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## MEMORIAL OF HORACE JOHN FRASER

November 27, 1905–February 2, 1969

G. P. MITCHELL AND A. R. GRAHAM, *Falconbridge Nickel Mines Limited, Thornhill, Ontario.*

Horace John Fraser, President of Falconbridge Nickel Mines Limited, and a member of the executive committees of nearly thirty other companies, institutions, and organizations, died suddenly on February 2, 1969, at his country home, Lost Herd Farm, near Palgrave, thirty miles north-west of Toronto, Ontario. At the culmination of four successful careers, as an outstanding earth-scientist, as a respected university professor, as an efficient government administrator, and as a top mining executive, he had contributed uniquely to the mineral industries of United States and Canada. His friends, associates, and organizations miss him sorely.

Dr. Fraser's great achievements stemmed from his concentrated application of a clear analytical mind, a retentive memory, tremendous energy, and a quietly forceful personality, to every task which he set himself. Combined with his integrity, and his abilities tersely to impart accurate information to others at any technical level, to make apt decisions, and most of all, to inspire in his associates loyalty and confidence, these qualities brought him the admiration, respect and affection of all with whom he worked. With Fraser, you soon knew where you stood, and might stand if you continued to work to your capacity. In his latest career, in the innumerable decisions required of him as a chief executive, his strict adherence to principle and his acumen gave his companies an enviable reputation, and a rapidly increasing rate of growth.

In 1905, at the prairie hamlet of Girvin, Saskatchewan, Horace John was born the eldest of three children of the pioneer family of Fred Brisbin Fraser and Jenny Macklin Fraser. Originally from the rich farm area near Coburg-Port Hope in Ontario, the Frasers combined thrift and industry with the Scottish respect for learning. Wise parents, they could

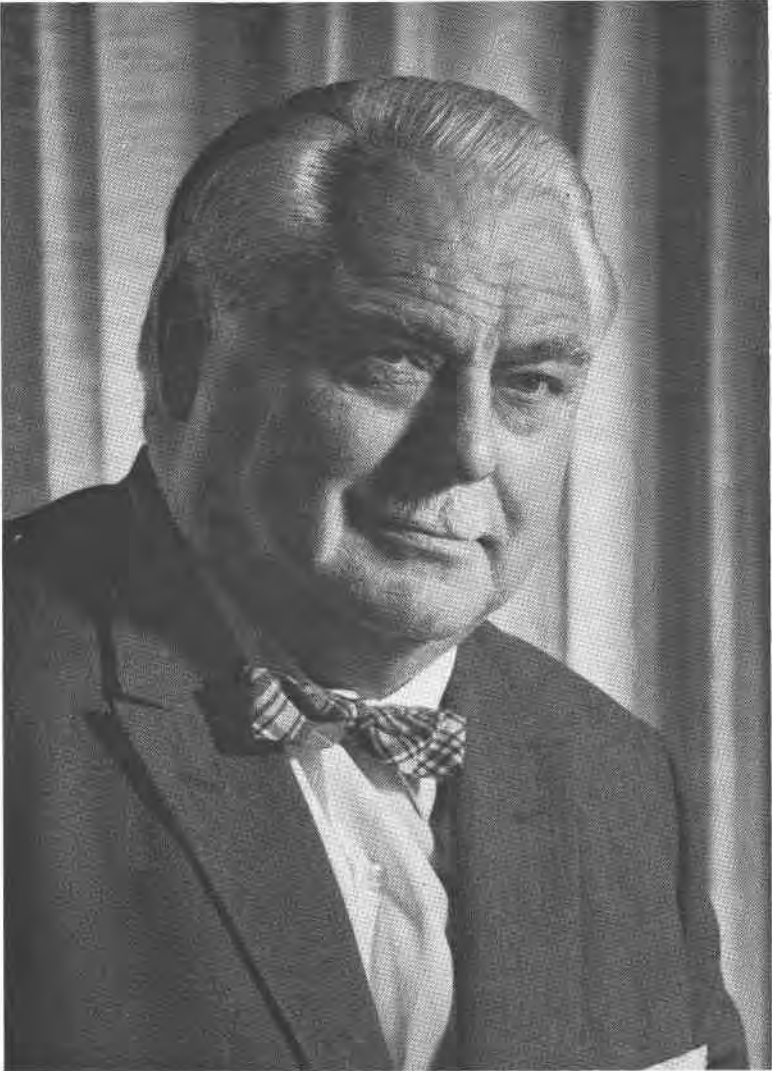
impart these traits to their children. After his first day at school, when Horace was asked how he liked it, he replied, "Not much, and that's the last day I'm going to school." Something must have changed his mind, for in 1918, Horace completed grade eight in the one-room Girvin school.

Mainly to improve educational opportunities for the children, the family then moved to a bush farm a mile from the larger town of Swan Lake, Manitoba. Here Horace assumed the responsibility now given him by his parents, to do a man's work on the new farm. The heavy physical labour, the decisions expected of him daily, the new horizons opening to him through the collegiate, the new opportunities for sport and friendship among his schoolmates, all rapidly matured the carefree youngster into a youth with strong work habits, and the powerful body and mind he was to use so well throughout his life. Already in these early years, he displayed tremendous drive and energy: he participated in Scouting and in church young people's activities, he took violin lessons, he skated, swam, fished, and hunted. He worked long hours on the farm, and at the same time became a top scholar and a voracious reader. According to his brother Byron, a searing hot coal-oil lamp-chimney sometimes revealed to their mother Horace's clandestine sessions with his books after everyone was supposed to be asleep.

The care and attention of a fine high school principal, John Duncan, helped stimulate Horace's interest in the world beyond the prairies, and greatly accelerated his matriculation. Two months before his 15th birthday, with his parents' strong approval and financial help, Fraser enrolled in a pre-medical course at the University of Manitoba. He was on his own, and except for family visits, never returned to the home farm.

Early in his undergraduate career, the advice and influence of Dr. R. C. Wallace, head of Manitoba's science faculty, and one of Canada's most eminent geologists and educators, led Horace Fraser to recognize his own attraction to the physical sciences. With characteristic decision he switched courses to pursue chemistry and geology with energy and dispatch. He graduated at nineteen in 1924 as a gold medallist, with a Bachelor of Science degree in chemistry, and went on to win a University Travelling Fellowship with his Master of Science degree in Geology and Chemistry in 1926, before he was twenty-one. During his stay at Manitoba, his abilities yearly brought him scholarships, demonstratorships, and lectureships. The awards and fees supplemented his parents' financial help and his own earnings as summer field assistant with the Canadian Geodetic and Geological Surveys.

Survey field parties in the nineteen twenties still paddled their own canoes over the water routes of the trackless Canadian north. Fraser's sturdy frame, conditioned by heavy farm work and strenuous sports,



*Horace John Fraser*

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served him well in at least two narrow escapes from drowning, once with George Brownell in a stormy lake, and once with C. A. Merritt in the rapids below the main falls of the Fox River, in northern Manitoba. Undaunted, Fraser completed several field seasons. For the remainder of his life, he displayed solid ability in and appreciation for the techniques of field geology, as well as respect and friendship for those who ably practised them.

Again through Dr. Wallace's foresighted counsel, Horace Fraser in 1927 accepted a teaching position at Harvard, which gave him financial independence while he earned his Master of Arts degree in economic mineralogy and geology, awarded in 1928. He continued at Harvard, working under direction of Dr. L. C. Graton toward his Doctorate in economic geology, and simultaneously taking courses from the head of the department, Dr. Donald H. McLaughlin (now chairman of the board of the Homestake Mining Co.). From the latter courses and his contact with McLaughlin, he acquired insight into mineral economics and concern for their practical application which served him well in his later executive positions. After graduation with his Doctor of Philosophy degree in 1930, he was awarded the post-doctoral Storrow Travelling Fellowship of the National Research Council of Canada. For two more years until 1932, he served as an instructor in geology and as a research assistant at Harvard Engineering School, engaging among other projects in research on Sudbury nickel ores for International Nickel with Dr. L. C. Graton's group.

The roster of Dr. Fraser's friends, associates, and students at Manitoba, at Harvard, and later at the California Institute of Technology includes many who are now pre-eminent in all fields of research, academics, government service, and industry in Canada and the United States. Those whose lives he touched always recognized him as a peer in all of the tasks he tackled with them. Several of the professional and personal friendships endured to the end. To his close friends of those days, he was known as "Dutch" Fraser. According to Dr. Fraser, he had accidentally earned this nickname at an art exhibition, by standing near the famous full-length portrait by Frans Hals, of a robust Dutch gentleman. His hilarious companions found a strong resemblance in the portrait to the stocky build and cheerful, rubicund visage of their good friend. Fraser became "The Dutchman," later shortened to "Dutch."

In later years, when desk work prevented much physical activity, Fraser's increasing weight became a serious concern and forced him to curb his hearty appetite. One of his favorite relaxations after work, informal conversations and reminiscences with friends over a drink and a snack, became more infrequent, but was never completely foregone. A

major hobby was his farm home near Palgrave. Here, he spent some of his all too few leisure hours supervising another working operation, including the breeding of purebred beef cattle.

As well as carrying out confidential research with Professor Graton's group, on ore minerals, and on methods for their study, Fraser in the thirties and early forties published independently and jointly on research in sedimentation, on pegmatites, on field studies of loess, on the micro-chemical identification of the precious metals, on polishing ore minerals, and on mineral economics. The diversity of these interests, and the competence shown in the investigations, are symbols of the tremendous breadth of his early knowledge of mineral science, and are a measure of Fraser's attainments in the first of his four careers, as a research scientist. He never forgot the importance of research, and throughout his life continued to initiate and support maximum effort in applied and basic research in companies and institutions under his influence.

In 1932, Horace Fraser married, at her parents' home in the United States, Catherine Wandee Cheek, who survives him. In 1933, Ian Bruce, their first child was born; he is now a teacher in Orangeville, Ontario. Five years later in 1938, Malcolm Bradley was born; he is now a lawyer in Sydney, Australia.

In the year of his marriage, Dr. Fraser brought his bride to Copper Cliff, Ontario, where he had just accepted an appointment to the geological staff of International Nickel Company, Limited. For three years, he contributed much to that company's records on the mineralogy and petrology of the Sudbury nickel-copper ores.

In 1935, an attractive offer from the California Institute of Technology in Pasadena, to work with a life-long friend, Dr. Ian Campbell, (just now retired as State Geologist, California) teaching courses in economic mineralogy and geology, persuaded Horace Fraser back into the academic world. At the Institute, his lectures quickly gained the respect of his students and associates by their clarity, accurate technical content, and leavening of anecdote and devastating humor. His treatment of his students was carefully unbiased by personal considerations, but invariably demanded maximum performance. His own energy and dedication inspired effort and achievement through his ability to communicate his knowledge in, and enthusiasm for, the field and laboratory practice of a science which he himself had so thoroughly embraced and mastered. As assistant, and later, as associate professor, he was largely instrumental in creating an enviable reputation for the economic geology course, attracting students to the Institute from across the continent, and especially from Canada. Respect of another kind came to him during a geological field trip, when he participated as a casual substitute, in a student football game at Furnace Creek Ranch, Death Valley. The first

offensive sweep at "Professor" resulted in three husky young men up-ended, and a "nailed" ball-carrier. Fraser had muscle as well as determination, and could effectively use both when required.

His fame at the Institute, together with various consulting commissions for mining companies during vacations, soon brought him recognition beyond the academic world. Shortly after the entry of the United States into World War II, a call from Washington closed the second of his careers, and began another, as assistant divisional chief in charge of ferro-alloys in the Foreign Economics Administration of the United States Government. His erudition, application, and his level-headed and efficient discharge of his duties again brought him the respect of his co-workers, and the three years from 1942 to 1945 spent in Government service should count as the third of Horace Fraser's successful careers.

At the close of the war, Dr. Fraser was given the opportunity to return to Canada and begin the fourth and final part of his life work. Falconbridge Nickel Mines Limited, the bell-wether of the large flock of exploration, mining, and subsidiary companies associated with Thayer Lindsley's famous Ventures Limited, was eighteen years old. A first-class resident manager was required at the Sudbury mines, to help guide their post-war development in competition with those of its colossal neighbor, International Nickel Company Limited. L. K. Brindley, then President of Falconbridge, had recognized Fraser's eminent professional qualifications during wartime negotiations over nickel stockpile contracts with the ferro-alloys branch, where Fraser was then employed, and invited him to apply for this key position. Fraser accepted the challenge, and moved to Falconbridge, Ontario in 1945.

Over the next twelve years, new mines and rapid expansion, largely due to Fraser's imaginative advice and adept powers of administration, first at Falconbridge, and later at the head office, more than doubled the size and importance of each of the Falconbridge and Ventures groups of companies. In 1947, Fraser became general manager; in 1950 after being appointed vice-president and a member of the board of directors, he moved to the head office in Toronto. He was elected president and managing director of Falconbridge in 1957 and of Ventures in 1958. Four years later, the two groups of companies merged, and the integrated world-wide complex continued its steady and rapid increase in size and importance under the Falconbridge name, still with Fraser's careful direction. His sudden death occurred just before the signing of an agreement to produce ferro-nickel from nickeliferous laterites, by a new process developed by Falconbridge, at a large plant to be built in the Dominican Republic. Bringing this complex agreement to the brink of consummation was Fraser's last feat of industrial diplomacy.

Beginning in his early youth, and throughout his life, Dr. Fraser

pursued with unceasing energy and disciplined gusto, his broad interests within and without his field. His philosophy of life was participation and service. His great achievements in his four careers came from his deep commitment to any cause he deemed worthwhile. Professional, educational, and community associations everywhere continually sought his always active participation on their executives, and he gave away his leisure unselfishly throughout his lifetime. The new Laurentian University at Sudbury owes its existence and rapid growth largely to his early conceptions and efforts; over the last four years he served as chairman of its board of governors.

In his executive function, Dr. Fraser suffered no fools gladly; his subordinates were chosen for their qualities and experience, and his demands were so carefully tailored to fit these that each worker gained that strong confidence in his own, his associates', and his superiors' abilities, which builds an effective organization. The keystone of the edifice remained the trust and affection which Fraser inspired in each and all of his associates, however diverse their personalities, or their positions within his companies.

Few large industrial concerns have enjoyed the luxury of such a president, whose mastery of technique and detail extended to accurate and intimate knowledge of equipment, function, and personnel in most of Falconbridge's complex branches. Fraser, through his prodigious capacity for reading and digesting reports and for retaining perspective on them all, enjoyed a far broader and more immediate grasp of his company operations than most chief executives. When others, before decision, might require referrals and consultations, with much recapitulation of previous actions, Fraser commanded an amazing range of details in his head, immediately directed action and got it. Without question, Fraser succeeded in the last and greatest of his careers, as an efficient and dedicated leader and servant in the mineral industry.

Horace John Fraser, Ph.D., F.R.S.C., L.L.D., was past president of the Ontario Mining Association, the Mining Association of Canada, and the Canadian Institute of Mining and Metallurgy. He held the Blaylock Medal of the last organization, sparingly awarded for outstanding contribution to the Canadian mineral industry, and the honorary degree of Doctor of Laws from Queen's University, in Kingston. He was chairman of the board of governors at Laurentian University, and served on the advisory council of engineering at Queen's University, Kingston. He was a Fellow of the Royal Society of Canada, Geological Association of Canada, Geological Society of America, and the Mineralogical Society of America. He was a member of the American Institute of Mining and Metallurgical Engineers, Canadian Institute of Mining and Metallurgy,

the Society of Economic Geologists, and the Association of Professional Engineers of Ontario.

Dr. Fraser in his lifetime also earned eminent membership in that rare fraternity of hard workers whose imagination and selfless efforts build industries and civilizations.

## ACKNOWLEDGEMENTS

We thank all Dr. Fraser's friends, and most of all, C. Byron Fraser, his brother, for their contributions to this memorial.

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## MEMORIAL OF ARTHUR FRANCIS HALLIMOND

January 17, 1890-September 2, 1968

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Arthur Francis Hallimond was born at Saltburn, N. Yorkshire. He was the son of Henry Tasker Hallimond and Sarah Susannah Cunningham. The families of both his parents belonged in North Yorkshire and the bordering county of Durham. Among their relations were many devout Wesleyans, and one of his father's cousins, John G. Hallimond, who had emigrated to America, was for over 25 years Superintendent of the Bowery Mission in New York.

A. F. Hallimond was at Sir William Turner's School at Coatham, Yorkshire, from 1889 to 1908. He showed quite early an interest in sci-