Geoscience Canada
Journal of the Geological Association of Canada
Journal de l'Association Géologique du Canada

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Volume 45, Number 1, 2018

URI: https://id.erudit.org/iderudit/1050630ar

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Publisher(s)

The Geological Association of Canada

ISSN

0315-0941 (print)
1911-4850 (digital)

Explore this journal

Cite this article

Wilton, D. H. (2018). Albert Peter Low - The Iron Man of Labrador. *Geoscience Canada*, *45*(1), 43–58.

ARTICLE

Albert Peter Low in Labrador– A Tale of Iron and Irony

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SUMMARY

In 1893–1894, Albert Peter Low of the Geological Survey of Canada, along with D.I.V. Eaton and four indigenous assistants explored the Labrador Peninsula, then perceived as one of the last great unexplored wilderness areas of North America. The expedition left Lake St. John (now Lac St. Jean) on June 17, 1893, canoeing across the northeastern edge of the North American continent, arriving at Fort Chimo (now Kuujjuaq) on August 27, 1893. They departed Fort Chimo by steamer for Rigolet on the Labrador coast and the Hudson Bay Company post at North West River in the fall of 1893. On March 6, 1894 the party started up the Grand (now Churchill) River continuing through large central lakes into the Ashuanipi river system in western Labrador, then out via the Attikonak River to the Romaine River and finally the Saint Jean river system to arrive at Mingan on the north shore of the St. Lawrence River on August 23, 1894. Low described their fifteen-month journey as having covered over 8700 km including 1600 km on foot, over 4700 km in canoe, 800 km by dog team and 1600 km by steamer. The report from the expedition provides a compendium on the natural history of the region as well as the first geological maps. In terms of economic and scientific results, the greatest was documentation of the vast iron ore deposits of western Labrador; a world-class mining district that has been producing for sixty-three years since 1954. Low's account also provides details on the essence of such an epic journey, which stands as a classic in the annals of Canadian geological surveying.

RÉSUMÉ

En 1893–1894, Albert Peter Low de la Commission géologique du Canada, accompagné du D.I.V. Eaton et quatre assistants autochtones ont exploré la péninsule du Labrador, alors perçue comme l'une des dernières grandes étendues sauvages inexplorées d'Amérique du Nord. L'équipe a quitté le *Lake St. John* (aujourd'hui le lac Saint-Jean) le 17 juin 1893, a traversé la bordure nord-est du continent nord-américain en canoë, et est arrivé à Fort Chimo (aujourd'hui Kuujjuaq) le 27 août 1893. À l'automne de 1893, ils ont quitté Fort Chimo à bord d'un vapeur pour Rigolet, sur la côte du Labrador, et le poste de la Compagnie de la Baie d'Hudson sur la rivière North West. Le 6 mars 1894, les membres de l'équipe ont remonté la rivière Grand (aujourd'hui Churchill), puis à travers les grands lacs centraux jusqu'au bassin de la rivière Ashuanipi, dans l'ouest du Labrador, puis, par la rivière Attikonak jusqu' à la rivière Romaine et, enfin, le réseau de la rivière Saint-Jean jusqu'à Mingan, sur la rive nord du fleuve Saint-Laurent, le 23 août 1894. L'excursion décrite par Low a duré quinze mois et parcouru plus de 8700 km dont 1600 km à pied, plus de 4700 km en canoë, 800 km en attelage de chiens et 1600 km en bateau à vapeur. Le rapport de l'expédition constitue un recueil sur l'histoire naturelle de la région ainsi que des premières cartes géologiques. En ce qui concerne les répercussions économiques et scientifiques, la plus importante en a été la documentation des vastes gisements de minerai de fer de l'ouest du Labrador, un district minier de classe mondiale, en production pendant soixante-trois ans depuis 1954. Le récit de Low fournit également des détails sur le caractère épique d'une telle expédition, laquelle est un classique dans les annales de la Commission géologique du Canada.

Traduit par le Traducteur

Geoscience Canada, v. 45, https://doi.org/10.12789/geocanj.2018.45.130 pages 43–58

GC Data Repository: D.H.C. Wilton: A.P. Low's (1896) map quadrants

INTRODUCTION

Albert Peter Low (1861–1942; Fig. 1 inset) was a geologist with the Geological Survey of Canada (GSC) from 1882 to 1907 (with a two-year break). In 1893 and 1894 he made a pioneering trek through Labrador (Fig. 1) travelling the major rivers of central and western Labrador and documenting the geology exposed therein. The title, *Albert Peter Low in Labrador – A Tale of Iron and Irony*, is somewhat of a triple-entendre as Low's Labrador journey was truly of epic proportions, one of many that he undertook for the GSC throughout eastern and central Canada, but also because he documented the vast iron-ore horizons of western Labrador, which became the Labrador City, Wabush and Schefferville mines. The Geological Survey of Canada refers to Low as Canada's 'Iron Man' based on his exploits and expeditions. The irony refers to the ultimate fates of both he and his senior assistant, D.I.V. Eaton.

This paper is concerned in detail with Low's expedition through Labrador and an earlier version was published in *Very Rough Country: Proceedings of the Labrador Explorations Symposium* (MacDonald 2010), a book produced by the Labrador Institute of Memorial University. The original paper (Wilton 2010) has been modified for the more geological audience of *Geoscience Canada*. The 2005 symposium was held as part of the centennial celebrations of Mina Hubbard's journey from North West River, Labrador, to Ungava Bay (Hubbard 1908).

Mina's journey was the final act in an adventure story that gripped North America in the first years of the 20th century. In 1903, Mina's husband, Leonidas Hubbard, along with his friend Dillon Wallace, and George Elson, a mixed-race Cree from Ontario, attempted to canoe from Northwest River across Labrador to the headwaters of the George River and thence downriver to Ungava Bay (Wallace 1905). They left the Hudson Bay Post at North West River on July 15 and canoed to the head of Grand Lake where they took the wrong river, the Susan, into the interior; they should have taken the Nascaupee (now Naskaupi River). After two months of hard-scrabble canoeing and portaging, the party was running out of supplies and summer, so decided to return to Northwest River. Hubbard succumbed to starvation around October 18 at their final camp after Elson and Wallace had left for help. Elson made it back to North West River and Wallace was rescued on October 30. The party overwintered in North West River before returning to New York in May 1904.

Mina, upset by Wallace's (1905) account of the ill-fated expedition, decided to complete her husband's journey with the aid of George Elson. Wallace also determined to complete the journey and likewise put together an expedition. Incredibly, both expeditions left North West River on the same day, June 27, 1905, albeit from opposite sides of the river. Mina was first out at the George River (now Kangiqsualujjuaq) trading post on August 29. She wrote *A Woman's way through unknown Labrador,* which has subsequently become part of the modern feminist canon (e.g. Grace 2000; Pratt 2002; Buchanan et al. 2005). As will be described below, Albert Low's 1893–94 maps played an important role in the whole Hubbard story.

GEOLOGICAL SURVEYS

Geology became firmly established in Europe as a scientific endeavor in the latter part of the 18th century mainly because of the growing need for coal; the lifeblood of the Industrial Revolution. As well described by Winchester (2001), early geologists, such as William 'Strata' Smith, recognized that the distribution of coal-measures could be mapped across the countryside and the three-dimensional form of distinct layers so defined.

National governments established geological surveys to define the endowment of natural resources present within state boundaries. These initial 'surveys' became scientific institutions charged with studying the Earth in their respective territories. The venerable British Geological Survey began as the Ordnance Survey in 1832. With some prescience, and an eye on the developing coal industry in Cape Breton, the fledgling representative Government of Newfoundland initiated the Geological Survey of Newfoundland with J.B. Jukes in 1839 (Cuff and Wilton 1993). The enterprise only lasted until 1841 when the same assembly revoked Jukes' funding due the perceived lack of results (i.e. no discovery of significant coal resources); the survey was perhaps the earliest, but not the last, victim of government budget cuts. The Geological Survey of Newfoundland (GSN) was subsequently resurrected in 1864 under the leadership of Alexander Murray.

In 1842, the Legislative Assembly of the Province of Canada created the Geological Survey of Canada (GSC) with Sir William Logan as its first Director. With the creation of the Dominion of Canada and its exponential growth into the second-largest country in the world, the GSC geologists had to spread out and cover vast expanses of northern North America. As described by Alcock (1944, p. 195), the mid- to late 18th century GSC consisted of a small band of "*geologists who belonged to that great period of Canadian exploration when, following Confederation, it became the task to explore and map the vast spaces that had been added to Canada's frontier. In many respects* [this] *was the most interesting and romantic part of the survey's history.*" Since these surveying geologists ventured into 'unknown' regions of the Canadian landscape, they also operated as natural scientists and were expected to collect data not only on the rocks, but also the topography, flora and fauna and, most controversially, in present contexts, information on indigenous peoples. These latter observations must be viewed through the social lenses of the time.

Even though the GSN had been operating as a viable entity since 1864, the first GSN survey in Labrador was not undertaken until 1939 (Kranck 1939), and even then Kranck's work was not carried out as an official GSN project, but rather he was part of the 1937 Finland–Labrador Expedition (Tanner 1944). Prior to Kranck's work, geological surveying of Labrador had been left to the GSC. The first such expedition was by Robert Bell in 1884, when he completed a reconnaissance geological survey of the Labrador coast on a trip into Hudson Bay (Bell 1884) on board a Newfoundland sealing vessel, the 'Neptune.' Bell travelled through the area again in 1885 on the vessel 'Alert' (Bell 1885). He stopped briefly at Nain and Nachvak Fiord. As noted by Brookes (2016), Bell's main obser-

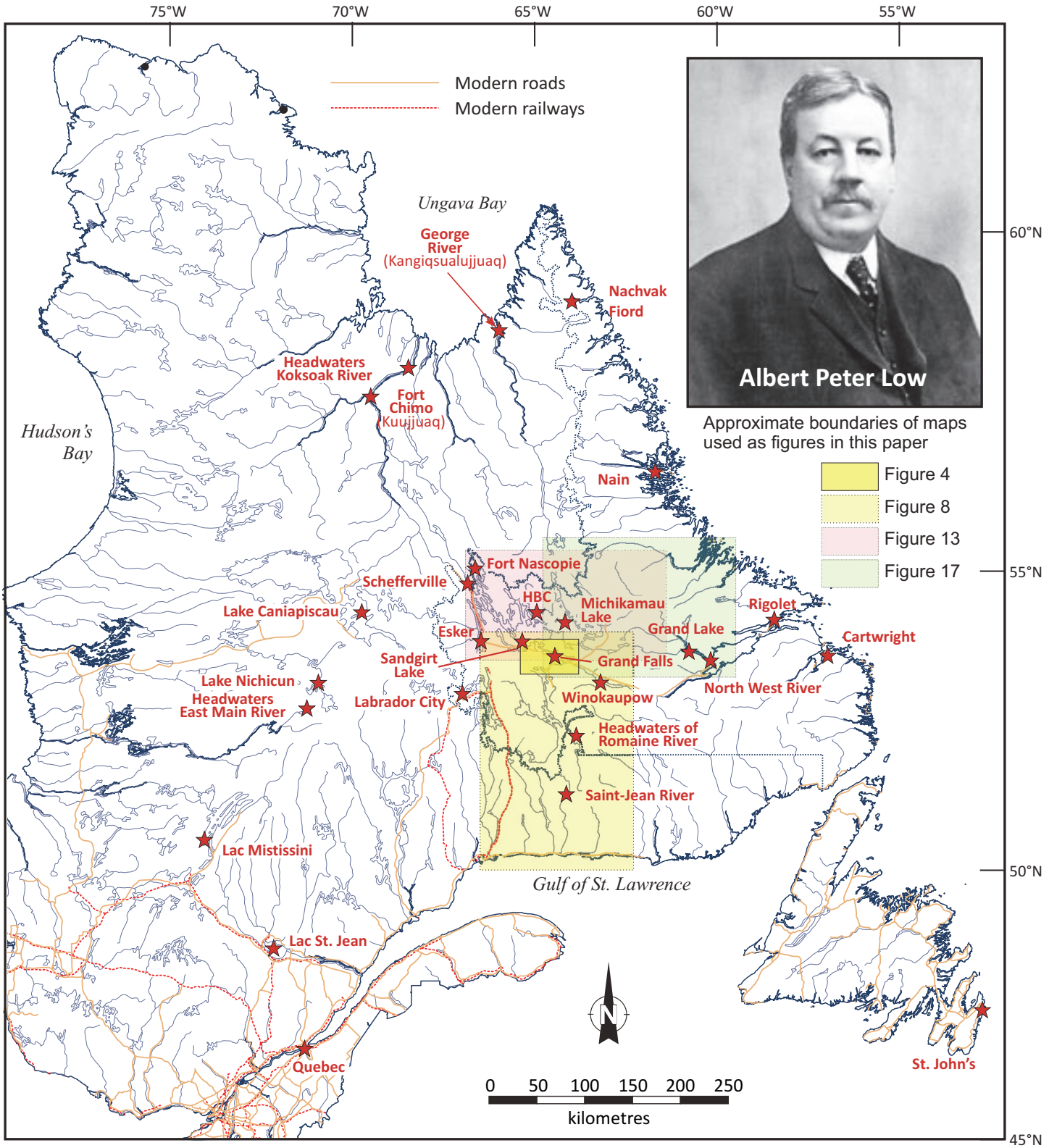

Figure 1. Map of the Labrador Peninsula with locations of important sites from Low's 1893–94 journey; note HBC refers to the approximate (underwater) location of the Michikamau Hudson Bay Company post and that Low referred to the community of North West River as Northwest River. Inset of A.P. Low from the Natural Resources Canada photo archives.

https://doi.org/10.12789/geocanj.2018.45.130

vations were that, although "*glacial grooves*" were observed at sea-level, the tops of the Torngat Mountains appeared to him to be unglaciated with evidence of "*long-continued atmospheric decay*" (Bell 1885, p. 7–8).

THE GEOLOGICAL SURVEY OF CANADA 1893–94 LABRADOR FIELD PARTY

The GSC party that set out in 1893 consisted of A.P. Low, his senior assistant, D.I.V. Eaton and "*four young Indians*" (Low 1894b, p. 136). The names of these other crew members are not mentioned. They hired local guides and assistants along the route as needed, likewise all unnamed.

A.P. Low

In their extensive research, Finkelstein and Stone (2004) note that it is very difficult to derive a sense of A.P. Low, the man. His contemporaries have left little record about his personality and in his own writings there is little introspection. In one of his few narratives on his exploration through Labrador (Low 1894b), he describes himself and the expedition in the third person; albeit fairly self-promotional. For instance, in describing the GSC in the 1890's, he described:

> "*…these explorations, often very difficult and dangerous, have attached to the staff of the Survey, several of the most intrepid and successful young explorers on the continent*" (Low 1894b, p. 135). He further states that "*Mr. Albert Low, of the same Department, has just returned from an exploration extending over nearly two years, in the largest unknown tract of the Dominion, the interior of the Labrador Peninsula, or North-East Territory, comprising some 289,000 square miles, an area equal to twice that of Great Britain and Ireland.*" He concluded that "*Mr. Low has crossed this area from south to north, and from east to west, and his detailed report when published will contain the first trustworthy account of the great region which promises to be of considerable importance on account of the immense mineral deposits which he has discovered there*" (p. 135–6).

The bare facts about Albert Peter Low are that he was born in Montreal on May 24, 1861, and was educated at McGill University, earning a degree in Applied Sciences (1st Class Honours) in 1882 (Alcock 1944). He "*obtained his geological training under Sir William Dawson*" (Low 1894b, p. 136). He was hired by the GSC on July 1, 1882, having spent the previous summer mapping with the survey in the Gaspé Peninsula (Alcock 1944). He began independent mapping in 1883. He worked with the GSC for the next 17 years, before taking a two-year break (1901–02) to work with the mineral industry in an iron ore exploration program (Alcock 1944). He returned to the GSC in 1903 and commanded the 1903–04 Canadian government expedition to the Arctic aboard the Newfoundland sealing vessel, the 'Neptune.' He became Director of the GSC in 1906 at age 45 and in 1907 became Deputy Minister of the newly created Mines Department into which the GSC was moved (Stewart 1986).

D.I.V. Eaton

Low's equally hard-working assistant on the 1893–94 Labrador expedition was Daniel Isaac Vernon Eaton (born 19 September, 1869 in Nova Scotia). Eaton was the surveyor and cartographer for the expedition producing the geological and geographical maps. He worked with the Newfoundland Railway in 1889–1990 as an informally-trained surveyor (Wright 1998) before joining the GSC in 1890. He stayed with the GSC until 1896 when he left to join the Royal Canadian Regiment (Zaslow 1975).

THE MISTASSINI INCIDENT

An insight into Low's character may be gleaned from the 1884 'Mistassini Incident' (Gittins 1985; Stewart 1986). Low had been with the GSC for two years and had been conducting independent mapping for only one season when he was tasked to join a joint Canada–Quebec survey of the Lac Mistassini region (Fig. 1) as second-in-command to J. Bignell, of the Quebec Geographic Society. According to Stewart (1986), Bignell was a veteran 67-year old surveyor.

Right from the start of their 'collaboration,' Low was displeased with delays. He described leaving Ottawa on June 9, 1884, arriving in Quebec City June 12th, then "*waiting*" until July 19th before leaving for Rimouski, arriving there on July 25th, and then being delayed again, due to helpers not being hired, such that field work did not begin till August 8th (Low 1885). Thereafter, he described continually awaiting Bignell throughout the canoe trip to their winter camp at the Hudson Bay Company post on Lake Mistassini.

The last 10 days of his trip were particularly arduous for Low's group, involving "*short rations and temperatures of - 40°F*" (Low 1885). By the end of January, 1885, Low "*had several disagreements with Mr. Bignell regarding the operations of the party,*" so he left for Ottawa to clarify who was to be in charge. He departed the post on February 2nd with two other men (the latter carrying mail) and arrived at Lake St. John (Lac St. Jean) on February 21st. They walked on snowshoes, but the trip was anything but boring and mundane as "*two heavy snowstorms 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 distance in a straight line from Lake St. John to midway on the southeast shore of Lake Mistassini is over 256 km. Low then left Lake St. John on February 23rd by horse and sleigh to Quebec City and then on to Ottawa, arriving March 2nd.

With new instructions putting him in charge of the combined party, Low left Ottawa on March 23rd, arriving at Lake St. John on April 5th. In the company of seven others, he left Lake St. John on the 9th of April. The trip back was no picnic either, as described by Low (1885).

> "*It was found necessary to travel mostly in the early morning, before the heat of the sun melted the crust of the snow. We therefore commenced our day's tramp about 3 a.m. and stopped about noon... we passed overland to Lake Chibougamoo* [sic]*, arriving there on the 20th of April. Up to this time the weather, being cold and clear, was very favorable for traveling, but we were now overtaken by a period of mild weather, which made the snow so soft and heavy as to render tramping with loads almost impossible. In addition we were short of provisions, and the 24th, I decided to*

send four men ahead without loads, with instructions to reach the Hudson Bay post on Mistassini and send back provisions from there. These men traveled over sixty miles in forty hours without food and thus reached the post. From here two Indians were sent back with provisions to relieve us, and arrived at out camp on the east side of Lake Chibougamoo [sic]*, April 28th. Continuing our journey we reached the post the next day."*

Gittins (1985) notes that Low was paid $2.05/day in 1884, which was raised to $2.20/day in 1885. Bignell, on the other hand, received $5/day. Based on US Bureau of Labor Statistics data (Canadian data only goes back to 1917), Mr. Low was paid the equivalent of $58.85/day and Mr. Bignell, $117.65/day; the latter being just above the minimum wage in all Canadian provinces as of 2017.

THE 1893–94 EXPEDITION THROUGH THE LABRADOR PENINSULA

Year 1893

The original plan for Low's exploration in 1893–94 (Low 1894b) was that his party would travel to the headwaters of the East Main River then cross over to the headwaters of the Koksoak River and follow it downstream into Ungava Bay, overwinter there and then proceed to explore the Hamilton (now Churchill) River (Fig. 1). Although not explicitly stated, it would seem that the plan was for the party to ascend the George River from Ungava Bay, thence through Michikamau to the Hamilton River and out.

Low and his senior assistant, D.I.V. Eaton, left Ottawa on June 3rd, 1893 travelling through Montreal, to Quebec City and thence to Lake St. John. They shipped supplies from Montreal to Fort Chimo (now Kuujjuaq) as they planned to winter there prior to going inland the next summer. In June, 1893, at Lake St. John (Low 1894a, p. 63A) found that:

"*…it was impossible to obtain provisions or any supplies of any kind from the Hudson's Bay posts, and as all the able-bodied men are at this season away to Hudson Bay, engaged in bringing the next season's supplies to the posts, a quantity of provisions sufficient for the whole season had to be taken from Lake St. John, and four men engaged for the entire trip. To transport the provisions, six canoes were found necessary*"

They departed Lake St. John on June 17th with "*four young Indians*" who were to stay with them for the whole trip and "*eight others to assist in transporting the provisions as far as Lake Mistassini*" (Low 1894b, p. 136). Low (1895, p. 515) described the vessels used to get to Lake Mistassini as

"*…two Peterborough canoes, 19 feet long, built of cedar, and each capable of easily floating a load of 1000 lbs together with a crew of three men, along with these was a smaller cedar canoe and three others of birch bark.*"

The party arrived at the Lake Mistassini Hudson Bay post on July 2nd and left for the Hudson Bay post at Nichicun (Fig. 1) on July 5th. Low states that "*only three canoes were used, and an old Indian was engaged as a guide, who subsequently proved quite useless in that capacity, as he had entirely forgotten the route to Nichicun, which place he had not visited since his boyhood*" (Low 1894b, p. 136). The party finally arrived at the Nichicun post on August 4th. At this post, Low was fortunate to find a guide who would take the party to Lake Caniapiscow (now Caniapiscau or Kaniapiskau), on the Koksoak River.

Departing Nichicun on August 7th and descending the Koksoak River, the party reached Ungava on August 27th and Low simply stated that "*thus the trip across Labrador from south to north was completed in seventy days*" ((Low 1894b, p. 137). Low offered a somewhat more personal view of this leg of the expedition in a letter to the GSC Director from Rigolet in October 1893 that was subsequently published as his 1893 report:

"*From it you will see that we reached Ungava 27th August, after a summer of very hard work, in fact, the hardest that I have ever experienced, but as everyone was in good health, it was not unpleasant*" (Low 1893, p. 4A). In his more detailed, and seemingly self-promotional report from 1894, Low (1894a) stated that: "*By working hard, early and late, wet days and Sundays, Fort Chimo was reached at least twenty-five days sooner than it would have been under ordinary conditions of canoe travel*" (Low 1894a, p. 68A). He estimated the canoe trip at over 1200 miles [1920 km].

A catastrophe afflicting the local indigenous peoples awaited Low on his arrival at Fort Chimo (now Kuujjuaq) and this would significantly alter his plans for exploration in 1894. In his first description of the tragedy, Low (1893, p. 5A) states:

"On arriving at Fort Chimo, I found the natives there in a most deplorable state, owing to the absence of deer last winter, and to the failure of the Hudson Bay Company's agent to supply their needs, as a consequence between 200 and 300 died last winter, and the small remainder are in a state of abject poverty. Such being the case, I considered it inadvisable to send provisions inland, as they would probably be stolen. The stock of pork at the post was also not sufficient to supply the wants of my party, and as the work can as advantageously be carried on from Hamilton Inlet, I resolved to proceed there on the Hudson Bay Company's steamer."

In his 1894 report on the starvation at Fort Chimo, Low (1894a, p. 68A–69A) tempers his description and removed any suggestion of wrongdoing by the Hudson Bay Company, describing that when his party had arrived at Fort Chimo, they:

"…soon learned that a great famine had prevailed during the past winter among the Indians trading at this post, whereby nearly two-thirds of them, or upwards of one hundred and sixty persons died of starvation. This calamity was due to the failure of the reindeer to follow their accustomed routes of migration during the preceding autumn, when they did not cross the Koksoak River in great bands as usual. In consequence the Indians who depend on

https://doi.org/10.12789/geocanj.2018.45.130

the reindeer for both food and clothing were soon reduced to starvation, and unable to obtain other supplies, died off by families during the winter. About twenty-five Eskimo also perished from the same cause. The surviving Indians having been in a state of constant starvation throughout the past year, and consequently being unable to trap furs and so pay their debts, were at the time of our visit in an abject state of poverty."

He also noted that the Hudson Bay personnel held a clothes drive for aboriginal children. Low later simply stated that "*the conditions at Ungava were not such that work the following year could be carried on advantageously*" (Low 1894b, p. 137). In his final report on the expedition, Low (1896) does not directly discuss the calamity and how it affected his survey plans; he just noted that "*At Fort Chimo the famine of 1892–93 reduced the number of Indians in that district from 350 to less than 200 persons.*" More charitably, he stated that "*Dishonesty and theft are unknown to the interior Indians; provisions and outfit can be left anywhere inland with perfect safety for any length of time. Only in the case of absolute starvation will provisions be taken, and then only a small part, for which payment will be left by the persons taking them*" (Low 1896, p. 47L). Hence, he was perhaps mitigating his earlier suggestion that he could not safely leave supplies inland during the fall-winter of 1893–94.

In his 1894 report to the Director, Low (1894a, p. 69A) hints at the realization that his proposed plan to cover the Labrador Peninsula might be better conducted from the Labrador coast as:

"The supply of pork at the Hudson's Bay post was too small to provide sufficient for the party if they remained at Fort Chimo... it was deemed advisable not to winter at Fort Chimo, as originally intended; especially when it was learned that the work in hand could be carried on more advantageously from the head of Hamilton Inlet."

So, it was actually while at the Fort Chimo post that Low was informed that the best way through the interior of Labrador was via North West River (subsequently, the starting points for the Hubbard and Wallace expeditions).

Low's revised plan had the party depart Fort Chimo on September 10th on the Hudson Bay Company steamer 'Eric' arriving in Rigolet on October 1st. The party stopped at the Hudson Bay Company posts of George River (now Kangiqsualujjuaq), Nachvak and Davis Inlet enroute. From Rigolet, Low (1893, p. 5A) told the GSC Director that he now proposed:

"…to immediately send my men and the canoes up the Hamilton River, with instructions to take them as far as the Grand Falls portages if ice will permit. They will remain there until they can return to North-west River on foot, and will then be employed drawing in provisions on the ice, so that by open water in the spring, next season's outfit will be well inland, thus leaving the summer free for exploration in the interior."

The party's provisions were shipped by steamer from Rigolet to the Hudson Bay post at North West River and the men followed in canoes. Low used this post as his winter base taking trips to Cartwright, Sandwich Bay, and Rigolet (Low 1895). Meanwhile four men were sent from North West River 192 km up the Hamilton River on October 23rd; they stayed there till the ice formed fully on the river and they returned on December 29th. In a slightly different version, Low (1894b, p. 137) stated:

"The four Indians were sent up the Hamilton River, with instructions to go as far as possible before the river became covered with ice; they succeeded in reaching a point about one hundred miles above the river's mouth. Here they remained till Christmas, when they descended on the ice to the Post."

Year 1894

In January 1894, Low hired eight men from Rigolet and four men from North West River to aid his crew of Eaton and 'four Indians' in carrying supplies up the Hamilton River. According to Low (1894a, p. 137):

"On the 19th of January, Mr. Eaton started up the river with a party of seventeen men, each hauling two hundred pounds of provisions on a sleigh. He succeeded in ascending seventy miles, when owing to a lack of snow on the rough ice in the heavy [Gull Island] *rapids, he was obliged to cache the loads and return. A final start was made on the 6th of March, when the party* [now including Low] *assisted by eight men proceeded inland with more provisions and outfit sufficient for six months travel."*

"…Arriving at the cache in five days [note that he is stating that they travelled five days from North West River with full sled loads in the middle of winter, all the way to Gull Island]*, they continued on seventy miles farther, until they were stopped by open water, extending ten miles below Lake Winokaupow. A second cache was made here and the whole party returned downstream to the first cache for a second load. When this load and the canoes had been hauled to the foot of the open water, the loads were put into canoes and they were tracked and poled up the lake – a novel and disagreeable mode of travel, with the thermometer standing a few degrees below zero"* (Low 1894b, p. 137–8). The temperature reference is, of course, in Fahrenheit, so this was no small excursion.

In his report to the Geographical Journal, Low (1895) described the ordeal of getting past Lake Winokaupow in more graphic detail:

"Slow progress was made along the narrow sloping margin of ice near the water's edge for 10 miles, until further travel with sleds became impossible. The loads were stored at another cache here, and the party returned to the lower one, for the remainder of the provisions left there. On the way up, the canoes were taken out of winter quarters about 10 miles below the upper cache, and drawn on sleds to that point. The provisions, outfit, and sled were loaded into the canoes, and they were then poled and tracked up the remaining 10 miles to the lake. This proved a… dangerous undertaking, as the temperature of the air was 5° to 10° [F] *below zero, and the river was full of ice. The men, working in the canoes, were able to grip the ice-covered poles only with their bare hands, and all were more or less frost-bitten.*" (p. 532).

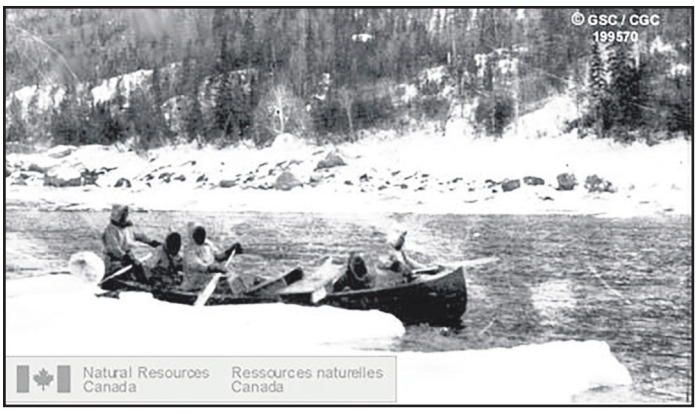

Figure 2. a (left) and b (right): Low party moving supplies up Lake Winokaupow, winter 1894. (note the sled dog (black) in Figure 2b). Natural Resources Canada, A.P. Low.

Figure 2 shows photographs of Low's party on Lake Winokaupow and Figure 3 is a view of the lake in 2009. Low (1896, p. 135–136L) described the lake as being:

> *"…remarkably deep; an isolated sounding taken fifteen miles up the lake, and about midway across, gave 427 feet... A third sounding was made fifty feet from the shore on the south side, opposite the first mentioned, and gave a depth of 80 feet. No other soundings were made, owing to the difficulty experienced in cutting through the ice, which at the time we passed was four feet nine inches thick, and two hours were required to make a hole through it with the implements at hand.*
> *…From Lake Winokaupow the extra men were sent home on the 1st of April and the party continued on alone, each person hauling four loads weighing from 250 to 400 lbs. On this account the ground had to be covered seven times and progress was consequently slow, so the Grand Falls were not reached until the 2nd of May… On the 19th of May hauling was abandoned, owing to the rotten state of the ice, and the next ten days were passed awaiting open water. At the end of the time the river opened and the party started up it in their canoes, but experienced considerable difficulty and danger from the thick ice coming down from the lakes above. Double loads were made until June 18th when part of the provisions were cached at Sandy Lake, where several canoe routes meet."*

This account of the most arduous, and certainly dangerous leg of the expedition, as given in the Canadian Record of Science (Low 1894b), is of necessity brief, but also curiously incorrect; the lake he refers to as Sandy Lake is actually Sandgirt Lake (now Lake Kanikauwinikau).

Low (1896) provided a much more detailed report on the journey from Lake Winokaupow to Sandgirt Lake. From the mouth of the Elizabeth River on the western end of Lake Winokaupow, it was a canoe journey of 72 km to Bowdoin Canyon. This canyon extended below the Grand (now Churchill) Falls for a distance of over 12.8 km by river, but for only 6.4 km in a straight line. Of course the party could not ascend the falls and instead followed a string of lakes and rivers starting with Portage River. Figures 4 and 5 show details

Figure 3. View to west along Lake Winokaupow in August 2009.

of this area on Low's (1896) map and sketches. The route from Lake Winokaupow thus involved a canoe trip up the Hamilton River for about 54 km to the mouth of Portage River and "*the portage-route of the Grand Falls, leaves the valley on the north side four miles above the mouth of the Portage River*" (Low 1896, p. 138L). The latter is also described in detail:

> *"The portage-route past the fall and rapids, leaves the main valley on the north side at the foot of the rapids fifteen miles below the mouth of the canon. The road rises 700 feet in a quarter of a mile as it ascends the steep wall of the valley by a narrow cut beside a small stream. It then passes over undulating wooded country, rising slowly for two miles, to a small lake that lies north-west of the lower end of the portage"* (Low 1896, p. 143L). The ground conditions were quite bad; *"….great difficulty was experienced in the ascent of the steep hill with provisions, sleds, canoes, and outfit, as at the time it was covered with ice and slush, rendering it, in places, almost impassable*" (Low 1895, p. 527).

To finally reach Sandgirt Lake from this point involved canoeing over 93 km with portages in excess of 10 km. Thus, the total distance covered to Sandgirt Lake from Lake Winokaupow was greater than 154 km by canoe with over 15 km of portages, part of which rose 210 m over 400 m, carry-

Figure 4. Detail of Portage River portage route over Grand (Churchill) Falls. From Low's (1896) geology map. Natural Resources Canada.

ing 100–182 kg of supplies, repeatedly from April 1 to June 18th, with only 10 days' break waiting for ice to clear!

Low and Eaton were amongst the first half-dozen or so Europeans to see the Grand Falls and Low produced the first photographic image of the falls (Fig. 6a, b). He described the raw naturalistic essence of the falls: "*the noise of the fall has a stunning effect, and, although deadened because of its inclosed* [sic] *situation, can be heard for more than ten miles away, as a deep, booming sound. The cloud of mist is also visible from any eminence within a range of twenty miles*" (Low 1896, p. 141L). "*These Falls are probably the highest and grandest in America. The river here rivals the Ottawa in volume*" (Low 1894b, p. 138). He also evocatively spoke of the falls in terms of aboriginal tradition in that:

> *"The Indians believe that the space between the falling water and the rocky wall is occupied by the spirits of two maidens who were accidentally carried over the falls, and who now pass their time in dressing and preparing deer skins. On this account, or more probably because of the feelings of awe inspired by the grandeur of the surroundings and the enormous power displayed in this rush of waters, those who hunt in the vicinity cannot be induced to visit the falls or the cañon below."* (Low 1895, p. 141L).

Anybody who now views the present strangled nature (Fig. 7) of the falls can easily surmise that the magic and the maid-

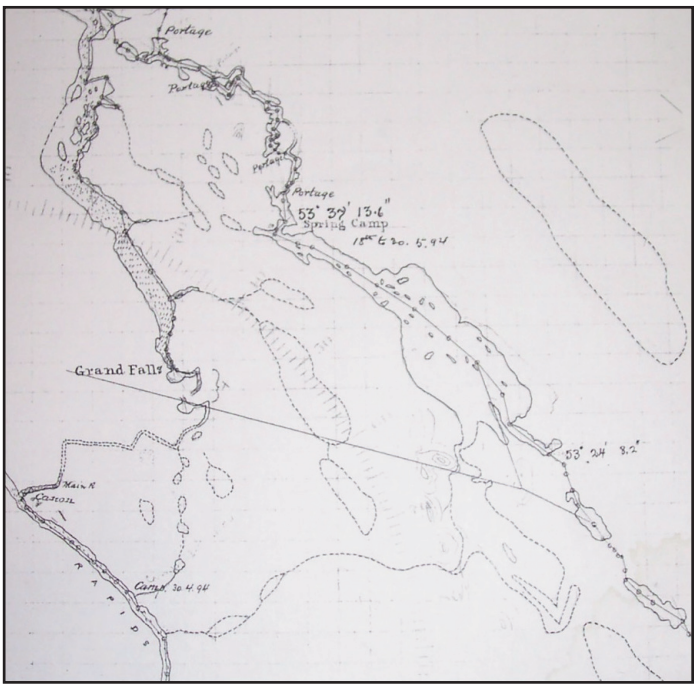

Figure 5. D.I.V. Eaton's sketch map of the Grand Falls portage (Low 1896). From Library and Archives Canada; courtesy of James Stone.

ens have fled since the capture and relocation of their waters. The water that flowed over the falls was diverted to create the 6,527 km^2 Smallwood Reservoir, which actually submerges part of Low's route through to western Labrador. The Churchill Falls Generating Station produces 5428 MW of electricity which flows through the HydroQuébec transmission system all the way to New England.

Continuing on towards the west, Low (1895, p. 147–148L) found that:

> *"Sandgirt Lake is an important gathering place for the Indians of the interior, on account of the number of routes that centre here. The Hamilton River divides into two branches, the larger or*

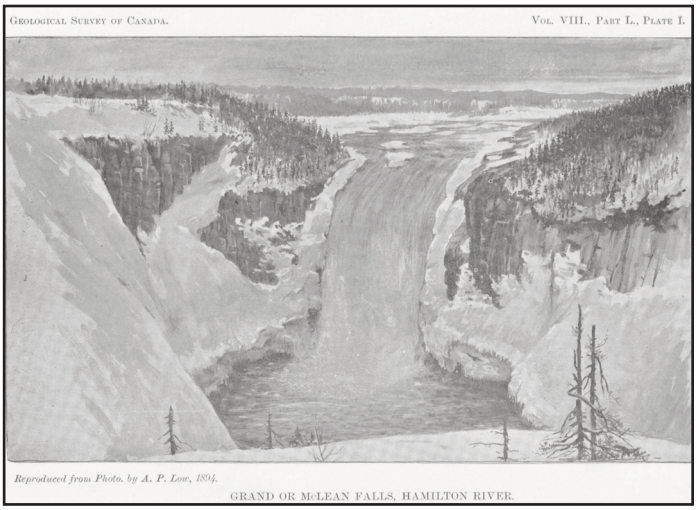

Figure 6. a: Low's photograph of Grand (now Churchill) Falls as on file with Natural Resources Canada (based on Figure 6b, the correct view, it appears that this digital image has been reversed). b: Plate I from Low (1896) of Grand (Churchill) Falls from his original photograph (Figure 6a). Natural Resources Canada.

Figure 7. The current (July 2011) appearance of the Grand (Churchill) Falls; the water has been diverted to fill the Smallwood Reservoir.

> *Ashuanipi Branch flowing in the north-west and the Attikonak Branch from the south. The main route from the Hamilton River to Lake Michikamau also ends here. The Indians who trade on the lower St. Lawrence and hunt anywhere in this vicinity, always congregate here in the spring, and descend to the coast in company, either by the Romaine or Moisie River."*

Thus, Sandgirt Lake was the hub of transportation through Labrador connecting the north shore of the St. Lawrence River, western and central Labrador, Ungava Bay and the Atlantic Coast.

As described by Low (1894b), the final legs of the expedition seem almost trivial when compared to the earlier ones. This is somewhat surprising in that the discovery and documentation of the vast iron resources of western Labrador constitutes probably the most significant result of his work. In his *Geographical Journal* report, Low (1895, p. 531) stated, when describing their trip through the Ashuanipi branch that:

> *"…before leaving this part of the river, attention must be drawn to the immense amount of rich iron ore seen about the shores of the lakes, which can only be estimated by millions of tons."* He was even more effusive when writing in the Canadian Record of Science (Low 1894b, p. 139) where he describes his vision of the iron deposits: *"…an immense area of Cambrian rocks, previously unknown, and found to consist of conglomerates, sandstones, limestones and shales, generally all highly charged with iron, and which often occurs as thick beds of hematite interstratified with the limestone and sandstone in such quantities as to rival or surpass the iron fields of the Lake Superior region of the United States."*

The Iron Ore Company of Canada, which opened up these western Labrador deposits in 1954, was formed by the Hollinger North Shore Exploration, the M.A. Hanna Company (Cleveland) and other steel companies (Geren 1990; Neal 2000). The steel companies needed to replace output from the Lake Superior district, which was depleted after the war. The western Labrador iron deposits actually superseded those around Lake Superior, much as Low had predicted 60 years before when the Labrador deposits were in unmapped wilderness.

Leaving the iron deposits behind, the party travelled for twenty-five days from Sandy (sic) Lake (Low in the Canadian Record of Science paper referred to Sandgirt Lake as Sandy Lake) northwest then south and back through the Ashuanipi branch; they travelled along the Ashuanipi River to south of present-day Esker, now a passing place on the iron ore railway through western Labrador. They then canoed 120 km through Michikamau Lake from Sandgirt Lake; along the north shore of Michikamau, "*a large area of precious Labradorite was found extending over ten miles*" (p. 139) was observed.

From Sandy (sic) Lake the party began its homeward journey on August 1st:

> *"The route followed was by the south-east branch* [of Sandgirt Lake] *to its head in Attikonak Lake there crossing the height of land, the Romaine River was descended nearly two hundred miles, and was left about sixty miles from the coast by a difficult portage route, which passes westward through and over a high range of anorthosite mountains to the St. John River. This stream was descended to its mouth, and the Hudson Bay post at Mingan was soon after reached. The party then crossed on the pocket schooner to Gaspe* (sic) *and so reached home after an absence of sixteen months, during which time they only once received letters from the outside world*" (Low 1894b, p. 139).

In contrast, the modern exploration camp must be equipped with wireless internet such that a worker in any tent can instantly hook into the world-wide web.

Low (1896) provided much more graphic detail on the final hardships of the trip out to the St. Lawrence River. The party travelled down the Romaine River until a point where the portage to the St. John River was taken (Figs. 8, 9); he describes the Romaine River downstream from the portage point as follows:

> "[it] *flows south-east for four or five miles in a wide shallow channel that slowly contracts as the current increases, and finally breaks into heavy rapids where the river passes into a cut between steep high hills. Nothing is known of the river for over fifty miles below this point, except that it is quite impassable for canoes, probably on account of long rapids with perpendicular rocky walls, where portages are impossible."* (Low 1896, p. 170L). The actual portage to the St. John River was up a western tributary and according to Low (1896): *"nothing but the absolute impossibility of passing up and down this part of the river* [the Romaine]*, would induce the Indians to make use of the present portage-route between the Romaine and St. John rivers, which is the longest and worst of those known anywhere in north-eastern Canada."* (p. 170L).

In summarizing this very tough portage, Low (1896) concludes that *"the total number of portages from the Romaine to the St. John is*

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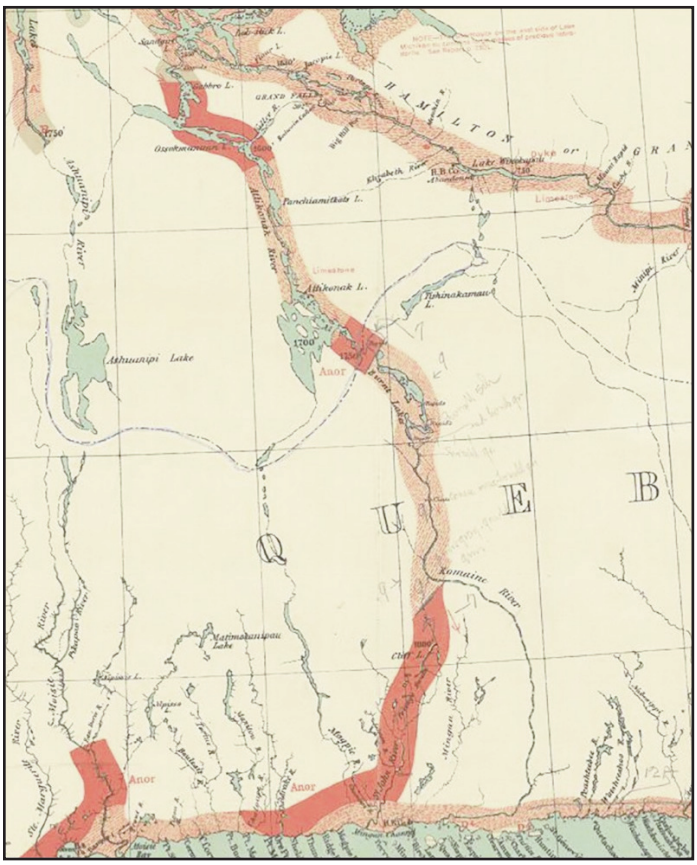

Figure 8. Detail of St. John [Saint-Jean] River portage from Low's (1896) geology map. Natural Resources Canada.

thirty-one, and their combined length aggregates nineteen miles and a half" (p.173L).

Along the portage route between the Romaine and St. John rivers, the party canoed down the 12.9 km long by 2.4 km wide Cliff Lake. He described the area: "*The scenery about this lake is very striking. Both sides are formed of vertical cliffs, often rising sheer from 500 to 600 feet above the water and terminating, in the higher points, in bare, rocky knolls, without a particle of soil*" (Low 1896). Low's photograph (Fig. 10) captures the weathered essence of the surrounding anorthosite.

These ordeals were not the end of the intense portaging, as 45 km downstream from the portage entrance, the St. John River "*descends a narrow gorge, with a heavy rapid ending in a fall of twenty feet*" (Low 1896, p. 173L). To get around it:

> "*the portage past the chute is nearly a mile long and passes along the almost perpendicular side of the valley some 300 feet above the stream. The ascent and descent at both sides is so steep that the Indians are forced to cut steps out of the soil in order to pass over with loads. In the middle it is close to the rocky wall, and the road has been made by placing logs along narrow parts, which almost overhang the boiling stream below.*"

Low (1896, p. 170L) described the distance covered in his expedition that started from Lake St. John: "*the total mileage of travel for 1893–94 was 5460 miles*, *made up as follows:- In canoe, 2960 miles*; *on vessel, 1000 miles*; *with dog-teams, 500 miles*; *and on foot, 1000 miles.*" He also reported (Low 1894a) that the cost of the 1893–94 expedition was $5,857.95; this would be on the order of $140,000 in present-day currency; much less than a standard one-month helicopter contract.

Figure 9. The Romaine River near its headwaters (July 2011).

Figure 10. Low's photograph of 'Anorthosite Cliffs, Cliff Lake,' as on file with Natural Resources Canada photo archives.

THE ESSENCE OF HIS REPORTAGE

General Natural History Knowledge

Low's reports (1893, 1894a, b, 1895 and 1896) were the first published descriptions of the travel routes through the Labrador Peninsula. His principal report (Low 1896) is a 387-page compendium of information on Labrador including not only descriptions of travel routes, but also photographs (some of the earliest), a brief anthology of history and bibliography of previous explorers, a wealth of natural history data including information on flora (especially trees) and fauna (from insects to mammals), anthropological and sociological information on the aboriginal and European inhabitants, climate data recorded during each day of their trip, and information ranging from fisheries in the region to the glacial history of the peninsula.

His 1896 report includes seven appendices listed as: Appendix I. *List of Mammalia of the Labrador Peninsula*; Appendix II. *List of Birds of the Interior of the Labrador Peninsula*; Appendix III. *List of the principal Food Fishes of the Labrador Peninsula*; Appendix IV. *List of Insects collected in the Interior of the Labrador Peninsula*; Appendix V. *Notes on the Structure of some Rocks from the Labrador Peninsula*; Appendix VI. *List of the Plants known to occur on the Coast and in the Interior of the Labrador Peninsula*; and Appendix VII. *Meteorological Observations in the Labrador Peninsula,* which includes temperature, pressure, wind velocity and cloud cover observations for each day until the last of their thermometers broke in June, 1894.

Low stated that they collected and "brought out" 120 species of plants from the Hamilton River (1894) leg of the expedition, along with specimens of birds, birds eggs, butterflies and insects. Nearly 200 "*specimens of typical rocks* [were] *brought home*" (Low 1894b, p. 139); 34 of these specimens were further examined in the laboratory and this work constitutes Appendix V.

Geology

Evaluation of Low's geological work must be tempered by the fact that it was completed long before isotope geochronology had developed to the point that the precise ages of rocks could be determined, and long before modern ideas on plate tectonics, mountain building, and metamorphism had been postulated. Low's work was also completed in a state of constant motion, and was truly reconnaissance, such that no detailed mapping could be completed.

Low's geological observations mainly involved detailed descriptions, down to the outcrop in places, of the track they followed; there is little 'big-picture' musing. Aside from the Innu place names, Low described somewhat whimsical locales mainly related to a canoe expedition such as Quartz Hill, Fault Hill, Shale Shute, Paint Mountain, Flour Lake, Sharp Rock Portage, Talking Falls, Disaster Rapids, Broken Paddle Brook, Broken Paddle River and Astray Lake; a place where the crew missed their route.

The main geological formations from oldest to youngest as defined by Low (1896) were the Laurentian ('crystalline Archean rocks'), the Huronian banded volcanic and sedimentary rocks, which were infolded with the Laurentian, and the Cambrian mixed detrital sedimentary, limestone, basic intrusive and volcanic rocks. Low described the Cambrian rocks unconformably overlying both the Laurentian and the Huronian. "*Basic irruptive*" rocks cut the Cambrian rocks and these in turn were cut by even younger granites. Much older eruptive rocks cut the Laurentian rocks. The legend for his series of four maps covering this enormous expanse of territory (Fig. 11) summarizes his thinking on geological relationships. The maps themselves cannot be represented adequately in this paper, but they are in the public domain. To examine these maps, interested readers are referred to the Geoscience Canada data repository, (http://www.gac.ca/wp/?page_id=306), where high-resolution files are placed for convenience.

The Laurentian, as mapped by Low, covered 90% of the Labrador Peninsula and comprised schists and gneisses. Low

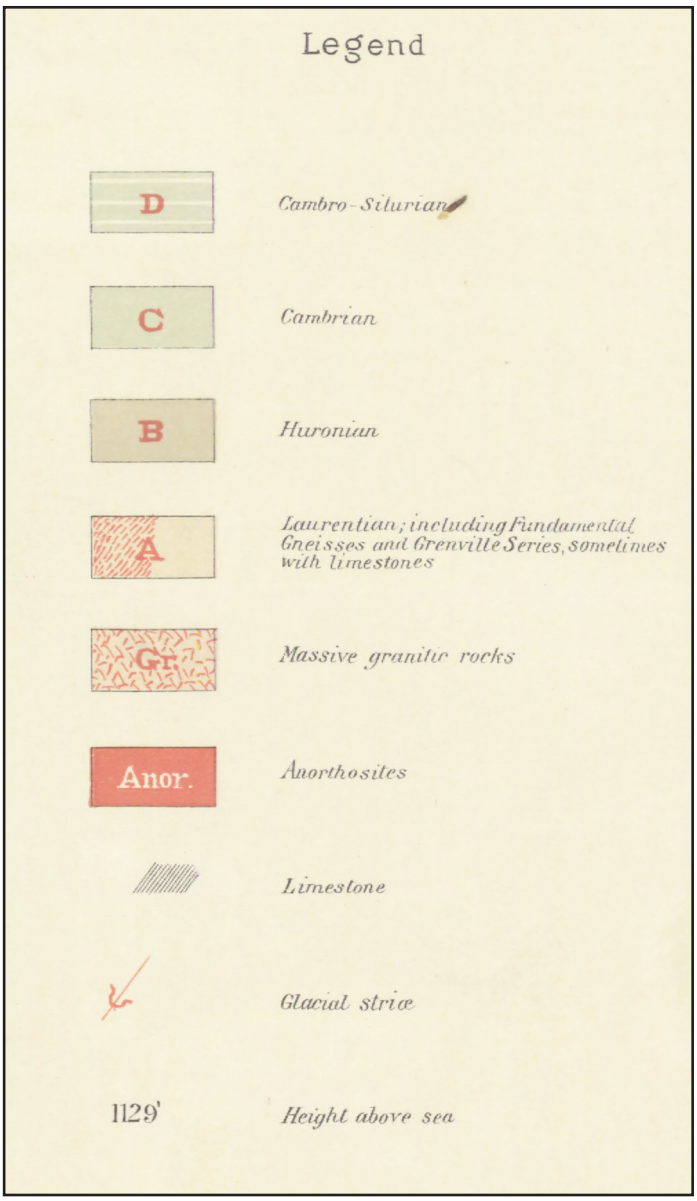

Figure 11. Geological legend from Low (1896). Natural Resources Canada.

(1896) suggested that "*by far the greatest area of the peninsula is underlain by medium to coarse-textured, hornblende-granite-gneiss, corresponding to the Fundamental Gneiss of Logan.*" "*Mica-gneisses and mica-schists*" that Low suggested (1896, p. 199L) were "*representatives of the Grenville Series of Logan,*" were the second most abundant rock type on the peninsula. Low mapped anorthosite, which he also included in the Laurentian designation, south of Nain, (now termed the Nain Plutonic Suite) as well as around Grand Lake (now termed the Mealy Mountains Intrusive Suite), and Lake Michikamau (now termed the Michikamau Intrusion).

The rocks of the Grenville Province, as this region is now called, have been proven to actually be much younger than the Archean at ca. 1.5–1.0 Ga. (e.g. Rivers 1997). The northwest boundary of the Grenville Province corresponds with Lake Mistassini, hence Low's 'Archean' rocks from Lake St. John

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Figure 12. a: Plate IV from Low (1895), "Esker Ridge along Ashuanipi Branch, Hamilton River" (note human figure on caribou moss in centre). Natural Resources Canada. b: A similar esker near Ashuanipi River, with Smallwood Reservoir in background (July 2011).

(Lac St. Jean) to Mistassini are actually much younger rocks of the Grenville Province. From Lake Mistassini to the Koksaok River, Low was correct in describing the rocks as Archean, but otherwise no other rocks on his journey actually constitute areas now defined as Archean in age. To the west of Esker, (a station on the Quebec North Shore and Labrador rail line, serving iron ore mines in the region), Archean basement rocks are exposed, but Low's trip along the Ashuanipi branch did not get that far west.

Based on detailed mapping and geochronology, the anorthosites mapped by Low (1896) as Laurentian (i.e. Archean), are now recognized as some of the youngest igneous rocks in Labrador at 1.5 to 1.2 Ga. They intrude all the older rocks. His Laurentian limestones belong to the much younger Grenville Province.

Low (1896) mapped the Huronian in two principal areas. The first area was along the East Main River in Quebec. The second area was southwest of Lake Mistassini, also in Quebec. He did map some Huronian rocks in western Labrador near the Ashuanipi River, but outcrops were too few to map out its areal extent.

In terms of the Cambrian, Low was hampered by the lack of fossils, such that he could not directly correlate the Labrador 'Cambrian' with the Lower Cambrian rocks from the Labrador Straits area, exposed in both Labrador and Newfoundland. Low mapped the iron formations of western Labrador as Cambrian. The remarkably iron-rich rocks, which Low noted along the Koksoak River and in western Labrador, are part of what is presently called the Labrador Trough (e.g. Neal 2000), a ca. 2.0–1.88 Ga sedimentary sequence that was deposited on the shelf along the margin of the more ancient Archean continent. Thus, Low was incorrect in assigning an age to the iron formations, but correct in correlating the iron-bearing rocks from the Koksoak River south to the Ashuanipi.

The discovery and documentation of the iron-bearing rocks of the Labrador Trough is obviously a tremendously significant product of Low's geological work. The elemental compositions of some rocks that he collected as reported in 1896 are remarkably similar to those reported by Neal (2000) from modern geochemical analyses over 100 hundred years later. In addition to the iron, there has been mineral exploration conducted over the anorthosites that Low mapped at Lake Michikamau (Smallwood Reservoir) and Ossokmanuan Lake. These rocks are analogous to those that host the Voisey's Bay nickel–copper–cobalt deposits (e.g. Naldrett et al. 1996; Evans-Lamswood et al. 2000).

Low (1895) also noted Quaternary geomorphologic features such as striae, eskers, moraines and erratics (Fig. 12). In fact, he recorded a large number of striae directions from throughout the region. Low mapped striae at the Nachvak trading post, corroborating Bell's (1884, 1885) observations that although glacial striae were visible up to a height of 104 m, the tops of the Torngat Mountains appeared to be unglaciated. Low also formulated the supposition that there was a central glacial ice-cap that covered Labrador and that the ice accordingly flowed outwards in different directions from this centre. Along with describing the iron-bearing rocks of western Labrador, Alcock (1944) suggests that this idea on the continental ice sheets constitutes the most important results of Low's expedition.

Photographs

Low took numerous photographs of the Labrador interior. These plates constitute some of the earliest visions of the region. His 1896 report only contained four plates, including that of Grand (Churchill) Falls reproduced as Figure 6b. An intriguing feature of some of these images (as in Fig. 6b and Fig. 12a) is that they are not the actual photographs, but artistic renderings of the photographs in pen and ink. Presumably this reflects the difficulty of publishing true photographic images compared to line drawings. The vast majority of Low's photographs, however, remain unpublished in the Natural Resources Canada photographic archive (there are 376 photos attributed to A.P. Low in the files).

Descriptions of the Hudson Bay Company and Other Trading Posts

Low also provides important historical information. According to Low (1896, p. 41L):

> "*In 1857 there were seven trading posts in the interior of the peninsula* [these included posts at Lake Winokaupow, Michikamau, and Fort Nascaupee (now Fort Nascopie) in Labrador], *and at present there are but three, Waswanipi, Mistassini and Nichicun* [all in what is today Quebec]. *Fort Chimo … was not then opened. The policy of the Hudson's Bay Company was then to keep the Indians away from the coast and contact with opposition traders; this has now changed, and the great body of natives travel annually to and from their hunting grounds in the interior, to the various coast posts.*"

The Michikamau and Fort Nascaupee posts closed in 1873, and the Lake Winokaupow post closed in 1874. Low (1896, p. 153L–154L) suggests that Fort Nascaupee was quite successful but closed because the Nascaupee 'deserted' it in favour of Fort Chimo, which was established in 1866.

> "*Those* [the Nascaupee] *from the north going to Fort Chimo while the southern Indians traded at Mingan or Seven Islands on the Gulf of St. Lawrence, or at Northwest River – all of them preferring to undertake the long arduous journey to and from the coast, where they could obtain better prices for their furs, and purchase provisions and other necessities at a much cheaper rate than at the interior post, where the cost of transport and maintenance added several hundred per cent to the original cost of the goods.*"

Thus, the fate of the inland posts was related to the economics of transport costs; a theme that resonates in Labrador to the present. Low (1896) described the long-closed post at the head of Lake Winokaupow, located on his map of the region:

> *"there is a wide, sandy plain about twenty-five feet above the river, and on it the Hudson's Bay Company formerly had a post, which was abandoned in 1873, and subsequently destroyed by fire"* (p. 136L). *"Lake Winokaupow is well stocked with fish, the employees of the... company when stationed there, depended to large extent on fish for food. In the old journals of the post* [held at Rigolet], *the catches of the nets are recorded, and show that fish were taken abundantly, especially in the spring. The catch included carp, whitefish, lake and river trout in the order named. Potatoes and turnip were grown at the post, but not very successfully, as after planting in the spring, everybody left the place, and did not return, until September, leaving the crops to grow without cultivation."* (p. 137L).

Another post was located along a stream that flowed southwest from Lake Michikamau into the Lobstick Lake route (see Fig. 13). Presumably, the site of this post at Michikamau is now underwater in the Smallwood Reservoir, which includes the former waters of Lake Michikamau.

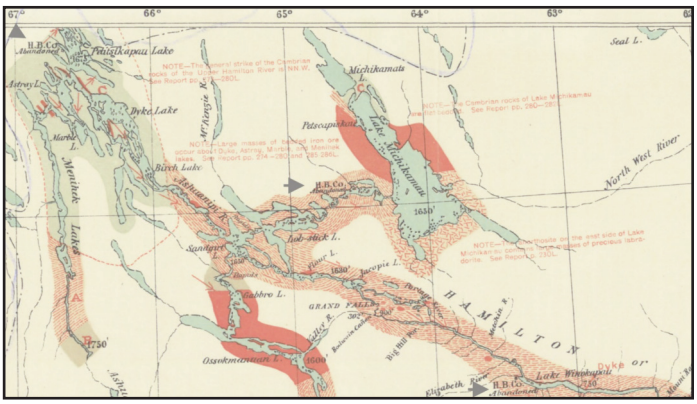

Figure 13. Location of Hudson's Bay posts: Lake Winokaupow to southeast, Lake Michikamau in the middle, and Fort Nascaupee (Nascopie) to the northwest (labeled as H.B.Co Abandoned); detail from Low's (1896) geology map. Natural Resources Canada.

> *"the Hudson's Bay Company kept a small outpost called Michikamau during the time that Fort Nascaupee was occupied. Nothing can be learned about this outpost from the...* [Company] *journals at Rigolet or Northwest River, beyond the bare facts that a post was maintained there for a number of years, and was finally abandoned from the same reasons which caused Fort Nascaupee to be given up. This post was not visited, but from the accounts of the Indians, some of the buildings have been accidentally burnt, and those remaining are in about the same state of decay as Fort Nascaupee."* (Low 1896, p. 159L-160L).

The westernmost Hudson's Bay Company post in the Labrador interior, Fort Nascaupee, was established ca. 1841 along a northern bay in Lake Petitsikapau (Low 1896), and is located on the map of Figure 13:

> *"The ruins of Fort Nascaupee stand in a small clearing, close to the shore of the lake.... The houses were built of small, squared logs, with board roofs. When visited, the dwelling-house was in a fair state of repair, with the window sashes and some of the glass still in place.... The roof was nearly unbroken, and leaked only in a few places* [they must have overnighted there]... *adjoining the main building on each side are two smaller buildings, evidently used for a kitchen and store; the roofs of both have fallen in. About fifty yards behind, the powder-house covered with earth was seen, with broken roof and partly filled up with earth. Adjoining this is a small burying place with a large wooden cross in its centre, but without any marks on the graves, which are probably those of Indians. In the attic a fragment of "The Albion", of March 7th, 1846, was found. Close to the house were several patches of rhubarb eighteen inches high, while a number of introduced plants still flourish in the old door-yard"* (p.154L).

This paper was presumably the "*The Albion, or British, colonial, and foreign weekly gazette*" published in New York. Clearings, depressions and scattered artifacts along with rhubarb remain the only indication of this fort (McCaffrey 1986). Low's photograph of the site is provided in Figure 14.

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Figure 14. Photograph of Fort Nascaupee (Nascopie) Hudson's Bay post in 1894 from Low's journey. Natural Resources Canada photo archives.

Figure 15. 'Sketch Map' of the Labrador Peninsula that accompanies Low's 1894a report. Natural Resources Canada.

Maps

The expedition produced a number of maps, both geological and geographical, and as such these constitute the first documentation of the Labrador interior and were used by most subsequent trekkers. The map from the Low (1894a) report was termed a 'Sketch Map' and it shows the Labrador Peninsula, the coastline, the interior along the expedition route and some other interior landmarks (Fig. 15). Note that the map shows the North West River flowing from Lake Michikamau to Grand Lake (this latter body of water is not named on the map), and also a small tributary flowing from the northeast into the North West River just above the mouth of Grand Lake. The later map (Fig. 16) attached to Low's (1895) *Geographical Journal* report is basically the final version of the geographical map. It outlines the route taken during the expedition and illustrates the correct orientation of Lake Michikamau, but also contains the North West River linking Grand Lake and Lake Michikamau.

The final maps from the expedition were published in 1896 and were done so in four separate sheets (located in the Geoscience Canada data repository); the southeastern map sheet also includes geological data on the area from Hamilton Inlet south to Partridge Point compiled from Packard (1891). These maps are beautifully drawn, and while described as geological maps, they also provided geographical, physiographical, and cultural information for the territory along their routes. Considerable care was taken to reproduce the aboriginal place names; for instance, the hill behind Makkovik, now called Monkey Hill, was originally named Altagaiyaivik according to Low's maps.

Low's maps played an important role in the ill-fated 1903 Leonidas Hubbard expedition. The 1895 *Geographical Journal* map shows the 'North West River' flowing into the head of Grand Lake splitting into two just above Grand Lake (Fig. 16). One river, continues north to an unnamed lake, whereas, the North West River branch was mapped as heading west into Lake Michikamau. On the final 1896 map, in the Grand Lake watershed, the river which splits off to the north of the North West River was correctly mapped as 'the Nascaupee,' and the

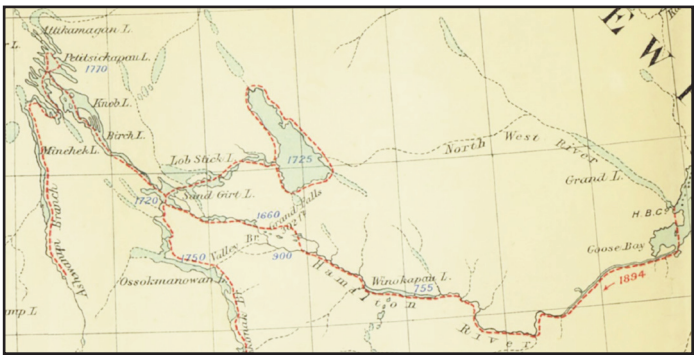

Figure 16. Close-up of map from Low's (1895) *Geographical Journal* paper report illustrating the canoe route up Hamilton (Churchill) River (note North West River flowing from Lake Michikamau). – this was reproduced from Geographical Journal 1895.

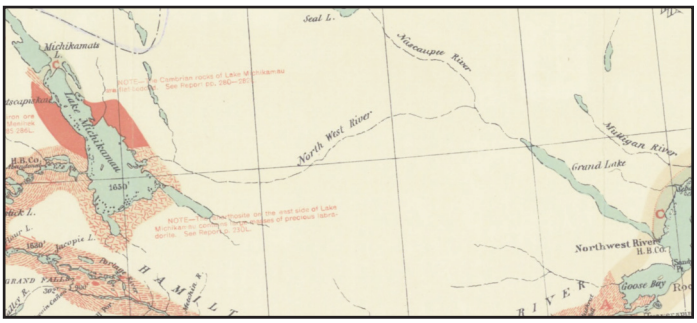

Figure 17. Detail of Lake Michikamau, North West River and Grand Lake from Low's (1896) geology map. Natural Resources Canada.

lake from which it flows was termed Seal Lake. But the map again showed a North West River flowing from Lake Michikamau into Grand Lake (Fig. 17). In these maps (Low 1895, 1896), the geographical detail of the rivers leading towards Lake Michikamau, and hence to the route to George River is incorrect. However, he did represent the rivers with dashed lines suggesting that the information was approximate and unconfirmed.

As subsequently shown by Mina Hubbard's journey, the route to Lake Michikamau goes up the Nascaupee (now Naskaupi River) and through Seal Lake. There is no river running west to Lake Michikamau as the so-called 'North West River,' and in fact there is no North West River flowing into Grand Lake. The modern North West River is a short waterway flowing out of Grand Lake through the community of the same name. Wallace (1905) includes a map (p. 261) which is listed as "*From map accompanying Report by A.P. Low Geological Survey of Canada*" which incorporates elements of both Low's 1895 and 1896 maps and has a 'North West River' flowing from Lake Michikamau towards Grand Lake. If he was using this map, it is easy to understand why Hubbard stubbornly held to the notion that he had to journey *west* to Lake Michikamau, rather than north and then west as he should have done.

Wallace (1905, p. 6) did blame Low's map of Grand Lake as the cause of their tragedy, stating that "*the Geological Survey map is the best of Labrador extant, but its representation as to the Northwest River (made from hearsay) proved to be wholly incorrect, and the mistake it led us into cost us dear.*" However, it is also an example of how Hubbard should have used local knowledge.

IRONY

The lives of both A.P. Low and D.I.V. Eaton would encounter unexpected turns in the years that followed their monumental expeditions. In 1907, after leaving active field work and serving as Director of the GSC, Low was "*seized with a severe attack of meningitis from which he never wholly recovered*" (Alcock 1944, p. 197). Stewart (1986, p. 275) provides a more detailed description, stating that Low was:

> *"…stricken by what is thought to have been a cerebral hemorrhage and, soon after that, by spinal meningitis. He never fully recovered and eventually retired in 1913 under a cloud of controversy over his physical inability to carry out his work. Amazingly, the strength and endurance of his youth did not totally fail Low, for he lived out a long, apparently quiet, retirement in Ottawa, ultimately dying in virtual obscurity in 1942 at the age of 81.*"

Zaslow (1975) noted a contemporary report which suggested that Low had suffered an "*attack of the grip"* in January 1907 and that he been "*reported dying*" (p. 263). Other colleagues suggested that Low had suffered from a serious brain disease and that it was uncertain that he will recover his mental faculties. Zaslow succinctly sums up the ironic misfortune that constituted the final years of Low's life as: "*tragically, he lived on and on, the mind of a child inhabiting his once powerful frame.*"

D.I.V. Eaton served through the Boer War and rose up the ranks of the Canadian military to become Lieutenant-Colonel and commander of B Battery, Royal Canadian Horse Artillery (Wright 1998). He was a professional soldier who served through the period of peace from the Boer War to World War I. He served in France during World War I and on the eve of the Battle of Vimy Ridge, while visiting his troops preparing for the great engagement, he was mortally wounded by enemy fire on April 8, 1917 (Wright 1998); he succumbed to his injuries on April 11, 1917.

CONCLUSION

Albert Peter Low's exploration through Labrador provided a veritable cornucopia of data on what was, at the time, a last great unexplored wilderness of North America. The story of the expedition itself was perceived by the outside world as a journey of epic proportions and provided endless evenings of inspiration to dreamers such as Leonidas Hubbard. Alcock (1944) went so far as to state:

> *"…ranking as the greatest of these* [in comparison with other GSC expeditions through Canada] *were the achievements of Low in traversing and investigating the vast hitherto unexplored spaces of the Labrador Peninsula. In fact, the information about this region, both geographical and geological, is so largely the result of this explorer, that the names Low and Labrador are almost synonymous."*

Reviewing the route, the distances travelled, the observations made, and the incredibly difficult work that the trip must have entailed, one can only come away with a sense of awe at what Low, Eaton and their crew achieved. The trip required constant counting. As described by Jolliffe (1987), GSC field crews had to count each step, and even every paddle stroke, to define distances. Meteorological measurements were made and recorded every day. Descriptions of the day's observations were dutifully written down each evening. Hundreds of specimens, ranging from birds' eggs to rocks, were packaged and carefully transported out, over every painstaking metre of portage, every kilometre of each river, and up and down steep cliffs. They actually brought out more than they took in, unlike many of today's geologists.

Compared to the other 'explorers' of Labrador, Low's group were professionals of the highest order. They knew what they were doing and equipped themselves accordingly for their travels. Low's crew travelled for sixteen months covering thousands of kilometres by the most basic of means, their own locomotion, and yet all returned in good health (however, Low did lose a man in 1895 to an accident on some rapids).

With all due respect owed Low for his trip, one cannot but also feel tremendous respect for the aboriginal inhabitants of Labrador who pioneered the routes and portages, and even built the cliff steps that Low's group used. These people did not make a single voyage; they made these perilous journeys annually to the coast, both out and back in, to trade their furs. Low was essentially following and reporting on their travel routes, not breaking the trails.

Figure 18 is a photograph of Low and Eaton, somewhere in central Labrador in the middle of their expedition, at the peak of their prowess as explorers, bestriding the Labrador wilderness. Unfortunately, both their subsequent fates were ironic and tragic. Low went from a man of incredible physical ability to a broken invalid some 13 years later, lingering on for a further 35 years. Twenty-three years later, Eaton, a professional soldier for in excess of 20 years, was mortally wounded, on its eve, in preparation for what is considered the greatest Canadian military triumph in which the 'creeping barrage' of artillery support was critical. Eaton was a commander of, and

Figure 18. A.P. Low and D.I.V. Eaton, central Labrador in 1894; as on file with Natural Resources Canada. Natural Resources Canada.

expert in, artillery techniques, and would most assuredly have been involved in the planning for the Battle of Vimy Ridge.

ACKNOWLEDGEMENTS

Martha MacDonald and the Labrador Institute are kindly thanked for permission to revise and republish the earlier Low paper from the *Very Rough Country* volume. It gave me a chance to become reacquainted with the most formidable Mr. Low. Andy Kerr is also kindly thanked for the opportunity to take Mr. Low out for another small paddle; Andy's gentle reminders, urgings on and editing, helped me finish. The modern-day map-making whiz, Mr. Rod Churchill of Altius Minerals Corp. produced Figure 1. Low's photos and maps were retrieved from the Natural Resources Canada repository and photo archives and this information is licensed under the Open Government Licence – Canada, https://geoscan.nrcan.gc.ca/starweb/geoscan/servlet.starweb?path=nrcanphoto/nrcanphoto_e.web.

REFERENCES

Alcock, F.J., 1944, Memorial of Albert Peter Low: Proceedings of the Geological Society of America, Annual Report for 1943, p. 195–200.

Bell, R., 1884, Observations on the geology, mineralogy, zoology and botany of the Labrador Coast, Hudson's Strait and Bay: Geological Survey of Canada Report of Progress for the Years 1882–1884.

Bell, R., 1885, Observations on the geology, zoology and botany of Hudson's Strait and Bay, made in 1885: Geological and natural history survey of Canada, 27 p.

Brookes, I.A., 2016, "All that glitters…:" The scientific and financial ambitions of Robert Bell at the Geological Survey of Canada: Geoscience Canada, v. 43, p. 147–158, http://www.dx.doi.org/10.12789/geocanj.2016.43.09.

Buchanan, R., Hart, A., and Greene, B., 2005, The woman who mapped Labrador: The life and expedition diary of Mina Hubbard: McGill-Queens University Press, Kingston, 544 p.

Cuff, R., and Wilton, D., 1993, Juke's excursions: being a revised edition of Joseph Beete Jukes' excursions: In and about Newfoundland during the years 1839 and 1840: H. Cuff Publications, St. John's, NL, 228 p.

Evans-Lamswood, D.M., Butt, D.P., Jackson, R.S., Lee, D.V., Muggridge, M.G., Wheeler, R.I., and Wilton, D.H.C., 2000, Physical controls associated with the distribution of sulfides in the Voisey's Bay Ni–Cu–Co deposit, Labrador: Economic Geology, v. 95, p. 749–769, https://doi.org/10.2113/95.4.749.

Finkelstein, M., and Stone, J., 2004, Paddling the boreal forest: Rediscovering A.P. Low: Dundurn Press, Toronto, ON, 336 p.

Geren, R., 1990, Cain's legacy: The building of Iron Ore Company of Canada: Iron Ore Company of Canada, Montreal, PQ, 251 p.

Gittins, J., 1985, History of geology: 1985: Centenary of a famous journey by A.P. Low: Geoscience Canada, v. 12, p. 39–40.

Grace, S., 2000, 'A Woman's Way:' Canadian narratives of northern discovery, *in* Kuester, M., Christ, G., and Beck, R., *eds.*, New Worlds: Discovering and constructing the unknown in anglophone literature: Verlag, Munich, p. 177–202.

Hubbard, M.B., 1908, A Woman's way through unknown Labrador: McGill-Queen's University Press, Montreal-Kingston, 210 p.

Jolliffe, A.W., 1987, Discovery of the 1930s: The Con Mine at Yellowknife, *in* Padgham, W.A., *ed.*, Yellowknife Guide Book: Geological Association of Canada Field Guide, St. John's, NL, p. 5–10.

Kranck, E., 1939, Bedrock geology of the seaboard region of Newfoundland Labrador: Newfoundland Geological Survey Bulletin 19, 50 p.

Low, A.P., 1885, Report of the Mistassini Expedition 1884–5: Geological Survey of Canada, Annual Report 1885, v. 1, Part D, 50 p.

Low, A.P., 1893, Letter 05-October-1893: Geological Survey of Canada Annual Report 1893 – Summary Report on the operations of the Geological Survey for the year 1893, p. 4A–6A.

Low, A.P., 1894a, North-East Territory–Summary Report on the operations of the Geological Survey for the year 1894: Geological Survey of Canada Annual Report 1894, p. 62A–80A.

Low, A.P., 1894b, The recent exploration of the Labrador Peninsula: Canadian Record of Science, v. 4.3, p. 134–140.

Low, A.P., 1895, Explorations through the interior of the Labrador Peninsula 1893–1894; The Geographical Journal, v. 5, p. 513–534, https://doi.org/10.2307/1774132.

Low, A.P., 1896, Report on exploration in the Labrador Peninsula along the East Main, Koksoak, Hamilton, Manicuagan and portions of other rivers in 1892–93–94–95: Geological Survey of Canada Annual Report, v. 8, 387 p.

MacDonald, M., 2010, Very rough country: Proceedings of the Labrador Explorations Symposium, Labrador Institute of Memorial University, Happy Valley–Goose Bay, 253 p.

McCaffrey, M.T., 1986, Archaeology in western Labrador: Archaeology in Newfoundland and Labrador 1986, Annual Report No. 7, p. 72–113.

Naldrett, A.J., Keats, H., Sparkes, K., and Moore, R., 1996, Geology of the Voisey's Bay Ni–Cu–Co Deposit, Labrador, Canada: Exploration and Mining Geology, v. 5, p. 169–179.

Neal, H.E., 2000, Iron deposits of the Labrador Trough: Exploration and Mining Geology, v. 9, p. 113–121, https://doi.org/10.2113/0090113.

Packard, A.S., 1891, The Labrador Coast: A journal of two summer cruises to that region: With notes on its early discovery, on the Eskimo, on its physical geography, geology and natural history: N.D.C. Hodges, New York, 513 p.

Pratt, A., 2002, Lost lands, forgotten stories: A woman's way through unknown Labrador: Harper Collins, Toronto, ON, 258 p.

Rivers, T., 1997, Lithotectonic elements of the Grenville Province: Review and tectonic implications: Precambrian Research, v. 86, p. 117–154, https://doi.org/10.1016/S0301-9268(97)00038-7.

Stewart, H., 1986, A.P. Low (1861–1942): Arctic, v. 39, p.274–275, https://doi.org/10.14430/arctic2088.

Tanner, V., 1944, Outlines of the geography, life and customs of Newfoundland-Labrador (the eastern part of the Labrador Peninsula): Based upon observations made during the Finland–Labrador expedition in 1937: Acta Geographica, v. 8, p. 557–563.

Wallace, D., 1905, The lure of the Labrador wild: The story of the exploring expedition conducted by Leonidas Hubbard, Jr.: F. Revell, NewYork, 331 p.

Wilton, D.H.C., 2010, Albert Peter Low – The Iron Man of Labrador. in very rough country, *in* MacDonald, M., *ed.,* Proceedings of the Labrador Explorations Symposium 2010: Labrador Institute of Memorial University, Happy Valley-Goose Bay, NL, p. 126–162.

Winchester, S., 2001, The map that changed the world: William Smith and the birth of modern geology: Harper Collins, New York, 368 p.

Wright, G., 1998, Eaton, Daniel Isaac Vernon: Dictionary of Canadian Biography, University of Toronto/Université Laval, v. 14. Accessed from: http://www.biographi.ca/en/bio/eaton_daniel_isaac_vernon_14E.html.

Zaslow, M., 1975, Reading the rocks: The story of the Geological Survey of Canada, 1842–1972: Macmillan Company of Canada, Toronto, 599 p.

Received June 2017
Accepted as revised February 2018

For access to the four geology maps that accompany A.P. Low's (1896) report, please visit
GAC's open source GC Data Repository link at:
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