



CLIFFORD SYMINGTON LORD
1908 - 1981

Dr. C.S. Lord, formerly Chief Geologist of the Geological Survey of Canada and Chairman of the Board of Governors of The Arctic Institute of North America, died in Ottawa on 4 October 1981. With his passing Canadian earth science lost one of its most able and knowledgeable geologists, especially of the Canadian Shield in the Northwest Territories, as well as one of its most modest and dedicated servants.

Clifford Lord was born in New Westminster, B.C. on 24 August 1908. He attended the University of British Columbia, graduating in 1929 with a B.A.Sc. degree in geological engineering. After leaving U.B.C. he joined the Anglo-American Corporation of South Africa and was employed for three years in concession exploration in Northern Rhodesia (now Zambia). He returned to Canada and completed his M.A.Sc. at U.B.C. in 1933. For the next two years he practised as a consulting geologist in mineral exploration in British Columbia.

In 1935 Dr. Lord was employed by the Geological Survey of Canada to map the west half of the Megantic sheet in the Eastern Townships of Quebec. He then undertook further graduate study at the Massachusetts Institute of Technology. His Ph.D. thesis dealt with the geology of the Gunnar Gold Mine and the details of its geological setting in the Rice Lake greenstone belt in eastern Manitoba. After completing his

Ph.D. in 1937 he took a permanent position with the Geological Survey with whom he remained until he retired in 1973.

Clifford Lord's career with the Geological Survey was marked by a variety of responsibilities and assignments in many different parts of Canada. Before the Second World War he undertook reconnaissance mapping in the Archean rocks of the Slave Province, northwest of Yellowknife. There he mapped the Snare River area and completed the mapping of the Ingray Lake area begun by Tuzo Wilson. His work extended our knowledge of the nature and distribution of the Archean volcanic and sedimentary rocks and, perhaps most importantly, documented the unconformity between these rocks and the younger overlying Proterozoic sediments of the Snare Group.

In the same year that he was completing the mapping of the Snare River sheet Dr. Lord visited the producing mines and numerous properties in connection with the publication of the first edition of *Mineral Industry of the Northwest Territories*, published as Memoir 230 of the Geological Survey. This publication provided an up-to-date account of the geology of the Bear and Slave geological provinces, classified the mineral deposits by deposit type as well as by commodity, described briefly the significant deposits, and provided conclusions and advice on where minerals might be sought. It became the bible of the prospector. Every prospecting party in the Northwest

Territories had a dog-eared and much-thumbed copy of this publication in its camp.

During the Second World War Dr. Lord was engaged in a variety of projects concerned with increasing the supply of strategic metals. In 1942 he explored for chromite in the Takla Lake region of central British Columbia and for tin and tungsten in the western Selkirk Mountains. In 1943, following the opening of the Alaska Highway, he undertook a geological reconnaissance of a strip of country bounding the highway between Teslin and Watson Lake in order to provide the regional geological framework from which to plan the exploration for strategic minerals. In the mid-1940s he completed the mapping of McConnell Creek map-area in north-central British Columbia. This area was one of several traversed by the Pinchi Fault zone with which were associated a producing mine and several deposits of mercury — a critical metal for the Canadian war effort. Those who were engaged in the 1970s in revising and upgrading the maps of McConnell Creek and surrounding areas were profoundly impressed by the accuracy of Dr. Lord's observations and the perceptiveness of his correlations. His map required relatively little revision.

By the mid-1940s Dr. Lord had become sufficiently familiar with Cordilleran geology that he wrote the summary account of the regional geology of the Western Cordillera for the Geological Survey's third edition of *The Geology and Economic Minerals of Canada*, published in 1947.

After the war Dr. Lord returned to the Precambrian Shield where he undertook further reconnaissance mapping in the Bear and Slave geological provinces. He also visited numerous additional mineral deposits in the northwestern Shield as part of his revision of the Geological Survey's *Mineral Industry of the Northwest Territories*. The new edition, published as Memoir 261 in 1951, was a much larger and more comprehensive account of the geology and related mineral resources. It included the geology and petroleum resources of the Mackenzie Mountains gained from exploration by oil companies during the latter part of the war. It, too, became the prospector's handbook for the Territories.

In the post-war years the Geological Survey became concerned about the apparently hopeless task of completing the geological mapping of Canada within a reasonable time. It was estimated that it would take about 100 years to complete the task in view of the large size of the country, the few geologists available to the Survey, and the slow logistical methods which were then used — mainly canoe and packhorse. It was clearly recognized by the Survey that geological mapping could only be accelerated by the use of the helicopter. However, it was not until about 1950 that helicopter technology was sufficiently advanced to be applied economically to geological mapping. In 1952 the Geological Survey undertook its first major helicopter-assisted geological survey in the Keewatin District of the Precambrian Shield west of Hudson Bay. Clifford Lord, with his widespread experience and capacity for organization, was the logical choice as leader. The result was a successful survey of 146 000 km² in 113 days by five geologists using two helicopters. Furthermore, regular use of helicopters

thereafter resulted in the remarkable achievement whereby the preliminary reconnaissance mapping of the Precambrian Shield, at a scale of 1 inch to 8 miles, was completed by the mid-1970s. It also made Canadians leaders in the world in the application of helicopters to geological mapping.

Clifford Lord's broad regional and varied logistical experience, coupled with his demonstrated organizing ability, made him a natural choice in 1954 for Chief Geologist of the Geological Survey — a post he held with distinction for nearly 20 years. This was a period of great expansion and diversification of the Geological Survey program. Although he understood the value of geophysical and geochemical surveys, many of which were begun and carried out during his term as Chief Geologist, he always maintained that geological surveys were the core activity of the Survey and provided the ground truth against which other types of geophysical and geochemical surveys should be judged.

While Chief Geologist he introduced a project management system which, though perhaps somewhat cumbersome, was years ahead of its time in the Federal Government. The essence of his system, in a more streamlined form, is used by the Survey today. During most field seasons he visited numerous field parties to learn, first-hand, the geology of various regions of Canada, to become familiar with new techniques, and to observe how the scientists operated in the field. He thoroughly enjoyed these visits and the life in camp which provided opportunities for Survey scientists to get to know their Chief Geologist. Under these more relaxed circumstances away from the formality of his office, they could better appreciate his knowledge, interest and dry humour.

Between 1963 and 1971 C.S. Lord carried out many assignments on behalf of the United Nations, Canada's External Aid office and its successor, the Canadian International Development Agency (CIDA). He visited Malaysia, Thailand, India, Burma, Kenya, Uganda and Tanzania. His advice was sought on a wide range of activities from preliminary reconnaissance to detailed mineral evaluations of limited areas, and he drew heavily on his long experience in the field and familiarity with every type of field operation.

Outside the Geological Survey he served the earth sciences in many ways by playing key roles in many organizations. As an authority on the geology of the Canadian Shield north of latitude 60° he was elected a Fellow of The Arctic Institute of North America. Furthermore, owing to his Arctic expertise, his influential position as Chief Geologist of the Geological Survey, and his administrative talents, he served as a most useful member of the Board of Governors of the Institute, being Chairman in 1960.

For many years he was on the Executive Committee of the National Advisory Committee on Research in the Geological Sciences. He served the Canadian Institute of Mining and Metallurgy (CIM) in several capacities. In 1969 he was awarded the CIM's Distinguished Service Medal in recognition of his many important contributions to Canada in geology, mineral exploration, geological survey logistics, and advice and assistance to developing countries. He also was on the Ex-

ecutive Committee of the National Organizing Committee for the 24th International Geological Congress held in Canada in 1972. He developed a management system which provided efficient control and coordination of over 120 field excursions all over Canada. He was elected to Fellowship in the Royal Society of Canada in 1949. He was also a Fellow of the Geological Association of Canada and the Geological Society of America. In 1974 he was honoured by the naming of the C.S. Lord Core Library in Yellowknife, N.W.T.

As a geologist Clifford Lord provided accurate maps and concise, informative and timely reports. He generally stuck to the facts and rarely indulged in speculation. Later, as Chief Geologist, he demonstrated his skills as an administrator with a flair for planning and organization. His position provided him with an unequalled view of the Survey and its staff. Never one to waste words, he could deliver opinions with devastating brevity. However, he was extremely fair and was always careful to acknowledge achievement and assistance.

As R.G. Blackadar has so eloquently expressed, "Dr. Lord was a hard-working and dedicated man to whom the Geological Survey and Department of Energy, Mines and Resources owe much for the smooth operation of the Branch for nearly two decades. He was also a very private person whom few of his professional colleagues knew outside of his official role. Those who did found a person with a dry sense of humour, a provider of sound advice and a raconteur of stories, of places and people he had met on his worldwide visits although he remained a man who never seemed able to completely forget his official duties." He contributed much to our understanding of the geology of Canada, especially the Precambrian of the Arctic, and provided practical advice for mineral development. Because of his modesty, few, except those who followed in his footsteps, appreciated the magnitude

and quality of his achievements.

He is survived by his wife Beryl, and a son, Philip S. Lord, both of Ottawa.

J.O. Wheeler

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