

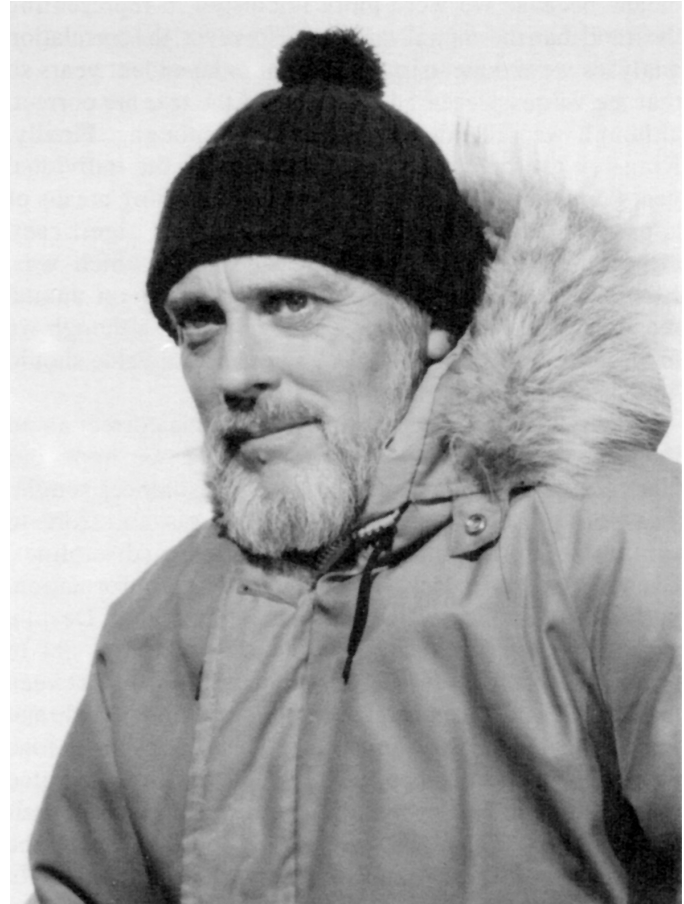
ROBERT L. CHRISTIE (1926 – 1999)

Dr. Robert L. Christie, geologist, naturalist, and explorer, suffered a heart attack on his beloved sailboat in the morning of 1 September 1999 and died a few hours later in hospital in Belleville, Ontario. Some weeks earlier, Bob and Audrey had sold their small farm at nearby Madoc, Ontario, and were preparing to move to Gabriola Island in British Columbia, back to Bob's home province. Bob will be remembered for a broad range of geological achievements in western and Arctic Canada, as well as in Greenland, achievements documented by nearly 100 maps and reports published in scientific journals. He will be especially remembered for his loving warmth, his infectious laughter, and his limitless generosity. Bob was undoubtedly the kindest and gentlest man I have ever known, and his family and friends were the special delights in his life. During the early sixties, Bob and I camped together for three summers in the Arctic Islands, doing fieldwork for the Geological Survey of Canada. When faced with tough conditions in the field, Bob would harden with stoic endurance. But when the sun shone on our little flycamp, he would rise to a rhapsody, and his cheerful yodel would signal that all was well in our little corner of the vast Arctic wilderness.

Bob won distinction for his fieldwork, particularly in the Arctic islands, but he eschewed visible signs of prestige, particularly those institutionally accepted ones, like the medals that he had won, which he playfully referred to as "gongs." He felt that his most genuine rewards came from the sense of community and solidarity developed by working closely with people whose opinions and feelings really mattered. There was no capacity for self-delusion in Bob. Whatever he did, in both his personal and professional lives, he truly believed in.

Bob held many early Arctic and Antarctic explorers in high regard, but Sir Ernest Shackleton, who nearly made it to the South Pole in 1909, was somewhere near the top of his list. A contemporary, explaining Shackleton's indomitable feats in Antarctica, might easily have been referring to Bob in the Arctic: "[it is] courage and unselfishness and good temper, and helping one another, and a willingness to put in every ounce you have."

On 18 July 1926, Robert Loring Christie was born in Vancouver, British Columbia, the eldest of five children. His father was a professor of forestry at the University of British Columbia, and his mother was a secretary at the university. When Professor Christie retired, the family moved to a small farm in the Fraser Valley, where Bob attended country school. Then the family moved back to Vancouver, where Bob finished high school. Even as a child, Bob assumed a considerable responsibility in caring for his siblings, while his parents pursued a broad range of political and professional activities outside the home. His sister Edith remembers Bob as a highly responsible but gentle, fun-loving guardian during his high school and university days. Often, Bob was required to miss school to



Robert L. Christie

care for her and the other children in the family. In spite of this, Edith laments that Bob's father, who was somewhat taciturn and a strict disciplinarian, never seemed able to express pleasure at Bob's accomplishments. Bob loved his father, but often reflected how nice it would have been if his father had been able to reciprocate that love with gentle encouragement and support. Always positive, Bob concluded that this aspect of his childhood made him a stronger, more caring person, and he never wavered in the love and support he showered on Audrey, his children, and all others dear to him.

Bob discovered the Geological Survey of Canada (GSC) even before he went to the University of British Columbia (UBC) to study geology. In 1944, when he was only 17 years old, he worked as an assistant on a Survey horse party, mapping in the western Cordillera. The following two years he assisted Fred Roots, whom he had befriended at UBC, and who was working for the GSC in the rugged Cassiar Mountains of British Columbia. Bob had found the organization that could fulfill his professional needs, and he was determined to work for the Survey someday. He thrived in the outdoors, particularly in strenuous activities like rock climbing, mountain skiing, and backpacking. Moreover, he loved the beauty of nature, especially the

mountains above tree line and the ocean. Bob took to geology like a duck to water, much to the chagrin of his father, who wanted his son to become a forester. Bob's early life on the farm in the Fraser Valley and his engineering training served him well throughout his career, particularly in the field. He was inventive and could fix anything: repairing a tent, a broken radio or compass, or a leaky boat was child's play to Bob. The Pacific Ocean had a magnetic attraction, and he never gave up yearning to return to his roots, to sail there, and to smell the salt sea air again.

From 1949 to 1953, Bob mapped and studied the geology of the Bennet Lake map sheet in the rugged Coast Range of northern British Columbia for the Geological Survey to fulfill requirements for his PhD dissertation at the University of Toronto. At the time, the Survey's J.O. Wheeler was mapping the Whitehorse map sheet directly to the north of the Bennet Lake sheet. Bob and "J.O." cooperated with each other in the field and became lifelong friends. J.O. remembers Bob's endurance and meticulous attention to scientific detail in the field and many examples of his inventiveness, including adapting a light and unsafe supply boat to achieve complete stability and safety in the very rough waters of large lakes in the area.

Bob's long career as an Arctic geologist began on northern Ellesmere Island in 1954, when he joined a team headed by Geoff Hattersley-Smith and jointly sponsored by the Defence Research Board of Canada and the United States Air Force Cambridge Research Centre. Bob and Geoff worked closely together from mid-April, when the temperature was -50°C , to the end of September to achieve the party's objectives. They conducted detailed investigations of the Ward Hunt Ice Shelf and a geological reconnaissance of the north coast of Ellesmere Island to the west of Cape Columbia. Using skis and a dog-hauled sledge, Bob made the first geological reconnaissance from Ward Hunt Island to Lands Lokk, where only a few early explorers had been before. In spite of severe weather and harsh travel conditions, Hattersley-Smith remembers Bob's cheerful stoicism, his tolerance, and his tact, but cannot recall a single cross word or disagreement for the entire six months. He also remembers Bob's slight embarrassment at having his field companions listening on their camp radio, with mischievous pleasure, to arrangements for his marriage to Audrey later in the year—a long and very happy marriage.

In 1956, Fred Roots persuaded Bob to return to geological mapping in mountainous northern British Columbia, where he worked mainly with horses as part of Operation Stikine, which Fred led for the Survey. However, Bob had been "bitten by the Arctic bug": the following year he returned to northern Ellesmere Island to represent the Geological Survey on the Canadian International Geophysical year (IGY) Operation Hazen (1957–58). In 1957, Bob examined bedrock geology all around Lake Hazen, while his companion, the late Roger Dean, studied Pleistocene geology. The following year, Bob and his

assistant Barry Walker made a geological traverse by dog-sled from Clements Markham Inlet via Gilman Glacier to Lake Hazen, the first crossing of the United States Range in northern Ellesmere Island, except by Inuit hunters. They then made another crossing from Lake Hazen to Alert and back using pack-dogs. The following year (1959), Bob diverted his attention from northern Ellesmere Island to the southern part of the Canadian Arctic Archipelago to join Ray Thorsteinsson, Tim Tozer, and John Fyles, all of whom became lifelong friends, in the geological study of Victoria Island and adjacent smaller islands. Bob's main responsibility on the project reflected the expertise in igneous intrusive rocks that he had gained in the Cordillera.

During the next two summers (1960–61), Bob mapped and explained the geological framework of Precambrian and lower Paleozoic rocks along the eastern margin of the Archipelago; that is, southeastern Ellesmere Island and eastern Devon Island. In 1961, Bob and his assistant Norman Haimila, using skis and dogs, studied the geology along the Ellesmere Ice Cap, starting from Alexandra Fiord and ending at Goding Bay. A few months later, in early June, they attempted to return to Alexandra Fiord across the ice cap. However, ice conditions had deteriorated in effluent glaciers, and at one point they had to carry each dog through a deep, soft snow field and progressed only about 5 km in seven days. Consequently, they abandoned their plans to cross the ice cap again, struggled to reach Smith Sound and returned to Alexandra Fiord on the sea ice.

My most memorable and pleasant field seasons in the Arctic were in 1962, 1963, and 1966, when I served as Bob's assistant, mainly in fly camps. I remember the excitement of learning new things from Bob each day, about Arctic history, Inuit life, plants, animals, and astronomy, as well as geology. I hoped that the end of each field season could be delayed as long as possible. Each day would begin with Bob's favorite breakfast, his legendary "raisin porridge," and it would end with his summarizing our scientific observations for the day with extensive, well-illustrated notes. Each day he would compliment my own contributions to his project, even if they were minimal. I, in turn, would work even harder, always determined to go that extra mile for him. In addition to being well prepared, well organized, and an outstanding but modest teacher in the field, he was always jovial. I can't remember a single cross word between us or a single day that we couldn't find something to laugh about. In addition to pursuing his own objectives in the field, Bob was always thinking about data that we might gather for colleagues interested in subjects beyond his own area of specialization. Such finds might be recent shells for Wes Blake, Quaternary wood for John Fyles, vertebrate fossils for Dick Harington, or a unique metamorphic rock for Tom Frisch.

In 1962, we were attached to the Survey's Operation Prince of Wales and studied Paleozoic rocks on the flanks of the Boothia Arch on Boothia Peninsula, Somerset

Island, and eastern Prince of Wales Island. One day, Bob discovered a circular volcanic plug, several hundred metres in diameter, that was cutting through Paleozoic strata on Somerset Island. Bob entered into his notes “possibly a kimberlite pipe” and, of course, it was! Some years later, kimberlites on Somerset were extensively explored for diamonds by Cominco and other companies. On another occasion, Bob and I were stranded in a foggy drizzle with no food, but only a survival tent and our sleeping bags, on little Pandora Island, east of Prince of Wales Island. What might have been a miserable experience turned out to be a memorable and pleasant one. Bob had rolled Tolstoy’s 700-page *War and Peace* into his sleeping bag. For five days, we conserved heat by staying in our sleeping bags as much as possible and, by tearing pages off, we finished reading the Russian classic more or less simultaneously.

The following summer, Bob and I mapped the geology from the head of Tanquary Fiord to Yelverton Pass in northern Ellesmere Island and focused our attention on the Tanquary structural “high” that Bob had discovered earlier. In the Tanquary “high,” Lower Paleozoic rocks are overlain by much younger Triassic rocks, and Bob explained several possibilities for that relationship in subsequent publications. Happily, Geoff Hattersley-Smith was conducting glaciological studies at the head of Tanquary Fiord that summer, and he and Bob reminisced excitedly about their earlier experiences exploring the north coast of Ellesmere Island together. On one occasion, Bob and I flew to Hare Fiord farther south on Ellesmere and discovered a magnificent ancient carbonate reef of Carboniferous age, which became the subject of my PhD dissertation. The reef was replete with a great variety of beautifully preserved fossils, and we gathered them excitedly for several days. Of particular interest among our discoveries were several hundred specimens of cephalopod ammonoids, including many that had never been found anywhere in the world before. A few years later, I published a paper in which I named the most spectacular of these new fossils *Christioceras*.

During 1965–66, Bob led Operation Grantland, a Canadian-Danish project to correlate the geology between central Ellesmere Island and Greenland. Bob’s firm but gentle diplomacy resulted in extraordinary scientific accomplishments, and friendships were forged that resulted in successful collaborative research between Canadian and Danish scientists that continues to the present day. Bob was proud of this international achievement, particularly because his uncle and namesake, L.C. (Loring) Christie, had also achieved some considerable recognition for his Arctic work in the diplomatic arena. Loring Christie had been confidential secretary and international adviser to three Canadian prime ministers, Sir Robert L. Borden, Arthur Meighen, and W.L. Mackenzie King. He had held responsibilities related to affirming Canadian sovereignty over the Arctic Islands, which had been transferred from Britain to Canada in 1880.

In 1968, Bob and his family moved from Ottawa to Calgary, where Arctic research was coordinated by the Survey’s Institute of Sedimentary and Petroleum Geology. Bob satisfied a long-standing desire to introduce his family to the Arctic Islands in 1969, when he and Audrey and their five small children relocated for six months to the small community of Grise Fiord on the south coast of Ellesmere Island. Bob continued his fieldwork there while the children attended school and Audrey, an accomplished architect, assisted the teacher in the community with classes in art and design.

In 1970, Bob led Operation Peel Sound in the southern Arctic Islands and, with his Survey colleagues Ray Thorsteinsson and J.W. (Bill) Kerr, completed the first geological maps for Prince of Wales Island. The following year, he compiled field guidebook A-66 on the geology of the Arctic Islands and Mackenzie region for the 24th International Geological Congress held in Montreal in 1972. Bob also led the Arctic field trip for the Congress. Bob’s attention turned once again to northern Ellesmere Island and Greenland in 1973, when he was invited by the Greenland Survey to conduct research on Paleozoic rocks in Greenland. In 1974–75, he worked in Peary Land in northern Greenland and in Copenhagen, as part of a cooperative venture between the Geological Survey of Canada and the Geological Survey of Greenland. This work was a logical and highly productive extension of initiatives begun earlier on his Operation Grantland. It resulted in a series of extraordinarily important papers in the late 1970s and early 1980s on aspects of Proterozoic and lower Paleozoic stratigraphy between northern Greenland and Ellesmere Island, as well as on the history of exploration in the region. Many of these papers were written jointly with Peter Dawes from the Greenland Survey, who had maintained a close friendship with Bob since he participated in Operation Grantland many years earlier. Tom Frisch, another Operation Grantland participant who was also inspired and encouraged by Bob, continues to work in the area to the present day, often in collaboration with Peter Dawes and his associates. Another important participant in Operation Grantland, Hans Trettin, subsequently spent several years resolving a number of major geological problems uncovered during that operation.

In the early 1980s, in addition to his Arctic work, Bob began to study the economic potential of phosphate rocks in Canada. Through extensive fieldwork in western and Arctic Canada and in the United States, he soon established himself as an authority on the subject. He showed several possibilities for possible future exploitation of phosphates for fertilizer production in Canada, and his findings were published in a number of papers, some of which were translated into Chinese and Russian.

In recognition of Bob’s scientific leadership and his broad knowledge of Arctic geology, he was assigned two other major projects in the 1980s both of which he completed with distinction. First, in 1984 and 1985, he updated the geology of Melville Island through incorporation and

synthesis of new surface and subsurface geological and geophysical data to assist in the exploration for petroleum and minerals. Second, his compilation of the geology of Melville Island, with contributions from 16 other scientists, was published in 1994 as GSC Bulletin 450.

Throughout his Arctic career, Bob was profoundly excited by the implications of Tertiary logs and tree stumps, first discovered on Judge Daly Promontory during the Lady Franklin Bay Expedition of 1881–83, led by Adolphus Greely. Because of this interest, Bob and his colleague, N.J. (Jack) McMillan were given the task of compiling data on the fossil forest discovered in the Geodetic Hills, northern Axel Heiberg Island. Jack McMillan also had a longtime interest in the subject and had discovered another fossil forest site at Hot Weather Creek, near Eureka, when he was attached to Operation Franklin in 1955. Why did forests exist in such a place some 50 million years ago in Tertiary time? What were the characteristics of the fossil wood and leaves, and how were they preserved? Bob and Jack dealt with all these questions in their 1991 compilation (GSC Bulletin 403), which is acclaimed as the standard reference on the subject.

Finally, Bob was seconded to the Polar Continental Shelf Project in 1990. One of his major responsibilities was scientific and logistics supervision of “Hobson’s Choice,” the new ice island that had broken loose from the Ward Hunt Ice Shelf some six or seven years earlier. Bob realized at that point that his Arctic career had come full circle: it had all started on the Ward Hunt Ice Shelf with Geoff Hattersley-Smith some 36 years earlier.

Few exceeded Bob Christie in his energy and zeal for Arctic geology and his profound interest in Arctic history and Arctic peoples. He learned to speak Inuktitut as well as

Danish, and he could handle a sled and dogs with ease. He loved dogs and horses: both had served him loyally in the field. When his two Siberian husky pets died in Calgary, he took them to a quiet place in the Bow River Valley, in full view of the Rockies, and buried them beneath the pines in “a place they would enjoy.”

Bob could not tolerate injustice and often denounced it loudly, never backing away from a fight on the subject. He and Audrey saw social injustices within the public school system in Calgary and succeeded in establishing a form of charter school to meet the needs of children, with input from parents and teachers, not from some faceless bureaucracy. Bob championed the rights of women and applauded the successes of his many female students and peers in the field and in the office. He was a master of tact and diplomacy and had the ability to get the best out of students and his colleagues. Ironically, he also saw some merit in conflict, particularly scientific conflict, because he felt it brought energy and excitement to the pursuit of truth. For 38 years I have been warmed by the gift of Bob’s friendship in my life. He has left a profound and indelible mark on all of us as who knew him, and he has left an equally powerful imprint on the geology of the Arctic, a land he truly loved.

Bob Christie is survived by his wife, Audrey, and their children, Michael, Adrienne, Anne-Marie, Andrew, and Alex.

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