

InfoNorth

The McGill Axel Heiberg Expeditions: Reconnaissance Year, 1959

by Peter Adams

INTRODUCTION

FIFTY YEARS AGO, in 1959, the first of several McGill University expeditions to Axel Heiberg Island in what is now Nunavut, Canada, took place. These “expeditions” were succeeded over the years by a series of field seasons, almost unbroken right down to the present, involving universities and other research organizations from around the globe. Today the base of the original expeditions at Expedition Fiord, western Axel Heiberg Island, has become the McGill Arctic Research Station. Adjacent to it is the Canadian Space Agency’s analogue research site, part of the agency’s Analogue Research Network.

THE HISTORICAL SETTING

The decade that ended in 1959 was one in which there was great interest in the polar regions. Like the current decade, it included an international polar year (the International Geophysical Year, which had a strong focus on high-latitude science). In northern Canada, the Cold War stimulated a great deal of activity, notably the completion of the air photo coverage of Canada, the construction of the DEW Line and other anti-missile facilities, and the establishment of weather stations in the sub-Arctic and High Arctic (Thomas, 1974). Many of these activities were, to a greater or lesser extent, joint USA–Canada enterprises. The operation of Soviet and American nuclear submarines in the Arctic Ocean stimulated Canadian investments in the Polar Continental Shelf Project (PCSP), which began as a federal research and mapping program on Canada’s Arctic shelf, but by the end of the decade had evolved into the research expedition support system that it is today (Foster and Marino, 1986). PCSP is but one example of federal involvement in the North during the 1950s. Using current names to evoke some of the federal agencies of the day, the Geological Survey of Canada (GSC), Fisheries and Oceans, Indian and Northern Affairs, Transport Canada, the Armed Forces, and others were all active in research and survey activities across the North in those days, the GSC particularly so (Adams, 2007).

In that decade, Canadian universities were becoming major players in research in the Canadian North, laying the foundation for a massive expansion of university research in the following decades. The universities of Laval, Saskatoon, Toronto, British Columbia, and others had or were

developing a polar capacity. McGill University and the Arctic Institute of North America (AINA), then located in Montreal adjacent to McGill, were in the forefront of this activity (Adams, 2007). For example, McGill had a year-round teaching and research field facility in the sub-Arctic (the McGill Sub-Arctic Research Laboratory, now the McGill Subarctic Research Station) and played an important part in Operation Hazen on Ellesmere Island (Jackson, 2002). During that same period, McGill organized a series of expeditions to Baffin Island and was a key participant in the research voyages of the research vessel *Calanus*, up the east coast of Canada (Adams, 2007).

During the reconnaissance year (1959) of the McGill expeditions to Axel Heiberg, AINA was preparing its own Devon Island Expedition (Apollonio, 1962). This expedition, like its McGill counterpart, was succeeded by an active field station and field research projects down to the present decade (resulting, for example, in the fine long-term records for the Devon Island Ice Cap (e.g., Koerner, 2002).

Canada’s North was very different in the 1950s than it is today. During that decade, a group of Inuit had been deliberately relocated from sub-Arctic northern Quebec to Resolute, on Cornwallis Island, then the site of one of the new High Arctic Weather Stations and the takeoff point for both the McGill and the AINA expeditions (Canadian Arctic Resources Committee, 1991). Today, Resolute is the base of the PCSP and the official hub of federal activity in the High Arctic. At that time, the Inuit did not have the vote, and the northern territories (then the Yukon and Northwest Territories, now Nunavut, the Yukon, and the Northwest Territories) were creatures of the federal government, with appointed, not elected, governing councils. Transportation, navigation, and communications were slow and uncertain, both within the High Arctic and between the South and the High Arctic. There was a strong military presence, both Canadian and American, in the North.

Echoes of these differences appear in the following account of my experience as the youngest member (the sole field assistant and now sole survivor) of the reconnaissance year of the McGill Axel Heiberg Expeditions.

THE 1959 JACOBSEN-McGILL EXPEDITION

The McGill expeditions to Axel Heiberg Island began as the Jacobsen-McGill expeditions, as they were initially

jointly sponsored by the University (with federal, U.S., and private sector support) and George Jacobsen of the Tower Company, Montreal, who was very actively involved in northern construction in the period after World War II. The expeditions were an outgrowth of widespread polar interests at McGill, including the ideas and drive of Ken Hare, who was the Chair of Geography (Adams, 2007). The view at McGill was that the time was ripe for a long-term, in-depth study of part of High Arctic Canada, to build on the short-term, survey-type activities that predominated at the time. Also, there was interest in extending McGill's teaching and training activities, already established in the sub-Arctic, to the far North.

As far as I can tell, Axel Heiberg Island was chosen as the site for this enterprise for three main reasons. The first was that it provided a useful sample of Canada's very High Arctic territory, as revealed by the still-new aerial photography. Another was that George Jacobsen had been involved with a short expedition to the eastern side of the island, using an amphibious Canso aircraft, in 1953 (Avery, 1998). The third was that Fritz Müller (then Müller-Battle), a graduate of Zurich University, Switzerland, with a PhD from McGill, had been chosen to lead the expeditions. Müller was a glacier scientist with experience in Greenland and the Himalayas, as well as the Alps. Air photographs had shown that Axel Heiberg Island is well endowed with glaciers. I hesitate to suggest that the promise of oil was already biasing High Arctic research, but GSC research during the 1950s had confirmed the presence of oil in that part of the Arctic.

The purpose of the reconnaissance year was to select a region suitable for such a long-term study and, within it, to select a base campsite that would be convenient and productive for research over many years.

After a flurry of media interviews and preparation, the reconnaissance expedition left Dorval Airport on 13 July. Fritz Müller, the leader; was accompanied by Håkon Kranck, a professor of Geology at McGill with a special interest in gypsum domes, who supervised graduate students in later expedition years and who died in 1989 (see Dunbar, 1989), and George Jacobsen, an engineer and businessman with a special interest in permafrost, who was named Officer of the Order of Canada in 1971 and died in 1994 (Jacobsen, 1961; McGill University, Dept. of Geography, 1963), and Peter Adams, field assistant. I had just arrived from the University of Sheffield, England, to be a first-year graduate student and Carnegie Arctic Scholar at McGill University.

We flew to Churchill, Manitoba, in a commercial DC-4. This trip, via Ottawa and Winisk, a Mid Canada Line site and base for RCAF Station Winisk, took approximately 12 hours. Churchill at that time was a major military base and rocket range, involving all three services, with a formal officers' mess and "Eskimos only" areas on the base. We stayed there for three days, mainly because Resolute Bay on Cornwallis Island, our supply base for Axel Heiberg, was experiencing one of its fairly common communication blackouts.

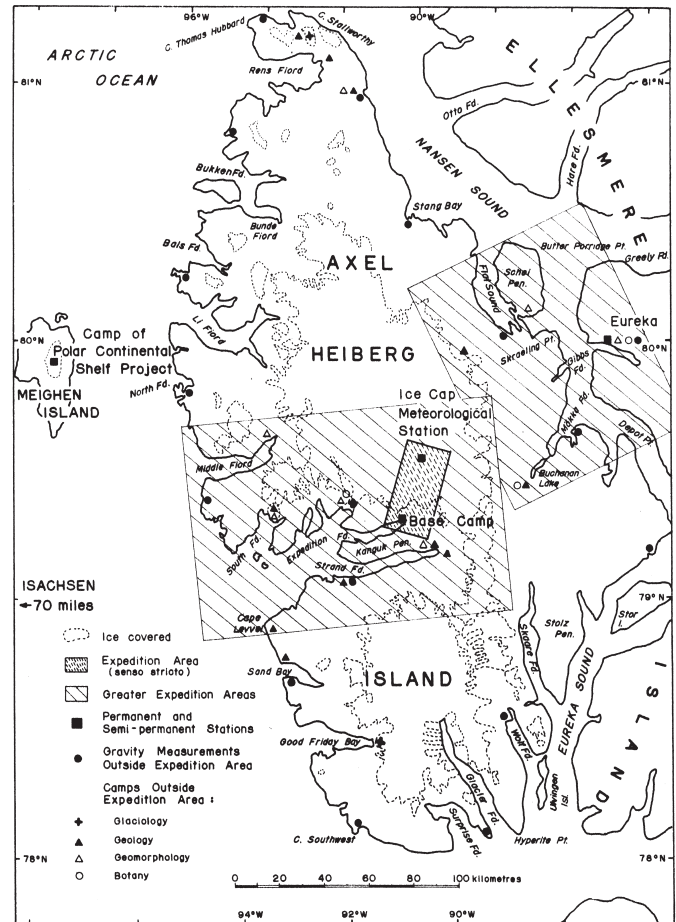


FIG. 1. Map 2 from Müller, B.S. (1961), a report that covers the 1959 and 1960 seasons. In 1959, the focus was the shaded area with Cape Levvel in its southwest corner plus Buchanan Lake. Most of the place names were from the Sverdrup Expedition at the turn of the century. Expedition Fiord had previously been subsumed by Sverdrup's "South Fiord." Buchanan Lake was named for the navigator of the Jacobsen Expedition of 1953 for which the pilot was Weldy Phipps.

We continued from Churchill to Resolute in a North Star, a four-engine aircraft from the RCAF Air Transport Command's No. 426 Squadron. The aircraft stopped to pick up fuel at Hall Beach (now Sanirajak, Nunavut), a DEW Line site on the Melville Peninsula, where "Eskimos only" signs were again in evidence. We arrived in Resolute on 16 July. At that time, Resolute was a USA-Canada weather station commanded, as far as I could tell, by a Canadian flight lieutenant. There, we first met Weldy Phipps, our main expedition pilot, who was working for Bradley Air Services. His Piper Super Cub aircraft was fitted with the latest innovation: balloon tires. Phipps, a longtime resident of Resolute, later became famous not only as a bush pilot, but as a member of the Northwest Territories Council and Member of the Order of Canada (Avery, 1998). He and Bert Bury, another pilot, with an Otter, flew various supply trips to and near Axel Heiberg. Unfortunately, we were stuck in Resolute because of further communication problems and fog. During our

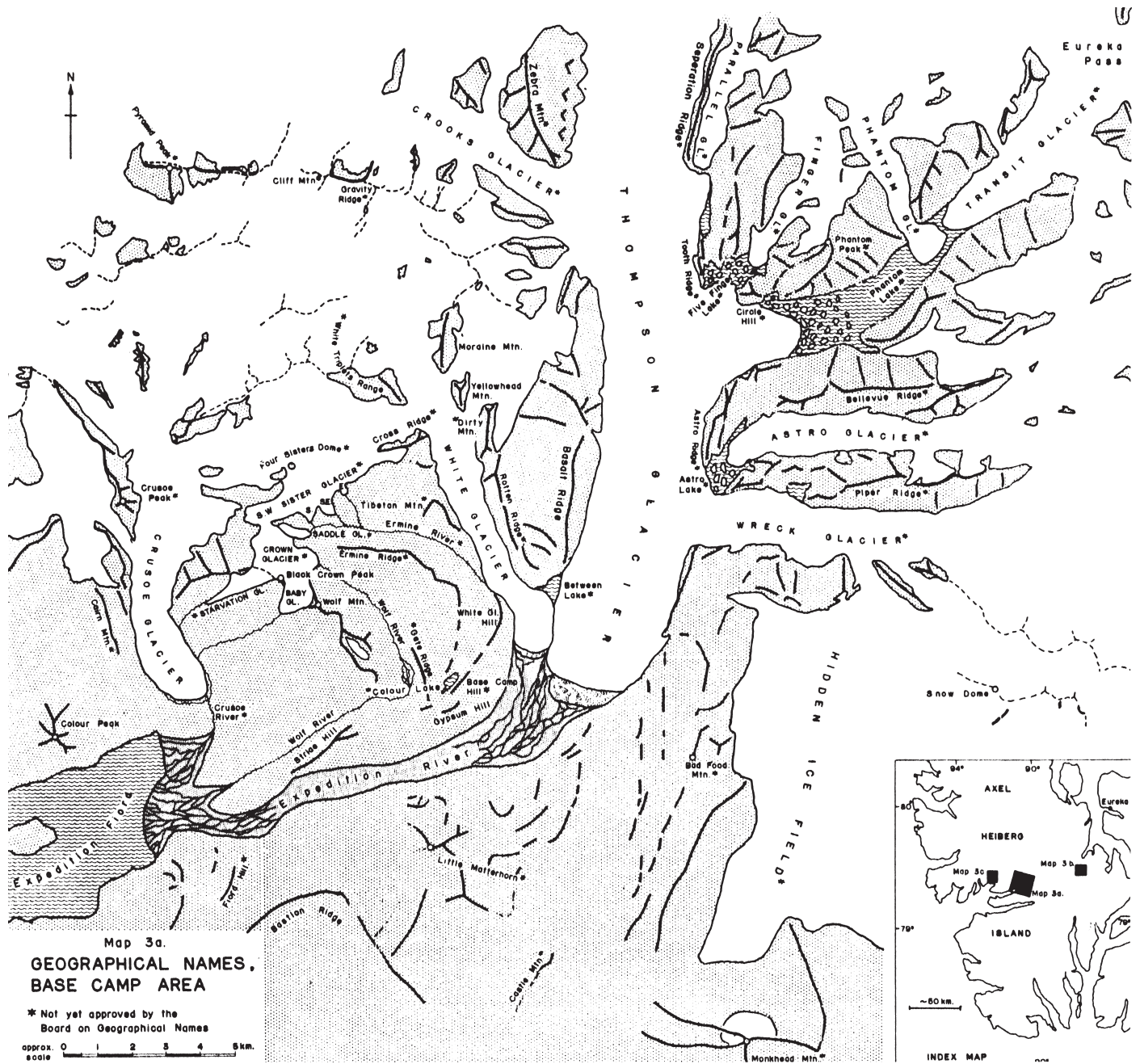


FIG. 2. Map 3a from Müller, B.S. (1961). Most of these names were eventually adopted. The Mosquito Camp of 1959 was close to the name "Crusoe River" on this map. The base camp selected in 1959 was beside Colour Lake, now site of the McGill Arctic Research Station. The Moraine Camp mentioned was, and is, just below Yellowhead Mountain, beside White Glacier. Maps 3b and 3c in the index cover the areas of Buchanan Lake and the Iceberg Glacier. The latter is the only glacier on Axel Heiberg that reaches the sea.

stay, a private U.S. Otter on wheels and skis suddenly made contact with the blacked-out Resolute radio. Phipps poured gasoline into a narrow trench alongside the airstrip and lit it to guide the plane in through the fog. At that time, the relatively pristine condition of Cornwallis Island enabled me to photograph a herd of muskoxen within easy reach of the camp, with a plastic pocket camera.

George Jacobsen chartered a DC-3, which showed up on 21 July to take us to Eureka, another USA-Canada weather station, on Ellesmere Island, which was to become our takeoff

point for Axel Heiberg. The pilot, Red Martindale, spread our topographic maps (very limited, see Ommanney, 1969: Chapter 5) on the floor of the aircraft to plot our course.

Phipps was already in Eureka when we arrived. He flew Müller to Strand Fiord on the west side of Axel Heiberg (Fig. 1), flying over the mountains and ice caps that form the central spine of the island. He came back for me (the Piper is a one-passenger aircraft) and then Jacobsen. He slept for a while before bringing Kranck over. We established a temporary camp on the south side of Strand Fiord, not far from



FIG. 3. Fritz Müller surveying on Wolf Mountain (see Fig. 2), 1190 m, with the principal study glaciers, White and Thompson, below.

Cape Levvel, near a pre-existing gasoline cache, probably one of many that Phipps maintained throughout the islands. He had dropped off some of our gear there. We called it Gentian Camp. Phipps had to return to Resolute because of problems with another Cub, and Jacobsen went with him. We began to work in the vicinity of that camp—for example, beginning the plane survey triangulation of the area (see Haumann, 1961). We had an air photo mosaic of the general region as guide for the mapping and travel. The only radios were in the aircraft.

Jacobsen and Phipps returned after a couple of days, and Müller began systematic flights around the region. On 25 July, we moved to “Mosquito Camp,” near sea level on the delta and north bank of the Expedition River, just below the Crusoe Glacier, in Expedition Fiord (Fig. 2). These local names and others in Figure 2 were not in use at the time. The site of the recently established Canadian Space Agency facility is close to that of this first camp. “Expedition Fiord” at that time was subsumed by the name “South Fiord,” which had been given to the entire embayment by the Sverdrup Expedition at the turn of the century (Ommanney, 1969). By this time, it was clear that the Expedition Fiord area was to be the focus for the McGill Expeditions and that the small lake (actually the only real lake in the area) farther up the fiord, now Colour Lake, was to be the base camp site.

I came to the conclusion quite early that, though we went through the motions of looking for the site, Fritz Müller had already selected this region in his own mind before we left McGill, largely for its access to a variety of glaciers. It has proved to be a remarkably productive research site.

Jacobsen flew south on 26 July, and Kranck moved to Colour Lake (then “Holiday Lake”) on 31 July to begin work on the gypsum domes of that area. He flew south soon afterwards. Müller and I used Mosquito Camp as a base for that summer’s work, gradually carrying supplies and equipment to Colour Lake and the White Glacier terminus, ready



FIG. 4. Fritz Müller drilling on Crusoe Glacier at 250 m, with Baby Glacier (elevation range 715–1175 m) 4–5 km in the background, in 1959. These two glaciers have been studied for many years since.

for the construction of the expedition base camp and the research program in the following summer.

THE 1959 FIELD SEASON ON AXEL HEIBERG

For the remainder of the season, the two-person expedition explored on foot much of the fiord and initiated programs that became the basis for many years of research. We continued the triangulation of the area, a small beginning to the production of detailed topographic and other maps that have been of great assistance to researchers ever since (see Ommanney, 2002). As there were only two of us, this work involved very long trips from our camp at sea level to prominent peaks (Fig. 3) and high-altitude glacier sites and back. We initiated mass balance, terminus and englacial temperature measurements on the Crusoe, Baby (Fig. 4), and White glaciers, leaving caches on the White for the following season. The measurement sites on White Glacier ranged from Crevasse Camp at 1050 m and Moraine Camp at 850 m to the future site of the Lower Ice station (300 m) on the glacier terminus and the outwash plain below the terminus at 65 m (Fig. 5). The White Glacier data now rank among the best and longest mass balance and terminus measurements of polar glaciers (Cogley and Adams, 2000). And, as a result of the early 10 m temperature probes and later deep drilling operations, the study of the White Glacier’s internal temperature regime became a classic in the field of polythermal glaciers (Blatter and Hutter, 1991).

During one of our prolonged absences from Mosquito Camp, our kitchen tent was destroyed and our supplies destroyed or contaminated by two wolves. We lived out the summer in a low hut made of gas drums and sod (Fig. 6). It was this hut that gave the nearby glacier, Crusoe, its name. We began collections of plants and rocks.

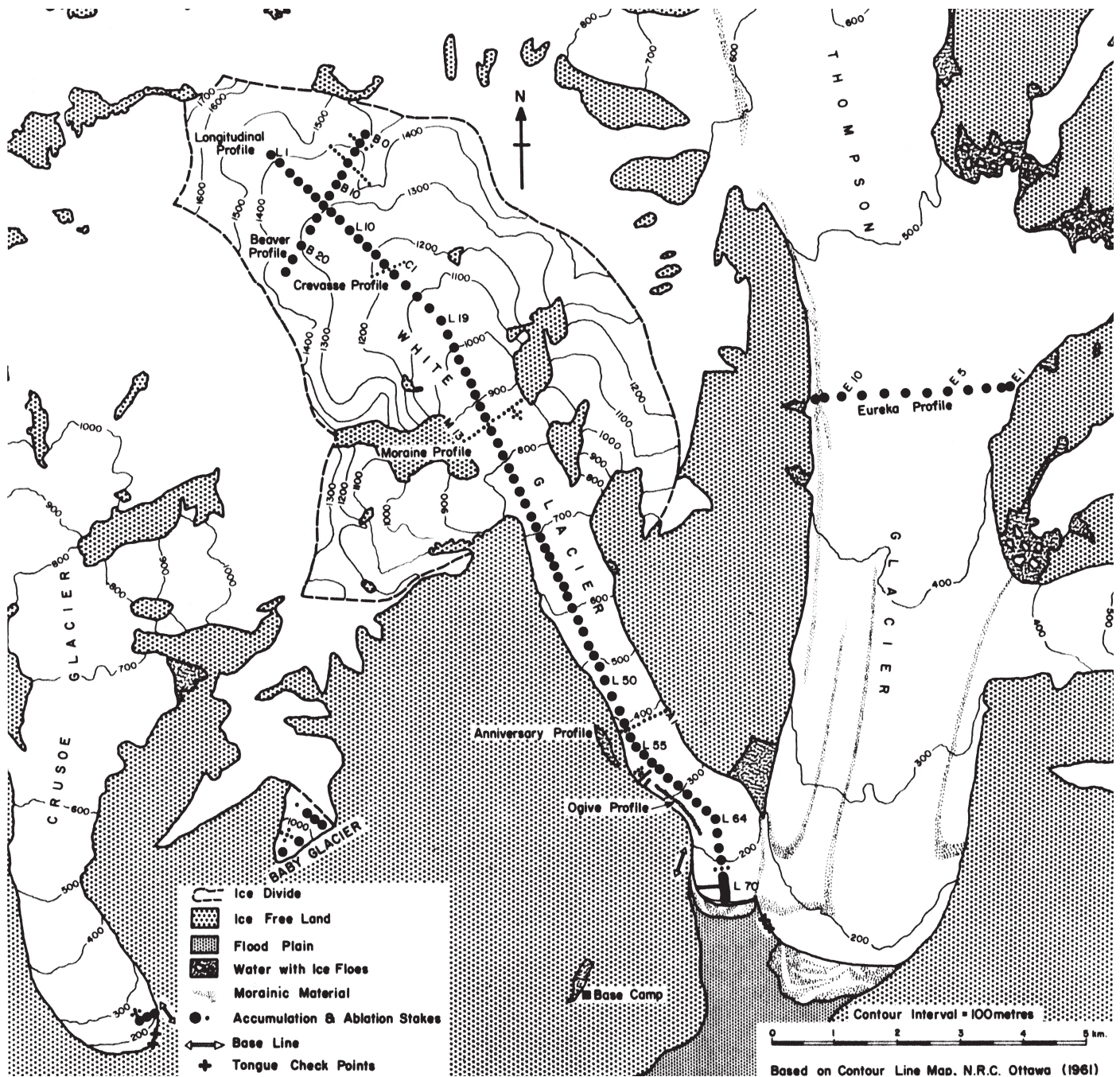


FIG. 5. Figure 1 from Müller, F. (1961), a publication that covers three field seasons. This shows the sites of measurements begun in 1959 on three glaciers: Crusoé, Baby, and White (at Crevasse Camp, Moraine Camp, and Lower Ice Station). Work along the length of White and all work on Thompson began in 1960.

We visited Buchanan Lake on the eastern side of Axel Heiberg Island, the site of GSC work in the early 1950s and of the 1953 Canso expedition, mentioned above. Weldy Phipps was the pilot and Jock Buchanan the navigator for that venture (Avery, 1998). Buchanan Lake is now a popular tourist site and is best known in the literature through the Buchanan Lake Formation and the fossil forests of eastern Axel Heiberg Island (e.g., Basinger, 1991; see Figs. 1 and 2).

Having established caches at Colour Lake and on the terminus of White Glacier, we were flown to Resolute

by Weldy Phipps and Dick deBlicquy on 26 August and reached Montreal, via Churchill and Ottawa, on 29 August.

CONCLUDING REMARKS

In 1960, a group of more than 20 workers erected the pre-fabricated houses (built by George Jacobsen's company in St. Jérôme, Quebec) that form the McGill Arctic Research Station of today. The research of that year and the following



FIG. 6. The debris of Mosquito Camp, destroyed by wolves, with the "Crusoe Camp" that replaced it and gave Crusoe Glacier, in the background, its name. This site was close to the name "Crusoe River" on Figure 2.

two years is summarized in the first two of the Axel Heiberg Island Research Reports (Müller, B.S., 1961; Müller et al., 1963) and can be found in the journals. Fritz Müller and George Jacobsen came to a parting of the ways early in the 1960s. The expeditions then became the McGill Expeditions rather than the Jacobsen-McGill Expeditions. I know little of this story, but Avery (1998), describing the Buchanan Lake expedition of 1953, provides a clue to what might have transpired. In that case, tension arose when George was perceived to be treating World War II fliers (the crew of the expedition's *Canso*) as "lackeys." After some years, Fritz Müller became Chair of Geography at Eidgenössische Technische Hochschule, Zurich. He continued his work on Axel Heiberg, and elsewhere in High Arctic Canada, from offices at McGill and Zurich, until his death on a Swiss glacier in 1980 (Adams and Ommanney, 1981). Since then, my own university, Trent, and many others across Canada and overseas, have worked with McGill to maintain the Axel Heiberg station, which has become an important High Arctic base for researchers and students with increasingly diverse interests. For a good number of years now, the driving force behind the station has been Wayne Pollard of the Department of Geography, McGill (wayne.pollard@mcgill.ca). The station website is <http://www.geog.mcgill.ca/mag2/fieldstations.htm>.

The Axel Heiberg Island Research Reports (18 volumes, 1961–87), published by McGill University, are a useful source of information on the early expeditions and some later field seasons. There is a bibliography of Fritz Müller's work in Adams and Ommanney (1981). During the 1960 field season, Budge Crawley of the National Film Board, an Oscar-winning filmmaker, shot extensive footage of expedition activities, which is now in the Crawley Collection, National Archives of Canada, Ottawa. Fritz Müller's field books, diaries, and photographs are stored in the Department of Geography, Eidgenössische Technische Hochschule,

Zurich, Switzerland. I believe that the cataloguing and eventual return to Canada of that material would be most worthwhile.

ACKNOWLEDGEMENTS

I am grateful to Al Brunger, Miles Ecclestone, Steve Gardiner, Marilyn Miller, Simon Ommanney, Wayne Pollard, Kathleen Smies, and Colin Taylor for their advice and assistance.

REFERENCES

- Adams, W.P. 2007. Trent, McGill and the North: A story of Canada's growth as a sovereign polar nation. Peterborough, Ontario: Cover to Cover Publications. 221 p.
- Adams, W.P., and Ommanney, C.S.L. 1981. Fritz Müller, 1926–1980. *Arctic* 34:195–198.
- Apollonio, S. 1962. The Devon Island Expedition, 1960–64: Preliminary report for September 1961 to September 1962. *Arctic* 15:317–321.
- Avery, N. 1998. Whiskey, Whiskey Papa, chronicling the exciting life and times of a pilot's pilot: A biography of Welland W. (Weldy) Phipps, OC. Published by Norman Avery, Box 32091, Lincoln Heights Post Office, 1386 Richmond Road, Ottawa, Ontario K2B 8B0. 161 p.
- Basinger, J.F. 1991. The fossil forests of the Buchanan Lake Formation (early Tertiary), Axel Heiberg Island, Canadian Arctic Archipelago: Preliminary floristics and paleoclimate. In: Christie, R.L., and McMillan, N.J., eds. Tertiary fossil forests of the Geodetic Hills, Axel Heiberg Island, Arctic Archipelago. Bulletin 403. Ottawa, Ontario: Geological Survey of Canada. 39–65.
- Blatter, H., and Hutter, K. 1991. Polythermal conditions in Arctic glaciers. *Journal of Glaciology* 37(126):261–269.
- Canadian Arctic Resources Committee. 1991. "Their garden of Eden": Sovereignty and suffering in Canada's High Arctic. *Northern Perspectives* 19:1 (Spring). 41 p. <http://www/carc.org/pubs/v19n01>.
- Cogley, J.G., and Adams, W.P. 2000. Remote-sensing resources for monitoring glacier fluctuations on Axel Heiberg Island. *Arctic* 53:248–259.
- Dunbar, M. 1989. Ernst Håkan Kranck (1898–1989). *Arctic* 42:390.
- Foster, M., and Marino, C. 1986. The Polar Shelf: The saga of Canada's Arctic scientists. Toronto: NC Press. 127 p.
- Haumann, D. 1961. Co-ordinates of ground control points determined in 1960. In: Müller, B.S., ed. Jacobsen-McGill Arctic Research Expedition to Axel Heiberg Island, Queen Elizabeth Islands. Preliminary Report of 1959–60. Montreal: McGill University. 35–42.
- Jackson, C.I. 2002. Does anyone read Lake Hazen? Edmonton: Canadian Circumpolar Institute. 164 p.
- Jacobsen, G. 1961. Permafrost programme. In: Müller, B.S., ed. Jacobsen-McGill Arctic Research Expedition to Axel Heiberg

- Island. Queen Elizabeth Islands, Preliminary Report of 1959–60. Montreal: McGill University. 209–214.
- Koerner, R.M. 2002. Glaciers of the Arctic Islands: Glaciers of the High Arctic Islands. U.S. Geological Survey Professional Paper 1386-J: J111–J146.
- McGill University, Department of Geography. 1963. Deepest permafrost measurement in North America. *Polarforschung* 33(1/2):181–182.
- Müller, B.S., ed. 1961. Jacobsen-McGill Arctic Research Expedition to Axel Heiberg Island, Queen Elizabeth Islands: Preliminary report of 1959–60. Montreal: McGill University. 219 p.
- Müller, F. 1961. The areas selected for glaciological study. In: Müller, B.S., ed., 1961. Jacobsen-McGill Arctic Research Expedition to Axel Heiberg Island, Queen Elizabeth Islands: Preliminary report of 1959–60. Montreal: McGill University. 43–48.
- , ed. 1963. Jacobsen-McGill Arctic Research Expedition 1959–62: Preliminary report 1961–62. By F. Müller and Members of the Expedition. Montreal: McGill University. 241 p.
- Ommanney, C.S.L. 1969. A study in glacier inventory: The ice masses of Axel Heiberg Island, Canadian Arctic Archipelago. Axel Heiberg Island Research Reports, Glaciology No. 3. Montreal: McGill University. 105 p.
- . 2002. Mapping Canada's glaciers. U.S. Geological Survey Professional Paper 1386-J:J83–J110.
- Thomas, M.K. 1974. Canadian meteorological milestones. Downsview, Ontario: Atmospheric Environment Services. 29 p.

Peter Adams is Professor Emeritus at Trent University in Peterborough, Ontario, and a former Member of Parliament for Peterborough (peter.adams@cogeco.ca).