17th I commenced my operations on the river Pabos, and terminated them on the 24th. The weather was magnificent and thus I was enabled to work with rapidity. I sent my men to get provisions, while I continued, with my chainbearers, the survey of the said south-west branch. The south-west branch retains its size and volume as far as the 18th

mile, and is well adapted for the descent of merchantable timber. After that, there are only rapids and cascades. It becomes narrow and often disappears among rocks, and, at the 20th mile, it ceases to be perceptible, without waiting for our discovery of its source. At this place, the ground inclines towards the south, as far as the river Port Daniel; near the river Pabos, there is a great deal of spruce as far as the 19th mile. As regards the rest of the south-west branch, from the forks, there is no timber of any value; but from the rear line of the township of Newport, there is found an abundance of cedar and poplar on the shores of the river, and also pine and spruce on the heights, and on the streams. The lake which forms the source of the river is shallow, and I believe it dries up in summer. There is no vegetation, but the land rises a little on the east and lofty mountains are seen at two miles distance.

The survey of this river being completed, I repaired to the river Port Daniel. I made the survey of this river from the township of that name to its source. I found no merchantable timber. I then proceeded westward to the south-west branch. There was a thaw and I could not survey it. I followed this river for about 10 miles, and took a west-south-west course to the river Hall, which I surveyed downwards to the rear line of Cox.

All the land which I have gone over, in rear of the townships, is without value for agricultural or commercial purposes. The river Hall, however, is well supplied with birch, pine and spruce, as also the rivers of Grand Pabos. As to the river Nouvelle, I was unable to finish the survey of it, because of the bad weather, the season being too far advanced. But I succeeded, though with much difficulty, in performing that of the east branch, which I terminated on the 13th. On this river I found merchantable timber in a sufficiently large quantity to encourage the working of it; but there, as on the other rivers, I do not think it possible to follow agriculture with any beneficial results.

(*E.-H. Legendre*, 18th Sept, 1874.)

BONAVENTURE RIVER.

The Bonaventure falls into the Bay des Chaleurs, about seven miles above New Carlisle, in the district which bears the name of the river. The entrance to it from the bay is between two long narrow bars of gravel, one

extending from a high bank on the south side, and the other from the flat on which the village of Bonaventure stands on the north. Inside these barriers, there is an extensive basin, measuring from north to south one mile and a half, and from east to west three-quarters of a mile, of which space several low alluvial islands occupy a considerable part, and a large proportion on the south side is dry at low tide. The main channel of the river, north of all the islands, is seventy to one hundred yards wide, and is bounded on its north bank by low marshy plains extending towards the village.

From the mouth of the river to the highest part we reached, the general direction is nearly true north, and the distance in a straight line is about thirty-nine miles; but following the various bends of the stream it would exceed sixty miles. The portion actually measured was fifty-three miles and forty-nine chains, but this includes a small part of an eastern branch just above the junction of which the main stream is blocked up with drift timber.

In the distance of about eighteen miles from the mouth, the river passes through a level or gently undulating country, producing white pine, balsam-fir, spruce, black and white birch, cedar and varieties of the ash and elm, but the two latter are not abundant. This part constitutes nearly the whole depth of the township of Hamilton, and in a straight line to the nearest part of the coast may possess a breadth of ten miles. The soil of a large portion, judging from the settlements at New Richmond and New Carlisle, is very probably capable of advantageous cultivation, and an ample supply of water passes through it by various tributaries to the main stream. Two considerable branches flow in from the eastward, one about four and the other about eleven miles from the mouth, and several brooks join on either side. The breadth of the river in this distance varies from three hundred to one hundred feet, and it is bounded by banks in some instances rising to the height of more than one hundred feet, in others not exceeding ten or twelve feet.

Above these eighteen miles the country becomes more broken and less accessible. Three small hills called the "Three Brothers," rising abruptly from the river to the height of five hundred and five feet above high water mark, are the first indications of an approach to a mountainous region, and the character of one gradually increases proceeding further up. The pine timber, although still abundant, diminishes in quantity, and is of smaller dimensions than lower down, while spruce and fir, though more plentiful, are also of inferior growth.

At the distance of about twenty-five miles and a half from the mouth, a third branch, coming from the northward, joins on the right bank, and at the junction the upward direction of the main valley takes a sudden bend to the eastward, a short distance below which there are strong rapids called "The Falls," by the lumbermen, though the name is scarcely applicable, as they can at all times be ascended by light canoes. At this point the hills rise to the height of five to six hundred feet above the bed of the river; pine trees become still more scarce, and the inferior orders of spruce and fir constitute the prevailing timber, though white cedars of the finest description abound in the low grounds.

The river continues its easterly direction for about six miles, keeping in the strike of the stratification, when it again bends to the northward and is joined at the turn by a fourth branch from the south. In this distance its breadth frequently contracts to about seventy feet from bank to bank, while occasionally it opens to two hundred or even to upwards of three hundred feet across.

Two branches join the main stream above this; the first, at a distance of about thirty-four miles from the mouth, falls in on the east, and the second, about two and a half miles higher up, on the west side. Hills from five hundred to six hundred feet high occasionally rise abruptly from the river and again recede to some distance, leaving extensive flats along the banks, which, were they in a state of cultivation, I should suppose capable of growing excellent meadow grass, a material that would be of considerable value to the lumbermen as fodder for their cattle. The limit to the operations of this enterprising class of persons is to be found a short distance below the sixth branch, and from this downwards a considerable supply of timber is annually driven to the mouth of the river. But above the sixth branch, pine almost wholly disappears, or at any rate it is either too scarce or too small to attract attention.

Above the junction of the sixth branch, the upward course of the river again bends to the eastward, and continues in that direction for about three miles, presenting frequent rapids, where the width contracts to a space occasionally not exceeding forty feet, with high mountains rising precipitously from the banks; but, turning northward, it keeps this bearing to the highest part we attained. The water becomes smooth, the hills open out, and flats bearing heavy spruce and cedar timber extend over a large surface to their base.

The jam which blocks up the main stream, as already stated, is nearly a mile in extent. The water above dammed back by it has inundated the flats on either bank and, wearing a multitude of small channels in them, has formed a labyrinth of little islands. Threading our way among these, it was not until we ascended a hill to reconnoitre, 785 feet over the bed of the river, or 1392 feet over high water mark by barometrical measurement, that we discovered we had left the main channel and proceeded a short distance up a tributary falling in from the east. This branch was seldom more than twenty-five to thirty feet across, and the frequent interruptions it presented, resulting from fallen trees and drift timber, rendered our progress so tedious and difficult that a further ascent seemed impracticable.

The country over which we walked lies between this east branch and the main stream, and consists of a high table land reaching the altitude of 1453 feet over the level of the sea, and producing birch, fir, spruce, and a species of larch, known in the country by the several names of tamarac, haematack and juniper. The growth of these, among which no pine whatever was seen, was in many places so thick and close, while at the same time the trees were small, that it became necessary to cut a way through for the passage of the party.

With the exception of the timber jam upon the main stream, there appeared no formidable impediment to its ascent by canoes to the highest point we reached, and it seems, too, probable that, when there is a full supply of water, it might be navigated for a considerable distance beyond.

The Bonaventure is remarkable for the peculiar transparency of its waters, a circumstance observable from its mouth upwards, and originating the name given it by the Indians, who called it the Waganet, signifying the clear water. Unlike the Chat and the Cascapedia, it appears to be almost destitute of fish, for, with the exception of a very few salmon, sea trout and eels, which latter do not appear to ascend higher than the first fork, we saw none the whole distance we surveyed; water fowl are likewise scarce, probably in consequence of the absence of fish. The great merganser duck was the only species met with. Ruffed and spotted grouse frequent the woods; and the wild quadrupeds we saw were the marten, and in great and serviceable abundance the porcupine, while the recent work of the beaver and fresh tracks of the caribou indicated their presence also in the remote regions near the junction of the last tributary.

(*Alexander Murray*, 20th April, 1845).

Conformably to instructions for the survey of the upper waters of the river Grande Bonaventure and its tributaries, I have the honor to submit the following report together with the plan and field notes of the above mentioned survey :

I may here also mention that there was formerly a portage road from New Richmond to the west branch, but the bridges and logging of the several gullies are now impassable or carried away by the freshets, and in many places the windfalls have nearly stopped the road, rendering it impassable without a too expensive amount of labour.

On the 1st, 2nd and 3rd days, I had the greater part of my supplies forwarded to within about six miles of west branch and started with the intention of camping at the said starting point, but found that above Spruce island there was no ice. I was therefore obliged to camp there. On the next day I proceeded up with my first chainbearer, as far as the west branch, where we made a raft and sailed down to our camp, the river being as clear of ice as in mid summer for five miles. Here I was obliged to cut portages all along which caused a great deal of labor, as the banks are covered with a thick growth of cedar.

While my men were forwarding supplies, I spent several days searching for the rear line of the township of Hamilton as described in my instructions to pass at the foot of Bald Mountain, but could not find any trace of it. The oldest settlers and lumbermen, who have worked there for the last thirty years, assure me that there was never a line run farther north than the line between the 8th and 9th ranges of the said township. I intended to commence scaling the west branch, but owing to the springy nature of that tributary, there was no ice on it, nor has it, nor even the main river for several miles below it, been frozen the whole winter. The weather was very unfavorable for the greater part of January; it rained every alternate day, and at intervals an intense cold night's frost would dam up the river with anchor ice, backing up the water in some places more than 15 feet perpendicular.

Proceeding up the main river, I scaled the B. or 1st branch for five miles; the land on either side is hilly, intervened with valleys and flats, well timbered with spruce, cedar, gilead and pine. Here and there are old rollways showing where square timber had been made many years ago. Seeing the unprecedented mildness of the winter and fearing an early break up, I stopped my operations on that branch and proceeded up the main river, in order to find the headwaters before the opening of spring.

Going up I scaled the 2nd east or C. branch for six miles. At the mouth it is nearly as large as the main river, but, following up, it gets smaller, and at 5 $\frac{13}{80}$ miles, it branches off. We followed the north-east branch to the 6th mile. The south-east branch is likely the largest. The whole country on either side of this stream is rough and mountainous, timbered with spruce and pine. Square timber has been made here also many years ago. The D. fork or 2nd west branch may possibly run as far north as the main river. I only scaled it a short distance in going up. Above the D. fork, the main river is very crooked and the land mountainous on both sides as far as the 20th mile, but from that to the 26th, the river is straight and the land on either side leveller, except on the 23rd mile, where there are two large mountains, one close to east about six or seven hundred feet high, and another similar one about half a mile to left or west. There are however some very good flats of land all along here (moose and caribou are numerous in these environs).

On the 19th mile the two small streams shown on Sir Wm. Logan's plan are from the same source, a considerable large stream which falls over a precipice more than one hundred feet high. The country above it is in general rough, but well timbered with spruce and pine.

At 24 $\frac{34}{80}$ mile there is a large tributary east, as shown on the second copy of Sir Wm. Logan's plan which you gave me. I scaled it for four miles. It passes through a valley of good land between ranges of mountains, thickly timbered with an abundance of spruce and fir. To the left, however, of the 2nd mile post, there is a large mountain without a shrub on it having a smooth face several acres in area and elevated about 60°.

On the 27th and part of the 28th miles, there are jams of old timber which obstruct the passage of the water and cause it to pass under ground through the soft alluvial soil and reappear in several small streams forming groups of islands, which are covered with a very thick growth of large cedar from 2 to 4 feet diameter.

From the 28th to the 48th mile, the river is clear again, its average width is from $1\frac{1}{4}$ to $\frac{3}{4}$ of a chain. The land is rough and broken and covered with spruce, cedar, bouleau and scattering pine. As far as the 34th mile the soil is a pretty good quality of clay and gravel, but there is not in any place enough of it to make any settlements. There are several tributary streams which would lengthen my report to give a detailed description of, for which I would beg to refer you to the field books and plan accompanying this report.

From the 46th mile the river is jammed up again with old timber and divided into several small streams as far as the 49th mile, after which it is again clear but very rapid.

At 51 $\frac{55}{80}$ miles there is a small shallow lake 22 chains long, and 10 chains wide. At the east side of its discharge, there is a tree blazed and marked thus (1856 I. P.) The mountains here are not so abrupt as below, and the land seems poor and of a swampy nature. On the 52nd and 53rd miles, there is a larger lake $\frac{3}{4}$ of a mile long and from 10 to 15 chains wide, with two inlets at the north end. The N. E. inlet seems the largest, but, on following it up, I found it ran dry at about 30 chains from the lake. I traced the other inlet which runs north to 56 $\frac{1}{2}$ miles. At 55 $\frac{61}{80}$ miles, it forks around a conical mountain over 1000 feet high which may be considered the source of the river Grande-Bonaventure. I was detained here several days on account of the rainy weather in the beginning of March. I intended to have taken observations from the summit of the mountain, and for that purpose I climbed it on the 12th of March; but as if doomed to disappointment it commenced blowing and snowing, rendering it impracticable to take any satisfactory observation. I sent my men down with the baggage, &c., and remained with my chainbearer to explore the country in the direction of the opposite waters, but it rained and snowed incessantly, hindering the same. I saw enough of it, however, to satisfy me, that a range of mountains runs nearly east and west in line with the above mentioned conical mountain, from which the land falls off to the north. Along this range of mountains there was from 6 to 8 feet of snow, while at the east fork or 26th mile post, there was scarcely 18 inches. I may here state that on the whole river from the beach to the upper lake, there is not a single fall, but it may be considered one continuous rapid, free of any obstructions whatever, excepting the two jams above described.

The total northing or difference of latitude between my point of departure at the mouth of the west branch and the source of the main river Grande-Bonaventure is 39 $\frac{06}{100}$ miles, and there are only 22 $\frac{1}{4}$ chains difference of longitude or east departure. The distance by the river is 55 $\frac{1}{2}$ miles which may be considered to run due north

On my way down I scaled to their sources all the navigable tributary streams which are above the last forks. There was no ice on the main river from the lakes down to the 2nd east branch. I had some supplies *cached* at the D. fork. There I sent men for canoes and proceeded up that westerly tributary with the rest of my party while my supplies lasted. I only went up

12 miles on the main branch. There was no ice on the last five miles. There are three pretty large tributaries falling into this branch, one of which runs seven miles, and another 4 miles. I scaled them to their sources. The land here is better than on any other tributaries of the Bonaventure which I have scaled, except the 1st west branch, and it is covered with a considerable quantity of pine and an abundance of spruce, fir and cedar.

On the 6th April, I suspended work, left my men to bring the baggage down the river, expecting to meet the party I had sent for canoes, but found that there were about 10 miles of solid ice. I then decided on going on to examine the lower part of the river and see if it was possible to get canoes. I found the river opened from west branch to Deep Water creek, but from there to the beach, the ice was better than at any time during the winter.

I arrived at the settlement on the 8th and forwarded two canoes and other necessaries, by horse as far as river Duval. From there to deep water we had to drag them on the ice. I commenced scaling the west branch on the 16th and finished it on the last day of the month. This branch at the mouth appears to be a very large tributary, but, at 24 chains from the initial point A, a large branch falls in from the west called McGinnis creek, where square timber has been made some years ago. Above the mouth of McGinnis creek, the west branch spreads into bays and morasses, and a little below the 1st mile post, the channel of the stream turns eastward, but there is no water for a considerable distance. There are two old lumber shanties on the west branch where square timber has been made, one on the 2nd and the other on the 3rd mile. There is some splendid land both along the main river as far as the 2nd mile post and up the west branch for a considerable distance. The total area would be about two thousand acres. The valleys are well timbered with spruce, cedar, fir, gilead and pine, and the mountains with spruce, scattering pine and white birch. On the 6th mile the streams spread through a cedar flat about $\frac{1}{2}$ a mile wide, and there is no water to be seen for over a mile. At 6.61/80 miles a large tributary falls in from the west, and another at 7.14/80 miles. The latter is nearly as large as the main branch and timbered with spruce, cedar, fir, pine and gilead. At half a mile from the forks there is a picturesque fall 25 feet high between two perpendicular cliffs upwards of 50 feet high. The valley of the main branch averages from 20 to 50 chains wide and is well timbered with spruce, fir, cedar, white birch and scattering pine. A little below the 10th mile post the stream forks again; the largest branch bears to the north-east; beyond the 10th mile post the mountains close in leaving only a narrow passage

from one to two chains wide. Along the north-west branch the mountains rise to five or six hundred feet above the level of the stream. While camped at west branch I climbed Bald Mountain which is about 500 feet above the level of the water. From the top of a large spruce tree, on the very summit of it, I had a splendid view of the surrounding country. To the south, Bay-des-Chaleurs and the coast of New-Brunswick; to the west, the mountains of Cascapedia, and to the north and east, ranges of small mountains rise one over another crowned by the blue heads of the Shick-Shocks and the mountains at the head of Port Daniel and Gaspé Basin rivers.

The cedar of the Bonaventure deserves a special mention as I have not seen in any other part of the province anything to equal it in either size, quality or quantity. There is also a considerable quantity of pine, spruce, fir and gilead, and according to the explorers and lumberers that have visited the heads of the rivers Hall, Duval and Deep-Water, there is an abundance of birch and maple in that locality.

In concluding my report, I may mention my surprise in finding the agriculture in general in such a backward state, although there is every advantage for farmers. Along the beach from New-Carlisle to New-Richmond, the first range only is settled in many places, although the land seems good and level for from 4 to 10 miles back, which seems to run along the sea shore as far as Port-Daniel. The soil for the greater part is of a superior quality.

As the Bonaventure river has already been explored by a more experienced geologist than I am, it is useless to lengthen my report with a description of its geological features, any more than to say that the same slate rock and conglomerate is prevalent all through. There are at present only four tributaries unfinished, if I except the tributaries falling into the Bonaventure below the west branch, and they can be surveyed in summer easier than in winter.

(*Henry O'Sullivan*, 28th July, 1874.)

BONAVENTURE AND CASCAPEDIA RIVERS.

We therefore proceeded to the mouth of the Bonaventure, and in six days, notwithstanding the high water and consequent heavy poling, reached the forks. After clearing the way past the heavy timber jams, by which

Mr. Murray was stopped, in 1844, we commenced the survey of the main stream on the 3rd July, and in six days reached the lake at the head, a further distance of twenty-seven miles, progress being slow from the obstructed character of the river channel, necessitating the cutting of numerous portage roads where the jams were too extensive to be cleared out. An inlet of considerable size enters the north end of the lake. This, at a distance of two miles, divides into three branches, the eastern and middle of which rise in close proximity to York river, while a ridge of moderate elevation separates their sources from the waters of the Magdalen on the north. The lake by aneroid was calculated to be 1,450 feet above sea level. The descent of the branch is much more rapid than that of the main stream, being about twenty eight feet to the mile, while from the forks to the sea the average fall per mile is not more than twelve feet.

The country bordering on the lower part of the Bonaventure river has to some extent been already described by Mr. Murray, in the report of progress 1844. Above the forks the general course of the valley is north (magnetic variation about twenty-five degrees west). The hills on both sides for fifteen miles are from 500 to 800 feet above the stream. Above this point the surface becomes much less rugged and there are quite extensive areas of low land along the banks. Timber of large size, spruce, fir and white birch, is plentiful, but the cedar, which is so abundant and of such excellent quality along the main stream, disappears almost entirely on its upper portion. As a source of supply for lumber the valley of the Bonaventure far surpasses any other stream examined by us in the Gaspé peninsula. The spruce has so far apparently escaped the agency which has destroyed so much of the forest along the streams flowing east into Gaspé Basin, while large quantities of pine still remain on its branches. Extensive areas of good land, well suited for agriculture, border the river for twenty-five miles from the mouth, but on the upper part of the stream the land, though in many places of good quality, has such an elevation that frost will probably prove injurious. During the first half of July we had ice on nearly every clear night.

The Bonaventure river is noted for the extreme clearness and coldness of its water. The temperature, taken at various times in July, gave an average of 45° Fahr. No fishes are found in it, except a few very small trout, till the advent of the salmon and sea-trout. Birds of all kinds, and especially water-fowl, which are so plentiful on all the rivers of Gaspé and northern New-Brunswick, are almost entirely wanting.

The survey of several branches, of which there are five of good size, was found to be impracticable in canoes on account of jams, and the shallowness of the channel, while the coldness of the waters rendered it impossible to wade them. Finding it therefore useless to attempt any further work in this direction, we descended the stream and returned to the Cascapedia, where a second attempt to reach the Salmon branch, fifty miles from the mouth, was successful, and the survey of it was commenced on the 27th July.

The course of the Salmon branch to lake Cascapedia is twenty-seven miles, with a fall in that distance of 840 feet, making it very rough and rapid. Only twenty-two miles could be surveyed in canoes, and in this part there are three falls, the first at sixteen miles, of four feet; the second at eighteen miles, 25 feet, and the third at nineteen miles, 10 feet. Where our survey ended, there are very heavy rapids. These are caused by the stream suddenly turning past the spur of an immense cliff, not less than 1000 feet high, on the west bank, while on the east a low flat lies between the river and the foot of a peak, called the South mountain, which rises abruptly for nearly 1,400 feet.

The upper part of the Salmon branch for fifteen miles must have a descent of nearly fifty feet per mile, presenting the character of a mountain torrent. A short distance below its mouth a range of lofty hills, called the Big Berry mountains crosses the Cascapedia. Northward from this range a tract of comparatively level country extends for eight or ten miles, forming a large inland plateau, which is well defined for many miles, both to the east and west, and probably stretches from the vicinity of lake Matapedia to Gaspé Basin. It was traversed for a distance of forty-five miles on the lake branch of the Cascapedia, and appeared to extend much further as no island was visible in that direction, while, to the east, it crosses the headwaters of the Little Cascapedia in the vicinity of lake St. Anne. This plateau may be stated to contain from 1,200 to 1,500 square miles with an elevation over a great part of the area of 500 to 700 feet. Should early frost not be prevalent, its value, from an agricultural point of view, is very great since the soil is generally of excellent quality, and the large areas of spruce and alder swamps, if cleared, would furnish extensive grass lands. The first white frost, which, however, was slight, was noted by us on the 16th of August.

The valleys of the Shickshock range and of the several streams surveyed in this direction contain a large amount of valuable timber which is as yet

unaffected by disease and will prove a source of revenue for many years. Should it ever be in contemplation to construct a line of railway from the Intercolonial to Gaspé Basin, the route along this plateau would certainly be the shortest and easiest, since the country is comparatively level, while by crossing the heads of the several streams the expensive bridges that would be necessary on the shore line would be avoided. It would also open up a large tract of at present inaccessible country. The length from the Intercolonial to Gaspé by this route would not be much more than 150 miles. Between the lake branch of the Cascapedia and the Bay des Chaleurs, the country is not well adapted for settlement.

Near the rear of the townships of Maria and New-Richmond, the surface becomes exceedingly broken and rugged and shows a succession of hills and ridges from 800 to 1,700 feet high. The stretch of table-land in the vicinity of the Nouvelle river, referred to in the report for 1881, evidently does not reach this river, as the ranges are intersected by deep gorges, and from the reports of those who have traversed this area comparatively little level land exists. In the neighborhood of the Square Fork, which is a large tributary from the west, at thirty-eight miles from the mouth, the scenery becomes particularly wild, the Little and Big Berry mountains having peaks 1,500 to 2,000 feet high. From the summit of these mountains a magnificent panoramic view of the Shickshocks is obtained, surpassing in grandeur the mountain scenery of any other portion of Eastern Canada. In the foreground the immense mass of the Barn-shaped mountain towers in a double-headed peak to a height of 3,400 feet. It marks the northern limits of the inland plateau, and in its rear are the minor granitic peaks about the head of the St. Anne river and lake. In the back-ground the long-serrated ridge of the Notre-Dame mountains, terminated eastward by the huge bulk of Mount Albert, and containing among a hundred others the immense masses of Mounts Logan, Bayfield and Matawees, stretches westward beyond the limits of vision. Further eastward the traverse range of Table-top mountain, with peaks but little short of 4,000 feet, cuts apparently right across the strike of all the others, while from the approximately level plain at our feet rise several cone-shaped masses, which by their outlines indicate their probable igneous origin.

East of the Cascapedia the country is much less rugged. On the Little Cascapedia, Bonaventure, Port Daniel and Pabos rivers large areas and extensive flats can be found, apparently suited for cultivation. Between the inland plateau, previously noted, and the foot of the Shickshock range, a second tract of apparently good land, formed from calcareous and slaty

rock, is seen. This also has a considerable extent, both east and west. It has an average elevation of 1,000 feet. Much of it is well-wooded, especially with spruce, the forests of which are continuous as far as the eye can reach.

The country along the lake branch of the Cascapedia and its two tributaries, Lake inlet and Miner's brook, is, for the most part, comparatively low, and broken by a few ridges and scattered elevations. Of these, the most marked is the western prolongation of the Berry mountains, which extends for some thirty-five or forty miles, dividing in their upper part, the waters of the Lake inlet and the Miner's brook. Of the country to the south of this range we cannot speak from personal observation, but from the reports of hunters, there seems to be another area of low land of considerable extent. The sluggish character of the Lake inlet, and the fact that the Square Fork of the Cascapedia, and the Nouvelle river take their rise here in large lakes, tends to confirm this view.

(*R.-W. Ellis* 1882.)

GULF SHORE, CAP CHAT AND CASCAPEDIA RIVERS.

The coast country between Cape Rosier and Cape Chat is of a mountainous character; the ridges in regular succession run in towards the interior at a very small angle with the trend of the shore, and, with the exception of nine miles between the first mentioned point and L'Anse à Griffon, the hills in general come close upon a rocky and precipitous margin, leaving very little space for settlement beyond the narrow flats at the mouths of the principal streams that descend from the highlands to the St. Lawrence.

These are in general occupied by fishing establishments of more or less importance, and among the principal are those of the Great and Little Fox rivers, and those of the Magdalen, the Mont-Louis, the St. Anne and the Chat. On the chief part of these flats, there is not much room for agricultural labor, and the inhabitants, wholly engaged in fishing, depend for their supplies on importations from Quebec, which appear to find their way by Gaspé and Cape Rosier; and provisions become dearer, the closer we approach Quebec up to Cape Chat.

Reaching the Ste. Anne river, the land immediately on the St. Lawrence assumes a less rugged aspect than lower down. There, as well as on the

Chat, some few signs of cultivation make their appearance, and a small amount of arable land existing in the vicinity would permit its further extension.

The Magdalen, the Mont-Louis and the St. Anne present the only harbors along the coast. That of the Magdalen is the safest to lie in; and, if it were not for a sand bar in front, there would be water enough for larger vessels than the class of schooners frequenting it. That of Mont-Louis gives good shelter to small coasters; while that of the St. Anne, though possessed of deeper water than the others, is difficult of ingress and egress, there being a dangerous rock just at the entrance. Large vessels are occasionally built there, and one of 340 tons burden was on the stocks when we visited the place; but such a vessel could not be fully loaded in the harbor, there being only twelve feet of water on the bar in spring-tides.

The Chat affords no shelter for vessels of any description. On the Cape there stands a conical hill 366 feet high, and, about three miles lower down, the stream joins the St. Lawrence in the bight of a shallow bay bounded to the eastward by a low point, which is covered with sand above high-water mark, but juts out into a ledge of rocks laid bare for several hundred yards at the ebb of the tide. A current which comes obliquely across the St. Lawrence from the opposite side, at a constant rate of one to two knots an hour, and makes upon the shore, renders this point and the whole vicinity dangerous to navigation; and the hull of a fine transport called the Premier, cast away the previous autumn, on a homeward voyage with a large number of troops, and lying on the reef, after having been once raised in the spring and again stranded during a heavy gale which occurred while we were on the spot, afforded a melancholy proof of the perils of the coast and the insecurity of the bay.

At the mouth of the Chat there is a small lagoon, dry at low water, which is separated from the bay by a narrow barrier of clay, sand and gravel, and from this, looking across the lagoon up the valley of the stream, we had a striking view of the majestic mountains of Notre-Dame, which reared their lofty heads to the south and which it was our intention to pass on a line of exploration to the Bay des Chaleurs as near to a straight one across the strike of the stratification as circumstances would permit.

The accuracy attainable by a careful use of these means is perceptible in the result of our admeasurements across from the St. Lawrence river to the Bay des Chaleurs, after having been mapped on the scale of an inch to a mile. We dialled the river Chat, and, having by means of bearings fixed the

peak of a mountain towering 2,669 feet close over its left bank, from the summit of this and the summit of one of the peaks fixed by means of our base line on the shore of the St. Lawrence, and visible from the other, we triangulated a conical peak seventeen miles forward, on a stream flowing into the Bay des Chaleurs. Walking across to this mountain, through the forest, we again took to water and dialled our way to the bay. The whole distance, following the windings of our course, is upwards of one hundred and eleven miles ; but in a straight line, according to our map, it is seventy-four miles and sixty chains. The same line as determined by the latitudes and longitudes of its extremes, taken from Bayfield's accurate charts, is seventy-four miles seventy-nine chains, and as shewn by Deputy Surveyor-General Bouchette's new map, about to be published, it is seventy-five miles ten chains. The bearing of the line so nearly coincides in all the three that the difference is scarcely perceptible.

The distance measured on the Chat, before it became necessary to abandon our canoes, was thirty-two miles and a half, following its curves, and twenty-five miles and three-quarters, taking the general course of the valley. This carried us clear across the range of Notre-Dame which rises up at a distance of twelve miles in a direct line from the margin of the St. Lawrence, and occupies a breadth of six more. The stream cleaves these mountains to their very base, and, at the point where we left it, the height of its bed above the level of the sea, we found to be 587 feet, after ascending two small falls in the mountain gorge, one of ten feet and the other of sixty, giving a slope of eighteen feet in a mile for the water, and twenty-three feet in a mile for the valley of the stream. The breadth of the Chat at our last station on it was between fifty and sixty feet, while at the mouth it was about one hundred and fifty feet. Its course between these two points, without attending to minor curves, in a downward direction, is as follows, the bearing being magnetic, and the variation $22^{\circ} 30'$ west.

At every elbow made by these courses, with the exception of the last three which are through soft ground, a tributary of more or less consequence joins the stream ; but the farthest sources of the river take rise in a flat ridge about three or four miles south of the Notre-Dame mountains, which is much lower land, and constitutes the watershed between the St. Lawrence and the Bay des Chaleurs, over an extent probably ranging, both to the east and to the west, far beyond the Chat, which does not embrace more than twelve to fourteen miles of it. The waters of these sources are brought to the mouth of the deep mountain gorge by three main streams, all meeting at a point just there ; two of which running in exactly the same

line, but in opposite directions, are in the strike of the stratification and mark the boundary of the Notre-Dame formation, while the third makes a partial section nearly at right angles to the others, across the strata which lie upon those rocks to the south.

The whole area watered by the Chat may not exceed three hundred square miles. Nearly one half of this lies to the south of the great mountains, or among them. These send their tribute chiefly through two deep longitudinal valleys, immediately opposite to one another, in the strike of the range, which extends about six miles on each side of the gorge, and, emptying into it, are terminated by two master summits at their extremities, thirteen miles in a straight line as under, while several transverse valleys assist the others in carving the mountain mass into a considerable number of lower but important tops.

Both the principal summits we visited. In ascending the eastward one, which stands exactly opposite to the lower part of the valley of the Chat, and seems to terminate it, looking from the St. Lawrence, we clambered up the north side of the range, which presents a face whose slope cannot be much under 40° for 3,000 feet; and we found that, before the horizon was clear over the lower ridges between us and the great river, we had attained the elevation of 1,753 feet above its surface. The highest spring of water we could discover, which was an abundant one of excellent drinkable quality, coming from the strata at the upper base of the peak, was 3,544 feet up. The summit peak itself, a bare pointed rock, was 3,768 feet, while the broad flat top of another mountain summit, two miles to the westward, which went among us by the name of Mattawees (the Micmac word for a porcupine) from our having killed one of these animals as we scaled its side, and on which we rested the first night of our ascent, having reached it by mistake, was 3,365 feet. A deep ravine separated mount Matawees from the main peak, and another one severed it from a dome-shaped top nearly its own height, about a mile and a half to the westward, between which and the gorge of the Chat stood another gigantic boss.

The main summit to the westward of the Chat, to which we gave the name of Bayfield mountain, in honor of Captain Bayfield, who on one of his charts has indicated its position, we ascertained to be 3,471 feet, after having reached it by a very steep and fatiguing ascent from the gorge to a precipitous mountain knob, 2,669 feet high, which acquired the title of the Old Man, from the existence of an erect stone on a step at his edge, in the position of one watching what might be passing below, and a journey

along the ridge of a triple-topped hill over 3,000 feet high, separated from Mount Bayfield by two ravines, and an interposed mountain of more moderate elevation. All these heights, given between the two extreme summits, are the links of a chain standing on the north side of the longitudinal valleys which have been mentioned, and, while they constitute the most elevated serrated ridge, none of them are much more than a mile from the northern base of the whole belt. The five miles, which compose the remainder of its breadth, present summits of more moderate height, and one of the most elevated of these, which stands conspicuously protruded into the gorge on its east side, and was named the South mountain, we found to be 2,413 feet. The whole of these, as well as the northern crest, are abrupt on the north side, and in general more sloping on the south, in the probable direction of the dip of the strata; and these, as indicated by the ridges, have a strike which in this part of the range may be considered E. N. E. and W. S. W. magnetic.

From the highest summit we visited, the panorama displayed was of the grandest description. In the northern half of the circle, the waters of the St. Lawrence, dotted with its ships and fishing boats, spread out to the right and to the left as far as the eye could reach. On its northern shore, immediately in front, unaided vision could plainly distinguish the lighthouse of the Pointe des Monts, some fifty miles off, from which the granite hills rising immediately behind it in the interior gradually sank below the horizon as they receded from us, following them down the expanding gulf, to a point where we thought we could discern the Island of Anticosti, one hundred miles away, in the mist of the distance, while at our feet were arranged in parallel lines the ridges and valleys of the lower land between us and the river. To the eastward a confusion of mountains and ravines belonging to Notre-Dame range filled up several degrees of the circle, and one summit which exhibited a patch of snow, we supposed might be higher than the point we stood upon. Many of the peaks were bare, and as they retired one behind another and occupied a smaller angle in the perspective, it became difficult to distinguish those of the Notre-Dame from such as appertained to other ranges. Turning southward, a sea of parallel undulating ridges occupied the picture, the more distant of which we conceived might present a table land, with a few marked points rising in cones and domes; and through one gap, which probably was the valley of some south-flowing river, we distinguished a faint blue horizontal line, which we fancied might be in New-Brunswick. Prominent points became still fewer, veering westward, until the horizon was again

interrupted in that direction by a well defined outline of a not very distant part of the range from which we looked.

The highest summits within our view were generally bare rocks. Those next in the scale were crowned with sturdy dwarf spruce trees, many of them not five feet high, but springing up so close together that their branches interlocking rendered it very difficult to make way among them. On those still lower, spruce became mingled with white birch, and the size of the trees gradually augmented in proportion to the decrease of elevation. One feature in the vegetation high up in the hills, that struck us forcibly and gave us much satisfaction after confinement in the forest below, was the great extent of open glade that appeared on all sides but the north. Wide slopes on the east, the south, and the west, were carpeted with the most luxuriant growth and abundant specific diversity of ferns, from which clumps of spruce or of white birch, or of both mingled, started up here and there, giving the hills occasionally almost the character of park scenery, as if art had arranged the distribution with a view to ornament, and often producing, in combination with peaks, ravines, and a distant horizon, a landscape of a very pleasing description.

On the hills on the banks of the Chat and in the low grounds, the timber consists chiefly of spruce of good size balsam-fir, white cedar, and white birch, with occasional poplars in wet places, and a frequent fringe of alders on the margin. Maple is scarce: we saw only one grove of a size fit for sugar trees, and this was at the north base of the Mattawees mountain, where we commenced our ascent. White pines were not wanting, though not over abundant, and it was evident to us that the lumberer's axe had never tried its edge upon them. Ascending the stream we saw trees enough close upon the water to furnish a good stout cargo without any haulage, and in the space of a mile back from it in one place were counted twelve good long-stemmed trees, measuring from nine to ten feet round at five feet from the ground, and thirteen trees of the same size in another.

The small number of rapids and cascades in the Chat would render it an excellent stream for driving lumber, and if there were a good port in its vicinity, what with pine for square timber, spruce for saw logs, and white cedar for shingles and lathwood, a few cargoes might be got out profitably.

The soil of the Chat above its mouth is of a light description, consisting of sand and gravel; but I greatly doubt whether there is much soil at all on

the hill tops and sides. The low parts such as the meadows on the brooks might perhaps yield some fair grass land if cleared; but the valley is narrow, and the quantity of this can be but small.

Abandoning our canoes on the Chat, the general course of our pedestrian journey through the forest across the watershed between the St. Lawrence and the Bay des Chaleurs to the conical mountain fixed by triangulation from Notre-Dame range, was about S. 40 E. The distance in a straight line was about twelve miles and a half, but the deviations of our route increased it to thirteen miles and three-quarters. The position of intermediate stations we determined by counting our paces, making allowance for minute zig-zags and disturbing obstructions as they occurred, and checking our calculations by bearings and angles on the peaks from which we were receding, taken from the summits of high trees wherever the slope of the ground favored us with an opportunity.

These successive points were regularly wrapped, and we were thus always prepared to indicate the direction to be taken, trusting to the sagacity of our Indians to keep a straight line after the course had been given them. By this means we came with precision upon our conical mountain, though we did not get a sight of it until within a couple of miles of its base, and we were rather surprised to find with how much accuracy our paces had measured the distance.

After rising in the space of a mile to the brow of the slope bounding the Chat, which we found to be 1,204 feet above the level of the St. Lawrence, the surface over which we travelled up to the dividing line of the waters had a very gentle ascent of about eighty feet in a mile in the direction taken, which would produce about one hundred and twenty-five feet in a mile at right angles to the run of the ridge.

The chief inequalities of the ground resulted from a few sudden narrow gullies of 100 to 150 feet deep, constituting water courses, of which those in the first half of the distance belonged to the St. Lawrence and those in the other to the Bay des Chaleurs. The barometrical heights determined as we proceeded were 1,264 feet; 1,194 feet on the edge of a water course; 1,500 feet on the top of a sloping step, beyond which we saw no more of the northern streams; 1,707 the summit level; 1,630 feet on the margin of the first stream flowing southward; 1,608 feet, and finally 1,167 feet on a brook at the northern base of the conical mountain, after a sudden descent of about 200 feet. The height of the apex of this mountain, which consists of trap, we found to be 1910 feet, and from it we had an opportunity of verifying the

angles upon it from the peaks of Notre-Dame. It gave us also a sight of a considerable stream flowing from the westward, which we had been approaching, and now beheld at its western base and which we rightly supposed to be the Great Cascapedia. Round the eastern base of the conical mountain, our descent to the banks of the Cascapedia, through a deep and narrow ravine, was rapid, and on attaining its margin, at a distance of two miles and three furlongs, in a general course of S. 20° W. from the summit, we found that we stood at the height of 651 feet over the water of the St. Lawrence.

On the surface between the Chat and the Cascapedia, there appeared to us to be evidences of a very thin soil. We saw the solid strata indeed only in two places; but wherever we met with a tree blown over by the wind, its uptorn roots were almost certain to expose a mass of small angular fragments (often containing fossils) belonging to the rock which must have been close below, and it seemed to me probable that to this want of depth rather than to the chemical quality of the constituents that would have been derived from a more complete desintegration of the rock which was at the same time calcareous, silicious and aluminous, was to be attributed the presence of only those species of trees which are in general considered no great mark of aptitude for agricultural improvement. The ruins of this rock may yield a more promising growth of timber in other parts, but on our line we saw only white spruce, balsam-fir, and a few white birch; and it was very perceptible that the two former species were frequently arranged in broad parallel belts, partaking of a north and south direction, nearly monopolized sometimes by the one and sometimes by the other. The fir gave us open woods and easy walking, while the spruce groves were very tangled and difficult to penetrate.

Arrived on the banks of the Cascapedia, our Indians in three days constructed three canoes of spruce bark, capable of holding two persons each, and dismissing two of our men who were desirous of returning to the St. Lawrence, supplying them at the same time with a suitable quantity of provisions, we floated down the stream, dialling its course to the mouth. The whole distance, following all the windings of the river, was sixty-five miles and a quarter: but, pursuing only the main grand curves, we first made two miles and a half in a course a little to the east of south; then eleven miles in a curve rather to the south of east, passing three principal tributaries in a valley of red sandstone; our course then became nearly south, and in this direction three grand sinuous sweeps carried us in about thirty-eight miles to salt water. Where the river turned south, we had

again and for the last time an opportunity of obtaining bearings on the peaks of Notre-Dame from the naked top of a hill 1,435 feet above the St. Lawrence, yielding so great an abundance of blueberries and low-bush cranberries that we were induced to give it the name of Berry hill. The stream at its base was 440 feet high.

Down to this turn in the stream we did not observe much change in the character of the timber, which still continued to consist of whitespruce, balsam-fir, and white birch, with cedar in moist places: but further on, with these species of trees became mixed a predominating proportion of black birch and some pine; but the frequent lumber landings, as they are called, both old and new which met the eye, pointed out that the enterprise of commerce had thinned and was continuing to thin down the last very fast. Towards the mouth of the Cascapedia, maple exists in some abundance, and elm and ash are seen in a few places, particularly on a number of large fine alluvial, but still uncultivated islands, which there divide the river into several channels.

(*W.-E. Logan*, 1st May, 1845.)

RIVERS ST. ANNE AND CASCAPEDIA.

On arriving at St. Anne des Monts it was found impossible to ascend the river on account of the freshet caused by the melting snow on the mountains, and it was not until the 20th that the river was at all navigable with canoes.

While waiting, a carefully measured base line, nearly two miles long, was run on a bluff distant about one-quarter of a mile from the shore. This was connected with the mouth of the river by a chained survey and its position fixed. From this base line three prominent peaks in the Shick-shock range, distant about eleven miles, were accurately determined.

Having engaged four men with two canoes, we left St. Anne des Monts on the 20th, and reached the forks of the river, distant about thirty-two miles, three days later. Here the geological work of the season commenced, as the river had been explored and a micrometer survey made to this point by Mr. Murray, in 1846. His description is as follows:—"The total measured distance up the Ste. Anne river was rather less than thirty-two miles. The first general course from its mouth was S. 5° W. [Mag.],

for a distance of thirteen miles 66 chains (10 miles 30 chains straight), when it reached the base of the Notre-Dame, or Shickshock mountains; then S. 70° E. 10 miles eight chains (8 miles 40 chains straight), falling very rapidly along the northern base of the range. At the end of this distance it is joined by a branch from the north called Marten river, and then turning, S. 43° [Mag.] E. it bears that course for 7 miles and 58 chains (6 miles straight) to the end of the measured distance, where it splits into two streams of about equal size."

Three days were spent collecting specimens of rocks and plants in the neighborhood, while the men were employed bringing up provisions to a store camp established at the forks.

Leaving the forks on June 27th, a micrometer survey of the south or main branch was made as far as lake St. Anne. This distance was accomplished in three days, including a portage of upwards of one mile, past the falls, which occur about half a mile above the forks, and are about 60 feet high. The river here breaks through the east flank of Mount Albert, and below the fall passes through a deep and beautiful canon one quarter of a mile long, with perpendicular walls rising to more than 200 feet above the river. In places it is not more than six feet wide, but very deep, and above the falls so rapid that it cannot be ascended except at high water, and then only with great difficulty.

Seven miles above the forks, in the distance of half a mile, there are five small falls from two to seven feet high, caused by ledges of granite which here cross the river. These had to be passed by five portages, causing much delay.

From here to the lake, about three miles distant, the river passes through a flat country, and has very little fall, but is obstructed by timber jams and is very crooked. The total distance from the forks to the lake is 10 miles 67 chains (9 miles 52 chains straight), the general bearing S. 15° E.

As the forks are 709 feet above sea level, and lake St. Anne is 1,313, there is a difference of 604 feet, which gives the river an average fall of nearly sixty feet per mile between the two places.

The river for the first four miles of its upward course passes through a deep valley formed in the Shickshock mountains, which rise from its bed on either side into peaks varying from twelve to fifteen hundred feet in height. Having passed through the range, the country becomes comparatively flat, with small hills bordering the river. These rise two or three

hundred feet, and among them are a few isolated granite peaks, which rise to a height of more than 1,400 feet. This region is a continuation of the Devonian table-land which extends from near lake Matapedia, along the south side of the Shickshock range to lake St. Anne and to the Magdalen and York rivers, forming an almost level tract of country from the Intercolonial railway, near lake Metapedia, to Gaspé Basin, more suitable for a branch line of railway to Gaspé than the route by way of the coast from Metapedia station.

On account of its elevation, this table-land is of little or no importance for agricultural purposes, summer frosts being frequent. The timber growing on it is of small size and apparently stunted, and consists principally of white and black spruce, balsam-fir, and white birch, cedar not being found above the falls of the St. Anne.

Lake St. Anne, three miles long and rarely more than a quarter wide, general course S. E., is divided in to two portions by a shallow strait about one hundred yards long by fifty wide. The lake is very deep, a forty yards line failing to touch bottom in the middle of the large portion. On the east and west side of the lake granite peaks rise to heights of from 1,200 to 1,500 feet above its level, while to the N. E. and S. W. low ranges of hills not more than 500 feet high are seen. These hills are composed of Devonian sandstone, as are also the lower flanks of the granite peaks. The granite has burst up through the sandstones and is part of the mass of Table-top mountain to the north.

Having completed the survey of the lake and explored a portage to the headwaters of the west branch of the Little Cascapedia river, which passes about three miles south of the lake, we returned to the forks on July 4th. The next day we ascended Mount Albert. Its summit is about 3,000 feet above the bed of the river and one mile and a-half distant.

Here a camp was formed, and two weeks were spent on the flat top of the mountain, running a base line three and a quarter miles long. From this line we were enabled to triangulate 158 peaks, in the surrounding ranges. Geological investigations were carried on at the same time, and sections made along three brooks, which rise on the mountain and flow into the St. Anne.

The top of Mount Albert is nearly flat and is rent by a deep gorge on the east side, which, near its head, splits into several smaller ones. The sides of these gorges are quite destitute of vegetation and the bare serpen-

tine rocks are weathered to a light buff color. On the top of the mountain blocks of serpentine are scattered, and are partially covered by a thick growth of mosses and lichens. Sheltered places are occupied by a stunted growth of black spruce (*Abies nigra*), which rarely attains a height of ten feet. The branches interlace near the ground and form an impenetrable thicket. The whole surface has a dead appearance, and reminds one of the pictures of the moon. The top of the mountain has a gentle slope from S. W. and N. E. towards the centre, and the base line was run from the flag-staff point on the N. E. to an elevated point on the southern side, the course being S. 28° W. From the north-east end of the base line, where the accompanying sketch was made, a fine view of the surrounding country was obtained.

Commencing from the west, all the important peaks of the Shickshock range are seen stretching to beyond the Matane river. North of this the lower hills of the Cambrian rocks run in a series of ridges parallel to the coast and are cut by the valleys of the Cape Chat and St. Anne rivers. Beyond is the Gulf dotted with passing ships, and on the horizon the mountains of the North Shore are seen, the whole forming a grand and beautiful picture.

As we turn east the mountains of the coast become higher, often rising into peaks having an altitude almost equal to those of the Shickshocks, and shut out the view of the Gulf. Further to the N. E. we see the northern part of the great granitic mountain called Table-top mountain by Mr. Richardson.

This mountain, with its several peaks (a few of which are higher than Mount Albert), fills up the whole eastern horizon. It rises abruptly more than 2,000 feet above the surrounding country, which undulates from the valley of the St. Anne to its base. The higher parts and sides of the mountain are bare, trees being unable to grow in such exposed places.

To the south-east is seen the valley of the St. Anne, with the lake St. Anne in the distance, looking like a streak of silver; surrounding it are bare granite peaks. To the south, the great table-land, already mentioned, stretches along the base of the Shickshocks, broken only by a few granite peaks, while, in the distance, the Devonian mountains are seen in a number of parallel ranges, cut by deep transverse valleys, through which flow the branches of the Cascapedia river.

Having finished the work on the mountain, and made a collection of Alpine plants, we descended to the forks on July 20th.

Messrs. Porter and Hamilton remained to make paced surveys along the several small brooks on the north side of the river, and two men were sent to cut a road to the summit of Table-top mountain, about eight miles distant, while I descended the river to St. Anne des Monts to procure a fresh supply of provisions and compare my barometer with that of Mr. Vibert, who kindly kept reading three times a day during the entire summer, thus enabling me to fix the heights of all the peaks ascended during the season.

On account of a freshet, I was unable to return to the forks until the 27th. The men had then completed the road, and we started for Table-top mountain, but did not reach the top till next day, being unable to travel fast from the poor condition of the path and the heavy packs carried. Table-top mountain is about fifteen miles from north to south, with an average breadth of three miles. The surface is uneven, and numerous peaks, often rising five hundred feet above the general level, are found around its edges, while the centre is an undulating plain dotted with many lakes (as many as twenty-six were counted from one point) varying from one to one hundred acres in extent. The central area is about 3,000 feet above the sea level, but several of the peaks are higher than Mount Albert. Richardson's peak (3,700 feet) is the highest. This mountain presents a marked contrast to Mount Albert. The peaks on its margin form a basin of the central part in which, protected from the severity of the weather, black spruce grows to a height of thirty feet, many trees being a foot in diameter; these are clustered together with open glades between, covered with a rich growth, of Alpine timothy and ferns. The mingled colors of the dark spruce, the light grasses, the blue lakes, and the pink, bare, granite peaks form a pleasing picture. Brook trout abound in all the lakes and in the brooks flowing out of them, while the woods are alive with spruce partridges.

The lakes are arranged in groups, each group being drained by one large brook. East magnetic from the forks of the St. Anne, on the west side of the mountain, there are two groups; one of five to the south, and the other of three to the north. The brooks from these, in leaving the mountain, fall directly more than 600 feet, and unite a short distance from its base, joining the north branch of the St. Anne river about two miles from the forks.

Immediately south of these lakes is another group of three, forming the head of the middle branch of the Magdalen, and the north branch rises from a group to the east of the last.

To the north, several lakes empty into a brook which joins the north branch of the St. Anne, about six miles from the forks, while further north is a large lake and several small ones, which form the headwaters of the branch itself.

After having spent several days examining the top of the mountain, being greatly delayed by rain, I started, accompanied by Mr. Porter and two men, down the middle branch of the Magdalen river. A micrometer survey was made from the lakes at its head to the forks, to connect with the survey made by Mr. Richardson in 1857.

While we were thus engaged, Mr. Hamilton remained on the mountain, triangulating peaks to the east and south.

From the lakes, the middle branch flows down a gorge in the mountain for a distance of seven miles, the general course being S. 20° E. This gorge is very deep and divides the mountain into two portions. Below the gorge the stream turns east for a distance of two miles and passes through limestone hills not more than 800 feet above its level. It then turns N. 20° E. and flows through the same description of country for seven miles, where it joins the south branch and half a mile beyond is the junction of the north branch where Mr. Richardson's survey ended.

Along the first course the timber is small and stunted, consisting principally of black spruce, white birch and balsam-fir. That found along the second course and the upper part of the third is even poorer, consisting of a thick growth of black spruce, few trees of which exceed six inches in diameter. The lower half of the third course is well wooded, with valuable timber, mainly white spruce and white birch, many fine trees remaining although considerable lumbering has been done in the vicinity.

This survey was rendered very difficult by the rain which fell steadily for the last three days. It caused a freshet in the river, making it impossible to wade, while the woods along the banks were almost impenetrable on account of fallen timber. We reached the forks about 10 a. m., August 4th, and, being without provisions, immediately started for the camp on Table-top mountain, fifteen miles distant, which we reached at 8 p. m. After resting the next day we descended to the forks of the St. Anne on the 6th. Here high water detained us three days, when we proceeded down about four miles to a large brook which comes in from the north. From here Mr. Porter descended directly to St. Anne des Monts, so that he might dry and arrange the specimens of plants collected during the summer. Having spent two days surveying this brook, we descended to another which

enters the St. Anne river from the south about twenty miles from its mouth. From the head of this brook we endeavored to reach lake Cascapedia, about three miles distant, but were unable to do so on account of the great blow-down of timber which covers the sides of the mountain as far as could be seen. In passing through it I strained my knee so severely that I had great difficulty in again reaching the St. Anne. The next day, August 19th, we descended eleven miles to a large brook called rivière Côté, flowing from the south. My knee being very painful, I left Mr. Hamilton to survey the river, and descended to St. Anne des Monts. Mr. Hamilton having finished his survey joined us there on the 18th and left with Mr. Porter for Ottawa, on the 22nd. They took with them all the specimens collected during the summer and part of the outfit not in use.

On the 23rd of August I started up the Cape Chat river with two men and a canoe. Great difficulty was experienced owing to the low state of the water, and we were only able to reach a point about twenty-five miles from the mouth. This river has been described by Sir William Logan in his report for 1844.

Descending the river, we returned to St. Anne des Monts, and left there on the 29th to make a traverse across the Gaspé peninsula by way of the St. Anne and Little Cascapedia rivers. We arrived at the forks on September 1st, and a day was spent cutting cedar and putting a bottom on the canoe, as the river above the forks was so low that we had to drag the canoe the greater part of the way to the lake, which latter we reached on the 6th. From thence we made a portage to the west branch of the Little Cascapedia river, three miles distant. Two days were necessary to clear a trail and carry the canoe and baggage across.

Where we reached that stream, it is only fifteen feet wide and greatly obstructed with logs and fallen trees, so much so that four days were occupied cutting it out and hauling the canoe seven miles. The river for this distance is very crooked, with little current. Beyond this, having been joined by several large brooks, it becomes more navigable, attaining a width of about fifty feet with a swift current. The fallen trees, which are swept down it, form huge jams at intervals of three or four miles. These had to be passed by cutting portages and carrying everything over them, entailing great loss of time.

Seven miles from the portage, the river is joined by a large brook from the west, and just below this passes over a fall thirty-five feet high, at the foot of which it meets a large brook from the east.

Below the fall the hills are higher, having an elevation of 800 to 1,000 feet above the river. The soil along the flats of the valley seems to be much better than near lake St. Anne. Good spruce and birch timber is found close to the river, with a quantity of pine on the hills.

Nine miles below the first fall a second one of ten feet occurs, and below this the current, which so far has been rapid, slackens, and the river winds from side to side in a valley about one mile wide, containing excellent bottom land covered with a rich growth of white spruce, white and yellow birch, cedar and poplar, with a few trees of ash and maple. On the hills there are found large spruce and a few pines, all fit for lumber. This fine valley extends for a distance of twelve miles, with a south course. A mile above the forks, distant eighteen miles from the mouth, the river again becomes rapid, and the valley narrows to less than a quarter of a mile.

The Little Cascapedia, from the forks to the mouth, has been described by Mr. Ellis (Report of Progress 1880-2, pp. 9 D, 12 D.)

Being much delayed by the cause mentioned above, we did not reach the mouth of the river until the night of the 10th, and having counted on making the traverse in ten days we only carried provisions enough for twelve days, and so were without food for two days.

Next day we proceeded up the Bay des Chaleurs to Dalhousie, where we were met by Mr. A. E. Barlow, who had been left there by Mr. Ellis to assist in making micrometer surveys in the neighborhood of Rimouski. After spending three days at Dalhousie, collecting fossils and specimens of pretmite from the cliffs of Cape Bon Ami, we proceeded to lake Metapedia, where three days were spent examining the rocks on the east shore of the lake. From here we went to Rimouski to make several surveys of roads in that vicinity, but as the weather was cold and unsettled, and the roads very bad, it was found impossible to do this work; we therefore, left Rimouski on September 28th, and returned to Ottawa, October 1st.

The work of the season was greatly retarded by the frequent rains during the months of June and July and the first week of August.

Serpentine and Olivine.—These rocks are largely developed at the eastern extremity of the Shickshock range and form the prominent peak of Mount Albert. They extend in a southwesterly course from the west side of Table-top mountain across the south branch of the St. Anne river to Mount Albert, which is about the centre of the mass, and thence to the headwaters

of the east fork of the Salmon branch of the Cascapedia river, making a total length of twelve miles.

The greatest breadth is four miles, on Mount Albert, but the average is not more than two and a-half miles.

The rocks are chiefly olivine, more or less changed into a dark green serpentine, associated with patches of mottled brownish red, the whole overlaid by the banded beds before described.

The green serpentine has sometimes a coarse fibrous structure (picrolite), but the quantity is small and the quality not fine enough to make it commercially valuable as asbestos.

All the rock seen on Mount Albert was altered into the above serpentine, but on the eastern slopes, along the St. Anne river, olivine was found only slightly decomposed upon weathered surfaces.

Mr. Adams examined a section of this rock, under the microscope, and gives the following description of it:—"This rock, which is very fresh, is in section seen to be composed of olivine, arranged in very irregular bands of larger and smaller grains, together with a small quantity of an opaque black iron ore, which, judging from its association with the olivine, is probably chromic iron ore. A few grains of a very light brownish-green fibrous mineral, some of which show parallel extinction, are also present. These are probably enstatite, but none of them are cut so as to enable this to be determined with certainty. An interesting point in connection with this rock is that each grain of iron ore is surrounded by a greenish ring composed of an aggregate of wavy fibres, which in a few cases, where they were sufficiently large for examination, were found to have a parallel extinction, and which resemble serpentine. It is an olivine rock." See also description of similar rock from nearly the same locality by Dr. B.-J. Harrington. (Report of Progress 1877-78, p. 40 G.)

These rocks all change to a light buff color where they are exposed to the action of the atmosphere; and, as the soil above them is very poor, supporting little or no vegetation, a dead appearance is given to the scenery.

Banded structure is distinctly seen amongst the serpentines on the mountain, but the direction of the strike of the beds is not continuous, nor parallel to that of the surrounding stratified schists, and is supposed to be due to flow structure, as the olivine is undoubtedly of igneous origin.

Chromic iron is found associated with the green serpentine and seems to be confined to certain beds of the rock, as it is found scattered along the strike in loose blocks, some of which are ten inches in diameter.

This mineral was observed on the surface near the banded beds of serpentine, at the north-east side of the mountain, and also along a bed about two miles south of the first place.

The ore was found to occur in small, widely separated pockets, scattered through the serpentine, and where seen is not in sufficient quantity for profitable mining.

Where the olivine crosses the St. Anne river, veins of steatite of a light green color were observed, but the cost of transportation renders them of no economic value.

(*A.-P. Low*, 1885.)

NOUVELLE RIVER, WEST BRANCH.

“ I commenced the scaling of this river from the aforesaid sixth mile tree, chaining upwards on the ice when practicable, and through the bush, until I arrived at the seventh mile tree, which I marked as such, on the west side of the river. In the traverse of the river, I met with one brook running in from the east and crossed several small islands, the soil along the flats being fertile and consisting of a red loam; the timber principally of spruce and fir, with some poplar of large dimensions.

I proceeded on with the scaling, marking and establishing all the mile trees on the west side of the river, until I arrived at a small fork at fourteen miles and 14/50 chains, where the river divides into two branches, the main one running to the west, while the other branch inclines to the north-east. Between the seventh mile tree and the said forks, I passed several small brooks and islands, the former furnishing a good supply of water to the main river. I could not obtain the names of any of these brooks, nor do I believe they have yet been named. The soil in this locality is rich and the timber large, more especially the spruce, which would make good merchantable timber, being sound and straight. In the vicinity and between the ninth and tenth mile trees, there are some pine trees of good quality, growing on the slopes of the mountains facing the river and on both sides of the same.

The brooks that run into the main river are small; the spruce and fir are large; there is also some white and black birch; the soil is good, although in some places very stony. Excellent timber of the same kind abounds along the slopes of the mountains.

At a short distance above the nineteenth mile tree, there is a good sized brook, which comes in from the west, and, after passing the same, keeps north-west, as far as the twenty-third mile tree. Between these two points, the soil is not quite so good, nor is the timber as large, consisting principally of a smaller growth of spruce and fir, with a few birch trees.

The banks of the river are not high, seldom exceeding three or four feet. The river here is very rapid, but without any falls. From the twenty-third mile tree to its source, the river narrows very much, and the soil is poor and stony; the timber consists of spruce and fir, but of a small and inferior quality. At twenty-eight miles 65 chains the river forks off into three small brooks which run north for about one quarter to one half mile each, taking their rise in an alder swamp, and may be considered the head waters of the west branch of the river Nouvelle.

The land in the vicinity of its source is level and continues so to the north and west as far as the vision of eye extends. I may add there is not along its whole course, from my point of departure to its source, one single fall, and it may be considered a continuous rapid, free from any obstruction.

In general along the whole course, on either side of the river, there is hardly sufficient breadth of land to make it of any use for settlement purposes. At its source, however, there is a large tract of land that could be made available for that purpose.

(*P. Murison, 1876.*)

CASUPSCULL RIVER.

From the confluence of the Metapedia and Casupscull rivers, ascending the valley of the Casupscull to Four-Miles brook, the land has generally been burnt over and is barren. Both sides of the river present to view nothing but steep and bare hills and arid rocks increasing in height until they attain an average altitude of 250 to 300 feet. On the top of these hills, the soil, however, appears susceptible of cultivation. In the valleys, it is in

general uncultivable. True, there are here and there, now on one side of the river and now on the other, small strips of cultivable land, but not in sufficient quantity, at each point, to induce a settler to take them up, except at one place situated at about three and a half miles from the confluence of the two rivers, on the left slope, where there is a point of land well suited to cultivation, although hemmed in, over an area of about 150 to 200 acres, which might make a good farm, and to which communication might be had at present by a logging road running to it from the Metapedia road. This point is occupied, it is said, by a Mr. Bruno Danjou, who raises hay on it and pastures cattle there.

From Four-Miles brook to Eight-Miles brook, brulés are also of frequent occurrence; but here and there some clumps of timber of little value remain standing. In this tract, there are on each side of the river steep hills, sometimes bare and sometimes wooded, and cliffs still steeper and altogether barren, maintaining a uniform and average height of 250 to 300 feet. In the valleys, there is no cultivable land, a few small points of insignificant size excepted, such as are met with from time to time to the head of the river and the large timber is in too limited quantity to permit of profitable working. It consists of white and grey spruce, cedar, white birch, &c. However, at the mouth of Eight-Miles brook, and along that stream, the wood is sound, of good appearance and in sufficient abundance, and I may say the same of Four-Miles brook. On the top of the hills, the ground, though broken, is arable.

Three miles further on, there is a small brook, with a valley of easy access, along which the Indians have established a portage road to communicate with the Casupscull lakes, in which they fish for trout. Over these three miles and for a mile further, the ground presents the same characteristics, appearance and topography as between the Four-Miles and Eight-Miles brooks, with the exception that there are no brulés and that the valleys and hills are better wooded. The timber is of average size, but the soil on the hill tops seems little suited to cultivation.

Then follows a succession of cascades and rapids, difficult of access and often dangerous, as far as the falls distant about five miles from Eight-Miles brook and about twenty feet in height. Above the falls, there is another mile and a half of rapids and cascades. In summer, this spot is turned by a portage road for canoes, to the left, which comes out on the second Indian portage connecting the Casupscull lakes with the Metapedia road across the lands. Along the cascades and rapids, the hills which border the river are lower, but sometimes steeper.

Between the second Indian portage and the grand discharge of the Casupscull lakes, a distance of about seven miles, there is still another heavy rapid, at about 55 chains from the second Indian portage, which would be very suitable for the erection of mills. The appearance and topography of the ground is about the same as that previously described, with the exception that the hills are not so steep. In ascending the grand discharge of the lakes, at a few chains only from the river, there is a fall which prevents the salmon from reaching the Casupscull lakes. From this to the lakes, there are cedar, spruce and balsam-fir of fine quality; but the ground is broken and unsuited to cultivation. From the grand to the little discharge on the river, a distance of about a mile and a half, the land presents the same aspect as before. From the river, on the little discharge, the ground rises gradually for about 55 chains and is of little value, although the timber upon it is fair, after which the surface becomes flat, damp and swampy, only supporting a stunted growth of black spruce.

The lakes abound with fish. Every winter, the Indians of St. Anne de Ristigouche visit them in large numbers to catch trout which they sell at Campbellton to traders who export them. Large quantities of fish are taken. Around the lakes, the forest growth is generally black spruce and cedar of little value; but in the interior of the lands the timber is better and more mixed.

From the grand discharge to the south branch of the river Casupscull, the height of the hills gradually diminishes. The land is barren both in the valleys and on the hill tops. The timber is mixed and of moderate size. On the south branch, the timber is pretty good for three miles and a half to the point where this branch forks; thence to the source the land is wet and swampy, supporting only a stunted growth of small black spruce. From the south branch to the Still Waters, the altitude of the hills decreases gradually and, at the Still Waters, they disappear completely. The timber diminishes in value as the river is ascended, and the same remark applies to the land. The salmon, it is said, ascend to the Still Waters. From the latter to the end of the survey, the ground continues flat and wet, except at a couple of points, where there are small hills. The timber is very poor, consisting only of stunted black spruce.

The Casupscull river abounds with trout and salmon, but I regret to say that herein consists its whole value. Neither the soil, nor the timber is worth the expense of working.

(C. S. Lepage, 4th February, 1888.)

INTERIOR OF THE GASPÉ PENINSULA.

This report will be short and concise, as the accompanying journal contains in detail all the information, I could procure by my own observations or from other parties.

This exploration will, I believe, be of considerable service, as my journal will show all the places where lumbering is carried on, some of which are probably beyond the limits of the licenses granted. I was led to think that many lumber-merchants cut timber on unlicensed territory, from the fact that they do not keep any road open during the winter to communicate with the settlements, all the provisions for the lumbering season being brought up in the fall of the year, and the lumber being cut with great facility along the rivers, where there is little or no hauling involved. The spruce is so close at hand along the great rivers and their tributaries, that many contractors use no horses, but have the logs brought to and placed in the water by hand.

Another practice, which I consider an abuse, is that of placing no booms at the mouths of rivers at the time when the logs come down. Instead of that, men are placed to watch and immediately raft every piece that makes its appearance, and these rafts are at once towed by steamers either to Dalhousie to Mr. Moffat's mills or to Mr. Montgomery's mills at New Richmond.

Pine, spruce and cedar are plentiful throughout this region. The cedar, which is of very good quality, besides being used for other purposes, is made into great quantities of shingles, which are exported to the West India Islands in packages 20 inches long (length of shingles) and 9 inches broad; each package containing one hundred shingles. Large quantities of shingles similar to those which are sold here are also made. The pine is generally of good quality, yet not equal to that of Ontario. The merchantable spruce is much superior to that found in any other place. There is good hunting to be had throughout this country, as it contains large numbers of moose, caribou, marten and fisher. There are also some otter, mink and beaver; the latter is scarce, because, like the moose, it is too much hunted during the close season. I have remarked that the otter and mink destroy large quantities of the eggs of the salmon which spawn in all the rivers running through these lands.

There are numbers of salmon and trout in all the rivers and the lakes are all well stocked with trout. Some of the rivers are more advantageous than others for fishing, but they all contain fish, and there is much fishing done. This country is so very mountainous that the soil is unfit for cultivation, except in the spots marked on the plan accompanying the report. Another reason which induced me to designate these lands on my plan, as forest-reserves, is that there is still in the neighbouring township nearer the sea-coast, a large extent of land fit for cultivation, which is not yet colonized. Also, from the township of Nouvelle to the township of Port Daniel, the land is very good and less mountainous than that above mentioned, and may be colonized as readily as any other place in the province.

I may say before closing that my work was at times difficult and painful, but I trust it will not be unprofitable.

River Casupscull.—October 22nd.—Began my exploration on the river Casupscull. Along this river there is a burnt tract (*brulé*), extending about eight miles from its confluence with the river Metapedia. Both sides of this river are mountainous, but there is a little land fit for cultivation on the summit of the mountains.

October 23rd.—Continued my exploration, ascending the small discharge of the lakes about five miles, where I found quantities of spruce, cedar, fir and white birch. I especially remarked the fir, which is very large and as fit for working as the spruce.

October 24th.—Continued ascending the Casupscull for about five miles. The valley of this river is like that of the discharge of the lakes, with regard to the species of wood. The land is very mountainous and the soil poor.

October 25th.—Continued my ascent as far as the falls. Mountains and wood the same as on the preceding days. Large quantities of birch on the west. I noticed that there was lumbering done some 15 or 16 years ago, from the mouth of the Casupscull to the falls, marked on the plan.

October 26th.—Explored the eastern part between the river Casupscull and the Grand lake. In all the low grounds there are good spruce, fir and cedar, and on the mountains, white birch, fir, and some small spruce. Nearly all the large timber is blown down.

October 27th.—Explored to the west, between the river and the seigniorship of lake Metapedia. The land is mountainous, and the wood is

cedar and spruce in the low grounds ; on the mountains, the wood is nearly all blown down.

October 29th.—Continued my exploration, ascending the river to the grand discharge of the lakes. Timber—cedar, spruce and fir throughout. The land is mountainous, and the wood on the mountains blown down.

October 31st.—Explored to the westward towards the seigniory of Metapedia. Timber and lands the same as the preceding.

November 1st.—Continued the exploration, ascending the river Casupscull. Saw very little merchantable timber ; the trees are short and stunted. There is a little cedar and black spruce.

November 2nd.—Explored to the west in the interior, finding nothing but mountains and overturned timber.

November 3rd.—Explored to the east, between the river and mouth of the lakes ; the land is all mountainous and the timber stunted.

December 19th.—Resumed my interrupted exploration ; continued ascent of the Casupscull to about six miles above the grand discharge. Both sides of the river are mountainous, and the timber becomes smaller as the land rises.

December 20th.—Explored to the north, towards the river Matane. The principal timber is small black spruce on the low lands, and, on the heights, white birch and fir, overturned.

December 21st.—Shifted my camp while exploring about six miles higher ; very little useful timber in this distance, except some tamarac, suitable for railway ties. Land low and swampy.

December 22nd.—Shifted camp again about five or six miles further ; found the same land and timber as yesterday.

December 23rd.—Sunday. Shifted camp about six miles further, near the height of land ; same land and timber.

December 24th.—Explored towards the sources of the rivers Matane, Cape Chat and Cascapedia. On the high mountains of this locality, which are called the Chick-chocks, the timber is very small, and consists of bou-leau, fir and black spruce. In the low lands, the soil and timber are the same as mentioned above.

December 25th.—Returned and camped at the mouth of the south-east branch of the river Casupscull.

December 26th.—Explored this branch on the way up. From near the mouth upwards, for about four miles, there is good spruce fit for making logs; but above that the land is swampy and sparsely timbered, like the rest of this country.

December 27th.—Shifted my camp to the third lake Casupscull. Around these lakes there is a considerable quantity of spruce and a great deal of cedar. The land is mountainous. All the spruce along this river which I have mentioned is of the best quality (good grey spruce). On the upper part of the river, especially, there are large quantities of tamarac, suitable for railway-ties. The driving of logs can be done with much facility on the river Casupscull, and even on the outlets of the lakes and other tributaries. This river is also well stocked with fish, especially salmon and trout. The salmon run up as far as the head of the east branch, as shewn on the plan annexed hereto. The lakes which empty into this river are also filled with trout, but the salmon cannot pass above the falls, marked on the outlet. I am told that \$300 worth of trout are taken every winter by people from Campbellton, who ship it to the States. My plan of this river and the lakes is from estimated distances walked over and courses taken with a compass.

Rivers Nouvelle, Assemetquagan and Escuminac.—December 28th.—Shifted camp to the head of the river Nouvelle. Near the lakes I saw some good timber, cedar and spruce, and further on in the low lands good tamarac fit for making ties. West of this line the timber is nearly all blown down.

December 29th.—Shifted my camp to the head of the river Assemetquagan. Near the head of the Nouvelle there is some good timber, spruce, in the low lands, but on the heights I saw nothing but small timber and windfalls. There is plenty of good timber along the Assemetquagan, but the land is very mountainous.

December 30th.—Sunday. Shifted my camp lower down on the same river to the forks—to the part already done. The timber along this part of the river was cut during the winter of 1881 and 1882 by Mr. John Forrest of Campbellton, and the forest is now all but stripped. All the rest of the timber along the river, lower down, was cut about eight or ten years ago by Mr. Moffat, of Dalhousie. There are no salmon in this river, but it is well stocked with trout. The river Assemetquagan is very suitable for driving logs.

December 31st.—Shifted camp to the head of the river Escuminac, and, on my way, observed some good land and a little good timber, but most of the trees are blown down.

January 1st, 1884.—Shifted my camp to the forks of the river Escuminac. The land is mountainous. There is a good deal of hardwood at some distance from the river, and quantities of spruce in the vicinity of the river and its branches.

January 3rd.—Explored towards the head of the little river du Loup and of the Little river. In this very mountainous part, there is a good deal of timber, spruce, but I was told that the timber along the Little river was cut in 1881 and 1882 by Mr Moffat.

January 4th.—Shifted camp near the line of the township of Mann, along the Escuminac. The timber along this part of the river was cut some ten or twelve years ago by Mr. Moffat, of Dalhousie, and again in the winter of 1879-80 by the same party, according to what I was told. I myself saw two of the camps which were used when this timber was cut. The mountains are very high on both sides of the river, and well timbered with fine merchantable birch; there is also a little cedar.

January 5th.—Explored the north-east branch of the Escuminac, and found that the timber had been cut there also by the same Mr. Moffat. Between the two branches just mentioned the land is mountainous and the timber mixed.

January 7th.—Explored between the east branch of the Escuminac and Rocky brook, and found the land mountainous and timber mixed, birch, spruce, fir and cedar; the spruce and birch are of good merchantable quality.

January 8th.—Went out to the settlements, seven miles from the coast, near the forks. The river Escuminac and its tributaries are well adapted for the driving of logs, and very rich in sea-trout. I am told that a great many strangers go there to fish every summer.

January 9th.—Sent my men and the baggage to the river Nouvelle, and went to Campbellton to get some provisions.

January 11th.—Shifted camp from the Nouvelle to Tub-Brook.

January 12th.—Explored between the Nouvelle and Tub Brook, where I found spruce and pine, and in the mountains mixed timber. The birch is merchantable.

January 13th.—Sunday.— Explored Tub-Brook upwards to its source. Found some pine and spruce, but some of it was cut two years ago by Mr. Anthony Carl, of Nouvelle. This little river is suitable for the driving of logs.

January 14th.—Moved my camp to the upper forks of the Nouvelle. As we ascend the river, the mountains approach very near the banks, though here and there are some small level spots of ground (plateaux), fit for cultivation. I found there spruce, cedar and poplar in the lowlands, and a little pine on the mountains. Lumbering was carried on some years ago along all the branches of this river. The section is mountainous, and the timber mixed.

January 15th.—Explored the north-west branch of the Nouvelle about eight miles up. In this space I found a considerable quantity of spruce and some pine at the places indicated on the map. The river flows between high mountains, which are covered with mixed wood; some pine and a good deal of spruce.

January 17th.—My men shifted camp higher up, while I explored to the eastward, between the rivers Des Lacs and Nouvelle. In this section I found on the mountains stunted timber and overturned trees. Along the Nouvelle there is a considerable quantity of good timber, especially spruce.

January 18th.—Explored to the eastward between the Nouvelle and the north-west branch of the Cascapedia. I there found a good deal of spruce along the small streams, and around the small lakes. Further on to the north there is a large mountain covered with small, stunted trees.

January 19.—Shifted camp four miles higher up the same river. Both sides of the river Nouvelle are mountainous. There is a little spruce at the foot of the mountains, and at the top, black spruce and bouleau.

January 21st.— Explored the section comprised between the two branches of the Nouvelle, and about five miles of the western branch, going upwards. Along the latter branch, the land is mountainous and the trees are of stunted growth, but, on the borders of the river and its tributaries, there is a good deal of merchantable spruce.

January 22nd.—Explored the north-east branch of the Nouvelle as far as the source of the Casupscull waters, where I found swampy ground, which produces tamarac and a little grey spruce along the small tributaries.

On the whole, the valley of the Nouvelle is well wooded with spruce and pine of good quality. The river throughout its whole length is available for lumber driving. It is also well stocked with trout, and numbers of strangers visit it every summer on account of the fishing.

Cascapedia River.—January 23rd.—Moved my camp to the river Cascapedia. I found a good deal of spruce near the small lakes as well as all along the portage; there is also a great deal along the stream which empties itself into the Cascapedia.

January 24th—Worked upwards in a westerly direction along the Cascapedia, and found spruce for a distance of about three miles. Above that are the Chick-Chock mountains already mentioned, which are covered with small stunted trees.

January 25th—Moved my camp down the Cascapedia about five miles. There is timber all along this distance, but I remarked that much of the spruce was dried up.

January 26th—Went to the head of the north-west branch, where I found spruce and some pine on the mountains.

January 28th—Moved my camp to the lake on the Cascapedia. On the way observed a good deal of spruce and pine on both sides of the river.

January 29th—Explored the middle branch which rises in the height of land where the Cape Chat also has its source. I found a good deal of spruce on both sides of the branch, principally above the forks. The land is very mountainous, with nothing but stunted trees on the heights. At the foot of the lake I found the remains of a camp where Mr. Montgomery's jobbers had lodged during the winter of 1881-82.

January 30th—My men shifted the camp about five miles further down, while I explored the river between the middle branch and the Salmon river. I found a great deal of spruce on both sides of the latter.

The valley of this tributary of the Cascapedia is bounded by high mountains very thinly wooded.

January 31st.—Moved my camp to the mouth of the Salmon river. All along the course of the river downwards from the lake, spruce has been cut near the banks, but there yet remains a great deal, as there was none cut where it had to be hauled. I found another camp about six miles below the lake, built the same year as the other, 1881-82.

February 1st and 2nd.—Explored along the banks of the Salmon river going upwards. Above the forks I found a camp built this winter by Mr. Montgomery, and from such information as I could procure from the overseer and shantymen, they must have cut about 5,500 spruce trees, in American style, that is, leaving the trees their full length. Higher up the timber gradually diminishes in size, and, near the source of this river, there is nothing but stunted trees.

February 3rd, Sunday.—Moved my camp to Berry-brook. On the way down I noticed some cultivable land on both sides of the river as indicated on the plan. The timber has been cut during the last three winters.

February 4th.—Explored upwards the banks of Berry-brook. The timber has been cut for a distance of about four miles. There is still a little timber remaining higher up, but on the height of land it is all stunted, especially on the mountains.

February 5th—Explored the Little Cascapedia to its source. Found very little timber. The section between the Grand and Little Cascapedia rivers is quite mountainous.

February 6th—Moved my camp to the mouth of the north-west branch of the Cascapedia. Going downwards, I found a camp belonging to some of Mr. Montgomery's jobbers, Johnny Ouellet and his brother. On the east, there is a large burnt tract (brûlé) in the rear of which there is still some pine on the mountains, as shewn on the plan. On the west, there is also some pine on the mountains, although a great part of it has been converted into square timber, the same as on the other side of the river by Mr. Ouellet.

February 7th and 8th—Explored the north-west branch, going upwards. Lumbering has been carried on, this and preceding winters, over a space of eight or ten miles in length. The Ouellets have also been making square pine and spruce during this winter. Higher up along this river there is still some spruce and pine standing. The region is mountainous, with nothing but small trees on the heights.

February 9th—Moved my camp to the river Des Lacs. On the right, going down, there is a burnt tract (brûlé) as shewn on the accompanying plan, but there is a strip of green timber on the mountains on both sides of the river.

February 10th, Sunday.—Explored the river Des Lacs going upwards. Found that the timber had been cut nearly up to the lake. There is still a

little pine standing on the mountains, and beyond the river in the interior there is some spruce. I was told that these lakes are full of trout.

February 11th.—Shifted my camp further down the river. The same day, I explored the first branch to the east for a distance of about six miles. I found lumber which had been cut this winter, but there is still a little standing timber near the upper part of the river. This section is very mountainous, with nothing but scrub on the heights.

February 12th.—Camped at the forks of the Escuminac. On the way down, found a camp about two miles below the river explored the previous day.

Nearly all the wood, including the cedar, has been cut on both sides of the river. The soil is good, as shewn on the plan. The timber comprises poplar, elm and ash on the lowlands, and black and white birch on the mountains.

February 13th and 14th.—Explored the banks of the Escuminac, upwards as far as the north-east branch of the Nouvelle. Obligated to move our camp to the forks of the Escuminac. At the fall there is a magnificent mill-site. Near this fall, there is a piece of cultivable land, on which three settlers have already begun clearing.

The timber in this section is ash, poplar, elm and aspen. Almost all the timber along the Escuminac was cut seven or eight years ago. There was still some being cut this winter on the north-east branch. There is a great deal of merchantable birch all through the section between the Escuminac and the township of Carleton.

February 15th.—Being in the neighborhood, I explored the north-east branch of the Nouvelle. I found the spruce and pine cut nearly everywhere and parties were still cutting for Mr. Mcfatt in the township of Nouvelle. There is still a little pine and spruce standing. The region is mountainous and at the head-waters of this river and of the Escuminac, there is nothing but trees of stunted growth.

February 16th.—Shifted my camp to the falls on the north-east branch which cuts the corner of the township of New Richmond.

February 17th, Sunday—Explored this little branch, which is well adapted for driving, to within six or seven miles of its confluence with the Cascapedia. Found two shanties where parties were cutting cedar and spruce, but there is now very little timber remaining. There are many

mountains in the distance covered with mixed timber, birch and other kinds. There is a magnificent water-power at the falls suitable for a mill-site. Settlers are established there as far as the township line, thirteen miles from the coast. The river Cascapedia offers great advantages for lumbering, because provisions can be transported in the fall by means of scows drawn by horses. There are only two portages, and only one rapid, at the division line between the counties of Rimouski and Bonaventure, to obstruct this mode of navigation. Only two portages have to be made in going as far as the mouth of Salmon river. All the tributaries of this river are equally advantageous for getting out lumber.

The Grand Cascapedia is the finest salmon-river in this part of the province; salmon are found as high up as the lake near the source, and in the Salmon branch up to the falls.

All the timber that is cut and sent down this river is for Mr. Montgomery, who has his establishment mid-way between the Grand and Little Cascapedia rivers, in New Richmond. I am told that last year he loaded ten vessels for Europe, besides having sold a great deal of lumber on the spot.

February 19th.—Went up the Little Cascapedia as far as the last settlement in the 6th range.

February 20th.—Camped on the same river; two miles further north than the township line, at Mill brook. I there found parties cutting spruce and cedar. The soil is good all along the river, as shewn on the plan. The timber is mixed, comprising poplar, ash, cedar, spruce and fir.

February 21st.—Camped at the upper forks. Going up, I noticed that parties had been making square pine and spruce, besides cutting cedar. The forest thereabouts is very much devastated, there being scarcely anything left but cedar. The land is mountainous, and the timber on the heights is black and white birch, with a sprinkling of other kinds.

February 22nd.—Explored the north-west branch of the Little Cascapedia, about six miles upwards. Spruce and pine had been cut on this branch during the winter of 1881-82 by jobbers for Mr. Montgomery. There is still some spruce standing on the tributaries, and a little pine on the mountains, which are numerous all through this region. The only other timber is stunted black spruce and white birch.

February 23rd.—Moved my camp about eight miles higher up on the north-east branch. Found spruce and pine growing on the low grounds.

The land is very mountainous, with nothing but small black spruce and white birch on the heights.

February 25th.—Moved my camp about six miles higher up on the same branch. Found mountains and forests similar to those passed through the previous day, except that there was less pine.

February 26th and 27th.—Explored the north-west branch of the same river. The space between the two branches is very mountainous and bears nothing but scrub. I found a good deal of spruce and a little pine along the river. Upon the mountains the wood is small and stunted.

February 28th.—Retraced my steps to where I had left my provisions two days previously.

February 29th.—Camped at the head of the river. On my way up I still found a few spruce trees, but the timber gradually becomes shorter, especially on the mountains, where there is nothing to be seen but a few small black spruce and white birch trees.

The Little Cascapedia generally is a fine river for driving logs. It is also well stocked with salmon and trout. As previously stated, there have been large quantities of timber cut on all the branches of the river during the last few years, by Mr. Montgomery.

Bonaventure River.—March 1st.—Shifted my camp to the north-west branch of the river Bonaventure. The whole way across I met nothing but mountains covered with small timber. There is a little merchantable spruce in rear of the Bonaventure.

March 2nd.—Although Sunday, shifted my camp six miles below, on the same branch. On the first four miles, nothing but small timber was seen, but below that the spruce is of better quality and in greater quantity.

March 3rd.—Shifted camp about five miles further down on the same branch. Saw a good deal of spruce and a few pine trees among the other timber. Land very mountainous.

March 4th.—While my men camped at the forks of the Grand Bonaventure, I explored to the west, towards the branch between the Little Cascapedia and the Grand Bonaventure. In this part, there are considerable quantities of spruce and pine, especially down towards the forks, where they are plentiful, as represented on the plan accompanying this report.

March 5th.—Shifted camp about eight miles higher up, on the Bonaventure. All the way up, I met a good deal of spruce, and a little pine among the mountains. The land is mountainous throughout and the summits are covered with small timber.

March 6th.—Shifted camp still higher to the forks on the same river. The timber gets smaller and stunted as we ascend along this river. There is very little merchantable spruce, and nothing but small black spruce on the heights.

March 7th.—Shifted camp, exploring on the way up, and camped near the intersection of the county lines. Found very little merchantable spruce; the timber is short and nearly all black spruce.

March 8th and 9th, Sunday.—Returned to the left fork, below the branch of the same river Bonaventure.

March 10th.—Went up this little river to its source. Found considerable quantities of spruce, from the forks downwards and up along this little stream. There is also a little pine. This little branch is very suitable for driving logs.

March 11th.—Shifted camp below, to the confluence of the river des Pins with the Bonaventure. All along the latter, going down, there is good spruce and some fine pine. The land is very mountainous.

March 12th.—Descended the Bonaventure to the rear line of the township of Hamilton, and, in the afternoon of the same day, went up about three miles on the first branch outside the township. There is a good deal of spruce and pine throughout this section, although some was cut a few years ago. I also found considerable quantities of cedar, which is more abundant than any other timber, both on the lowlands and on the mountains. There is also, near the township-line of Hamilton on the right of the river, some fine merchantable birch. Some cedar was cut last fall, all along the river from the township of Hamilton to the forks. I was informed that the cedar had been used in building the Government bridge below, on the Bonaventure.

March 13th.—Shifted camp higher up on the river des Pins. All along this river there is a good deal of spruce, cedar and pine, although some was cut some years ago. The land is very mountainous.

The valley of the Bonaventure, as shown above, is very rich in pine, spruce and cedar. This river is very advantageous for the driving of logs. It is also, as I was informed, well stocked with salmon and trout.

Port Daniel River.—March 14th.—Shifted camp to the head of the river Port Daniel. The dividing ridge between the waters of this river and those of the Bonaventure is composed of very high mountains covered with stunted timber.

March 15th.—Explored all day down the Port Daniel. At the head of this river, the timber is small and stunted, but lower down, where I turned back, some merchantable spruce can be found.

March 16th (Sunday), 17th and 18th.—Being on the eve of running out of provisions I directed my explorations towards the head of the Pabos. From here to the West Pabos the land is very mountainous, and spruce not plentiful. On the heights especially there is nothing but small black spruce.

March 17th and 18th.—Directed my course towards the Grand Pabos, to obtain a general idea of the head-waters of this river. The lands through which these flow are very mountainous and the timber they bear is very small and short. Quite at the head of this river, on the left, is a continuation of the extensive burnt tract, (*grand brûlé*), which crosses the rivers of the Gaspé basin, the St. John, &c., which I mentioned in a previous report. White birch, aspen, spruce and fir are now growing on this burnt tract.

March 19th.—Returned to the north-east branch of the Bonaventure.

March 20th.—Camped at the forks of the same branch, lower down. There is very little timber on this section, hardly anything but small black spruce throughout.

March 21st.—Sent my men down by the Bonaventure to the township of Cox, while I walked in a southerly direction towards the township of Hope. On this line I saw very little timber near the river, but, as I continued in the same direction, I came across a small tract of land fit for cultivation (marked on the plan). Here there are birch, spruce, cedar, poplar and cherry trees. According to the report of my men, there is plenty of spruce on each side on the north-east branch of the Bonaventure, and the river is very advantageous for driving logs.

I was told that the rivers Pabos and Port Daniel are very rich in salmon and trout, and that their valleys are well timbered towards their mouths.

(*Joseph Bureau, 1884.*)

DISTRICTS OF RIMOUSKI AND TEMISCOUATA.

COUNTY OF RIMOUSKI.

I have the honor to report upon the exploration ordered by your letter of instructions, dated 20th February, 1884.

First Region.—The 4th of March, and the seven succeeding days were employed in transporting baggage to the mouth of the east branch of the river Rimouski, better known as river Caribou, and in examining the land, the water-courses and the timber from the last range-line of Flynn, at a short distance from the central line, following the right side of the said river Caribou, with western courses from time to time, in such manner, that having arrived at the grand river Rimouski, all the region comprised between the Rimouski and the Caribou, in rear of the surveyed ranges of Flynn and Duquesne and part of Chenier, are explored.

All this region, forming a superficies of over fifty miles, comprises lands of most excellent quality, slightly undulating towards the interior, and almost everywhere sloping gently towards the rivers; the soil brown and yellow earth, generally mixed with gravel. Hardwood predominates on the heights. On the whole, the soil throughout this region is fit for cultivation and advantageous for settlement. Cedar is met with nearly everywhere, and the mountain ash, sure sign of the good quality of the soil.

Second Region.—The seven days from the 11th to the 18th were employed in going over, in all directions, as much as possible, the tract between the river Rimouski and the township Biencourt, in rear of the township Chenier. These lands are of the best quality for settlements; the head of the river Snellier and other small streams met with form valleys of fertile soil, a brown and grey earth in the valleys, and a rich yellow soil on the hills. The timber is fine and large, comprising maple, birch, white birch, spruce, cedar and fir. The banks of the Rimouski are very high, although inclined in certain places. From the mouth of the Caribou, where we returned on the 18th at night, we went up, the next day, to lake Rimouski, on the river of this name, commonly known as Trout lake. The 20th, taking a general westerly direction over the mountains bordering the river, we reached the lake, which is the source of a large stream, called the north branch of the Rimouski. From this point, about two miles from the river, the aspect of

the land changes suddenly ; high rocky cliffs are replaced by low hillocks, surrounded by gulleys through which large streams flow in different directions from the lakes with which the country is dotted. All these lakes contain fish. From the 21st to the end of the month of March, following a course to the vicinity of the line between the counties of Rimouski and Temiscouata, and in rear of Biencourt to the province line, I found the same description of land throughout ; the fir, spruce, white birch and cedar are of large size, birch and mountain-ash are plentiful, and there are a few maples.

On the 1st of April, we reached the Rimouski near the boundary line. On the 2nd, 3rd and 4th April, following the course of the Rimouski, we explored the lands on each side, and along the small streams which flow into it, to lake Rimouski, which we had left on the 20th March. From the boundary down to the forks of the north branch, the land, although mountainous on leaving the river, is excellent, the flats are very extensive, and offer all the desirable advantages for colonization. Of wood, there is spruce in sufficient quantity for exploitation, cedar, yellow birch, white birch, fir and alders. From this last point down to about three miles above lake Rimouski, though the land is generally level, the soil is poor, being of yellow sand and gravel. Fir and poplar-leaved birch predominate in the forest. Beginning with the above-mentioned three miles, the land rises and, as we advance, the hills are seen rising one above another for a distance of about two miles ; some of these in the vicinity are above 1800 feet in height. These mountains afford some most picturesque scenery ; their sides sometimes steep and rocky, sometimes gently sloping, afford but narrow plateaux of soil of medium quality, generally sandy and gravelly ; the spruce and white birch are as before, but on the summit of the mountains the soil is good and not very stony, and is covered with fine timber, mostly hardwood. The whole region here described may comprise about one hundred miles in superficies.

The 7th of April, we continued our exploration along the Rimouski, as far as the mouth of the Caribou, with easterly courses from time to time toward the summit of the mountains. The soil here is of the same quality as before mentioned, but the flats are more extensive and of better soil, and cedar is in greater quantity. Approaching the river Caribou, the flats, widening out, comprise several hundred acres of rich land, the greater part covered with alders. Here again, the mountains, which, at first sight, appear bound together like a wall, are found to be surrounded by gullies, more or less deep, which afford facilities for passing beyond. Some very

excellent land is found on the sides of the mountains and in the gullies, where many good settlements might be made.

Third Region.—On the 5th of July following, we resumed our work. In the first week from the 22nd to the 25th we had three days of rain ; but from the 26th July to the 21st August we had most desirable weather and profited by it accordingly, going over the country in all directions. The region with which we are now occupied is that lying between the range of mountains to the east of the river Rimouski and the river Mistigouche, from the surveyed ranges of Flynn and Ouimet to the province line, and comprising an extent of about 250 miles.

With the exception of this chain of mountains which skirts the river Rimouski and also of the heights or large hills in the vicinity of the boundary, which lands, nevertheless, offer no serious obstacle either to communication or culture, though the soil is more meagre, composed of sand and gravel generally, we found no place which could not be worked to advantage. The land, slightly undulating after leaving the streams and lakes, is composed of rich yellow soil of good quality. The vicinity of the river Mistigouche, for an extent of many miles, is magnificent in all respects. Maple, birch, mountain-ash, spruce, white birch, cedar and alders are the kinds of woods which predominate.

In the interior of this region there are a great number of lakes ; the most remarkable are the lake Mistigouche, à Sifrois and à Côté : all these lakes are the sources of numerous water-courses and rivers which run through the country in all directions. Immediately west of the headwaters of the Mistigouche, running south-west, we crossed a grove of many thousand maples, which was formerly used as a sugary by the Indians of the locality. The soil is of superior quality.

Fourth Region.—Having come down from the woods, on the 21st August, we returned on the 27th. We explored by courses, in various directions, the region situated between lake Mistigouche, and the river of that name, on one side, and the river Metis, the seigniorie of lake Metis and the river Patapedia, on the other, from the province line down to the rear lines of the townships Ouimet and Massé, the whole embracing a superficies of two hundred and eighty miles or thereabouts. Besides, we examined the lands situated along the river Metis, east side, to the west line of Nemtayé, on a depth of about twelve miles, say a further extent of over seventy miles.

In the part above the townships of Ouimet and Massé, between Mistigouche and Metis, on a depth of about two miles, the land is generally level

and of excellent quality ; soil yellow and grey earth on the heights, grey clay and black soil in the low and moist spaces. The timber is, as before, spruce, white birch, birch, maple, mountain-ash, cedar in quantity and alders. At the end of the above mentioned depth of ten miles and for about ten miles higher, between lake Mistigouche and the west branch of the Patapedia, the soil and timber are both of the same description as above mentioned ; but from there to the province line the land looks poor and is very hilly and rocky. The country preserves the same character, returning between the two branches of the Patapedia until near their sources. There is a very large flat at the confluence of the two branches of the Patapedia, at the foot of the mountains. The soil is of good quality, but rocky. The timber on this flat and the neighboring lands, say for about five miles around, was totally destroyed by fire in July last.

As to the seventy miles on the banks of the Metis going towards the west line of Nemtayé, the soil is hilly, but easy of access and of good quality. Here and there on the banks of the river, are some fine large flats of rich land, covered, generally, with cedar and alders ; ash, poplar and elm are also sometimes met with. In all this region, there are not probably more than seventy square miles of land of inferior quality, mountainous and rocky such as I have just mentioned, while the remainder, about two hundred and eighty square miles, is eminently suitable for colonization and sufficiently watered by lakes and rivers.

Fifth Region.—Between the 30th of March and the 16th of April, we traversed and examined the fifth and last region in all directions. This region comprises all the unsurveyed lands, in rear of the townships Nemtayé, Humqui, Metalik and Milnikek, as far as the seigniory of Metis and the river Patapedia, and containing an area of about three hundred and thirty square miles.

As to the description of the lands it will, I think, suffice to say here that everywhere throughout this region, though it is mountainous in certain places, the soil is of the same quality, excellent and well adapted to culture. The forest contains many varieties of wood. The following woods,—spruce, white birch, maple, birch, hazel, mountain-ash and cedar, are those chiefly met with on the heights as well as on low grounds. A great part of this fine country has been ravaged by fire. In rear of the township of Milnikek, in the county of Bonaventure, on a tract extending to the Patapedia, containing over fifteen square miles, the finest timber has been burnt. Spruce, birch, maple and cedar are yet found in abundance in the few spots to which the fire did not penetrate. This devastation dates some years back,

as the new growth of all species, which now replaces the lofty timber of former days, has attained a height of 15 to 20 feet. The lands in this region are well watered by numerous lakes and rivers.

Before entering upon the general observations with which this report should close, I would point out that, during our last exploration, we were favored with very fine weather, solid snow under foot, level ground nearly everywhere and clear woods.

The principal streams and rivers which we met in the various regions above described, which deserve being pointed out, are seventeen in number, viz:—

- 1st. The river Caribou, or east branch of the Rimouski.
- 2nd. The upper part of the Rimouski, from the *Montagne Chiedos*, to its sources.
- 3rd. The Snellier river.
- 4th. The outlet of Echo Lake.
- 5th. The river des Sables.
- 6th. The north branch of the Rimouski.
- 7th. The south-west branch.
- 8th. The Flat river, *Rivière Platte*.
- 9th. The river à Sifrois.
- 10th. The Little Kedgwick.
- 11th. The river Mistigouche.
- 12th. The river Patapedia.
- 13th. The river Metis.
- 14th. Mill stream.
- 15th. McKinnan's brook.
- 16th. The river Humqui.
- 17th. The ruisseau Sauvage.

The waters of the Snellier river flow into the river Grand Touladi, and this into the Rimouski; the discharge of Echo Lake into Eagle river which falls into lake Temiscouata; the river des Sables into the discharge of Echo lake; the north arm, the south-west and Flat river into the river Rimouski; the river à Sifrois into the river Caribou; the Little Kedgwick into the river Quatadum Kedgwick, in the province of New Brunswick; the river Mistigouche, into the river Metis; Mill stream, McKennan's brook, Humqui and the ruisseau Sauvage into the river Metapedia.

Water-Powers.—All these streams and rivers become large enough, during freshets, to float logs for the greater part of their length. The rivers

Caribou, à *Sifrois*, *Mistigouche*, *Metis* and *Humqui* are floatable to their sources, the *Rimouski* to about two miles above its north arm. The banks of all these streams and rivers afford at certain points good sites for saw or grist-mills.

Merchantable Timber.—As to merchantable timber, such as spruce and pine, it is nearly all destroyed in the vicinity of the *Rimouski*, of the east branch, the *Metis* and *Mistigouche*; still there is a good deal of fine spruce in many places, as at lake à *Castor*, at the head of the *Snellier*, of the *Rimouski*, of the north and south west arms, and river à *Sifrois*. The new growth is in great quantity throughout. On the lands outside of the limits under license, as the *Little Kedgwick*, the *Patapedia* and the vicinity of small streams at the head of lake *Mistigouche*, there are quantities of spruce fit for logs, with a few pines scattered here and there. There is a considerable quantity of spruce and pine along *McKenna's* brook and at the source of the *Humqui*; spruce abounds everywhere else. Timber suitable for building purposes, especially cedar, abounds on the heights as well as in low places all through the country explored.

Lakes.—The lakes within this territory abound with fish, the red trout being the only kind, so far as I was able to prove; nevertheless, salmon were seen to rise in the Grand lake of the east branch of the *Patapedia*; in *Big Humqui* lake, white fish, suckers, and lunge (*touladi*) are taken; the other little lakes in the interior contain fine large trout. There are also lunge (*touladi*) in the lake à *Côté*, one of the sources of the river *Sifrois*, and in the still waters of *Mistigouche*, which contain numbers of trout.

Minerals.—Judging from the nature of the soil, there is no doubt that minerals of some value exist along the rivers, at the foot of the mountains and among the rocks which we met, but, not having the necessary tools or sufficient time, we were unable to make any search for them.

Means of Communication.—As to the means of communication, I have seldom travelled over any country which could be more easily made accessible by roads in all directions. A route from the *Taché* road might be opened in the vicinity of the central line of *Macpés* and *Flynn* as far as the province line, across magnificent and generally level land; this would be a prolongation of the *Macpés* route. Others might also be made with great facility, in the valleys of the river *Snellier*, of the *Grand Neigette*, *Metis*, &c. There is nothing to prevent the opening of a first-class road from the Inter-colonial station at *Humqui* to the fine lands of the fifth region and beyond it.

Colonization.—With regard to colonization, the lands explored, embracing a superficies of over 1300 square miles, offer very great advantages; all, with rare exceptions, being fit for settlement. I consider them fully equal to the much vaunted lands of Lake St. John, which I have already had occasion to visit. The cultivation of these lands, with the assistance which the lumber trade will afford for many years, would support thousands of families.

The Climate.—The climate is about the same as at Quebec; a little milder I think that at Rimouski, on the banks of the St. Lawrence.

(*J.-B. Lepage*, 1st May, 1885.)

RIVERS RIMOUSKI, NOIRE AND CARIBOU.

I have the honor to report that I have completed the scaling and exploration of the river Rimouski, including its north-eastern branch and the rivers Noire and Caribou. I began my surveying operations at the mouth of the river Rimouski, in March last, after having ascertained the variation of the magnetic needle by an observation of the pole star. At about thirty chains from the starting point, we met the Boucher brook on the left; it is of no importance. The first mile is dotted with small islands, of which the chief group is known as "Samson's islands." At the fifth station on the first mile, the shores of the river rise, forming pretty steep banks. A little before the end of the first mile, the Levasseur brook comes in from the left and discharges at the foot of the Bradley rapids.

The second, third and fourth miles show an undulating shore line, frequently very steep and broken by rocks, brooks and cascades. At the end of the second mile, towards the Faustin fall, the ground, though rocky, is flat and covered with a growth of white birch and aspen. On the fifth mile, the banks are sometimes level and sometimes scarped like the preceding. This mile is remarkable especially for an abundance of second growth hardwood; from the sixth mile to twelve and a half miles, that is, to the head of the Long-Sault, the river preserves about the same aspect; extensive brulés are occasionally met with. Towards the islands on the right, there is a quantity of fir and spruce. The river becomes narrower and narrower to the fifteenth mile, so that, at certain spots such as the fourteenth and following stations, its width is no more than twenty links;

several small falls, varying from eight to twelve feet, occur on the first fifteen miles, but at fifteen miles and seventy two chains there is one of seventy five to eighty feet high. Above this fall, the stream resumes and maintains its ordinary width to the foot of the Three Falls on the thirty-eighth mile where it again narrows to thirty or forty links and is bordered by perpendicular cliffs, varying from 45 feet in height.

From the thirty-ninth mile, the banks disappear and the river resumes its width, which it retains to the north-east branch. On the thirteenth, fourteenth and fifteenth miles, the river is hemmed in between rocky banks ranging from one hundred to one hundred and fifty feet in height and between which it flows with great rapidity. From the sixteenth to the twenty-fourth mile, the river banks become more and more wooded, the prevailing species, which are of good quality, being the white birch and spruce; black birch, however, is abundant on the twenty-third mile.

I should not omit to mention that, in the twenty-second mile, there are some fine lands well adapted to tillage and which only await the axe of the hardy settler to reward him for his labors.

From the twenty-fourth mile, hard woods, such as ash, elm and birch, become more frequent and are found mixed with the spruce, white birch and balsam-fir, as far as the thirtieth mile, from which to the fortieth mile the banks are generally low and rocky, pretty well wooded, it is true, but soft woods preponderating; they are also cut by numerous brooks and rivers, some of which are very important.

At forty-eight miles sixty-eight chains, the north-east branch, which I had to scale, commences. Permit me to call attention to the south-west branch, which, as well as the north-east branch, begins at the point above mentioned. It is an important stream, with a pretty large volume of water. The Messrs Price have already cut timber on it for a short distance. It will undoubtedly, before very long, be sought after by limit-holders, and I believe that it is the Government's interest to not allow this fine river to be ignored, as it promises to yield a considerable revenue.

With the north-east branch, I commenced a new numbering for the miles. The two or three first leagues are remarkable for the constantly varying height of the river banks, on which cedar and spruce prevail and sometimes pine and balsam-fir. At seven miles and forty-three and a half chains, a pretty large stream, called the river Sifrois, is encountered. I blazed a cedar to the left to indicate where the scaling of this pretty river should begin.

The ninth mile is well wooded with soft wood, it is true, but of very varied kinds. The land seems of excellent quality. The lake à Prime also begins on this mile, ending on the next mile, where the river receives the contributions of several brooks bordered by cedars to the confluence of the river Noire, which is one mile fifty-four chains and seventy links long, including the lake in which it takes its rise. The banks of this river are partly wooded with a large quantity of fine black spruce; they are not high and the land seems to be of good appearance, being also covered with bouleau and birch.

At the one hundred and forty-sixth station, the north-east branch takes the name of the river Caribou to the confluence of the river Noire.

The river Noire has a varying width of 30 to 50 links. Its banks are low. Spruce and cedar predominate. It takes its rise in the lake of the same name. This lake is pretty large and encloses a good-sized island. A high mountain, covered with hardwoods, bounds it to the left, while the opposite side is very flat and covered with mixed woods.

(*L.-H. LeBel*, 30th June, 1875.)

RIVER SIFROIS.

In April last, I began this survey at the confluence of the river Sifrois and the east branch of the river Rimouski at seven miles forty-three chains and a half on the said east branch. At seven chains from the starting point, I discovered a pretty large lake near the confluence, which I scaled. The banks of this lake are generally low or not very high and are wooded with spruce and cedar—the former predominating.

Having completed the scaling of the lake, I continued that of the river Sifrois to station number twenty-one, a distance of one mile forty-two chains and eighty-two links from the starting point, where it forks. From this point, I continued the survey along the right or south branch to its source in three lakes, the second of which is of good size. The banks are generally low, though broken; but on the fifth mile, there is a high mountain to the left, covered with white birch. The banks are generally wooded with mixed timber—birch, white birch, cedar and spruce, grey and red, but the grey predominating.

After completing this branch, I returned to station number twenty-one at the forks aforesaid, and thence carried the scaling along the left or north-east branch to its source in two lakes, beginning at the same time a new numbering for the miles. The banks of this branch are also generally low and covered with mixed woods, spruce, the grey species, especially, predominating. The banks of the first lake is skirted by a mountain clothed with mixed timber; those of the second lake are low and covered with black spruce. This river, whose average breadth is fifty links, is floatable along its whole length, and, according to the reports of the limit-explorers employed by the Price firm, 25,000 to 30,000 logs may be made on it—about one eighth of the quantity being pine.

I should not omit to mention there is very little cultivable land along this river, and, according to the statements of the explorers above mentioned, the lands further in the interior are no better, as they are very rocky and only support a growth of stunted white birch.

(*L.-H. LeBel*, 25th July, 1876.)

RIVER TOULADI AND ITS TRIBUTARIES.

We went to River-du-Loup and thence to the point indicated on the river Touladi, situated beyond the seigniory of lake Temiscouata, which we had to scale. We camped at the starting point of our exploration on the river Touladi, which I scaled to the branch of Eagle river and Squatook river.

From the forks of said river, I explored four miles to the east. There is good land in the two first miles, wooded with mixed timber of good quality, and the surface is level and free from stones. The third and fourth miles are pretty well wooded, but the surface is broken and the soil of mediocre character. On these four miles, merchantable timber is scarce, having been already cut off by the Americans. From the same forks, I next explored a mile and a half to the south-west to the summit of a high mountain. Along this course, the land is good and wooded with cedar, white balsam, maple and birch. From the top of this mountain, in a south-easterly direction, a *brulé* can be seen extending to the head of the first Squatook lakes. This *brulé* occurs between these lakes and the river Touladi

on mostly level ground for the greater part of its length and shows no merchantable timber in any direction except a few scattered white spruce.

Leaving the forks, I scaled Eagle river for a distance of four miles and then stopped to explore for four miles more on each side of the stream to the east and west. The first exploration was eastward. The two first miles are level and wooded with birch, balsam, spruce and bouleau. The soil is a yellow loam free from rocks. At the beginning of the third mile, we crossed the river du Milieu, and this mile, as well as the fourth, is broken and generally wooded with spruce, balsam and bouleau. The soil is of mediocre quality. The second exploration was to the west for a distance of four miles, and, along the whole of it, the soil is magnificent, level and wooded with spruce, balsam, birch, maple and some scattering white pines. In conducting this exploration, logging roads were met with.

After these two explorations, I continued the scaling of Eagle river to Eagle lake. This river is still water along almost its whole narrow and tortuous course, which is navigable by canoes. It is bordered by flats wooded with elm and ash, the soil therefore being alluvial and very rich. I continued the scaling of the lake to the little river St. John, which occurs at a mile from the foot of the lake on the north-west side. I then scaled the river to its source, which is in a small lake.

For three quarters of a mile from its mouth, it is still water and bordered by flats of elm and ash—the remainder being broken by rapids. There is even a fine fall at a mile and a half from the lake, which could be utilized as a water power. The soil is pretty good. The merchantable timber has disappeared and logging roads are to be seen in all directions. I then continued the scaling of Eagle lake to its discharge, three miles distant, whence I made explorations to the south-east and south-west for a distance of four to five miles. I explored first to the south-east. The two first miles are pretty flat and the soil is good and generally wooded with hard woods of all kinds. At the beginning of the third mile, a branch of the river du Milieu is met. It is of good size. At four and a half miles, a very high burnt mountain occurs, from the summit of which I discovered a *brulé* extending to a great distance. Towards the north, the ground appeared very level. Towards the north-east, the view beyond a mile is cut off by a mountain. Towards the south-west, the view extends very far and embraces some merchantable timber, apart from some bad pines. I then ran the second exploration to the north from Eagle lake. The two first miles are level and wooded with balsam, cedar and some birch—the soil being of

good quality. The third and fourth miles are rolling, but well wooded with maple, birch and white balsam. The soil is excellent, but there is no merchantable timber except a few scattering white spruces.

From the head of Eagle lake, I scaled the discharge, which at that point takes the form of a brook formed by a small lake four miles further to the north-east. This brook is bordered with cedar, tamarac and stunted black spruce. The soil is generally mediocre.

After completing the exploration of Eagle river and lake, we proceeded as rapidly as possible to scale the Squatook river and lakes and to explore the surrounding country. This work was performed in three sections, the first comprising the four Squatook lakes, the second the river Squatook and the third, great lake Squatook.

On the first section, in the vicinity of the four lakes, the soil generally is broken, but of good quality. The north-west part is well wooded, but the south-west has been partly burned over. However, some pines of inferior quality and some scattered white spruce remain.

In the second section, the surface is generally rolling, wooded with balsam, cedar, spruce and some birch and comparatively free from rocks. Towards the head of the river, very extensive maple groves are encountered, but there is no building timber, the pine and spruce having been cut off.

In the third section, on each side of great lake Squatook, which I scaled, the mountains skirting the lake are wooded with maple for a long distance on the south-west side of the lake. On the south-east side, the quantity of maple is smaller, and the ground is more broken, though still comparatively free from rocks.

In the fourth section, the discharge of lake Squatook, which I scaled, is bordered with very rich alluvial flats of ash and elm for a distance of about two miles. The stream then changes its course towards the north-west and the mountains come closer.

On the tops of the mountains, the ground is level and the soil of good quality and free from rocks, being wooded with maple, birch and a little balsam and spruce. A few pines still remain, but they are of bad quality. On the other hand, there is workable spruce on this section.

CONCLUSION.—The conclusion to be drawn from the foregoing is that lumbering cannot be carried here with profit and facility ; that the soil in

general is good and comparatively free from rocks ; and that hard woods abound, especially maple groves of large extent and superior quality around lake Squatook.

(*E. Casgrain*, 23rd March, 1872.)

COUNTRY BETWEEN LAKE SQUATOOK AND MADAWASKA.

As the accompanying plan, proces-verbal and field-notes can be referred to for details of the work done and topography of country traversed by our line, it is only necessary in this report to make a few remarks on the general features, nature and capabilities of the country and available means of developing them.

I may in a word express my surprise that such a site for colonization should remain so long unnoticed. I have heard a great deal of the Lake St. John district, the Ottawa valley, the Eastern Townships, &c., and from time to time I have surveyed more or less through each of the said districts, and I must say that, for richness of soil, the whole country between lake Squatook and the provincial boundary line surpasses any tract of bush land I have yet surveyed.

It is true that in general the land is very uneven ; there are no extended level flats nor elevated ranges of table land ; it may be called a rolling, hilly country, but the greatest difference of level between the highest hills and deepest valleys would not here exceed seven or eight hundred feet ; and strange to say that it is on the highest elevations we find the best soil and timber.

Generally, north of the St. Lawrence, we find good birch and maple on the side hills, but as we approach the summits, at about the same elevation as the hills in the Madawaska district, the quality of both soil and timber diminishes and on the hill tops we find nothing but stunted spruce, fir and bouleau ; while, there, (in Madawaska), bottom flats are covered with cedar, birch, beech, spruce and fir are confined to the side hills, and the summits are crowned with splendid maple sugaries through which one might drive a carriage without cutting a twig. Some scattering pines are to be seen here and there, but the greater part of that timber was cut and taken off many years ago.

On the side hills in several places, a good deal of the timber is broken down, but the trees have fallen so irregularly that it seems to have been caused by sleet rather than by wind storms.

The soil throughout is heavy clay generally of a greyish blue colour, but in some places approaching to yellow. There are no boulders; some detached rocks and stones of a softer nature are visible here and there; but with the exception of an occasional out-cropping ledge on the steep side hills, there is nothing to hinder the free use of the plough, when the land would be cleared off.

The alluvium deposits along the Basley brook and Owen's river are exceedingly rich; but on approaching lake Squatook, there are some low marshes and mudholes, and a portion of the land east of the head of the lake has been overrun by fire some years ago and is now covered with a second growth of poplar, cherry, hazel and other brushwood.

The burnt district, however, does not seem to be very extensive, for, from the hills south of the lake, looking north and east, the primitive forest timber is discernable, and splendid hardwood hills seem to rise one above another as far as the eye can reach.

As to the best mode of development of the country within the limits of our survey, I should say that a colonization road from end to end along our line would be very advisable and quite feasible by following the course of the dotted line on the accompanying plan.

It appears that the Squatook portage could be easily improved to serve as an outlet, and that a still better outlet could be had in the vicinity of Basley lake to strike the Madawaska river midway between the Dégélé and the province line.

To give a clearer idea of the configuration of the country, I have added to the plan an approximate profile of the section traversed by our line, and take the liberty to suggest that, if this system was carried out in townships and outline surveys, much improvement might be made in the location of colonization roads.

(*Henry O'Sullivan, 1882.*)

CABANO ROAD.

The first and second miles of the road run through cultivated lands; but there is still a good deal of standing timber on the second concession. This timber is mixed and the soil is mediocre, for the bed of vegetable mould, although of good quality, is light and in some places the rock crops to the surface, which renders cultivation difficult. The third and fourth miles, also occupied, are wooded with maple. The soil is better than on the two first and formed of yellow gravelly loam without rocks. The fifth mile, wooded with balsam and spruce, is mediocre along the road, but better to the north and south. The sixth mile is wooded with maple and its soil is excellent. From the seventh to the twelfth mile, the soil is superior, as it is largely composed of very rich gravelly grey loam. The thirteenth and fourteenth miles are in maple, spruce and balsam and gravelly yellow loam is the most common. The Cabano river traverses the fifteenth mile which embraces more mediocre land than any other part of the road. The sixteenth and seventeenth miles are wooded with mixed maple, cedar and ash on a very rich grey and black soil. To the north of this part of the road, there is a large cedar grove extending to the Blue river. The land is good, but would require a great deal of work to drain it, as it is very flat and in spring the Blue river floods it for a distance of at least ten acres to the south. The eighteenth mile traverses broken ground, wooded with mixed timber, but the land is good. The north-east part of the nineteenth mile is mediocre and would be difficult to cultivate.

My instructions being to terminate the road at the confluence of the Blue river with the river St. Francis, I was prevented from doing so by the fear that the water, which floods the banks in the spring for a distance ranging between two and fifteen acres, would render the construction and maintenance of the road expensive.

Without delaying the laying out of the Cabano road, I explored the land to about the middle of the townships of Packington and Robinson, to run a colonization road through there later. From the seventeenth mile, this line extends for about seven miles to the south and traverses level ground well wooded with maple. The soil is generally grey and yellow loam. It would be opportune to locate a road at this point and to subdivide the lots, which would be taken up as soon as the line is run.

The Cabano road traverses one of the finest sections of the country. The absence of rocks and stones, even on the surface, is especially noteworthy.

thy. Apart from the two mountains of the Cabano, there are no hills of sufficient size to impede cultivation. Everywhere maple predominates, mixed with cedar and ash. Splendid rivers and numerous brooks drain this region, relieving the scenery and contributing to its richness. On the Cabano river, there is a strong water power. The branches of the Baker river to the south of the Cabano road have also some heavy falls and excellent water powers. Lastly, there is no part of the country where the work of clearing can be effected at less cost and would yield a greater return to the settler than all the territory south of the Taché road between lake Temiscouata, the New Brunswick line and the river St. Francis.

The lands skirting the lake Temiscouata road are generally not of superior quality, but this need not be allowed to frighten the settler as to the nature of the lands in the interior. To disabuse his mind on this head, he has only to take one of the branches of the Blue river and follow it to the river St. Francis. He will find the lands of such uniform goodness that he will not hesitate to locate there, with the certainty that the quality of the soil will not fail to attract the attention of his fellow countrymen as it is attracting that of the Government. In addition to the exploration of the road to serve as an outlet for the settlers in the townships of Robinson and Packington, I made several others on both sides of the road. All of them were satisfactory both as regards the quality of the soil and the facilities for cultivation offered to colonization.

(*A.-F. Tétu*, 27th January, 1864.)

CABANO AND POHENEGAMOOK ROAD.

The first mile runs over rising ground for a distance of 24 chains upon an angle of 8 to 15 degrees. On the second mile, at 1 chain 20 links, there is another ascent of 2 chains, with an angle of 25°. At 23 chains, there is still another ascent of three chains, with an angle of 15°. Thus far, the wood is mixed and is composed generally of balsam, spruce, birch, cedar, and some maple. At 30 chains, there is a descent of 10 chains. In this last part, there is a fine hardwood bush running from east to west. The rest of this mile is level and the soil generally grey.

It being impossible to continue any longer on this course, on account of a large mountain at the end of the 3rd mile, I proceeded in a direction N.

45° E. astronomical for a distance of 37 chains ; then having secured enough easting to avoid this mountain, I resumed a south course 55° 50' east astronomical, which I prolonged to the line between the townships of Pohenegamook and Estcourt, a distance of 84 chains. In this part, the land is pretty level, and suited to tillage. The prevailing woods are birch, cedar and balsam. The soil is generally grey. I then resumed a straight south-east course for a distance of 80 chains 62 links, continuing to always traverse good land. Subsequently, I had to change the course several times to avoid passing too near a large brook, whose banks are too flat for bridging. I first went north 5° 10' west for eight chains fifty-two links and then south 59° 50' east for ten chains. At the beginning of this last course, I crossed the large brook called the Niger brook. It is fordable. Its course is 30° west and its breadth forty links. At the extremity of this course, I was again obliged to change direction to avoid a cedar swamp. I went north 76° 40' east for 20 chains 45 links. On the last mile, the land is good enough. The prevailing woods are spruce, balsam and cedar. Thence, I ran south 55° 51' east for 38 chains 38 links over level ground well wooded with maple and birch. The soil is grey. I next went south 74° 20' east for 91 chains 62 links, meeting everywhere a rich level soil covered with maple groves ; at the end of this course, there is a cedar swamp that could be easily drained and sloping towards the south-east for a distance of 40 chains. The soil is of first quality in this part.

After the last course referred to, I continued south 79° 50' east for 19 chains, and thus completed the sixth mile. I then began the seventh mile on a course south 11° 50' east for 52 chains 54 links. In starting, there is an ascent of six chains on an angle of 12° to 15°. The remainder is level and the soil of superior quality, wooded with beech, maple and birch. The eighth mile begins with a gradual ascent of 24 chains on an angle of 4° to 5°, followed by a descent of 14 chains on a similar angle. This mile, like the previous one, is well wooded with maple, birch and cedar. Among these hardwoods, there are splendid maple groves a little more to the east.

At this point of my line, there being no further impediment to running a due south-east course, I did so for 5 miles and 36 chains as far as 9 chains on the fourteenth mile. The ninth, tenth and eleventh miles are very level. The twelfth begins with a descent of 10 chains ; the rest of the mile is pretty level. The thirteenth mile is rolling. In general, on these five last miles, the timber consists of spruce, cedar, balsam and birch. The soil is cultivable. The trees are very large and tall, which is indicative of

great force of vegetation, and, from information received from parties who have been lumbering in this place for years, the land is not at all rocky.

On the fourteenth and fifteenth miles, I had to run several courses to avoid the channels of the Blue river and to select the highest ground. At 65 chains on the fifteenth mile, I found a suitable spot to bridge this river, whose width there is one chain. The water is two feet deep and the banks are from 18 to 24 feet high.

At 5 chains 23 links on the fifteenth mile, I struck the line of the Cabano road lately run by Mr. A. Têtu. And at 23 chains 56 links, I stopped my road at the portage 14 chains from the river St. Francis, the point indicated in my instructions as the terminus of the line. In this last part, the land is excellent for tillage, the soil being also free from rocks. Elm and ash abound on the banks of the Blue river.

To sum up, I firmly believe that I have judiciously realized the first object I laid down for myself in running this line; namely, to give it a direction passing through the best settling lands. It is sufficient to attentively read my report to be convinced of this. As for my second object—to make the lands more accessible to the pioneers of colonization, I think I have also attained it, for, if I have mentioned in my report several ascents, some of which are pretty long, it is well to remark that they are not at all steep, as indicated by the smallness of their angles of inclination.

(*E. Casgrain*, 18th April, 1864.)

RIVER NOIRE REGION.

In conformity with the instructions of the Crown Lands' Commissioner, dated 22nd December, 1871, to explore the lands embracing the sources of the little river Noire, in the townships of Chabot and Painchaud, and also to ascertain the value of the soil in those townships, I went on 1st March to the 7th and 8th ranges of the township of Pohenegamook by the St. Alexandre road to the west of lake Pohenegamook. We explored six miles along a logging road running south south-west and camped on the banks of Wild Cat brook, on the 40th lot of the tenth range of the township of Chabot. This exploration line is represented on the accompanying plan by a red line. To that point, this line traverses splendid land well wooded

and free from rocks. The pine has been cut off; only a few scattering white spruces remain; fine first quality cedar, however, is plentiful.

In continuing this exploration beyond the sixth mile, we reached the little river Noire, which passes on the 18th lot of the 9th range of the township of Chabot. It flows at the bottom of a very deep ravine and resembles more a brook than a river. Before descending into this gully, we perceived the tops of some pines and spruces. The cedar is very large and abundant along the whole line, and in some spots there are mixed hardwoods. On leaving the river Noire, we skirted the mountain, which is also very well wooded, going towards the south-east. From the top of this mountain, the view extends very far to the south-east and north-east, and some pine and spruce of good quality can be seen. We then continued southwesterly for two miles over pretty level land, meeting some hardwood and a good quality of settling soil. We then left this township to enter that of Painchaud, which is very mountainous and unfavorable to colonization, on account of its many ravines. We continued our route westward for about three miles and then crossed a high mountain, which enabled us to see for a great distance to the south-east and south-west of said township. Only a few scattered spruces were noticed on the flanks of the mountains. We next went down into a ravine, where we found a portage road made by the Americans running towards the north-north-west, and we followed it to the Taché road, between the sixth and seventh ranges of said township; and this road continues by the line of the Taché road to the Government road at St. Denis, by which we came out on the 13th March instant.

CONCLUSION.—In the explored part of the township of Chabot, the soil is good, favorable to colonization and abundantly wooded. But the township of Painchaud seemed to us unsuited to settlement, at least the greater part of it, for the reasons already given and on account of the stony soil. Merchantable timber may be made along the river Noire.

(*E. Casgrain*, 23rd March, 1872.)

FISH AND GAME.

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SALMON AND SEA-TROUT RIVERS.

As, above or west of Quebec, the only river still frequented in any numbers by the salmon is the *Jacques-Cartier* in its lower reaches which are in private hands, the salmon and trout rivers, leasable either in whole or in part from the Government of the Province by anglers, may be said to lie below or east of that city all along both shores of the St. Lawrence, Gaspé and the Bay des Chaleurs. "Above Quebec"—says Rowand, in his *Emigrant and Sportsman in Canada*, (published in London, in 1876,)—"most of the rivers have been spoiled for salmon; but many thousands of trout streams and some hundreds of salmon rivers discharge their waters into the gulf and river St. Lawrence; and I think I may assert, without fear of contradiction, that the angling in Canada is the finest in the world. On each shore of the river, there is hardly a mile of coast line without a river or stream. Thousands and thousands of lakes, all of which hold trout, lie hidden away in the forest; in the majority of them perhaps a fly has never been cast. Trout fishing on hundreds, I may say on thousands, of charming rivers and lakes is open to everyone. And under better regulations there would be salmon fishing for every Canadian angler and for every visitor to the country, at a tithe of the expense of Scotch or Irish salmon fishing—and such salmon fishing! Not pulling from bank to bank of a dull stagnant river with lines trailing after the boat, but casting into magnificent rapid streams, in which the water, clear as crystal, is now lashed into foam over a rocky ledge, now rested for a few moments in an eddying pool dotted over with foam bells, from thence to plunge headlong into a narrow gorge, and to pause again and again in pools where there is endless diversity of fishing water, and endless charms of forest and mountain, of rock and river. The banks of the rivers are all beautiful; in some places clad with forest, they rise gently from the river's edge, in others they take the form of rocky terraces, many hundred feet in height, rising abruptly from the water. Some of the Nova-Scotian rivers resemble the Scotch in color, but the bulk of the Canadian (Province of Quebec) rivers, almost all those that flow into the St. Lawrence, are very bright and clear. There is no ploughed land, no drains, and very few bogs to discolor their waters. Their sources are

in the primæval forest or in the bare, rocky hills of Labrador and Gaspé. Sitting on a high bank on one of these rivers, when the sun is high, we can see every pebble in the bottom and count every salmon and trout. In the fishing season, there are very few of the dark, cloudy days that the old country angler is favored with. The Canadian sun has a knack of shining nine days out of ten or nineteen out of twenty in summer. Fortunately the banks of most Canadian rivers are high and often precipitous, so that the stream is in shade up to nine or ten o'clock in the morning and again from four o'clock in the afternoon." This description of the Quebec salmon and trout rivers, drawn from the personal observation of an experienced angler, is neither exaggerated nor over colored, as every one knows who has ever visited them.

NORTH SHORE BELOW QUEBEC.

The *Montmorency* is the first stream of any angling importance, which enters the St. Lawrence on the north shore below Quebec, from which the celebrated Falls at its mouth are only distant some six miles. It is, of course, impassable for salmon on account of these Falls, which are higher than those of Niagara; but, though its lower reaches have been greatly fished for many years, owing to their proximity to the city, it is still a famous trouting river, very heavy fish being taken out of it at times. It is also remarkable for the gameness and beauty of its trout. For some 18 or 20 miles of the lower part of its course, it runs through a settled district. Naturally this portion has been the most fished. But, above this, its rapid flow for some 40 miles from its headwaters in Snow lake, an extensive sheet of water famous for its immense grey trout (*touladi*) and speckled trout, as well as for the numbers of caribou that frequent it in winter, is wholly through the wilderness, where it is leasable. Its upper waters can be reached either from Laval by canoe or by the colonization road from Stoneham and Tewkesbury.

The *Ste. Anne du Nord* falls into the St. Lawrence, some 18 miles lower down than the Montmorency, between the parishes of La Bonne Ste. Anne and St. Joachim. It was formerly in high repute as a salmon river, but unfortunately enjoys this reputation no longer owing to the destructive practices, which have depleted its waters. Efforts are being made to restock it. Above the Falls, which are some two or three miles from its mouth and of the most romantic character, it is good for trout. It is easily reached either by waggon, steamer or rail from Quebec.

The *Rivière du Gouffre*, the next in order, falls into Bay St. Paul, some 40 miles below Quebec. It was formerly a good salmon river, but has much deteriorated. The scenery is grand beyond measure. The course of the river is circuitous and much broken by rapids, which are difficult to ascend. It is fed by a number of lakes, all of which abound with trout and are leasable.

The *Murray River* joins the St. Lawrence near that favorite watering place, Murray Bay, some 90 miles from Quebec, and is remarkable for the beauty of its scenery. It was formerly called by the inhabitants *La Rivière Saumonée* from the immense quantities of fish that used to be taken in the bay and river. The late Mr. R. Nettle, Superintendent of Fisheries for Lower Canada, in his work on the "Salmon Fisheries of the St. Lawrence," says of this river: "I have been informed by John Nairn, Esq., seignior of Malbaie, that from 200 to 300 fish were netted at a tide, and that he himself had killed about 50 fish in three or four days with fly." Since those days, the reputation of the Murray river as a salmon stream has sadly fallen off, but it still furnishes fair sport occasionally and its fish usually run heavy. Its upper reaches, which are alone leasable and now leased at a rental of \$50,—the lower parts of the river flowing through seigniorial lands—are not frequented by the salmon, but are still famous for the abundance and large size of their trout. In 1887, guardian Boily reported as follows in regard to them: "Trout in abundance and of large size."

The *Canard* and *Noire* are two small streams entering the St. Lawrence between Murray Bay and the mouth of the Saguenay, but they are of little moment, though salmon have been taken in them.

The *Saguenay*, the grand, the chief tributary of the St. Lawrence, so noted for its sublime and picturesque scenery—though one of the greatest salmon rivers in the world—is of no angling importance, except for sea trout, as the royal fish do not rise to the fly in its dark, deep waters. But as a nursery for the salmon, few rivers can equal it. Sufficient spawn could be preserved in its numerous tributaries alone to stock the whole river with myriads of the finny tribe. On its downward course from Lake St. John, it receives the waters of over 30 considerable affluents, in most of which salmon were formerly taken. However, the same causes which have led to the destruction of the fisheries elsewhere hold good on this river. But there are still many of its branches, beautiful streams, up which the fish make their way to spawn and which afford splendid sport to the

angler. Foremost among these may be placed the following, which are accessible by steamer four times a week from Quebec :

The *Little Saguenay*, a fine salmon stream, falling into the main river on the north-west side, not far from its mouth, and actually under lease until 1890 at an annual rental of \$345. It was visited in 1885 by Mr. D.-C. Mackenzie, the official inspector of the department, who reported upon it as follows : " The Little Saguenay flows through the townships of Sagard and Dumais, falling into the Saguenay about 20 miles above the mouth of the latter. None of the lands on its banks are granted or even surveyed, except a strip of about half a mile in length on the left bank near the mouth. A couple of settlers named Tremblay and Girard have a few acres of land under cultivation on the banks of the river some distance above the Price property. A comfortable fishing lodge, with outbuildings, stands in a pleasant situation about four miles from the river's mouth. Some four miles further up, there is a fall, or rather there are two falls, the lower about 20 feet high, sloping ; the upper about 50 feet in height, perpendicular. Salmon are thus, of course, limited to the lower eight miles of the river. Within this distance, there are 10 or 12 pools available for the use of the lessee, besides one or two in front of the patented lands. I was told that there is good brook-trout fishing to be had above the falls. The lessee, who was on the river at the time of my visit, informed me that he was tolerably satisfied with the sport it had afforded him this year, and, as he now keeps it carefully guarded, there is reason for anticipating a steady increase in the number of fish frequenting it." In 1885, the largest fish taken by the lessee weighed 25 lbs and the smallest $8\frac{1}{2}$ lbs, the average weight being $17\frac{1}{2}$ lbs. In 1887, the lessee did not fish the river, but the guardian reported " a larger number of salmon than the previous year observed on the spawning beds ; brook trout in abundance."

The *St. John* (L'Anse St. Jean), another stream discharging from the north-west side of the Saguenay, affords tolerable rod fishing for salmon, as well as excellent trout fishing. It takes its rise in little lake St. John, 18 miles from its mouth, and empties into L'Anse St. Jean. In its course, it receives the waters of the rivers du Portage and Du Moulin, besides those of great lac des Islets, lac à la Balle, lac à l'Ours and lac Grenouilles. In his report for 1885, the inspector, Mr. Mackenzie, reported of this river : " The *River St. Jean* (Saguenay) flows through the townships of Ducreux and St. Jean, falling into the Saguenay about twenty-six miles above the mouth of the latter. The lands on its banks for over nine miles from its mouth, or the whole length of its course through the township of St. Jean,

are surveyed ; most of them are occupied, and several lots are patented. Near the mouth stands a large saw-mill, the sawdust from which is not allowed to pass into the river, but is carefully deposited in immense heaps on the bank. Most of the angling in this river is done in a pool just below the mill, lying within the lands patented as a mill-site. There are only three pools between this and the first fall, a distance of five miles. Two of these appear by the map of the river to be in front of ungranted lands. The fall referred to is about fifteen feet in height and impassable for salmon, but they get above it when the river is high by taking advantage of some natural basins in the rock at one side. I understand, however, that there is no fishing done above this fall. The salmon frequenting this river run from twelve to twenty-two pounds in weight." In 1887, the guardian reported : "Noticed at least 150 salmon on the spawning beds." This river is actually under lease to Senator E.-J. Price, the owner of the mill at the mouth, at a rental of \$150 per annum.

The *Eternity*, which falls into the Saguenay higher up on the same side near the celebrated Cape of the same, is also a salmon stream and was under lease until a few years since.

The *River à Mars*, another north-west tributary of the Saguenay, falling into Ha! Ha! Bay. Mr. Mackenzie reported of this river in 1885 : "The river à Mars, another tributary of the Saguenay, flows through the township of Bagot, falling into Ha! Ha! Bay. Though not so considerable as the St. Jean, it appears to be better stocked with fish. It also contains a much larger number of pools, some eighteen having been pointed out to me, most of them in front of lands patented or soon to be so. Some, however, lie beyond the surveyed lands, notably one in front of the land on which a fishing-lodge is built, about eight miles from the bay. This is one of the best pools in the river, and at the time of my visit, it appeared to be swarming with fish, which were supposed to number several hundred." The largest salmon caught in it that year by the lessee, Senator Price, weighed 24 lbs and the smallest 10 lbs, the average of his catch being nearly 12½ lbs. The rent actually paid for this river is \$235 per annum. At the head of the river à Mars are a multitude of splendid trout lakes, and its own waters also abound with trout.

The *Ste. Marguerite (en haut)* is one of the chief tributaries of the Saguenay, which it enters from the north-east side about 18 miles above Tadousac. At a short distance from its mouth, it divides at the forks into two arms known respectively at the north-east and the north-west branches, each of which form a considerable river. They take their rise in the moun-

tainous region bordering the Saguenay and flow through a country remarkable for the wildness and grandeur of its scenery. The *Ste. Marguerite* is particularly famous for the abundance and large size of its salmon, which ascend its branches for fully 60 miles. Lemoine, in his *Pêcheries du Canada*, tickets it as follows: "Principal affluent of the Saguenay. Trout and salmon in abundance either for fly or net." Rowand, in his *Emigrant and Sportsman in Canada*, thus refers to it: "Near the mouth of the magnificent Saguenay, to which comfortable steamers run three times a week from Quebec, is one of the best rivers in Canada, viz, the *Ste. Marguerite*. It is rented by the proprietor of the Russell House (St. Louis Hotel), Quebec, on lease to the year 1883, at a yearly rental of \$555. The lessee has furnished cottages on the river, which he lets to anglers at \$50 per week up to the 10th August, and at \$35 per week after that date up to the close of the season. The right of angling is attached to the cottages, canoe men and food being extras. Salmon average about 16 lbs in the *Ste. Marguerite* and as many as 300 fish are taken in the season. The sea trout fishing is also capital." In 1875, Mr. Gagnon, land surveyor, reported of it that it abounded with the finest salmon and trout; and Mr. Mackenzie, the official inspector, wrote of it in 1885: "The north-west and north-east branches of the *Ste. Marguerite* are two rivers of considerable size, which rise in unsurveyed lands in the county of Chicoutimi, meet in the township of Albert, in the county of Saguenay and, after flowing together for about a mile and a half, fall into *Ste. Marguerite* bay, which again opens into the Saguenay river, about eighteen miles above the mouth of the latter. The tide flows to a point about three-eighths of a mile above the head of the bay. Some of the lands fronting on the river between tidal-water and the junction of the two branches are occupied and cultivated, but none are granted, except two lots on the north-west side, which were patented in 1871 to the Hon. D.-E. Price. Salmon frequent this river in large numbers. There are two good pools in front of ungranted lands on the north-west side. The *North-West Branch* flows through the townships of St. Germain, Champigny, La Brosse and Albert. It contains some thirty pools between the lower and upper forks, a distance of about twenty-six miles. Some of these are in front of the lands patented to the Hon. D.-E. Price and Mr. W. Russell, but the greater part of them are within ungranted lands. This river seems more subject to change in the number and position of pools than any other I have visited. Several places, formerly considered good pools, have been filled up with sand and gravel carried down by freshets. New pools are, however, frequently discovered, and the formation of others may be promoted at little expense. Six commodious cottages have been built at convenient points along the river upon the patented lands

above mentioned, and so furnished as to render it unnecessary for anglers going there to provide themselves with tents, bedding, or cooking apparatus. There appeared to be a greater number of fish in the river this year than usual, and the average size of those taken was larger than has been the case for seven or eight years back. The *North-East Branch*, although rather larger than the other, is of much less value for angling, being obstructed within five miles from the forks by a steep fall of over forty feet in height. It contains only about a dozen pools, and two-thirds of these lie within or in front of patented lands. The present lessee of the public portion of the river will probably endeavor to form some artificial pools in front of ungranted lands. He has had an ice-house constructed near the forks, and intends, I believe, to have a dwelling-house built next year. Having carefully examined the fall above-mentioned, I think it would be quite possible, and not expensive, to make a way for salmon to pass above it, by cutting a series of basins in a part of the rock and placing a fish-ladder over another part. This would open a fine stretch of some 16 miles of run, where the fish would find new and more extensive spawning grounds, and make this branch, almost, if not quite, as valuable as the N. W. branch." Since 1883, the North-West branch has been under lease to the Ste. Marguerite Salmon Club, at an annual rental of \$310, and the North East branch to W. M. Brackett, Esq., the celebrated American artist, at a rental of \$120. The largest fish taken on the N. W. branch in 1888 weighed 28 lbs, and on the N. E. branch 20—the smallest being 10 and 12 lbs. respectively. In 1885, one weighing 33 lbs was killed in the former, and one of 27 lbs. in the latter.

The following can be easily reached by schooner, yacht, or fortnightly coasting steamer :

The *Little* and *Great Bergeronnes*, which run parallel and lie in close proximity to each other, are the first streams of any size or note on the north shore below the Saguenay. The former is a fair salmon and trout river, and the latter a good trout stream.

The *Great Escoumains* is one of the large and important rivers of the north shore and was once a famous salmon stream, but its character, in this respect, has almost, if not wholly, departed. Its upper waters, however, still abound with trout. It falls into the St. Lawrence about 23 miles below Tadousac, and is a cold, clear and rapid river, abounding in rapids and deep pools.

The *Sault-au-Cochon* is a fine trout stream, but high falls near its mouth bar the upward passage of the salmon.

The *Sault-au-Mouton*, a little further down, partakes of the same character.

The *Portneuf*, which is a considerable stream, still affords good sport. It is said to be a very pleasant river to fish with the fly. Up to the first falls, it swarms with trout and is frequented by salmon for several miles higher up.

The *Laval*, which falls into the St. Lawrence 60 miles below Tadousac, and which is at present under lease to Sir R.-W. Cameron, at a rental of \$75, is a fine salmon stream. In 1858, the late Superintendent Nettle reported that he had explored it for some distance up and found it well stocked with salmon and trout of a large size and fine quality. He adds: "The produce of the net fishing at the mouth of the river averages from 800 to 900 salmon of the largest description, average weight being 20 lbs., but sometimes they weigh 65 lbs. The sea trout fishing is almost incredible and of a superior quality. The falls on the Laval river are about 27 miles from the mouth." The Laval is a wild and picturesque stream, alternating with gentle rapids and deep, narrow pools.

The *Colombier* is a small, but promising salmon stream, falling into the St. Lawrence near Cape Colombier. Mr. D.-C. Mackenzie, of the Crown Lands Department, reported with regard to it in 1884. "I went (August 21st) in my canoe to examine the river Colombier, which had been spoken of in the department as likely to afford good fishing. The water was very low, and the course of the river much obstructed by floating wood, so that it was impracticable, except for a much smaller canoe than I had with me. I saw no sign of salmon and very few sea trout, but I noticed two or three places within the lowest mile of the river in which I think salmon could be taken with the fly early on the season. A thorough examination made in June or July next would probably show the Colombier to be worth leasing." Lemoine describes the Colombier as good for salmon.

The *Blanche*, which is a neighbor of the Colombier, is a small, but beautiful stream, but unimportant to-day as a salmon river, though described by Lemoine, in his *Pêcheries du Canada*, as good for salmon. It is, however, yet capital for trout.

The *Plover*, another stream in the same vicinity, does not differ materially from the last.

The *Betsimils* or *Bersimis* is, after the Saguenay, one of the largest and most important rivers of the north shore of the St. Lawrence, with a great

depth and volume of water, and drains a vast extent of country still wholly in the state of wilderness, except at the river mouth, which is the rallying point for the Indians of the coast, and where there are an important trading post and mission. It falls into the St. Lawrence about 70 miles below Tadousac and 200 below Quebec. It takes its rise in the region of the northern height of land between the province of Quebec and the old Hudson Bay territory, and, in its course to the sea, a total length of about 260 miles, it receives the contributions of numerous streams, which may be classed as rivers, and many lakes of considerable extent, including among others lakes Pipmaukan, 30 miles, and Nikoukamiau, 13 miles, whose waters abound with speckled trout, large lake trout (*touladi*), pike, white fish, &c. The river itself is also well stocked with fish, but according to the report of surveyor T. Casgrain (page 590), the salmon do not ascend beyond the fall, forty miles above the St. Lawrence. In his "Pêcheries du Canada," Lemoine describes the Bersimis "as a vast river with charming scenery and numerous affluents, filled with large trout, but which only rise to the fly on the affluents." In 1858, the late Mr. R. Nettle, Superintendent of Fisheries, wrote as follows of the Bersimis: "The Bersimis River is second only to the Saguenay, and the next largest on the north shore, abounding with salmon of the largest size and in the greatest abundance. No nets are set in this river, and one reason of my going up was to see if it were not possible to be netted; the Saguenay is netted at several points, and I thought it strange that the Bersimis could not be made available for nets. Aug. 14th, arrived at the falls this morning. They are about 30 feet high and fall into a bay of about a mile in circumference, in the centre of which are several islands. I was surprised to find about a hundred seals plunging about in search of their prey. They are the greatest enemy the salmon can have, and whoever may lease this or any other river where seals frequent would do well to exterminate them. No salmon can get up these falls. All the fish in the Bersimis must be in the main river and tributaries from the fall downwards. Having gained all possible information, we then commenced to descend, arriving at the Nipewicawcounanan, and, as our guide informed us that the salmon went up this branch to spawn, we went some way up. No river could be better adapted for the spawning of salmon; fine pools and gravelly shoals. Here must indeed be the breeding ground of the Bersimis and should be kept as such." Speaking of this branch, Lemoine in his "Pêcheries du Canada," describes it as follows: "Tributary of the Bersimis; a fairy-like stream with cascades; a terrestrial paradise for fly fishers." Another writer says: "With the single exception of the Moisie, the Bersimis, which is a lovely river, breeds the largest salmon on the coast."

The *Missiquinak*, *Papinachois*, *Outardes*, *St Pancras* and other streams falling in somewhat lower down, afford no spawning grounds for salmon, as these migratory fish, cannot ascend the high falls near their mouths, but large quantities of sea trout frequent their estuaries and speckled trout abound in their upper waters.

The *Manicouagan*, the next river of importance, is one of the large rivers of the coast, but is not a salmon stream in the proper sense of the term, these fish being prevented from ascending it by a fall of 200 feet high at its mouth. At 20 leagues from the sea, however, the *Godbout* and *Manicouagan* communicate by means of a lake of 3 leagues in circumference, and the salmon found in the *Manicouagan* reach it through this lake.

The *Mistassini*, from 35 to 40 miles lower down, is not a large stream and does not hold very heavy salmon ; but they are tolerably fine fish and the casts are clean and numerous.

The *Becsie* or *Sheldrake* empties just below the preceding and is of much the same description.

The *Godbout*, one of the most famous rivers of the coast, is the next in order, about 15 miles further down, or about 250 miles from Quebec. The privilege of fishing its sparkling waters is unlet at present, though it continues highly reputed for the abundance and excellence of its fish, as well as the sport they afford. In 1858, according to the late Superintendent Nettle, the *Godbout* yielded about 1,250 salmon to the Hudson Bay Company ; other parties had taken about 100, and the bay nets had given about 2,000. In 1881, it yielded to the fly about 164 fish, of a total weight of 2,377 lbs, the largest weighing 30 lbs., and the average weight being $14\frac{1}{2}$ lbs. Rowand in his *Emigrant and Sportman in Canada*, says of the *Godbout* : " Great numbers of fish are killed in this stream, sometimes 500 in one month, but the size is small, viz 12 lbs. Salmon run up to a distance of about 80 miles."

The *Little Trinity* follows, and is a good salmon and trout river. The guardian reported in 1887 : " More salmon and trout have run up this year than last. The lessee, (Mr. Machin, Assistant Provincial Treasurer, who leases it at \$20 per annum from the Government,) did not fish himself ; his friends took 4 salmon and 5 doz. trout. The salmon run from 8 to 20 lbs. and the trout up to 6 lbs. The latter are of two kinds, salmon-trout and sea-trout."

The *Trinity River*, 278 miles from Quebec, is a rapid stream, abounding with salmon and trout. In the past, it was greatly injured by excessive netting at its mouth and the desultory and destructive fishing of its upper waters, but it is now rapidly recuperating. Mr. Whitcher examined this river in 1858 and reported that he had found it physically well adapted for salmon. And he added: "The sea trout frequenting it are of large size, firm in flesh and of uncommon fine flavor. More pleasant tasted and nutritious fish food I seldom have eaten." In 1885, Mr. Mackenzie visited it for the department and reported: "The Trinity appeared to me to be rather more considerable than either branch of the Marguerite (Saguenay.) It appears, from reports made to the department, to be fairly well stocked with salmon, of a size that affords very satisfactory sport, and is notable for the number and size of the sea-trout frequenting it. It flows entirely through vacant Crown lands, and is easily reached by yacht from Tadousac, or, with more certainty as to time, by steamer from Quebec. For these reasons I think it should, if properly guarded and not over-fished during the next four years, fetch, when next offered to public competition, a much higher rental than is at present paid for it." It is actually leased to Mr. Gilmour at a rental of \$105. Mr. Gilmour's score during a short visit in 1888 was 51 salmon, weighing a total of 607 lbs., and an average of 13 lbs, the largest fish turning the scales at 16 lbs., and the smallest weighing $9\frac{1}{2}$ lbs. The guardian's report for the same season was as follows: "Salmon as plentiful as last year; larger, but not rising so well to the fly, so that the number taken by angling was less this year. Believes this was owing to the lowness of the water. Numbers of young salmon (grilse) ascended the river." The river is also frequented by sea and salmon trout, the latter in great abundance and of larger size than usual.

The *Pentecost*, which is the next in succession, about 300 miles from Quebec, is also a river frequented by salmon and sea trout. It is a full, swift stream and gives excellent fishing, especially trout.

The *Calumet* and *Little Marguerite*, in the same neighborhood, bear about the same character.

The *Ste. Marguerite (en bas)*, which falls into the St. Lawrence, a short distance above the Bay of Seven Islands, is a considerable river, being navigable for schooners and barges up to the first rapid, and, in its long course, receives the waters of numerous lakes and tributaries. Between the first rapids and the Grand Portage, there are 25 salmon pools. Besides salmon, the Ste. Marguerite contains grey trout, pike, white fish, shad, &c. The

late Superintendent Nettle said of this river : " The river Marguerite is a fine stream and, though only 30 barrels of salmon were taken this season, (1858) I am convinced it would produce a great many more, if fished properly. The trout are of the finest quality (silver trout)."

The *Moisic* or *Misteshepu River*, the " Great River " of the Montagnais Indians, is another of the great north shore tributaries of the St. Lawrence, and one of the best salmon streams in the world, being specially noted for its heavy fish. It is described in the late Commander Fortin's report for 1861-62, as one of the best stocked on the north shore, and as having been fished by the Hudson Bay Co. from the time when the Company became the lessee of the King's Posts. In 1859, the whole of the estuary part was leased to Mr. John Holliday, of Quebec, for the sum of \$1,800, whilst the fluvial division was rented for fly-fishing to Messrs. Williams & Bacon, of Boston, for \$400. In 1862, Mr. Holliday took 576 barrels of salmon and Messrs. Williams & Bacon caught with the fly 308 fish, equal to $14\frac{1}{2}$ barrels. In 1873, Messrs. Ogilvie and Turner, who angled the *Moisic*, took 217 salmon in the short space of three weeks, the largest fish weighing $37\frac{1}{2}$ lbs. In all, 279 fish were killed with the fly in the river that season, their aggregate weight being over 4,500 lbs. In 1881, the lessee of the fluvial division reported his catch with the fly at 24 salmon, total weight, 2,967 lbs., average weight $27\frac{3}{4}$ lbs., largest fish 42 lbs., smallest 15 lbs. The upper part of the *Moisic* is actually under lease at an annual rental of \$105.

Trout River, (à la Truite), 7 miles below the *Moisic*, is unimportant as a salmon river, as these fish do not pass above the falls at its mouth ; but, as its name indicates, it is famous for its trout. Fishing, however, in it is not very early.

The *Mautou* empties into the gulf of St. Lawrence, a short distance below the Bay of Seven Islands. This large river boasts one of the finest waterfalls in North America at two miles from its mouth. The whole body of water in the river, which is of very considerable volume, falls perpendicularly in an unbroken sheet from a ledge of rock, 113 feet in height, and the surrounding hills, perpendicularly scarped and in part crowned with fir and spruce trees, present a picture equalling in picturesque beauty anything of the kind to be found in Canada. Owing to the obstruction offered by this fall, salmon cannot ascend to the upper reaches of the river, but they frequent the estuary, as do also large sea trout. The river above the falls abounds in speckled trout of great size. Actually unleased

The *St. John* (north shore) flows through the Laurentide mountains and falls into the gulf of St. Lawrence about 70 miles below the river Moisie. It is a large and excellent salmon river. In his official report on this river for 1867, Commander Têtu, of the Government schooner *La Canadienne*, says : " The salmon fishing also had been good and altogether it had been many years since there had been such good fishing in the St. John. In obedience to orders from the department, Mr. Beaubien had gone far up the St. John river, accompanied by a miner and had succeeded in blowing up a rock several tons weight, which had until then presented an almost insurmountable obstacle to the ascent of salmon to the spawning beds of this beautiful river, and, in the attempt to get over which, thousands of that fish had lost their lives, for, when the water was low, there was to be seen, below the rock in question, a cavity several feet in diameter, which was invisible when the water was high, and into which fell all the poor salmon that did not succeed in leaping the rock, and once in, they could not get out and soon died or became a prey to the bears, who, when the water was low, ventured as far as this spot, called the *chaudière*, and devoured all the fish to be found there. On the occasion of his expedition to the *chaudière*, Mr. Beaubien found from 25 to 30 dead salmon in it, and the remains of many more on the rocks around, whither they had been dragged by the bears. The effect of the blast has been such that salmon will now be able to ascend it without danger, the whole of the side of the *chaudière* having been blown away." In his report for 1873, the fishery overseer of the Mingan division, reported that the net fishing of the St. John river had yielded that season 4,020 salmon, weighing 53,214 lbs, and averaging 13¼ lbs. per fish and that 147 fish, weighing 1895 lbs and averaging 13 lbs, had been taken with the fly. At the same time, he adds : " Although the pools were full of fish, yet the water was quite low and very clear, so that the fish would only take the fly on very dull days." Mr. C.-E. Forgues, provincial land surveyor, who visited the St. John in 1885, reported as follows : (page 603) " I have reason to believe, from what I saw, and from the opinion of a man who accompanied me, who understands such matters, that this river is much frequented by salmon. The pools are marked on the map submitted by me to the department. There is no obstacle to prevent salmon from entering this river. I was not, however, able to establish their presence myself, as the season was too far advanced ; they had all gone above the falls. Some anglers, who have leased the right of rod fishing at the falls, have taken as many as 27 salmon in two days. This is sufficient to indicate that the fish must have been plentiful. The St John has for years past been one of the best preserved

rivers in the province." It is at present under lease at an annual rental of \$205—the lessee's catch during the season of 1888 being 72 salmon of a total weight of 1,133½ lbs., and an average weight of 15¾ lbs., the largest fish caught weighing 26 lbs.

The *Maggie* is a rapid little river, with a good reputation as a salmon and trout stream.

The *Mingan*, about 90 miles below Trout river, is also one of the principal rivers of the north shore, traversing the Laurentides from north-east to south-west and falling into the St. Lawrence. It is navigable for light canoes up to the foot of the Grand Rapid, a distance of about 9 miles, but, above that, the navigation is obstructed by impassable rapids. It is famed for the abundance and large size of its salmon. The late Mr. Richard Nettle, Superintendent of Fisheries for Lower Canada, includes it among the best salmon rivers in the country in his work on "The Salmon Fisheries of Canada," and Mr. Lemoine states that it is good both for net and fly, and that the pools always contain heavy salmon. The late Commander Fortin states that Mr. McFarlane, who angled the Mingan for a few days only during the season of 1873, caught 157 salmon and 250 large trout. Mr. surveyor Forgues, in his report of 1885 on the Mingan river, adds the following testimony as to its excellence: "Judging from what I could see, salmon are very abundant in this river. I cannot say how many were taken this year, for the fishermen seem interested in not letting the truth be known. From the mouth of the river to the first fall, the pools, marked on the plan, are not first class, but those higher up are superexcellent. The reason is obvious. The salmon, having overcome the first fall, seek a resting place. The height of the smaller fall is only from four to six feet, while that of the first fall is over forty-six (46.18) feet. From the number of falls mentioned, it might be supposed that little would be gained in going as far as the Grand Rapid. The portages, however, are so easy and so short as to form no serious obstacle. This is one of the finest salmon rivers in the country. At the spawning season, the fish run up the Grand Rapid, and, according to reports, push their way as far as twenty leagues into the interior. The fishery laws are strictly observed, as on the St. John."

The *Manitou*, an important affluent of the Mingan river, flowing into it below tidal water, has the reputation of being a well stocked stream. The lakes which lie on its course are also famous for speckled trout of the largest size and finest quality. The salmon have no difficulty to skip the falls, after which they have a clear run of 30 miles.

The *Little Romaine*, nine miles lower down, is a rough stream, but excellent for salmon and trout. It is in high repute for the strength, size and playfulness of its fish.

The *Great Watsheshoo*, *Corneille*, *Pashashebo*, *Nabissipi* and *Agwanus*, next enter the St. Lawrence between Mingan and Natashquan, and are all more or less good for salmon angling, especially the first, third and last.

The *Natashquan*, another of the great tributaries of the St. Lawrence falling into the gulf from the north shore, is rightfully placed in the foremost rank of salmon rivers. It is navigable for boats of light draught up to the foot of the first fall about 12 miles from the mouth. The salmon pools are for the most part near the falls. Of this river, the late Commander Fortin reported as follows: "There were a great many salmon in this river, this summer (1862)." And again in 1863: "I am informed that the persons, who fish for salmon with the fly in the upper part of this river, have made a splendid catch." And again in 1865: "Mr. Powell, the lessee of the fluvial division of this magnificent stream, had been most successful in fishing for salmon with the rod and fly. Never had so many salmon been seen at the foot of the rapids in that river; most of them were very large. An idea may be formed of Mr. Powell's success, when I state that with three rods that gentleman and his companions had already taken several hundred salmon. One of them, in a single day, caught 33 with his own rod. This was a most conclusive proof that there was a great deal of salmon in the Natashquan river." Again in 1868, he reported the river full of salmon, and in his report for 1873, he states that "the sport on the Natashquan was most encouraging." In 1885, Mr. Forgues, P. L. S., reported the river well stocked with salmon. Another writer says: "The Natashquan is a splendid stream, full of fish ranging from 6 to 40 lbs. You must camp at the second falls and need not leave that spot to better your chances, for there you may hook and kill salmon *usque ad nauseam*." Rowand says: "The Natashquan is, perhaps, one of the very best rivers in Canada. The only drawback to this and many other splendid streams on the Labrador coast, is the difficulty of getting at them. A Government steamer makes two trips down the coast in summer, and if the angler misses these chances he must go by sailing boat. (N. B.—Since this was written, a coasting and mail steamer makes regular fortnightly trips). The Natashquan was unleased up to the end of last year and was offered on lease of five years for \$800. The angler must, of course, have his own camp. But this is no hardship, for the climate is charming in the fishing season and the scenery perfect. Both the salmon and sea trout fishing are probably the best in the world. The season for

all these rivers is from the 15th June up to the end of July. There are many splendid streams, east of the Natashquan, that have never been properly explored by the angler; the Kegashka, the Washecootai, the Meccatina, and the St. Augustine. It would be a delightful expedition to visit and explore these rivers during the fishing season."

The *Musquarro* flows through the Laurentian mountains and falls into the gulf of St. Lawrence, about 40 miles below the river Natashquan. It is a bold, rapid river, but navigable by canoes for a considerable distance and excellent for salmon and trout with the fly. Lemoine, in his "*Pêcheries du Canada*" labels it as follows: "Rapid river, with steep banks. Good for both net and fly." The angling privileges are actually unleased.

The *Kegashka*, 15 miles below the Musquarro and 45 below the Natashquan, is more largely frequented by salmon and trout than the Musquarro. The late Commander Fortin, in his official report for 1866, refers to it briefly as a fine river, but it must be remarked, he adds, that salmon generally ascend it at a much later period than any other river of the north shore. Lemoine, in his *Pêcheries du Canada*, however, states that salmon abound in the bay, but they cannot get up the river beyond the rapids. The angling privileges are unleased.

The *Washecootai* flows through the Laurentides and empties into the St. Lawrence, about 50 miles below the Natashquan. It is navigable by canoes to the foot of the great rapid, a distance of 15 miles, but, at about 7 miles from its mouth, there is a fall 47 feet high. In his report for 1873, the fishery overseer for the Natashquan division reported as follows on the head of this river: "Washecootai river was angled this season for the first time by Mr. John Thomas Molson and party of three. Sixteen fish were caught in two days, of the average weight of 10 lbs., two rods only fishing at any one time. Fifty-one fish were caught in the Natashquan river." Surveyor Forgues, in his report of 1886, (page 608), says of the salmon fishery of the Washecootai: "From the fisheries' point of view, I may state that the salmon did not run much up this river this year; but I am inclined to think, that they got above the rapids and the falls before the nets were set. Trout swarm in the lakes." The angling privileges of the Washecootai are actually unleased.

The *Romaine* or *Olomanushcheo* is one of the large rivers of the Labrador coast. Its waters, are, however, shoal. It extends north and south many hundred miles, and has some fine falls. 100 miles from its mouth there is a natural bridge and a considerable distance further magnificent falls said to

be equal to those of Niagara. It abounds with salmon and trout of the largest size and is remarkable especially for a rare and beautiful quality of white and silver trout.

The *Coacahoo*, *Etamamu* and *Naputeepe*, still further down the coast, are also splendid salmon and trout streams, especially the second.

The *Netagamu*, still further, is a large, deep stream, but salmon cannot go up, except for a short distance, on account of the falls near the mouth. It is, however, a splendid trout stream.

The *Little Meccatina*, *Ste. Augustine* and *Corkewetpeche*, lower still, are fine salmon and trout rivers.

The *Esquimaux*, otherwise called the *St Paul*, is one of the remotest, as it is also one of the largest and finest of the provincial salmon rivers. In his *Pêcheries du Canada*, Lemoine speaks of it as formerly yielding 52,500 salmon per season to the nets of the fishermen of the Hudson Bay Company, but, though its productiveness has since greatly fallen off, it is still one of the best salmon rivers of the north shore. It falls into the harbor of Bonne Espérance only 30 miles west of the eastern limit of the province at Blanc-Sablon, and divides into two branches at about 4 miles from its mouth, one called the Rapide Champagne and the other Rapide à la Perche. It is navigable for vessels of a considerable draught for five miles and for a considerable distance further by canoes. From the foot of the rapids to the falls, the distance is 80 to 90 miles. Mr. Forgues, P. L. S., who visited it in 1885, reports that it is more frequented by salmon than any other river on the coast.

SOUTH SHORE BELOW QUEBEC.

The *Rimouski* is the first really important salmon river below Quebec on the south shore, but, as the pools are located almost wholly within seigniorial or conceded lands, it is unnecessary to here refer to it except to state that its upper waters and those of its numerous branches and lakes, which are within the Crown domain, are famous for their red trout, touladi, &c.

The *Grand Métis*, which is next in order, is also a fair salmon stream, but runs almost wholly through seigniorial or conceded lands.

The *Matane*, which is actually under lease to Sir A. T. Galt, at a rental of \$50, is an excellent salmon river, flowing partly through the seigniory

of Matane and partly through the townships in rear, and easily accessible from the line of the Intercolonial Railway. The guardian reported in 1887: "Trout and salmon frequented this river in large numbers during the season of 1887, but were much less plentiful in the upper waters than below the dam." Fish weighing 30 to 40 lbs. have been taken in the Matane, but they usually run about 16 lbs. It rises in the Shick-Shock mountains and after a course of about 60 miles, falls into the gulf of St. Lawrence, 33 miles west of Cape Chat.

The *Tartigo* and *Blanche*, two small rivers falling in between the Grand Metis and the Matane, hold an occasional salmon and plenty of sea-trout from 4 to 7 lbs in weight.

The *Great* and *Little Mechins* and the *Great* and *Little Capucins* partake of the same character as the last.

The *Cape Chat*, which enters the gulf about $2\frac{1}{2}$ miles N. E. of the cape of the same name, is a good salmon, but a better sea and salmon trout river, and is leased at an annual rental of \$50. The lessee last season took 5 salmon, the largest of which weighed 24 lbs. and 2,000 trout.

The *Ste. Anne des Monts*, which falls into the gulf about 11 miles below Cape Chat, is a large and beautiful stream, flowing from beyond the Shick-Shocks in the county of Rimouski. It is navigable for schooners 1 mile at high water and for canoes 54 miles. It is a bold, rapid river, abounding with salmon and trout and affords the finest fishing. Salmon run very large in it, averaging nearly 20 lbs. It is at present leased to Mr. Henry Hogan, of the St. Lawrence Hall, Montreal, at a rental of \$230. The lessee's scores during the last two seasons, fishing for only a short period in each, show the excellence of the Ste. Anne des Monts as a salmon river. They were as follows: In 1887, 159 salmon; total weight, 2,677 lbs; average weight, 16 lbs; largest fish, 33 lbs; smallest fish, 7 lbs.; in 1888, 210 salmon, total weight, 4,192 lbs; average weight, 20 lbs; largest fish, 49 lbs; smallest fish, 8 lbs.

The *Claude*, *Anse-Pleureuse*, *Pierre* and *Mont-Louis* are streams lower down, holding an occasional salmon and plenty of sea-trout.

The *Magdalen*, which falls into the gulf about 70 miles below Cape Chat, is one of the important rivers of the coast and a good salmon stream. It has not been leased for some years past. In 1880, the guardian reported: "Fly-fishing was satisfactory; 69 salmon, weighing 1,030 lbs, having been killed in the Magdalen river." Its scenery is magnificent.

The foregoing streams are reached by Intercolonial Railway, by the river, or by rail and waggon from the Intercolonial along the Maritime road.

The *Dartmouth*, which falls into the bay of Gaspé, is a splendid salmon stream, with a course of about 50 miles, actually renting for \$520 per annum. Rowand says of it:—"The Dartmouth is another charming stream; 2 or 3 miles from the mouth, there is a beautiful pool at the foot of some falls, where I have killed big sea trout and salmon until my arms were tired. Recently these falls have been blasted to let the fish higher up the river." Lemoine refers to it as "swarming with salmon." In his report for 1883, Mr. Mackedie says:—"The Dartmouth river flows through the townships of De Beaujeau, Blanchet, Sydenham South and Gaspé Bay South. None of the lands on its banks to which fishing rights appertain are disposed of. There are some 8 or 10 good pools between tidal water and the first falls, a distance of about 10 miles. To fish above these would involve a long portage over a high hill. Very little angling was done in this river this year, only 26 salmon having been taken, averaging 19 lbs. More than 200 are supposed to have gone above the falls." Last year, the lessee's score showed a catch of 24 fish, averaging 20 lbs.

The *York* also falls into Gaspé Basin, and is another famous salmon river. It is a large stream, with a total length of about 100 miles and many tributaries, and takes its rise in the mountainous region in the interior of the Gaspé peninsula. It is navigable for large vessels one mile from its mouth, for boats 5 miles, and for canoes to its source. It is actually rented at \$320 a year. In 1880, the guardian reported: "Salmon angling has been very good in York river; anglers having killed, in less than a month's time, 100 salmon weighing 2,402 lbs. The river is reported to be well stocked with breeding fish. The York river fish average about 20 lbs." Mr. Mackedie, in 1883, reported on it as follows:—"It contains some 15 pools within a distance of 25 miles from tidal water, which is as far as angling is generally done, through there are some fine pools within the next 14 miles. Salmon begin to enter this river about the middle of May and cease running about the end of July. Angling may begin about the 10th June or later, according to the season. There was not much done this year, only about 70 salmon having been taken or one tenth of the number supposed to be in the river. The York is remarkable for containing very few sea trout in comparison with other rivers: "Rowand says of the York:—"Fish do not run quite so large as in the St. John, but there are plenty of them and they take the fly very freely." In 1887, the guardian reported: "Established an increase of a hundred in the number of salmon on the

spawning grounds as compared with last year. Owing to the small depth of water this season, the fly fishing was not successful. There was great abundance of young salmon in August, but they were almost entirely destroyed by the sheldrakes. In my opinion, the Government should offer a reward for the destruction of these birds." The attention of the Government has been called to this subject.

The *St. John* (Gaspé), which falls into Gaspé Basin at Douglstown, after a course of about 70 miles, furnishes the finest salmon and sea trout angling. Canoes can ascend it to its source which is in the highlands of the interior of Gaspé. Rowand says of it: "The St. John is the best of the three in Gaspé bay; it is a charming stream to fish and salmon run large." Mr. Mackenzie reported on it in 1883, as follows: — "The St. John (Gaspé) flows through the townships of Laforce, Baillargeon, York and Douglas. It is said to contain some 22 pools, pretty widely scattered over a length of about 50 miles. Most of them appear to be in front of vacant lands. Anglers visited it about the 10th June, which was much too early. They would have had a better chance in July and August, as the greatest number of salmon enter the river in July, and fresh run fish were seen in it as late the 19th August last; 25 in one of the lower pools: I was informed that no angling has been done on this river for the last five or six years above Barnes' pool, about 30 miles from the mouth, the guardian and lessee being agreed as to the advisability of leaving the higher pools undisturbed; and it was suggested that, in leasing the river, the fishing should be restricted to the lowest 30 miles by a clause to that effect being inserted in the lease." At present, the St. John rents for \$240 per annum. Last year, the lessee killed 35 fish of an average weight of 23 lbs. the largest being 28 lbs.

The *Malbaie* is a small salmon and trout stream, falling into the bay of that name midway between Gaspé Basin and Percé and navigable for canoes for 30 miles. It flows mostly through conceded lands. Rowand says of it: "Malbaie is a nice-looking stream, which salmon have access to, but it has been poached to death." Since this was written, the guardian of the division reported in 1880: "Malbaie river appears to be steadily increasing; at least 100 salmon having spawned in that stream last season."

The *Grand River* is a first class salmon river, which flows into the sea some 16 miles from Percé. Rowand says of it: "Grand river is a good stream, salmon plentiful, averaging about 12 or 13 lbs. It is leased at a yearly rental of \$200. The angling season for all these rivers on the south

shore is from the 10th June to the 15th July ; of course, this is only approximate because seasons vary according to the melting of the snow in the Shick-Shock mountains. After the middle of July, most of these rivers run very fine, though sea trout and grilse never fail." In 1880, the guardian reported : " The lessee of Grand River had excellent sport and killed 89 fish with the fly. The guardian saw no less than 300 fish in the breeding pools during the month of November." In 1883, Mr. Mackedie reported : " The Grand river flows through the township of Rameau (Crown lands) and the seigniory of Grand River (private). The best of the angling is within the limits of the seigniory, but good fishing may be had in the part above (Crown lands) in the months of July and August. The lessee of the portion within the seigniory pays the owners \$225 a year for it, and the upper portion is considered worth at least half as much." In 1887, the guardian reported : " Fish are plentiful in this river. On the 15th November, on my last visit to the upper waters, I saw some 450 salmon on the spawning grounds." The upper part of the Grand river is leased at \$50 a year, but has not been fished by the lessee for several years past.

The *Little Pabos*, which flows into the gulf near the entrance of the Bay des Chaleurs, has a high reputation as a salmon and trout stream. Mr. Mackedie says of it in his reports for 1883 and 1884 : " The Little Pabos river, rising in unsurveyed lands, flows through the seigniory of Pabos (Crown property.) It contains salmon pools as far up as thirteen miles from the mouth, but anglers seldom go above the falls, eight miles up, and it is recommended that fishing should not be allowed in the upper portion (above the falls) after the first of August. The lands along the river for four or five miles from the bay are nearly all disposed of, but there are several good pools in front of unsold lands in the lower portion as well as in the upper. This river does not appear to have been angled until two years ago ('81) when only four fish were taken, out of forty supposed to be in it. Last year it contained two hundred, of which eighteen were taken. This year the same number of fish are supposed to have run in, but there had been no fishing done at the time of my visit. The present lessee, who has had the river for several years, has been endeavouring to improve it, and is entitled to some consideration on account of the little benefit he has yet derived from his outlay, but some definite arrangement as to time should be made with him. The Little Pabos is one of the few well guarded rivers in the Gaspé district. It is too small to be divided into sections, but is well stocked with salmon and should fetch a higher rental on a 5 years' lease than has hitherto been paid for it." It is at present rented for \$105,

and the lessee last year reported his catch at 34 salmon ; total weight 418 lbs ; average weight, 12 lbs ; largest fish, 30 lbs ; besides 200 sea trout.

The *Grand Pabos*, five miles from the little river of the same name, is a splendid salmon stream, divided into two branches, which rent respectively at \$50 and \$30 to Mr. Henry Hogan, of the St. Lawrence Hall, Montreal. In his reports for 1883 and 1884, Mr. Mackenzie thus refers to this river :—

“ The Grand Pabos, north branch, flows through the township of Newport and the seigniory of Pabos. It contains about twenty good pools between the granted lands and the first falls and several more between the first and second falls. This river was leased up to 1881, but has not been taken for the last two years, although reported as having been full of salmon last year and containing a large number this year. Unfortunately, not having been leased nor protected, it is supposed that nearly every salmon which entered the river this year was speared. The west branch is said to have been well stocked with salmon some years ago, but the fish, having been prevented from ascending it by a dam, forsook it, and have not returned, although the dam has been cut. Re-stocking and guarding might restore it.” “ I visited the Grand Pabos also for the second time, and found that, though it has been very extensively poached for some years past, it still appears to contain a considerable number of salmon, and would, without doubt, afford a fair amount of sport if properly guarded. It might be divided into two sections,—the first, from the mouth to Falls Brook, a length of about ten miles, containing ten or twelve pools, and the second from Falls Brook to the Second Falls, about the same length, and containing as many or more pools. It is possible, however, that in the present condition of the river, it could not be disposed of in sections, but if leased entire, it ought to fetch not less than seventy-five dollars per annum for five years. In view of the large amount of poaching that has been going on in this river of late years, it is very desirable, and may even be said to be absolutely necessary, that a guardian should be appointed to take charge of it at once, for if not protected it bids fair to be completely ruined. The mouth of this river forms a large shallow basin about three miles long by a mile or more in width, separated by a sand bar from the Bay des Chaleurs, into which it flows through a narrow channel. It is understood that many salmon are killed in this basin at night throughout the season by parties who are ostensibly in search of eels ; their flambeaux proving an equally attractive lure to the larger fish. On other rivers, notably Grand River and Little Pabos, which are both well guarded, this flambeauring for eels is prohibited, except when and where the salmon are not likely to be interfered with. On this account

it would seem advisable that river guardians, whether employed by the Provincial Government or by lessees, should be empowered and instructed to enforce the Federal fishery laws in tidal as well as inland waters, to confiscate and destroy all spears and other implements that may be used in the illegal capture of salmon, and to prosecute offenders ; for the preservation of salmon is a matter of as much importance to the Federal Government, in connection with the coast fisheries, as to the proprietors or lessees of inland fishing rights, if not more so. The *West Branch* of the Grand Pabos falls into the same basin as the north branch. It is much smaller than the other, but, if protected, would furnish sport for one or two rods when in proper condition. I was informed last year that there were no salmon in this branch, although a mill-dam which had formerly prevented them from ascending it had been cut away. On making a personal examination of it, in August last, I saw some fifteen or twenty large fish in one pool not far from the mouth, and have no doubt there were more in the higher parts of the river. This is one of several instances in which I found that statements made to me last year were not to be relied on, and goes to show that actual inspection is the only means by which information that may be acted upon with confidence can be obtained. On both branches of the Grand Pabos, the water, after being raised by heavy rain, returns to its ordinary height more quickly than is generally the case with other rivers." In his report for 1887, the guardian says : " Counted seventy to eighty salmon in the north branch, and saw numbers of trout Both salmon and trout much less abundant in the west branch ; the trout seldom run up this branch, but remain near the mouth. No salmon, but only trout taken with the fly this year."

The *Port Daniel*, which falls into the Bay des Chaleurs, about 4 miles from its entrance, is a considerable river divided into three branches. Mr. Mackenzie says of these : " The west, middle and east branches of the Port Daniel river flow through the township of Port Daniel. They are said to have been formerly good salmon rivers, but do not at present bear this character. I did not think it advisable to visit them on this occasion, as I was informed that, on the west and middle branches, the lands are all granted or taken up as far as salmon-fishing would extend, while the east branch is rendered inaccessible to salmon by a jam at the mouth."

The *Grand Bonaventure*, which falls into the Bay des Chaleurs opposite the village of Bonaventure and about seven miles above New-Carlisle—though excelled by some other rivers in the same district—is still a famous stream for salmon and sea trout in their season. Of other fish, however, it

seems to be comparatively destitute. Few of the Canadian salmon rivers have suffered more from the murderous spear of the Indian and the illegal practices of the white man than the Bonaventure, but at present it is rapidly regaining its old-time reputation. It is admirably fitted by nature to be a favorite haunt of the royal fish. It is free from falls, the only obstructions to uninterrupted navigation by canoes from its mouth almost to its source being occasional jams of drift wood, carries a large body of remarkably clear, cold water varying in breadth from 70 and 100 yards at its mouth to 40 feet and less in its upper reaches, and is joined on its way by several important tributaries on both sides. It takes its rise in the mountainous region in the interior of the Gaspé peninsula and the total length of its course, which lies partly through the townships of Hamilton and Cox, is between 60 and 70 miles amid the most romantic of scenery. Last year, the official angling score of the lessee, who pays an annual rental of \$285 for this river, was 65 salmon, of a total weight of 1,132 lbs. and an average weight of 15 lbs. The largest fish killed was one of 40 lbs.; but salmon of 50 lbs. and upwards have been frequently taken in the Bonaventure and, as a rule the run of salmon killed in it are composed of heavier fish than in the adjacent streams. Mr. D.-C. Mackenzie, in his official report on the Bonaventure to the Government of the Province in 1883, says: "It is largely frequented by salmon and trout, contains many pools and may be angled as far as the First East branch, about 26 miles from its mouth. Above the ninth mile, the lands are all vacant, except one lot in the township of Cox, in front of which there are a couple of pools. There had only been four rods on the river this year at the time of my visit and about 50 salmon taken. If known to be in the market and put up to auction, it would probably let for a much higher price than has hitherto been paid for it." Mr. J. Bureau, provincial explorer, reported as follows regarding the Bonaventure in 1884: "It is also, as I was informed, well stocked with salmon and trout." Mr. Mackenzie, in his report for the same year, says: "As I was unable to see much of the Bonaventure river last year, I visited it again and examined it as far up as the Second East branch, a distance of about forty miles. There are seven pools in front of private lands within the first eight miles from the mouth, and above that forty-eight more, all in front of ungranted lands. These might be divided into three sections, as follows: No. 1, from the mouth to Deep Water creek, fifteen miles, containing 14 pools in front of ungranted lands, besides the 7 which may be considered private property. No. 2, from Deep Water creek to First West branch, 10 miles, 16 pools. No. 3, from First West branch to Second East branch, 14 miles, 18 pools. Each of these sections, with the water in good condition,

would give fishing for four to six rods throughout the season. The Bonaventure is at present leased at an annual rental of \$285, and the lessee, last year (1888), reported a catch of 65 salmon, total weight 1,132 lbs.; average weight 15 lbs.; largest fish, 40 lbs.; smallest $8\frac{1}{2}$ lbs. In 1887, his catch was 88 fish, total weight, 1,350 lbs.; average, 15 lbs.; largest fish, 30 lbs.; smallest, 8 lbs.

The *Little Cascapedia* runs parallel to the Grand Cascapedia at a distance of only about five or six miles to the eastward, but is much less important and valuable as a salmon river, though its official angling score for 1879 showed 21 salmon, of an average weight of $17\frac{1}{5}$ lbs. and a total weight of 373 lbs., the largest fish killed weighing 33 lbs. It also takes its rise in the Shick-Shock mountains and divides into two principal branches at 22 miles from its mouth, which is also in the Bay des Chaleurs on a fine bay, not less than 9 miles in breadth and on the shores of which are two important parishes of New Richmond and Maria. Its course is between 75 and 80 miles in length. The scenery is magnificent. It used to be said that few salmon were seen in it, but, on the other hand, plenty of trout; and this statement seems to be corroborated by the report of Mr. Mackedie in 1883. "The Little Cascapedia," says Mr. Mackedie, "was formerly a fair salmon river, but is now of no value whatever for angling, except for trout. The use of the spear and drift net has resulted in the almost total extinction of the salmon accustomed to frequent it. The mouth of the river is of a very different character from that of the Grand Cascapedia, being wide and shallow, but this is generally understood to be of no consequence as far as the passage of salmon is concerned, for they enter with the rising tide. Re-stocking, with efficient protection for a few years, would probably restore this river to its former condition, and make it sought after by anglers, whose numbers appear to be increasing every year." In his report of the following year, Mr. Mackedie added this. "The Little Cascapedia flows through the township of New Richmond and unsurveyed lands. It is practicable for ordinary canoes as far as 'The Forks,' about twenty miles from its mouth, and for light ones some twelve or fifteen miles further on both branches. As the time at my disposal was very limited, I did not examine either of the branches. There are four pools within the first seven miles, where the river flows through granted lands. Above that there are only two, until the sixteenth mile is reached, where there are three within a mile-and-a-half. Between the twentieth and twenty-third miles there are six more, making eleven pools within vacant lands from the mouth of the Forks. Although this is a "bright" river, the water being

very clear and transparent, I saw no salmon in it, but have reason to believe that there had been some, which had either been killed illegally or gone above the Forks. A few were seen in it by the lessee later on, but none were caught. I was informed that this river had been pretty well cleared of salmon three years ago by the use of nets and that the lessee had found a net set in it this year. Under such circumstances, it is not surprising that salmon seem to have forsaken it, and that it is considered worthless for angling. The absence of a guardian empowered to prevent poaching and prosecute trespassers naturally leads the people of the locality to suppose that they are free to take all the fish they can, by any means, and to argue that if one person do not take them another will. Experience has shown that a few prosecutions, resulting in fine or imprisonment, would have a very good effect in reducing the amount of poaching and destruction of breeding fish, now so extensively practised on this and other rivers. If well stocked, this river would give good fishing for three or four rods while the salmon are running, and ought to fetch a rental of at least two hundred dollars a year, but in its present condition it will probably not bring more than fifty dollars per annum for the next five years, if so much. Arrangements ought to be made for its being re-stocked next year, either by the lessee, if disposed of, or at the instance of the Government, if not leased. There would seem to be ample reason for feeling confident that the expense of re-stocking and guarding a river for a year would be more than counter-balanced by the increased rental which would consequently be obtained for it. In 1887, the guardian reported as follows: "The salmon of this river have been destroyed by poachers; on the other hand, sea-trout are abundant. The salmon pools are so small that all the fish may be taken in one night. To afford encouragement for the re-stocking of the river, it should be leased for a term of ten years. The lessee has this year, at his own expense, caused the mouth of the river to be deepened, to afford a better passage for the salmon. "The improvement promoted in this way and foreshadowed by Mr. Mackenzie would appear to have already set in, as Mr. Bureau, who has since visited and reported on the river, states that it seemed at the time of his visit well stocked with salmon and trout. The Little Cascapedia is at present under lease at an annual rent of \$60.

The *Grand Cascapedia* is to-day, without exception, the finest salmon river in the province, the fish in it being not only as a rule more abundant, but usually heavier than those taken in the other rivers, 40 to 50 and even 60 lbs being a not uncommon weight. It is also one of the most picturesque, flowing through a mountainous country unrivalled for the grandeur of its

scenery. It takes its rise in a lake of the same name, of about two miles in length by a mile and a half in breadth. This lake is about 76 miles from the mouth of the river at New Richmond in the Bay des Chaleurs, and is fed by a little river which may be considered as the main river Cascapedia, and takes its rise in the Shick-Shock mountains about 30 miles further inland. At two miles below the lake, the river Cascapedia is only 20 yards in breadth, but from that place it widens by degrees until it reaches at its mouth a breadth of about 500 yards. There are no falls in it, but a great number of rapids, which nevertheless do not prevent it from being navigable for wooden and bark canoes. The water is very clear and limpid. Numerous islands, covered with the finest trees of the country, such as ash, elm, maple, white and red birch, all growing on alluvial soil, are met with along nearly its whole course, and, together with its shores sometimes steep, sometimes gently sloping and covered with rich grass, contribute to make it, as already stated, one of the most picturesque in Canada. It appears that the salmon do not go as high as lake Cascapedia to spawn. They have been seen in Miner's Brook, a stream which falls into the main river, very near to the lake, but more frequently in the creeks and pools, where the water is deep and still at 3, 6 and 7 miles further down; there they are found in great numbers and choose favorable places to deposit their ova. The sea trout and speckled trout are also very large, of fine quality, and very abundant. The following are the most remarkable spots on this river, with the respective distances from its mouth.

Picapico mountains.....	14	miles from the sea
Turner's brook.....	2	" higher up.
Montmorency falls (in a brook).	2	" "
Jonathan's brook.....	3	" "
Tracadie.....	3	" "
Charles Vallee's brook.....	4	" "
Square Fork.....	5	" "
Indian Falls (rapids).....	1½	" "
The confluence of Cascapedia river (properly speaking) with the Salmon branch...	9	" "

43½

Salmon Branch is a tributary of the Cascapedia and takes its rise west of the Shick-Shock mountains. It runs toward the east and joins the principal branch at the above mentioned point. It is less considerable than the

main branch, but more rapid and very much broken by falls and rapids. On the Square Fork, which is a large tributary from the west at 38 miles from the mouth of the Cascapedia, the scenery is particularly wild ; the Little and Big Berry mountains having peaks 1,500 to 2,000 feet high. From the summit of these mountains, a magnificent panoramic view of the Shick-Shocks is obtained, surpassing in grandeur the mountain scenery of any other portion of Eastern Canada. Rowand, in his *Emigrant and Sportsman in Canada*, says of this river : " The Grand Cascapedia is celebrated for the immense size of its fish. It is a large and very rapid stream. Its salmon average 23 lbs and every season mighty monsters of the deep are hooked by anglers. Fortunately, owing to the color of the water, somewhat coarser tackle can be used than in most other rivers." Mr. Joseph Bureau, explorer for the Crown Lands Department, says : " The Grand Cascapedia is the finest salmon river in this part of this province (Gaspé district) ; salmon are found as high up as the lake near the source and in the Salmon Branch up to the falls." Mr. D.-C. Mackenzie, who inspected the different salmon rivers for the department, in 1883, makes the following report regarding the Cascapedia : " The Grand Cascapedia, well known to be one of the finest salmon rivers on the continent, falls into the Bay des Chaleurs between the townships of Maria and New-Richmond. All the lands within these townships to which fishing rights appertain have been taken up, if not patented and the fishing privileges leased at an average yearly rental of \$50. Above the surveyed lands, or from the mouth of the Escuminac to Salmon Falls on the Salmon Branch, a distance of about 42 miles, there are fifty or more pools or fishing places, at the disposal of the Government : these might be divided into five sections as follows : No. 1. From rear line of townships of Maria and New-Richmond to lower end of Four Mile Tree Island, 4 miles ; 10 pools. No. 2. From lower end of Four Mile Tree Island to foot of Button's rapid, 7 miles. 12 pools. No. 3. From Button's rapid to Indian Falls, 12 miles, 13 pools. No. 4. From Indian Falls to " the Forks ", including Fork's pool ; 10 miles, 12 pools. No. 5. From the Forks to Salmon Falls, 10 miles, 12 pools. The number of salmon taken in the Grand Cascapedia this year has been estimated at over 500, besides large quantities of trout. It seems probable, from the reputation of this river and the many applications which have been made for it, that it would yield a large revenue, if offered to public competition and especially, if leased for terms of five to ten years, as the lessees would be inclined to erect houses and exert more careful guardianship." In one season's angling (1879) as many as 647 salmon have been killed with the fly in the Grand Cascapedia, their total weight representing 16,288 lbs and their average individual weight 27 lbs, the

largest fish weighing $44\frac{1}{2}$ lbs and the smallest 9 lbs. At present, the Grand Cascapedia is under lease to His Excellency the Governor General of the Dominion at a rental of \$500 per annum ; but a better idea of its real value can be formed from the prices paid for the purchase of the fishing rights of the riparian proprietors along the lower part of the river—Mr. Dunn, of Dunn & Wiman, New-York, having paid — it is said — \$10,000 alone for the two pools opposite Woodman's and a club of American gentlemen \$4,000 for the Princess Louise's cottage and the two pools along its frontage, while another gentleman, who has acquired several of the other private pools, sublets them at the rate of \$150 per rod for the season.

The *Nouvelle* and, its neighbor, the *Escuminac*, which fall into the Bay des Chaleurs, nearly opposite Dalhousie, are two beautiful little rivers famous for the abundance and splendid quality of their sea trout. Rowand says of them : " There is no artificial obstruction on either of these streams and yet salmon do not ascend them. The reason of this, in my opinion, is that both of them empty their waters into the bay over flat, muddy bars, which are grown over with sea grass. In both of these streams there is a peculiarly large and fine run of sea trout. These trout are quite different in color and shape from the sea trout that are taken in the other Bay des Chaleurs waters. I regret that I am not learned enough in fishes to give their peculiar ichthyological marks. Their average weight is larger, their color darker, and their habits different from those of other sea trout I have met with. In their habits, the places they choose to rest in, and the way they rise at the fly and play when hooked, they exactly resemble salmon. In fact, trout fishing with light tackle in Escuminac is salmon fishing in miniature ; they average about 3 or $3\frac{1}{2}$ lbs. ; the smallest fish $1\frac{1}{2}$ lbs., and the largest not over 6 lbs. It is, perhaps, worth noting that these trout are peculiar to the only two streams in the Bay des Chaleurs, in which there are no salmon. The trout fishing in the Escuminac in the month of July is about the best I know of anywhere. This stream, flowing from the snow-clad Shick-Shock mountains, is icy-cold and clear as crystal. Civilized trout would object to rise to a fly under these conditions, but in Escuminac they are not fastidious." Mr. Mackenzie, in 1883, made the following report on these rivers : " The Escuminac and Nouvelle rivers are both well known to contain large numbers of fine sea trout, and might be advantageously leased to parties who would sub-let and adopt means to attract anglers who desire only a day's or a few days' sport. The best fishing on the Nouvelle, at least, is above the granted lands." The Nouvelle is actually leased at a rental of \$55 and the Escuminac for \$40 per annum.

All the foregoing rivers are easily and quickly reached either directly by steamer from Quebec or by the Intercolonial railway and steamer from Dalhousie, as well as by waggon road. Those falling into the Bay des Chaleurs are especially noted for the magnificence of their scenery and for the great distances they can be ascended towards their headwaters without obstructions. Very little portaging is needed also to enable the tourist or sportsman, ascending to their sources, to descend by some of the streams falling into the gulf of St. Lawrence, such as the Cape Chat, Ste. Anne des Monts or Magdalen rivers.

The *Restigouche*, which is in part the dividing line between the provinces of Quebec and New Brunswick and falls into the Bay des Chaleurs at its head, after a course of nearly 220 miles from its source near lake Temiscouata, is one of the greatest and finest salmon rivers in the world. It is, so to say, the key of the Bay des Chaleurs, which is the great salmon emporium of Quebec and New Brunswick. Its name means "the river which divides like the hand" in allusion to its separating at the head of tide into five principal streams, varying from 50 to 70 miles in length. The entrance to the Restigouche from the Bay des Chaleurs is 3 miles wide and 9 fathoms deep. The tide flows up it 24 miles, of which 18 are navigable for the largest ships. The principal towns on its banks are Dalhousie and Campbellton in New Brunswick. The scenery on its course is everywhere both grand and beautiful, but that portion is most interesting where it forces its way through the mountain lands, which give birth to the great streams of New Brunswick and those of the United States emptying into the Atlantic Ocean. Here the eagle unmolested builds its nest upon high cliffs, the bear and cat secrete themselves in caves and rocky fissures, the moose and caribou browse upon their favorite food, and the salmon, fearless and free, reflect the sunshine in the deepest and darkest pools. Mr. S. Wilmot wrote of this river in 1872: "In the study of nature or in the admiration of that which is really beautiful, no one would regret a trip up the Restigouche. Its clear, transparent, limpid and highly aerated waters are as cool and grateful to the palate in midsummer as spring water itself. The beautifully wild and indescribable grandeur of its scenery is almost beyond description. At many of the windings of the river, a general panoramic view is produced, impressing one with the idea of some mighty amphitheatre situated in the midst of nature's wilds, which completely dazzles the eye with delight and for a moment almost overcomes the mind with awe. Add to this the musical sound of the sparkling and foaming rapids, through which you are constantly passing, and all combine to

make the far-famed Restigouche one of the most desirable rivers on this continent either for the tourist or sportsman to visit. The Restigouche, with its numerous branches, is one of the principal sources from which the fisheries of the Bay des Chaleurs are annually supplied with their catch of salmon." The late Mr. R. Nettle speaks of the Restigouche as the grand, the majestic, and as crowning the whole with its numerous tributaries, which drain an area of about 5,000 miles. Lemoine styles it "a noble stream, with magnificent tributaries; salmon frequent it by thousands." In 1873, the total catch of salmon in the Restigouche was about 500,000 lbs. In 1874, over 1,500 salmon were killed with the fly in the Restigouche and its tributaries. Salmon average about 16 lbs; but very large fish are frequently taken, ranging from 35 to 60 lbs. In 1883, Mr. Mackenzie reported: "On the Quebec side of the Restigouche river, the greater part of the land is taken up, and the fishing rights are mostly in the hands of private individuals. A few lots, however, in front of which there is good fishing, remain undisposed of. These I have indicated on a plan of the river, and I think it very likely that the fishing privileges appertaining to them will be in demand next year and fetch good prices if put up to public competition. There was some contention between parties holding land on opposite sides of the river, regarding their respective rights in certain pools. This, I presume, will have to be settled by the courts. On a great portion of this river the banks are so high and steep that clearing and cultivating them is impracticable, and, inasmuch as it would injure the river for fishing, undesirable. Settlement would be in no wise retarded by the whole face of the hill in such places and a depth of two to five chains in other places less steep, being permanently withdrawn from sale to be leased as a fishery reserve. The lands in the neighborhood, though generally unfit for cultivation, are not without prospective value as timber lands on account of the increasing demand for white birch and poplar for spool-making and cedar for railway-ties." The Restigouche is at present leased in five sections at rentals respectively of \$200, \$170; \$90; \$25; and \$80. The Restigouche Salmon Club, which is composed of wealthy and distinguished Americans and included the late President Arthur, holds two of these. The Dominion Government maintain a salmon hatchery on a small branch of the Restigouche a few miles above the junction of the Metapedia with the main river and the Patapedia, another of the large Quebec tributaries of the Restigouche, is leased to the Restigouche Salmon Club, at an annual rental of \$100 and reserved for breeding purposes. This club have a splendid clubhouse at the junction of the Metapedia and the Restigouche near where the latter is spanned by the Intercolonial railway bridge. The Quebec

Morning Chronicle, of July 4th, 1889, referring to this Club, had the following:—“Rev. Dr. Rainsford, of St. George’s church, New York, and lately of Toronto, has become a member of the Restigouche Salmon Club, \$4,700 having been paid for his admission share. The reverend gentleman, who is now at the club house, has so far enjoyed fair sport, having raised quite a number of fish, a large proportion, however, getting away. H. W. DeForrest, secretary of the Restigouche club, has made the best record on the river so far this year, having killed nineteen fish in four days of last week. Most of the salmon taken this season are of much larger size than usual, the average weight not having been exceeded for many years.”

The *Metapedia* or *Musical River* is one of the famous salmon rivers of Canada, falling into the Restigouche about 19 miles above Campbellton. In its course, it receives the waters of a number of large streams and lakes, particularly the Assematquegan, the Casupscull and the Humqui rivers, and lake Metapedia, some 16 miles long by 3 miles wide, famous for its speckled trout and touladi. Mr. S. Wilmot, of the Dominion Fisheries service, thus described the Metapedia in 1873: “The Metapedia with its tributaries forms a magnificent body of water, flows principally over a rocky and gravelly bed, and is very rapid in its current, presenting no serious obstacles to the passage of salmon into the interior of the country. It is said to take its rise in the Chik-Chak mountains, some 60 miles in the interior, and to flow thence northeasterly, through an uninhabitable region, to lake Metapedia, after passing through which, it is increased in volume by the confluence of the Humqui river, a considerable stream coming from the south-west. Thus enlarged in body, the Metapedia runs in a southeasterly direction until again increased at the forks by the waters of the Casupscull, which comes from the north-east, whence it flows on very rapidly till it reaches the Restigouche. The line of the Intercolonial railroad follows the windings of the Metapedia river, from its mouth, till it reaches the lake of the same name; as this road will now be speedily completed for travel, the river will be brought into great notoriety as a salmon river, and as its natural capacity for production is reported to be of considerable magnitude, and the salmon of more than average size, it will likely be more frequented for fishing purposes than heretofore.” Rowand says of the Metapedia: “The fish in this river are nearly, if not quite as large, as in Cascapedia, a stream which it resembles in characteristics. Salmon average 21 or 22 lbs. It is noticeable in the Bay des Chaleurs, and I think in Canadian rivers generally, that the stronger the stream the larger the fish. There are about 40 miles of fishing water on this river. The best pool is at the Forks about 35

miles from the mouth.*** The Intercolonial railroad runs for 30 or 40 miles along the very bank of the Metapedia, so that it is perhaps the most accessible river in all Canada. The fish do not take the fly as freely in the Metapedia as in the Restigouche. Season, July and August." The scenery of the Metapedia is magnificent. The river is in many places diversified with numerous islands and picturesque windings; sometimes, its waters are contracted between stupendous mountains and at other times expanded to a great extent in a fine open country. In 1880, the overseer reported a catch of 200 salmon in the Metapedia with the fly. In 1887, the lessee, Sir George Stephen, reported his catch at 49 fish, total weight 1002½ lbs., average 22½ lbs. largest fish 36½ lbs.; smallest 8 lbs.; and in 1888 at 45 salmon, of a total weight of 996 lbs. and an average weight of 23 lbs., the largest fish weighing 35 lbs. and the smallest 8 lbs. The rent paid at present for the Metapedia, the Casupscull and Humqui is \$260. Sea trout are also plentiful.

The *Casupscull* is the chief affluent of the Metapedia, into which it falls about 35 miles from the mouth of the latter. It has a total course of from 60 to 70 miles. Rowand describe it as "a very rough and rapid little river, up which go the largest fish of the Matapedia. Its salmon average 25 lbs." And he adds: "It has seldom been angled owing to the great difficulties to be encountered in getting up it and next in fishing it. On one occasion, I pushed up this stream some 10 miles with great trouble. The bed of the stream is so rough and rocky, and the stream is so strong, that it is a herculean task to push a canoe up it, while the banks are so precipitous, it is impossible to walk. In one place, I found a long gorge, through which the stream foamed, throwing itself over a lot of ledges into as many basins. In these, there were plenty of salmon, but I found it almost impossible to catch them. A canoe could not live in this place, the banks were precipices and even when one could get one's fly into the water and hook a monster, the chances were ten to one against getting him." This description seems to agree with that furnished by Surveyor Lepage, in his report of 1888, (page 758). Mr. Lepage adds that the Casupscull in its higher reaches, receives a number of affluents, that the salmon ascend to the Still Waters, and that the river, as well as the lakes at its head, abound also with trout. Mr. Bureau, who visited the river in 1887, reported as follows: "This river is also well stocked with fish, especially salmon and trout. The salmon run up as far as the east branch. The lakes which empty into this river are also filled with trout, but the salmon cannot pass above the falls, marked on the outlet. I am told that \$300 worth of trout are taken every winter by people from Campbellton, who ship it to the States." Mr.

Mackedie says of the Casupscull in his report for 1884: "The Casupscull, a tributary of the Matapedia, flows through the township of Casupscull and unsurveyed lands, falling into the Matapedia about thirty-six miles above junction of the latter with the Restigouche. It is practicable for canoes up to a point about twelve miles from its mouth, where there is a broken fall or cascade, some twenty feet or more in height. None of the lands on its banks are disposed of. Statements made to me with respect to its value for fishing were very contradictory, such as, "Salmon do not go above the falls"—"Salmon do not stop at all in the lower part of the river, but go at once above the first falls."—"It (the lower part) will afford moderate fishing for two rods all the season."—"None but large fish can pass over the first falls."—"There is nothing to prevent any salmon from getting above these falls."—"There are only three pools in the first twelve miles." &c. In examining the first twelve miles, I observed some fifteen places where salmon might lie, but was unable to try them, so cannot say how many of them may be called "pools." I think it probable, however, that salmon may be caught in at least six of them while running in, with the water in good condition. I understand that there are also some good pools above the falls, but it is difficult to reach them, and it was impracticable for me to do so at the time, as I was not prepared for making a portage. A party taking the river on a five years' lease, might have a road cut by which access to the upper portion could be more easily obtained, and would probably find good fishing there. This river is said to be much poached, and especially by parties from Salmon lake, who take large quantities of fish from the spawning beds in the upper waters. It would thus seem necessary, in order to protect it effectually, for the guardian to go into camp above the falls, and remain in the vicinity of the spawning grounds from the time when the fish arrive there until they disperse after spawning. Such protection could not fail to be beneficial to the owners and lessees of fishing rights in the lower portions of the Metapedia and Restigouche, by increasing the number of fish that would return through those waters to spawn in their native river; and the exclusive control of these rivers on that account alone should be worth a considerable sum to the parties referred to." The Casupscull is at present embraced in the lease of the Metapedia to Sir George Stephen.

The *Humqui*, which runs into the south-west side of the Metapedia, three miles below lake Metapedia, is also a salmon river, included in the lease to Sir George Stephen, with the Metapedia and the Casupscull. Mr. Mackedie thus refers to it in his report for 1883: "The first river flowing

through Crown lands which I examined was the Humqui, a tributary of the Matapedia. It is naturally frequented by salmon, and contains several fine pools above the granted lands; and, if protected, would be worth leasing, but some of the people living in the neighborhood are inveterate poachers and allow the salmon no chance to increase. It is generally understood that every salmon that goes up the river is speared. In order to prevent this wholesale destruction of breeding fish by keeping them out of the Humqui altogether, a dam has been placed across the Matapedia, below Salmon lake, by Mr. Stephen. When I saw this dam it was not in a condition to hinder the passage of salmon, but I was told that it was intended to raise and repair it, so as to make it an effectual barrier. This is in direct contravention of the fishery law—sec. 13, sub-sec. 5—but under the circumstances it would appear to be more merciful to the fish than letting them pass up freely would be.”

The *Assemetquagan*, another tributary of the Metapedia, falling in on its left bank, is a famous trout stream.

LAND-LOCKED SALMON WATERS.

LAKE ST. JOHN AND ITS TRIBUTARIES.

Lake St. John, the great inland sea at the head of the Saguenay river, and its numerous tributaries are the home *par excellence* of the far-famed *ouananiche* or land-locked salmon, a fish which is now attracting the more general attention of anglers and which is not excelled in gameness or toothsome-ness even by its congener, the true *salmo-salar*. Trout, pickerel, pike, while-fish, &c., also abound, and afford good sport, but the *ouananiche* constitute the real charm of these waters for the sportsman. They are taken both in the great lake itself and for certain distances up the different rivers which fall into it, as well as at its discharge. Lake St. John is tapped directly by the Quebec and Lake St. John railway, which extends on one side to the north-westward as far as Roberval, crossing on the way the Ouatichouan and Ouatichouanishé rivers, and on the other to the north-eastward as far as the Metabetchouan river, whence it is the intention to push the construction of the road to Chicoutimi, at the head of steamboat navigation on the Saguenay. The principal tributaries of Lake St. John are :

The *Belle Rivière* which rises in the lake of the same name, in the county of Chicoutimi, and falls in about six miles above the Little Discharge of the great lake.

The *Metabetchouan*, a fine broad stream, which enters on the south side about eight miles higher up than the Belle. It rises in lake Naguagami in the vicinity of Kiskisink or Cedar Lake, on the line of the Lake St. John Railway, and has a total course of between 60 and 70 miles. Its upper waters and the lakes which discharge into them swarm with speckled trout of the largest size and finest quality, and its lower reaches are frequented by the *ouananiche*. It is leased in two sections, the upper and lower, at a rental of \$150 each per annum.

The *Ouatichouan*, which means in the Indian language "Do you see the Falls there?" and which enters the south-west corner of Lake St. John, a little more than the same distance further, has a course of $59\frac{1}{2}$ miles. About a mile from its mouth are the Great Falls, 230 feet high. They rival those of Montmorency in height and far surpass them in the distribution of the

water as it descends over the pendant rocks. These beautiful falls can be seen almost from the opposite side of Lake St John and have given the river its name. *Ouinaniche* are taken in the estuary and as far up as the falls while the upper reaches of the river and the tributary lakes abound with red and grey trout, pickerel, &c.

The *Ouiatchouaniche* or *Little Ouiatchouan*, about six miles beyond, joins the lake on the west side. It is a somewhat smaller stream.

The *River aux Iroquois* is another small stream falling into the lake on the west side at St. Prime.

The *Ashuapmouchouan* or *Chamouchouan* is one of the largest tributaries of the lake, into which it falls on the west side, and might properly be considered the continuation of the Saguenay. It is over half a mile wide at its mouth, rises in the highlands forming the watershed of the rivers flowing on the one side towards the St. Lawrence, and on the other towards Hudson Bay, and, in its course of about 170 miles, receives the waters of many tributary rivers and lakes. At about 92 miles from its mouth, it divides into two branches, one of which being the largest, is called by the Indians the Chief river and the other retains the name of the Ashuapmouchouan, as far as lake Ashuapmouchouan, a large sheet of water, whence to its source it is called the Nikoubau. Among the affluents which join it in the lower part of its course, are the rivers à l'Ours, au Saumon and Pimonka. These are famous fishing grounds for the *ouinaniche*. Mr. Surveyor Gagnon states at page 133 : " That part of the river Chamouchouan, called Pimonka, abounds in fish, of eight different species, viz : salmon, *ouinaniche*, trout, doré, white fish, carp, loach, pike and perch. The trout especially is of superior quality, abundant and large, measuring from 20 to 30 inches in length ; it is called *mingouche* by the Abenaqui Indians. Lake "Witouche" abounds in fish, such as the "witouche", white fish and delicious trout. The same remarks apply to the other lakes where trout is more abundant and superior in quality."

The *Mistassini*, so called from the supposition that it was the ancient route to Great Lake Mistassini, falls into the north west corner of Lake St. John, about three miles from the Chamouchouan. This is also a large river abounding with fish. It has numerous tributaries, among which the largest are the Mistassibi, aux Rats, Wassiemska, &c.

The *Peribonka*, which discharges on the north side about 12 miles from the last, is one of the largest, as it is also the most beautiful of all the

tributaries of Lake St. John. The *Little Peribonka* falls into it near its mouth.

The *Grand* and *Little Discharge* of Lake St. John are also famous fishing grounds, especially the former. Mr. Surveyor Duberger, page 126, says: "Both the Petite and the Grande Décharge offer a great advantage to settlers by the quantity of fish of different species which abound in their waters, such as pike, ouinaniche and pickerel, &c., &c., particularly about the islands on the borders of Lake St. John." Some of the best ouinaniche fishing grounds on the Grand, as well as the Little Discharge, are in private hands, but the islands of the Grand Discharge which are also capital ground are leasable and actually let at a rental of \$20.

All the rivers falling into Lake St. John, as well as the Grand and Little Discharge, are accessible by rail, steamer, boat or waggon.

INLAND LAKES AND STREAMS.

The inland lakes and streams of the province of Quebec, which abound with the various kinds of trout, bass, pike, pickerel and other game fish prized by the angler, and which may be leased from the Government, are much too numerous to be described or even catalogued. In fact, most of the province, especially its northern section, is simply an immense network of lakes and rivers, large and small, constituting a veritable sportsman and angler's paradise. Thousands of these beautiful forest-environed bodies of water within the Crown domain have never been fished, and many of them are nameless. Some of them lie just beyond the settlements and others again can only be reached by canoe, the logging roads of the lumberer or the trails of the adventurous hunter and trapper. The following information is therefore confined to such of these inland waters as are referred to in the foregoing reports of surveys, to those actually under lease and to those which are more or less accessible by the regular lines of communication from the great centres, such as Ottawa, Montreal, Three Rivers, Quebec and Sherbrooke.

OTTAWA DIVISION.

This territorial division, comprising the extensive counties of Ottawa and Pontiac, and having the cities of Ottawa and Hull, as its chief centre, is drained by the great Ottawa river and its numerous tributaries and dotted over with so many lakes and connecting streams, many of them of great magnitude, that it would be impossible to enumerate more than a mere tithe of them. The lakes on the Rouge, Petite Nation, Du Lievre, Blanche, Gatineau, Coulonge, Black, &c., branches of the main river, and their affluents are famed for the abundance of their game fish, such as speckled and forked-tail trout, bass, pike, pickerel, maskinongé or muskalonge, white fish, &c., and among them may be more particularly mentioned the following :

Ottawa County.—Lake Wolfe, in the township of Ponsonby; lakes Rognons, Rond, au Brochet and Long, in Amherst; Cameron, aux Castors and des Trois Montagnes, in Clyde; Maskinongé, des Mauves, la Truite and Vert, in Labelle; de la Montagne Tremblante, Grand lac Castor, Long, Vert and Mitchell, in Joly; Macaza, Chaud and à la Grue, in Marchand;

Longues Pointes, Désert, Cameron, Maskinongé, du Rat Musqué and au Sable, in La Minerve; Great and Little Nomingue, des Iles, Blanche, Noir, Big Bay and Croche, in Loranger; Sucrieries and Rond, in Waddington; Simon, Barrière and Vert, in Hartwell, which are connected with Great and Little Whitefish, Long and aux Sucrieries lakes, in the unorganized territory to the northward; lakes Ecorce, in Lathbury; Heart, Poisson Blanc and Sinsic, in Mulgrave; Clay, in Villeneuve; Grand Lac, McArthur, McLeod, Ste. Hélène and Tamo, in Portland; Rouge, Kiamika and Bark, in Kiamika; du Cerf, St. Germain, in Dudley; des Sables, Corbeau, Serpent, des Aigles and au Brochet, in McGill; des Ours and Wabasse, in Wells; au Poisson Blanc, Thirty-One Mile, Mitchell, à la Carpe, au Rat, Cameron, Pemichaugan, &c., in Cameron, Blake and Northfield; Great and Little Cedar, Blue Sea, des Isles and Grant, in Bouchette; à la Truite and au Brochet, in Low; St. Joseph, Quinn, Long, au Castor Blanc, Sapin, Murray and Hogan, in Aumond; Hall and Serpent, in Kensington; Baskatong, Long, Clair and Piscatosin, in Baskatong; Bras Coupé, in Lytton; Etroit, Pontiac, Long, Hogan, Blanc and Rond, in Egan; Philomène and à la Carpe, in Sicotte, &c., &c., besides thousands of others in the unorganized territory in the rear. Surveyor McMartin says of the township of Amherst (page 269): "The streams and lakes abound with fish and the country with game." Surveyor Roney says of the township of Blake (page 271): "In reference to the waters in Blake, they are as in the other lakes in that country, well stocked with plenty of good fish, more especially, the beautiful Thirty-One Mile lake, which contains the finest fresh water trout I have ever seen." Surveyor Rainboth says of the township of Bouchette (page 273): "There are several good roads, good markets for all kinds of produce, the lakes teeming with fish, immense quantities of which are caught every winter by the settlers." And again of the township of Cameron (page 275): "There is a beautiful stretch of lakes on Post creek extending from the Gatineau river to the Grand lake, and they are teeming with fish of the finest variety, such as trout, white fish, bass, pike, &c. Surveyor Mathieu says of the township of Clyde (page 276): "Lakes are numerous and abound with trout, some of very large size." Surveyor Allen says of the townships of Dudley and Kiamika (page 277): "The rivers and the lakes abound with excellent fish, trout, pike, perch, bass, pickerel and chub, a soft watery fish averaging from four to six pounds in weight, trout predominating in the lakes, in fact, monopolizing the most of them, and chub predominating in the rivers." Surveyor Johnston says of the township of Mulgrave (page 288): "All the lakes in this township abound in salmon trout, some of which are of a very large size. There seems to be no other species of fish in these lakes,

except Gull lake, where perch are caught in great abundance." Surveyor Rainboth says of the township of Robertson (page 297): "Game in great variety is very plentiful throughout this section of country." Surveyor Russell says of the territory of the Rouge, du Lièvre and Petite Nation rivers (page 441): "The fur-bearing animals are pretty well decimated, deer, that is, moose, caribou and the Virginian or chevreuil are moderately abundant. Of fish, the lakes and streams seem to possess a bountiful supply, consisting for the most part of the finest kind of trout, pickerel or doré and the pike families."

Pontiac County. — Lakes Lapèche, in Onslow; Sinclair, in Aldfield; Kantuagama, in Dorion; Lacroix and Blue Sea, in Church; Ellen and Mary, in Clapham, connecting with lake Dumont; Squaw, Hickey and Moore's, in Huddersfield; Calumet and McGillivray, in Chichester; McConnell, in Aberdeen; besides the following, among a vast multitude of others, in the unorganized territory beyond the settlements:—Pythonge, Desert, Round, Thomasine, Papin, Green, Dusable, Island, Pike, Windfall, Bark, Wolf's, Trout, Moose, Nicota, Big, Dam, Gardner's, Kawaskiamiqua, Barrière, Kanequanika, Bouchette, Kakebonga, Poignan, Pine, Des Rapides, Travers, Great Bear, Price, Lindsay, Big, Grassy, Wolf, Oorsick, Ecarté, Sasseganigou, Winnowaya, Ostaborning, Keepawa, Turtle, Mohr's, Little Moose, &c., &c. Surveyor McGrath says of the township of Aldfield (page 302): "The best fishing lakes in this part of the province are in Aldfield and Cawood." Surveyor Dumais says of the township of Guigues (page 315): "On the sixth and seventh ranges, there are three little lakes in which pike abound. Lake Sassaganigou, situated at the depth of the ninth range, seemed to me pretty large (4 or 5 miles long), and possesses bays and islands. Pike, trout, white fish and pickerel are plentiful in its waters." Surveyor Roney says of the townships of Leslie and Cawood (page 316): "This country is very well supplied with springs, brooks, rivers and lakes, of which the waters are pure and very healthy. Some of the lakes are of a good size, and very plentifully supplied with choice fish, and lovers of trout come from a distance to feast from those lakes. The Kazabazua river runs through a large portion of this survey; it is a nice stream." Surveyor Evans says of the township of Sheen (page 319): "Fish abound in all the large lakes. The varieties consists of pike, pickerel, bass and trout, chiefly." Surveyor Russell says of the Upper Ottawa country (page 419): "The main Ottawa seemed to be well stocked with fish of various kinds. The principal seen of the larger or finer as food were: mas-kinongé, pike, pickerel, bass, sturgeon, white fish, *atanabit* of the smaller or

inferior kinds, gold-eyes, suckers, dace, catfish and eels; trout are not found in the main stream, but, in some of the tributary lakes, they are got in abundance and of the finest quality. Some animals are not plenty and the fur-bearing ones but moderately so, being pretty well kept down by the native hunters trapping for the Hudson Bay Company. Moose and caribou are the representatives of the deer tribe, but in small numbers—nothing like what may be found in the St. Maurice or more eastern territories. The principal furred animals are, on land: bear, lynx, fisher, fox and marten; those frequenting the water: beaver, otter, mink and muskrat. Of game birds and wild fowl, there are the ruffed partridge and the Canada goose, rarely, the ptarmigan, ducks of various kinds, bitterns, occasional geese and very rarely swans."

MONTREAL DIVISION.

This division, so called because it is more accessible from the city of Montreal, which is its chief centre, includes the counties of Argenteuil, on the Ottawa, Montcalm and Joliette.

Argenteuil County, which is within easy distance of Montreal by the Canadian Pacific Railway, is watered by the Rouge and North rivers, besides several minor streams and tributaries, and embraces a number of fine fishing lakes in its rear townships, such as the Trembling Mountain lake and lake Gauthier, in Grandison; lakes à la Truite, Nantel, Carré au Castor, au Caribou, de la Baie, Manitou, de la Rouge, Cornu, Hélène, à la Petite Truite, aux Quenouilles or Wolfe, in Wolfe; lakes aux Ecorces, Sanon, David and des Seize Milles, in Montcalm; lakes St. Joseph, St. Denis and Ste. Marie, in Howard; and lakes Morin, Ste. Agathe and aux Sables, in Beresford. Some of these are leasable and not a few of them are of considerable dimensions. Surveyor Quinn (page 5) says of the portion of the township of Montcalm, which he surveyed: "It is well watered with living streams and some lakes of pure water abounding with speckled trout and other species of fish; beaver in these lakes and streams are more numerous than in any other part. I have also seen many otter, mink and other species of amphibious animals and the woods abound with the moose, caribou, deer and many other animals, affording a profitable pasture to the settler, trapper and hunter." Surveyor Barnard (page 9) says of the inland waters of Wolfe: "In the part of the township of Wolfe, which I have subdivided, there are, in addition to fifteen small lakes, five or six others whose area varies from thirty to a hundred acres. Lake Wolfe (nin

miles in circumference) alone covers a surface of several hundred acres. The abundance of trout which these lakes contain may be of great help to settlers and fishing for them has already been turned to profitable account by parties settled in the adjoining township. These lakes are likewise remarkable for the clearness and freshness of their waters, which attain a considerable depth in some places." Surveyor Leclerc (page 12) states that "trout abound in all the lakes of Wolfe." In 1880, the Federal Government's fishery overseers, for the Argenteuil Division, reported: "The principal kinds of fish frequenting the waters of this division are the speckled and grey trout (of which 5,000 lbs. were taken during the season), herrings, black bass, &c." Surveyor McMartin (page 453), who reported as late as 1887 of the river du Diable, which takes its rise in Grandison and extends through Wolfe to its source, in the county of Montcalm: "To those who are in search of sport, I can safely say that the country on the river du Diable is a veritable hunter's paradise, where the forest teems with game, and trout, bass, pike, perch, pickerel, &c., fill the rivers and lakes with moving things. Their only enemy is the otter, which is often more destructive to the finny tribe than the seine, spear, &c. Different kinds of game, such as the moose-deer, caribou and red deer are plentiful, and roam free and undisturbed in these quiet forests. They are actually so tame that they know not the fear of man, and can be approached easily to within a few yards. Small feathered game is not plentiful. Of fur-bearing animals, the bear, otter and mink are numerous. Beaver is almost extinct. The abundance of game on this river is due to the absence of the lumberman, the sound of whose axe has never been heard in those parts. The Indians, I am sorry to say, are now almost totally extinct on the Rouge and its tributaries; the country has thus retained its primitive character."

Montcalm County, situated in rear of Argenteuil, Two Mountains, Terrebonne and L'Assomption, contains many excellent lakes which are the headwaters of streams flowing towards the Ottawa, the St. Maurice and the St. Lawrence. Among these may be mentioned lakes à la Truite, in Chertsey; de l'Original and Ouareau, in Chilton; Ouareau, Vasoux, Croche, Pembina, Provost and Archambault, in Lussier; de l'Original, Archambault, Minette, à la Quenouille and Black Mountain, in Archambault; Brule, in Doncaster; and Long, Beaulieu, Ile du Pin, Wright, Catherine, Helene, Pope, Daly, aux Sapins, aux Brochets, des Cornes, Chaud, Tapanee, &c., &c., in the unorganized territory beyond the townships: Some of these are leasable. Surveyor Quinn says of the townships of Archambault and Lussier (page 260): "The magnificent lakes of pure water are abundantly

stocked with speckled trout, and amphibious animals are numerous around the lakes and inlets and furnish valuable furs." Surveyor Regnaud says of the township of Doncaster (page 260): "There is a considerable number of lakes and streams. The lakes are generally deep, clear and limpid, and their aspect is altogether agreeable." Surveyor Temple says of the lakes in the rear of Montcalm (page 454): "The lakes abound with trout, maskinongé, pike, white fish, doré and carp."

Joliette County.—Among the good fishing lakes in this county, may be mentioned lakes Cherrier and des Pins in Cathcart; Two Mountains, Croche, Provost and les Trois Sœurs, in Cartier; à la Truite, in Joliette and in the unorganized territory in the rear, lakes L'Assomption, des Islets, McLeland, du Diable, Rat Musqué, des Baies, Grand Lac, Maisonpierre, Bouleau, Rouge, Mattawin, Jobin, Croche, St. Servais, St. Grégoire, &c. Surveyor Quinn (page 241) says: "Speckled trout are numerous in most of the lakes, and L'Assomption river abounds with all species of fish."

THREE RIVERS DIVISION.

This division, with the city of Three Rivers as its centre, comprises the counties of Berthier, Maskinongé, St. Maurice and Champlain, and is famous for the great number and superior character as fishing water of its numerous lakes and streams tributary to the St. Maurice river.

Berthier County.—Lakes Long, Blanc, Clair, La Croix, Caribou and St. Rose, in the township of Gautier; David, St. Anselme, Remi, St. Pierre, Robert and Croche, in Courcelles; St. Louis, Obompwasin and St. Stanislaus, in Provost; Des Pins, in Brassard, and Long, in de Maisonneuve may be ranked as among the best fishing grounds in the rear of this county. Surveyor Laurier (page 41) says of Provost and Brassard: "There are also numerous lakes abounding in very fine trout and other fish."

Maskinongé County.—The rear townships and the unorganized portion of this county are dotted with a vast number of excellent fishing lakes and connecting streams, such as lakes aux Ecorces, Carufel, à la Truite, Noel, du Camp, au Violon, à Deux Etages, au Tonnerre, Willy and Bleu, in the township of Chapleau; Saccacomi in Decalonne, and lakes Sans Bout, des Sables, au Cordon, Grand Lac des Iles and Chamberlin, &c., in the unorganized territory. Surveyor de Lachevrotière says of the waters in Chapleau (page 251): "The lakes are well stocked with fish. I took some excellent trout in the lake aux Ecorces." Surveyor LeBer, says (page 464):

“ Except in the streams connected with lake Sorcier, Grand Lac des Isles and lake Sans Bout, there is a surprising abundance of small trout in this part of the river du Loup, but no other fish. Besides roaming animals, such as mink, otter and others, there are considerable numbers of beaver in the river du Loup. If the hunting of beaver were prohibited for ten years, the number of these animals would increase prodigiously. ” Some of the lakes in this county are actually under lease. In 1886, the guardian of some of these lakes reported as follows : “ Lakes Willy, Tonnerre and St. Bernard, are all well stocked with small sized trout, of from a quarter to a half pound ; the trout in Lake Saccacomi are much larger, reaching from three even to six pounds, but are not so plentiful as those in the other lakes, owing to the excessive fishing to which they have been subjected, winter and summer, for some years past. Doubtless Lake Saccacomi will soon recover its former condition, now that it is well protected. ” During the same year, the lessees of these lakes reported their season’s catch at 3,580 trout, weighing 1,750 lbs. average weight $\frac{1}{2}$ lb ; largest fish 6 lbs. In 1887, the club reported the trout steadily increasing and a catch of 1,896 trout, weighing 948 lbs, and last year their catch was reported at 1,795 trout, weighing 897 $\frac{1}{2}$ lbs. They pay a rental of \$50.

St. Maurice County.—The fishing lakes and streams in this county are also numerous and in high repute. Among them may be specified lakes à l’Eau Claire, in Caxton ; Pizagonque, des Pins Rouges, à l’Isle, à la Coureuse, in Belleau ; Grand Lac Souris, in Shawinigan ; des Chutes, aux Chantiers and Pembina, in Desaulniers, river à la Chienne, &c. Surveyor Barnard (page 466) says : “ The river à la Chienne is famed for its pike and trout fishing. As for pike, I was unable to note their existence here, as I had occasion to do on a preceding expedition, at another point on the Matawin, where I saw some of these fish taken, weighing 15 lbs. and pickerel of 10 lbs ; but I do not doubt that lac au Brochet (Pike lake), which figures on the plan of this tributary, was thus named for good reasons. As for trout, I have seen them taken in great lake à la Chienne, weighing 10 lbs. and in abundance. ” Mr. Mackedie, who, in 1885, inspected part of the lake country lying in the angle formed by the confluence of the St. Maurice and Matawin rivers, and actually under lease, reported as follows : “ Some three miles from St. Elie, on the banks of Lake Long, stands the Winchester Club House, originally built by Mr. Parker for a summer residence, at an expense, for house and grounds, of about \$6,000. From the Winchester Club House we proceeded through lake Long, lake de Gauvreau, lake Vert, lake de Joe, lake à Bellemare, and over the intervening

portages, coming out on a country road. I did not test any of these lakes, as most of the lands about them are granted and they are not understood to be available for leasing. From the last lake above mentioned, we drove to lake Pizagonké, one of the group leased to the Shawinegan Club, and near the foot, or south end of which, the Club have placed their headquarters. The establishment of this Club consists of the club-house, sixty-two feet in length; ladies' house, twenty-eight feet square; barn, thirty-six feet by thirty; boat-house, forty feet long, besides thirty arpents of land cleared, most of it already under cultivation. The Club have likewise built a wagon road from the settlements to the lake, six miles in length, at a cost of \$600, besides cutting out three miles of portage roads between lakes and making other improvements. They claim to have expended over \$5,000 in this connection and are anxious to procure a grant of 300 or 400 acres of land for cultivation, grazing and other purposes of the establishment. The lakes leased to this Club lie in the unsurveyed portions of the townships of Belleau and Desaulniers. The most important are lake Pizagonké, about 8 miles long but very narrow: en Croix, shaped as its name indicates, about a mile across; des Isles, two miles long; Rond, barely a mile in diameter; Little, three quarters of a mile; Brodeur, two and a half or three miles; Caribou, three miles or more; aux Isles, about two miles; Croche, something over a mile; Gauthier, rather smaller, and Antikiamak, generally called "Yagamak," three miles long. The last mentioned contains pike, pickerel, loche and chub. We caught several of the first named by trolling, weighing from 1 lb to 8½ lbs. The other lakes are all fairly well stocked with speckled trout, which are understood to have increased considerably in numbers during the last three years, that is to say, since these waters have been under lease to the Shawinegan Club and known to be protected. The fish in Pizagonké appeared to be of rather small size, averaging about five to the pound. Those in the others or Shawinegan lakes run larger, in some cases reaching 3 lbs. From the foot of lake "Yagamak" it is only a short distance, say 10 minutes' paddling, to the Matawin river, in which pike of much larger size than those in the lake seem to abound, one of 20 lbs having been killed by one of our party during a short time on the water before breakfast." In 1887, the guardian of the Shawinegan Club's lakes reported as follows: "Abundance of trout, grey and speckled; also numbers of pickerel and pike. The catch of this year was in round numbers about: 12,000 lbs. of trout; 2,000 lbs. of pike; 2,000 lbs. of pickerel, (*doré*)." This Club pay an annual rental of \$100.

Champlain County. — The lake and river system of this county is very extensive and embraces some of the best fishing waters in the province,

which are rendered more or less accessible by the great river St. Maurice and its many tributaries, including the Matawin, Rat, Vermillion, Flammand, Ribbon, Manouan, Mekinac, Petite and Grande Bostonnais, Croche, Pierriche, Tranche and Windigo, as well as by the Batiscan river, the Piles and Basses Laurentides Railways from Three Rivers, and the Lake St. John Railway from Quebec. Among its lakes may be enumerated the following: Mekinac, Caribou, Lafontaine, Vincent, Long, Archange, à l'Ours, Pêche, Clair, Français, Fou, Dawson, à la Truite, au Sleigh, Batiscan, Dickey, Masketsy, Roberge, aux Isles, Travers, Dussault, à Beaujour, Gilardeau, Alex, Long, du Centre, au Lard, Brûlé, à la Loutre, Castor, Wayagamack, Great and Little, à Boucher, du Raccourci, Ecarté, Kempt, Sasamaskin, Grand Lac des Cinq and an infinity of others. Some of these bodies of water are very extensive; among others great lake Wayagamack, which is 11 miles long and 3 wide, and, according to Surveyor DeLacheyrotière (page 83), "teems with fish, the trout being of excellent quality." Surveyor Casgrain says of the section extending from Mekinac township to the island of lake Edward: "It is intersected with steep mountains and lakes, of which some are very large; they are generally deep and full of fish." Surveyor Blaiklock (page 469) says the country extending from La Tuque towards Lake St. John, is "well watered by streams and innumerable small and large lakes." Surveyor Gagnon (page 472) says the lakes of the river Trenche "abound in fish." Mr. Mackenzie, who officially inspected a portion of the lake country of this county, in 1885, reported as follows: "I paid a flying visit to a few of those leased to Mr. Wm. Parker, for the Laurentian Club. The country within which these lie may be described as bounded on the south-west by the line between the counties of Champlain and St. Maurice, on the north-west by the river Matawin, on the north and east by the river St. Maurice, and on the south-east by the Pêche lakes, and comprises an area of one hundred and fifty square miles. These lakes are divided into four distinct groups. The most accessible are the Pêche lakes and tributaries, some twenty-five or more in number, which discharge their waters into the St. Maurice, through the Pêche river, about six miles above the Piles Railway-station. The first and second Pêche lakes, as they are named on the official maps, are about three and a half and two and a half miles long, respectively, with a short stretch of broken water between them. They are well stocked with lake-trout of large size, some that I caught weighing between four and five pounds. These are not found in any of the other lakes of the system. They also contain perch of over a pound in weight, and watassee, another scale-fish, something like a small herring, besides gudgeons or chub, and redfinshiners, which serve as

food for the larger fish. A substantial log house has been built on the first lake for the accommodation of members of the club. The third and fourth Pêche lakes, otherwise called lac Clair and lac du Français, pretty little sheets of water, each about two-thirds of a mile across, appear to be quite distinct from the larger lakes. They swarm with speckled trout, though I believe they have undergone a good deal of poaching. I was informed that nine hundred pounds weight of fish had been taken from them last winter. These lakes are less than two miles from the St. Maurice river, and not more than five miles from the Piles Railway station above mentioned. A Government road, locally called the Dubord road, over which I passed in approaching the first Pêche lake from the Shawinegan river, runs close by a tiny lake-let called lac des Vases, which appeared to be fairly alive with trout of small and medium size. Lake des Isles or la Truite, which I also took on my route, lies close to the first lac de la Pêche, on the west. This is a lake of considerable size, being nearly, if not quite, two miles in diameter. Its waters are remarkably bright and clear, and contain numbers of large speckled trout as lively and gamey as any angler can desire. These five, Truite, first and second Pêche, Clair and Français, were all the lakes of the Pêche group that I examined. They alone would, in my opinion, well repay the trouble and expense of a trip to visit them. Another group of lakes, named after the central and largest one, which is called very appropriately lake Fou, lies some distance to the north of the Pêche group. It is much more difficult of access than the latter, though very probably a shorter and easier way of reaching it than that by which I was conducted to it may be found. The route I followed was by way of creek Fou, which falls into the St. Maurice about six or eight miles above Des Piles; creek Bouchard, which runs into creek Fou; a portage of two miles over a winter road; then along several short stretches of creek Fou again, with intervening portages, to the lake itself. The total length of the portages, over which the canoes, tents, provisions, &c., had to be carried on the men's backs, was above six miles; and as two trips had to be made at each landing, the men had to walk more than eighteen miles, carrying heavy loads for twelve miles. The best part of two days was occupied in going in from Des Piles to lake Fou, but a day sufficed for the return trip, on account of the route being known and the weight of provisions somewhat reduced. Lake Fou is about four miles long, and of very irregular shape. Its most remarkable features are the number of deep bays which radiate in all directions from the main channel, and the near approach of the opposite shores at several different points, affording, to a person seeing it for the first time, a succession of surprises, as each new portion, previously unseen,

comes into view. It is, however, chiefly worthy of notice in this report on account of the number and size of the speckled trout it contains. The average weight of those taken while I was there, early in the season, was fully a pound ; some of them weighed over two pounds. I have since been informed that the average of some caught later in the season was considerably larger ; of sixteen fish, not one was less than two pounds in weight. The other lakes of this group, according to the information given me, are some eighteen in number, and all are well stocked with trout of the same species. Owing to want of time, I could not visit any of the lakes in the other two groups, but with Mr. Parker's assistance, I gathered information respecting them to the following effect : A group on a stream called the McLaren creek, falling into the Shawinegon river, numbers five lakes, all alive with brook trout. In two of these lakes, Brulé and Fruite, the fish run from one to four pounds in weight. The lakes of the fourth group, some seventeen in number, are known as the Cinq lakes (Lacs des Cinq.) Their waters flows into the Matawin river, about five miles above the junction of the latter with the St. Maurice. They are said to be unrivalled with regard to the numbers of speckled trout they contain. If any reliance may be placed upon the statements of men who have spent much of their time in the woods in connection with lumbering operations, it would appear that the country north of the Matawin is dotted with innumerable lakes, all well stocked with trout, and in some instances containing fish of remarkably large size. From a man who had been a foreman in Mr. Baptist's employ, I obtained some circumstantial details, as follows :—On the Petit Castor stream, which falls into the Matawin at a place called Tête des Cinq, there are eight lakes, the first large one being four miles from the Matawin. On the creek de la Truie, two small lakes. On the creek de Houle, four lakes. On the river Castor Noir two lakes. On the creek Prudent, falling into the Castor Noir, two large lakes, two miles and four miles long, respectively ; on another branch, Lac Clair, containing large trout ; and on yet another, Lac Long, three miles in length. These seem to be only a few of the lakes lying within ten or twelve miles north of the Matawin and west of the St. Maurice. East of the St. Maurice, the lakes appear to be equally numerous. With a steamboat running on this river between Des Piles and La Tuque, and stopping at convenient points, this district only requires to be brought into notice, to become the resort of hosts of anglers, who for many years to come would find all the fishing they could desire within easy reach of the river, in the midst of scenery unsurpassed for beauty, and at much less expense than is now entailed by a short sojourn in the Adirondacks or the lake region of the State of Maine." In 1886, the

local guardian officially reported lakes Roberge, Masketsy, &c., "full of fish" and in 1887, the official report respecting lakes des Cinq, Fou, à la Pêche, &c., was as follows: "These lakes contain brook and salmon trout; only one contains grey trout. The number of these fish is astonishing." In 1888, the Laurentian Club reported their catch in the last mentioned lakes at 3,500 trout and their largest fish at 3 lbs weight. In the Pêche lakes, the largest fish caught weighed $7\frac{1}{2}$ lbs. For the two sets of lakes, the Club pays rentals of \$50 and \$75. The other clubs, which have leased lakes in the same county, pay rentals varying from \$100 to \$10.

QUEBEC DIVISION.

This division, which comprises the extensive counties of Portneuf, Quebec and Montmorency, and has the city of Quebec, the capital of the Province, as its great centre, is the one actually most in favor with the angling fraternity. This is due to the fact that it is traversed throughout most of its length by the Lake St. John Railway, an excellent road now equipped with all the requirements and comforts of modern travel, which has opened up and rendered more or less accessible on both sides of its line, a vast region among the Laurentian mountains, famous for the grandeur of its scenery and actually teeming with lakes and rivers hitherto locked up in the wilderness and absolutely swarming with the finest trout, pickerel and other game fish. A number of local and other clubs, as well as private parties, have leased some of the most accessible lakes and streams along the railway and made considerable improvements, erecting club-houses, cutting roads, &c., and applications from wealthy American and other sportsmen are pouring in daily for others, but the extent of splendid fishing water in this district is so immense that it will satisfy the demand for many years, while the expiration at an early date of the actual leases will, no doubt, throw much presently taken up again upon the market:

Portneuf County.—This county, which is watered by the rivers Jacques Cartier, St. Anne, Batiscan, à Pierre, Noire, Mequick and their numerous branches, which cover it like a network, contains a host of fine lakes, many of them forming connected systems of twenty, thirty and even fifty which may be leased together. Among these bodies of water, may be mentioned the following: Lakes Sept Isles, à l'Isle, Vert, au Chien and à la Truite, in Gosford; Hauteur, Petit Batiscan, du Coin, Grande Chute, du Ruisseau, Portage, St. Joachim, au Renversi, in Rocmont; Bon Lac and Blanc, in Tonti; Clair, Belleau and Bellevue, in LaSalle; des Sables and George,

in Chavigny : Montauban, Carillon, Blanc, Richard, Long, Clair, Simon, Bleu, Auguste, &c. Surveyor Proulx (page 487) says of Long lake, 5 miles long by 1 broad, at the head of the river Noire: "It abounds with excellent fish." Surveyor Fafard (page 494) says of the north branch of the river Ste. Anne: "The settlers to whom I had occasion to speak told me that, during the summer, the river abounds with fish, and that trout are taken in large quantities, but generally of small size. I was also informed that a New-York gentleman, a painter, it appears, named Grace, was so charmed by the beauty of the site and the attractions of the place that he purchased a property at the "Forks" and has come there with his family to spend the fine season of the last two years. The great number of lakes and their proximity to each other make this a magnificent country for fishing and hunting." Surveyor Lefrançois (page 486) says of the lakes on the river Mauvaise: "Most of these lakes are very picturesque and, generally speaking, abound with fish (trout and gudgeon)." Last year (1888) the lessee of Petit Lac Batiscan reported his catch at 3,050 trout.

Quebec County.—This county, which is watered by the St. Charles, Jacques Cartier, Ste. Anne, Batiscan and a multitude of minor streams, also includes an infinity of lakes, large and small, among others, the famous lake Edward, some 20 miles long, so deservedly praised by "Adirondack" Murray, Kit Clarke and other sporting writers, for its beauty, and the abundance, great size and gameness of its magnificent speckled trout, Great Lake Batiscan, with its speckled trout running up to 7, 8 and even 10 lbs. weight; and Kiskising or Cedar Lake also in high repute for its extraordinarily heavy trout and pickerel, some of the latter running as high as 15 lbs. The first and last named are tapped by the Lake St. John Railway and the second by canoe and portage over a distance of 14 to 15 miles from the line. Among the other famous sheets of water, more or less accessible from the railway, may be included the following: Moise, Croche, aux Rognons, Marteau, de l'Isle, des Passes, Pearl, lake and river aux Rats, au Canot, aux Canards, aux Becscies, Clair, à la Croix, aux Biscuits, Travers, Trois Cariboux, Long, Brûlé, Hugh, à la Place, aux Chicots, Metascouac, des Iles, Carcajou, de Males, Naquagami, Kamamintigongue, Kakisksagamack, Bostonnais, St. Henri, Hugh, Mirror, au Rat, Baptiste, de la Montagne Brûlée, L'Etoile, de la Hauteur, de la Pluie, Najoualank, du Coin, aux Brochets, &c. Surveyor Casgrain (page 524) says: "For the first eight miles above lake à la Place, with the exception of two rapids, the river, swarming with trout, winds with an almost imperceptible current, through magnificent natural meadows, where wild hay grows luxuriantly, affording splendid feeding

grounds for the moose and caribou which abound in these parts." Surveyor de Lachevrotière (page 525) says: "Most of the lakes met with on the course of the survey swarm with fish; red trout is abundant, especially in lakes aux Biscuits, Travers, Trois Cariboux, Brûlé, &c., &c., judging from the results of the fishing trials I made in passing." Lakes Edward and Cedar Lake are presently leased to the Lake St. John Railway Company at rentals of \$100 each, and are open to the public on payment of a small fee. The Stadacona Fish and Game Club pay \$100 a year for lake and river aux Rognons, &c.; the Laurentides Club a similar amount for lakes Long, des Isles, Vert, &c., \$105 are paid for Great Lake Batiscan and smaller amounts for some of the other lakes actually under lease. There is an excellent modern hotel at lake Edward.

Montmorency County.—The leasable lakes and streams of this county are less accessible than those of the other sections of the Quebec Division—there being no railway—but for the same reason they are likely to much longer retain their high reputation. They include the upper reaches of the Jacques Cartier river and Great Lake Jacques Cartier at its head both famous for the abundance and large size of their trout; Snow lake, at the head of the Montmorency river, a large sheet of water difficult of access except in winter, but noted for the abundance of its speckled trout and heavy lake trout, as well as for the herds of caribou which roam the woods around it; Grand and Petit Lac à l'Épaulé, lakes Regis, Noël, au Foin, Grand Lac à la Chute, des Sept Isles, Vert, Petit Lac Malbaie, des Roches, &c. This county is traversed by the old colonization road from Quebec to Lake St. John, which has, however, fallen into disuse since the construction of the Lake St. John railway.

LAKE ST. JOHN DIVISION.

This division comprises the extensive counties of Chicoutimi and Charlevoix:

Chicoutimi County, which is one of the largest territorial divisions of the province, extending from the 48th parallel of latitude to the Northern Height of Land and having an estimated area of 15,206,355 acres, contains a greater body of inland waters than probably any other district of the same extent in North America. It is drained by Lake St. John, which is almost an inland sea, and by a large number of rivers, among which the principal are the Saguenay, the Chamouchouan, the Peribonka, Mistassini, Mistassibi,

aux Rats, Wassiemska, Great and Little Peribonka, Shipshaw, Valin, Ste. Marguerite, Bersimis, Little Saguenay, St. Jean, à Mars, Canard, Noire, Metabetchouan, Ouiatchouan, Ouiatchouanische, LaBelle, aux Ecorces, Pikauba, Upika, Upikauba, &c., and their branches ; and is traversed for a considerable distance by the Quebec and Lake St. John Railway and by a multitude of waggon and logging roads, as well as by steamers in summer from Quebec to Chicoutimi, the county town. The settlements are chiefly confined to a narrow strip around Lake St. John and down the Saguenay river. All the remainder is still in a state of wilderness and is the property of the Crown. Part of this vast territory has been surveyed and laid out into townships, but the residue, which embraces by far the largest portion of the county, is still unorganized. The number of its lakes and streams, large and small, most of which abound either with the famous ouinaniche or the finest brook and lake trout, pickerel, pike, &c., and have never been fished, is almost incalculable, and many of them are nameless. Among those which are most accessible may be enumerated the following : Quakamaksis, a considerable lake, actually leased at \$10 and which yielded last year, 1,282 trout weighing in all 403 lbs. ; Ecarté, leased at \$25 ; Caché, des Grandes Oreilles, all to the westward and within easy distance of the lake St. John Railway ; aux Rats, à la Passe, au Portage, St. Paul, Ouitouche, Long, aux Cariboux, and Carcajou, in the township of DeQuen, which is traversed by the railway ; Commissioners', 21 miles long, leased at \$30 ; Bouchette and Ouiatchouan, in the township of Dablon, also traversed by the railway ; Amabilish, des Cèdres, and the great and little lakes of LaBelle Rivière, easily reached from the Metabetchouan river or the colonization road to Quebec ; St. Croix, in the township of Caron ; Vert, in the township of Mesy ; Kaskouia, Clair, Long, Henri and Kenogami, in the township of Kenogami, the last named 25 miles long ; Grand Lake Ha ! Ha ! Little Lake Ha ! Ha ! ; Santa, à la Belle Truite, à Menard and Huard, in the township of Boileau, easily reached by the St. Urbain road ; St. Jean, in the township of Brebœuf ; à Johnny, in the township of Lallemand ; Otis, à Garth, Long, à la Balle, des Islets and Rond, in the township of Otis, which is traversed by the St. Agnès road ; de la Décharge and Rouge, in the township of St. Germain ; des Monts, in the township of Labrosse ; à Fortin, à Gagnon and Ste. Marguerite, at the head of the west branch of the river Ste. Marguerite ; à Roger and à Bouchard, in the township of Harvey ; Charles and Tortue, in the township of Falardeau ; LaBonté, Chabot and Vert, in the township of Bourget ; aux Brochets, in the township of Taché ; Ouatcheway and Pomouscachiou, at the head of the river Shipshaw ; Yshitagama, on the Grand Peribonka river ; de l'Ouest, des Pins, des Cyprés and à l'Isle Blanche, on

the Little Peribonka ; aux Rats, on the branch of the Mistassini of that name ; des Portages, Netsagamu and Kawashagami, on the Wassiemska, branch of the same river ; aux Rognons, à la Croix, Clair, à François, à Côté, Potowegami, Witouche and Meshusk, on the Salmon branch of the river Chamouchouan ; Pimoka and Dufferin, in the township of Dufferin ; and Portneuf, Emmuraillé, Bois Vert, Brûlé, de l'Ouest, des Monts, Milanikiche, au Pecan, aux Islots, au Renard, des Iles, Ile Verte and Grand Lac des Baies, at the head of the river Bersimis. Surveyor Gagnon says of the lakes in the township of Boileau (page 110) : " They abound with trout." Surveyor Dumais says of lake St. Jérôme, in the township of Caron (page 117) : " This lake, which is well stocked with fish, discharges its waters by a branch of the river Couchepegamish." Surveyor du Tremblay says of the lakes and streams in the township of DeQuen (page 129) : " The lakes generally abound in fish." Surveyor Gagnon says of the lakes in the township of St. Germain (page 174) : " All the lakes which I met in the course of my survey abound with fish, trout and eels predominating." Surveyor du Tremblay says of the waters in the township of St. Hilaire : " These lakes and rivers abound with fish." And at page 540, of the river Shipshaw : " Game and fish of all kinds abound all over."

Charlevoix County, which fronts on the St. Lawrence and has the famous watering place, Murray Bay as its centre, is accessible from Quebec by tri-weekly steamer, as well as by waggon road. It contains a considerable number of good lakes and streams ; among others lakes de l'Escarpe, des Cariboux, Double, du Chemin de Canot, de l'Enfer, André, de la Souris, à Main, Porc-épic, de la Belle Truite, des Martes, du Cran, de l'Equerre, Grand Malbaie, Castor, des Isles, la Galette, Antoine, Malfait, Long, Pointu, Pied-des-Monts, Larouche, des Cèdres, des Sables and des Marais, all more or less accessible from the St. Urbain and des Marais roads ; lakes des Ilots, au Plongeon, Noire and Jacob, in the township of Chauveau ; lakes Gauthier, Port aux Quilles, du Cap, de la Grosse Truite and Baie des Rochers, in Callières : aux Canards, in Saguenay, and à David, in Dumais. Surveyor Gagnon (page 96) says of the lakes in Callières : " All the lakes in this township are well stocked with fish and full of trout." The same, no doubt, may be said of most of the others, many of which have never been fished.

SAGUENAY DIVISION.

This immense division, extending from the north-eastern boundary of the county of Chicoutimi to the eastern extremity of the province, at Blanc

Sablon, takes in the whole of the territory known as the North Shore, below the river Saguenay—an almost complete wilderness—better known on account of its salmon and sea-trout rivers than of its lakes, which are, however, innumerable and many of them of great size. They literally teem with the finest fish, especially trout of the different kinds, but their remoteness and difficulty of access will, no doubt, leave them undisturbed for many years to come. There is, however, a certain number, within easy and accessible distances from Tadousac, which are well worthy of present attention, such as lakes Charles, des Isles, Russell and à la Boule, in the township of Albert; Long, à Gobeil, des Sables, à Patrice, Petit and Grand Bergeronnes, à Bas de Soie, Caribou, de la Rivière à Polette, Chatigny, à Boulanger, des Escoumains, Corbeau, aux Perdrix, Parent, à la Truite, Raymond, &c.

GASPÉ DIVISION.

This division, which comprises the counties of Gaspé and Bonaventure, and forms what is known as the Gaspé Peninsula, stretching from the Gulf of St. Lawrence on the one side, to the Bay des Chaleurs on the other, is not less famous for its trout lakes than its salmon rivers. The interior of the peninsula is dotted with them and their connecting streams, but, though both counties are easy of access by the Intercolonial Railway, as well as by waggon roads and by steamers from Quebec and Dalhousie, the inland waters can only be reached at present by ascending the rivers from the coast, which is, however, as a rule, easy, most of these rivers being without serious obstruction from their mouths to their head-waters. Among those which are accessible in this way are a fine group at the head of the Magdalen river and another at the head of the river Ste. Anne des Monts, in the county of Gaspé; lake Chasseur, on the east branch of the Nouvelle, lakes à la Truite and Trois Saumons, on the Little Cascapedia; and lake Cascapedia, on the Grand Cascapedia, in the county of Bonaventure. The latter county also contains the famous Matapedia, Casupscull and Salmon lakes. Surveyor Legendre (page 59) says of Matapedia township: "Besides the fertility of the soil, I admired three pretty little lakes forming the source of the south east branch of the Gleaden brook. These small lakes are full of trout. The growth of wild hay all around them is very tall, and through it may be seen the tracks left by the moose and caribou which feed there, it seems, during the night." These are a sample of most of the other lakes in the same region.

SOUTH SHORE DIVISION.

This extensive division comprises all the South Shore counties stretching from the St. Laurence to the New Brunswick and United States, boundary lines and ascending from the Gaspé Peninsula to Levis, opposite the city of Quebec, viz: Rimouski, Temiscouata, Kamouraska, L'Islet, Montmagny and Bellechasse. These counties are traversed by the Intercolonial and Temiscouata Railways, as well as by a multitude of waggon and logging roads, which facilitate access to the numerous lakes and streams in the unsettled districts:

Rimouski County.—This county, one of the largest in the province, is watered by the Rimouski river and its numerous branches, as well as by many other streams, and includes a large number of splendid fishing lakes in its rear townships; among which may be ranked lakes Rimouski, Taché, Vingt-Quatre Arpents, des Truites, des Baies, du Diable. Otter, Eagle (lake and river) Macpés, Grand and Petit Neigette, Tinette, Beau, Chicots, Ferrée (lake and river) Noir, Rodier, Mistigouche, des Isles, Humqui, Malcolm, du Portage, à Johnston, La Truite, Petit and Grand Matane, &c., &c. Surveyor Garon (page 340) says in his report of the survey of the township of Flynn: "The centre section surveyed by me is well watered; it is crossed by many streams, and dotted with lakes in great number, of which the largest and most important is lake Taché, which is very deep and abounds with fish. The other lakes are also well stocked with fish, among others lakes Lunette and Depot in Macpés, and lake Pierre in Flynn, which last one empties into the river Neigette, which in turn discharges into the river Métis." Surveyor Roy (page 341) says of the township of Humqui: "In the interior of the township of Humqui, there is a number of small lakes generally abounding with fish. These lakes are the source of a number of brooks which flow through the township in every direction." Surveyor Lepage (page 759) says: "The lakes within this territory (Rimouski) abound with fish, the red trout being the only kind, so far as I was able to prove; nevertheless, salmon were seen to rise in the Grand lake of the east branch of the Patapedia; in Big Humqui lake, white fish, suckers and lunge (touladi) are taken; the other little lakes in the interior contain fine large trout. There are also lunge (touladi) in the lake à Côté, one of the sources of the river Sifrois, and in the still waters of Mistigouche, which contain numbers of trout." Surveyor LeBer (page 762) says: "The river Noire has a varying width of 30 to 50 links. Its banks are low. Spruce and cedar predominate. It takes its rise in the lake of the same name. This

lake is pretty large and encloses a good-sized island." Only a few of the lakes in this county are under lease.

Temiscouata County.—The rear section of this large county contains a number of fine fishing lakes open to lease and very accessible. Among its inland waters may be mentioned the following: The three Squatook lakes; lakes des Sauvages, McLean, des Islets, Sept Lacs, St. Hubert, Des Fourches, des Roches, St. John, St. François, Mernimticook, Baker, Long, &c., besides the rivers Trois-Pistoles, Boisbouscache, aux Sapins, aux Bouleaux, aux Perdrix, St. Francis, Cabano, Blue and Baker river. Surveyor Têtu (page 378) says: "The Baker river, which discharges into lake Mernimticook and thence into the river St. John, is a very pretty little stream with a sandy and rockless bed, and without falls, but, in certain places, with a rapid and shallow current, which renders it navigable only by canoes. The lakes, which empty into it, are deep and, as they are full of fish, would be of great assistance to the settlers locating in these townships, if their finny wealth was not in great part destroyed in summer by poachers from New-Brunswick, who ascend this river armed with nets and *negogs* and commit irreparable havoc among the large red and white trout. The so called fishery guardians do not seem to pay any attention to this great wrong, as not one of them has yet taken the trouble to pay this place a visit, though one is imperatively demanded." Surveyor Fournier (page 379) says of the township of Raudot:—"It is seldom, on the south side of the St. Lawrence, and on so small an extent of land as that surveyed by me in Raudot, that so many lakes occur. I was told that there is another pretty large one, on the fourth range, towards the lots numbers twelve and eighteen or twenty, but I did not see it. Lake St. John is generally deep, although the lands, on both sides, near the lake are level or gradually sloping. There is a great deal of fish in this lake; we caught three kinds—white fish, of which some measured from fifteen to eighteen inches in length, pickerel and trout. They say there is a fourth kind, but we did not catch any. The small lake which discharges into the river Boisbouscache, on the lots numbers three and four of the third range, contains, they say, a great deal of trout; we did not fish there." The Squatook lakes and some of the others named are also famous for the abundance of their large red trout.

Kamouraska County also contains some excellent fishing lakes, among which may be mentioned lakes Pohenegamook, (a considerable body of water,) de l'Est, Ste. Anne and Noir

L'Islet County.—This county contains but few lakes of note beyond the seigniories

Montmagny County.—The majority of the lakes in this county are small, the only one of any importance being Frontier lake, in the township of Talon, with regard to which surveyor Têtu (page 267), makes the following statement: "This great lake which empties into the river Quam, by a large outlet, is filled with fish called "touladi," trout, white fish and others.

Bellechasse County.—This county is also comparatively destitute of any lakes of much size or value as fishing resorts. Surveyor Lavergue (page 36) says: "The lakes are small and very shallow and contain very little fish, trout being about the only kind to be met with."

EASTERN TOWNSHIPS DIVISION.

The region, traversed by the Quebec Central Railway and comprising the counties of Dorchester, Beauce, Megantic and Compton, with the cities of Quebec and Sherbrooke at its extremities, still includes a number of good fishing lakes and streams, such as Grand and Petit Lac Abenakis, St. Jean and Du Portage, in Dorchester; Young, Miller, Rat-Musqué, Mecanvamaack, Little and Great St. Francis, Fortin and aux Cygnes, in Beauce; Clapham, à la Truite, Black, &c., in Megantic. Surveyor Casgrain (page 213) says of the river Daaquam, in the township of Langevin, (Dorchester): "The river abounds with fish." Surveyor Legendre (page 220) says of Metgermette South (Dorchester): "The lakes and rivers abound with fish." Surveyor Legendre (page 14) says in connection with the township of Adstock, in Beauce: "Trout and Little St Francis lakes are very deep and swarm with fish. Trout abound in the first named and white fish in the second." The Spider and Arnold rivers territory, in the county of Compton, is actually under lease to the Megantic Fish and Game Club, at a rental of \$200.

INDEX TO SURVEYORS AND EXPLORERS.

A

- ALBANEL (Father).—Saguenay to Hudson Bay, 637.
- ALLBRIGHT G. A.—Grandison, 3.
- ALLEN S.—Dudley and Kiamika, 277.
- ARCAND L. A. O.—Caxton, 368; St. Maurice district, west section, 456; do, east section, 456.
- ARCAND L. Z.—Houde, 254.
- ASHE W. A.—Duhamel, Laverlocheres and Guigues, 310.
- AUSTIN G. F.—Wakefield and Templeton, 298.

B

- BARNARD J.—Wentworth, 5; Wolfe, 8; Boucher, 76-77; Lakes and Rivers in Radnor and Cap de la Magdeleine, 464; River à la Chienne, 467; River Matawin and its tributaries, 479.
- BELANGER C. A.—Cox, 50; Metapedia, 65; Risborough, 75.
- BELANGER P. R. A.—Arago, 245; Lessard and Beaubien, 249; Talon, 266.
- BELL R.—Magdalen River, 688.
- BIGNELL J.—Gayhurst, 16-17; Shenley, 29; Upper Ottawa, 433; Upper Lièvre, 443; Outardes, Betsiamits and Peribonka rivers, 593; Manicouagan, Pentecost, Trinity and Godbout rivers, 596; Mistassini expedition, 610; Upper St. Maurice, Gatineau and Ottawa Rivers, 657.
- BIGNELL J.-G.—Ditchfield, 15; Louise, 22; Marlow, 23; Risborough, 28-29; Spalding, 30; Tessier, 356.

BLAIKLOCK F.W.—Chesham, 188; Marston, 196; Woburn, 203; country between La Tuque and Lake St. John, 469.

BOIVIN E.—Ferland, 133; Bergeronnes, 361; Escoumains, 363.

BOUCHETTE C.-A.—Risborough, 25.

BOURGET C.-A.—Port Daniel, 71.

BRABAZON S.-L.—Huddersfield, 315; Mansfield, 317.

BRADLEY J.-A.—Macjés, 344; Matane, 348.

BREEN T.—Beaubien, 246; Lessard, 248; Awantjish, 334.

BUREAU J.—Interior of Gaspé Peninsula, 741.

C

CASGRAIN E.—Armagh, 31; Daaquam, 35; Mekinac to Island of Lake Edward, 92; Langevin, 211-215; Bourdages, 263; Estcourt, 373-374-376; River Metabetchouan and tributaries, 523; Block F, 525; Betsiamits, Outardes and Loup-Marin rivers, 584; River Moisie, 599; River Touladi and tributaries, 763; Cabano and Pohenegamook road, 769; River Noire region, 771.

CIMON A.—Otter Tail river, 434.

CRAWFORD W.—Joly, 280; Ma chand, 285; Ponsonby, 290.

D

D'AUTEUIL L. J.—Bedard, 336; Lepage, 343.

DE LA CHEVROTIERE T. C.—Carignan, 77; Langelier and River Croche, 78; Mailhot, 82; Chapleau, 251-252; Decallones, 252-253-254; Masson, 255; Bois, 324-325; Chavigny, 325; Belleau, 367; Desaulniers, 368; River Manouan to Lake Kempt, 459; River Manouan, from Temple's line to Lake Kempt, 460; Region between Lake Lacroix and the Metabetchouan, 524.

DEMEULES J. C.—Chauveau, 97; De Sales, 104; Labarre and Kenogami, 136; Metabetchouan, 142; Region along the "Des Marais" road, 552.

DEMEULES P. T.—Region along Maritime road, 569.

- DERY I.—Colbert and Rocmont, 327; Gosford and Rocmont, 330; Montauban, 333.
- DESRUISSEAU F.—Polette, 86.
- DESROCHERS V.—Bungay, 243.
- DORVAL U.—Provost and Brassard, 40; Joliette, 242.
- DUBÉ O. A.—Buckland, 34.
- DUBERGER E. A.—Alma Island, 106; Bourget, 110; Delisle, 124; Jonquières, 128-129.
- DUCHESNAY A.—Spalding, 29; Watford, 222.
- DUGAL J. N.—Ashford, 245; Chesnier, 337; Botsford, 370; Packington, 376.
- DOUCET G. A.—Biencourt, 337; Robitaille, 354; Begon, 369; Demers, 372.
- DUMAIS P. H.—Bourget, 111-113; Caron and Mesy, 116; Normandin, 150; Ouiatchouan, 158; Parent, 161; Signai, 171-172-173; Country between St. Raymond and Lake Edward, 490; Rivers Ouiatchouan, Bostonnais and Batiscan, 503; Rivers Mistassibi, au Rat and Wassiemska, 531; Little Peribonka river, 537; Petite and Grande Bergeronnes, Escoumains, Sault-au-Mouton, Portneuf, &c., 570.
- DUMAIS P.-J.-C.—Chamouchouan, 113; Charlevoix, 116; Roberval, 169; Simard, 178; Duhamel, 305; Fabre, 312-313; Lorrain, 317.
- DUTREMBLAY A.—Racine, 168; St. Hilaire, 175.
- DUTREMBLAY G.-B.—Dalmas, 119; Dalmas and Taillon, 121; Demeules, 127; De Quen, 128-129; Dolbeau, 131; Labarre and Kenogami, 139; Metabetchouan, 149; Taché, 181; Bergeronnes, 360; Iberville, 364; Manicouagan, 365; River Shipshaw, 539; Rivers Valin, Betsiamits, Shipshaw and Peribonka, 543; River Valin, North Branch, 546.
- DUTREMBLAY P.-P.-V.—Lejeune, 80-81; Rivers Towachiche and Eaux Mortes, 496; Rivers Musquarro and Kegashka, 607.

H

- ELLS R. W.—St. John, Douglastown and Dartmouth rivers, 698; Bonaventure and Cascapedia rivers, 716.
- EVANS S. T. A.—Sheen, 318-320.

F

- FAFARD EUG.—North Branch, River St. Ann, 494.
- FLETCHER O.—Chesham, 188 ; Whitton, 202 ; Ponsonby, 290.
- FORGUES C. E.—St. John, Mingan, Natashquan and Esquimaux Rivers, 602 ; Musquarro and Kegashka, 607 ; Washecootai, 608.
- FOURNIER C. F.—Pohenegamook, 243 ; Ashford, 246 ; Hocquart, 376 ; Raudot, 378.
- FOURNIER P.—Buckland, 35

G

- GAGNON GEDEON.—Callières, 96 ; Boileau, 110 ; Dufferin, 132 ; Labrosse and Albert, 141 ; Metabetchouan and Charlevoix, 149 ; Saint-Germain, 175 ; Rivers Trenche and Pierriche, 470 ; Salmon and Windigo rivers, 473 ; River Ste. Marguerite, 564 ; Rivers Ste. Marguerite, à la Truite and Manitou, 599.
- GARON G.—Duquesne, 339.
- GARON L.-J.—Bedard, 336 ; Flynn, 340 ; Macpés, 346 ; Neigette, 353.
- GILMAN R.—Doncaster, 260.
- GOSSELIN L.—Laterrière, 142.
- GRIFFIN P.—Pope, 291 ; Suffolk and Ponsonby, 298 ; Huddersfield, 315 ; Colbert and Ossonane, 326.
- GRONDIN L. J. E.—Massé, 346-347 ; Matalek, 347 ; Neigette, 352 ; Ouimet, 354 ; Tessier, 356.

H

- HENDERSON E. D.—Ware, 221.
- HENDERSON W.—Jersey, 17 ; Langevin, 217.
- HILL J.—St. Denis, 355 ; Tessier, 356.
- HOLMES J.—Alleyn, 302.

J

JOHNSTON J.—Blake, 271 ; Lathbury, 282 ; Mulgrave, 287 ; Ripon, 295.

L

LABERGE E.—Ashburton, 262.

LANGLOIS J.—Taillon and Delisle, 182 ; Ashburton, 262 ; Colbert, 326 ; Country around Lake St. John, 549.

LAPORTE J.—Brassard, 39 ; Provost, 44-45.

LAURIER C.—Provost and Brassard, 41 ; Peterborough, 255.

LAVERGNE P. E.—Bellechâsse, 31 ; Roux, 36 ; Rivers Blanche and Colombier, 595.

LAVIOLETTE G.—Wolfe, 6 ; Beresford and Howard, 380.

LEBEL L. H.—Rivers Rimouski, Noire and Caribou, 760 ; River Sifrois, 762.

LEBER H.—Milnikek, 67 ; Lejeune, 81 ; Awantjish, 335 ; Humqui, 340 ; Nemtayé, 353 ; River du Loup, 463.

LEBOUTHILLIER E. A.—Tourelle, 357 ; Mont Louis, Anse-Pleureuse, Pierre and Claude rivers, 689.

LEBOUTHILLIER G.—Douglastown, 231 ; Percé, 236.

LECLERC L.—Wolfe, 12

LEFRANÇOIS N. F.—LaSalle and Larue, 331.

LEFRANÇOIS N. J. E.—River Talayarde, 495 ; River Mauvaise, 496.

LEGENDRE E. H.—Causapscull, 50 ; Mann, 55-56 ; Metapedia, 58-59-63 ; Ristigouche, 73 ; Assamatquegan, 75 ; Pabos and Port-Daniel rivers, 701 ; Pabos, Port-Daniel, Hall, Little Cascapedia and Nouvelle rivers, 706.

LEGENDRE F.—Price, 84 ; Metgermette South, 220.

LEGENDRE F. O. A.—Adstock, 14

LEGENDRE HILARION.—Mekinac, 85-86 ; Region between the St. Maurice and Batiscan from Mekinac to Lake Edward, 467.

LEGENDRE J. B.—Bulstrode, 13 ; Price, 24 ; Thetford, 257:

LEPAGE C. S.—Carleton, 49 ; Dalibaire, 338-339 ; Matane, 349 ; Romieu, 354 ; Romieu and Dalibaire, 355 ; Casupscull river, 738.

LEPAGE J. B.—County of Rimouski, 754.

LEPAGE O. G.—Metapédia, 63.

LOGAN, Sir W.—Gulf Shore, Cape Chat and Cascapedia rivers, 720.

LOW A. P.—Mistassini Expedition, 619. Rivers St. Anne and Cascapedia, 728.

LUCAS S. B.—Cameron, 274.

M

MACDONALD W.—Patapédia, 71.

MALTAIS J.—Ross, 170 ; Rivers Upikauba and aux Ecorces, 548.

MARTIN J.—Joliette, 242 ; Peterborough, 256.

MARTIN J. A.—Lesage, 283 ; Loranger, 284 ; Marchand, 286.

MATHIEU N. C.—Archambault, 258-259 ; Lussier, 261 ; Clyde, 276 ; Kiamika, 281 ; Labelle, 282 ; Marchand, 286 ; Preston, 294.

MCARTHUR J.—Addington, 268 ; Bouthillier, 273 ; Hincks, 279 ; Lytton, 285 ; Ponsonby, 288 ; Dorion, 309.

MCGRATH B.—Aumond, 269 ; Aldfield, 302.

McMARTIN G.-E.—Grenville, 4 ; Addington and Labelle, 268 ; Amherst, 268 ; Bear river, 445 ; River du Diable, 451.

McOUAT W.—Temiscaming and Lake Abbitibi, 387 ; Lakes St. John and Mistassini, 634.

MICHAUD C.—Stratford and Garthby, 385.

MICHAUD, J.-L.—Boisclair, 303.

MURISON P.—Carleton, 46 ; Milnikek, 252 ; Nouvelle river, West Branch, 737.

MURRAY A.—Matane, Cape Chat, St. Ann and Douglastown rivers, 691 ; Bonaventure river, 708.

N

NEILSON J.—Linière, 21.

O

- O'DWYER W. W.—Chesham, 185 ; Ditton, 188 ; Emberton, 192.
- O'HANLY J. L. P.—Egan, 278 ; Dorion, 306.
- O'NEIL J.—Ditchfield, 14.
- O'SULLIVAN H.—Douglas, 230 ; Country between Cedar Lake and Lake St. John, 522 ; Grand Bonaventure river, 712 ; Country between Lake Squatook and Madawaska, 766.
- O'SULLIVAN J.—Block A, Pontiac, 426.

P

- PAGÉ F.—Tonti, 333 ; Rivers Moïse and Croche, 469.
- PAINCHAUD A.—Chloridorme, 225 ; Christie, 226 ; Denoue, 229 ; Duchesnay, 232 ; Fortin, 233 ; Pabos (seigniory), 234 ; Rameau, 238 ; Taschereau, 239 ; Magdalen Islands, 674.
- POUDRIER A.-L.—Cape Rosier, Gaspé Bay North and Fox, 224.
- POUDRIER F.-L.—Nemtayé, 353 ; Ham, 384.
- PROULX J.-P.—Country between Jacques Cartier and Batiscan rivers, 481
- PROULX P.-A.—Metgermette North, 219.

Q

- QUINN T. C.—Montcalm, 4.
- QUINN F. P.—Joliette, 241 ; Archambault and Lussier, 259 ; Lussier, 260.

R

- RAINBOTH E. J.—Bouchette, 273 ; Cameron, 275 ; Campbell, 275 ; McGill, 287 ; Robertson, 296 ; Suffolk, 297.
- RAINBOTH G.—Portland East, 292.
- RAUSCHER R.—Portland, 291 ; Portland West, 293 ; Wobassee, 300

- REGNAUD F. J. V.—Doncaster, 260 ; Wexford, 381.
- RICHARD J. B.—Wells, 383.
- RICHARDSON J.—Temiscaming and Lake Abbitibbi, 357 ; Valley of Lake St John, 499 ;
From Saguenay to Bay of Seven Islands, 560 ; Headwaters of the Saguenay,
St. Maurice and Gatineau, 644 ; Mingan Islands, 662 ; Anticosti, 663 ;
Magdalen River, 679 ; District between Magdalen River and Gaspé
Bay., 685.
- ROBERTSON H. H.—LaSalle, 330.
- RONEY J.—Blake, 270 ; Bouchette, 272 ; Kensington, 280 ; Wells, 299 ; Church, 304 ;
Clapham, 304 ; Duhamel, 304 ; Guigues, 313 ; Leslie and Cawood, 316 ;
Thorne, 320-321.
- ROSS A.—Marlow, 22 ; Risborough, 27-28 ; Buckland, 33 ; Watford, 221.
- ROSS R. J.—Jersey, 20 ; Linière, 21.
- ROY C. F.—Christie and Duchesnay, 226 ; Humqui, 341,
- ROY G.—New Richmond, 68 ; Standon, 220.
- RUSSELL LINDSAY.—Headwaters Ottawa river, 416 ; Rivers Rouge, Lièvre and Petite
Nation, 435.

S

- SINCLAIR D.—Aberford, 302 ; River Rouge, 446-449.
- St. PIERRE J.-R.-E.—Begon, 369 ; Cabano, 371.
- SYMMES H.-C.—Suffolk, 297 ; Headwaters Ottawa river, 414.

T

- TASCHEREAU G.-S.—Coleraine, 257.
- TEMPLE E.-B.—Metgermette North, 218-219 ; Territory between the Lièvre and St.
Maurice Rivers, west section, 454 ; St. Maurice district, east section, 456.
- TÉTU A.-F.—Cabano road, 768.

TÊTU F.—Roux, 35 ; Garneau, Casgrain and Lafontaine, 247 ; Leverrier, 250 ; Bourdages, 262 ; Rolette and Panet, 263-264 ; Talon, 266 ; Cabano, 371 ; Packington and Robinson, 377.

TÊTU R.—Block F., 529.

TREMBLAY J.-O.—Anse St. Jean, 106 ; Bagot, 108 ; Otis, 156 ; Perigny, 167 ; Simard, Tremblay and Falardeau, 180 ; Region along l'Anse St. Jean road, 558.

TREMBLAY P.-A.—Chamouchouan and Demeules, 115 ; Parent, 161 ; Signai, Labarre and Caron, 174.

TREMBLAY W.—Delisle, 126 ; Taillon, 183.

V

VERRAULT C.-A.—Fournier, 247.

VINCENT F.—Rivers à Mars and Ha ! Ha ! 547.

W

WAGNER W.—Exploratory line between Montreal and Ottawa, 409 ; Headwaters Ottawa River, 424.

WALLACE A.—Turcotte and Polette, 88 ; Simard, 177.

WELLS A.—Garthby, 383 ; Stratford, 385.

WHITE J.—Waltham, 322.

WOODS J.-E.—Baskatong, 270.

