Memorial to Johannes J. Brummer 1921–2005

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Johannes Jacobus (Joe) Brummer, a Fellow of the Geological Society of America, died January 17, 2005, in Toronto, Canada, at the age of 83. Although considered by many of his peers to be a geologist's geologist, Joe Brummer always saw himself, first and foremost, as a prospector with a pick in hand.

Joe was born in Graff Reinet, Cape Province, South Africa, on September 2, 1921. The Brummer family lineage in South Africa was started by Johann Wichard Brummer, who was born in Osnabruck, Lower Saxony, Germany, in 1764. Unhappy at home, Johann left Germany in 1784 and traveled to Holland where he joined the Dutch East India Company as a gunner. From there he was sent to Cape Town, arriving on November 28, 1784.

By 1794, Johann was living in Graff Reinet, the fourth oldest town in South Africa, located 610 kilometers north-northeast of Cape Town. This historic town, located in a bend of the Sundays River, is in a district that gave birth to a hardy, independent, and rugged breed of people. Joe possessed these qualities, which would serve him well in his chosen career.

When Joe was of school age, his family moved to Pretoria. Most of his schooling was at the Christian Brothers College in Pretoria. An enthusiastic Boy Scout from 1931 to 1938, Joe became a King Scout, learning first aid and collecting some twenty-five badges, a Gold Cord, and a Bushman's Thong. During these early years, Joe enjoyed big game hunting and fishing with his father.

After graduating from high school, Joe decided to become a mining engineer. Although he knew little about what this entailed, Joe made this decision because he wanted a career totally different from that of his father, who was in the insurance business.

In 1939 Joe began his studies in engineering at Witwatersrand University in Johannesburg. In sports, he focused on cross-country running, at which he excelled, and fencing, for which he won numerous trophies. Upon completion of his degree in 1943, he was encouraged by his father to continue his studies another eighteen months to complete the requirements for a degree in mining geology, as insurance in case mine work led to later health problems. He received this degree in 1945.

During vacations while at university, Joe spent time at various mines in South Africa, Northern Rhodesia, and the Belgian Congo. Besides useful work experience, he met some remarkable people.

One especially informative encounter was a visit to Jadotville in the Belgian Congo. In February 1945, Joe met H.J. Schuiling, director of the Geological Division of Union Minière in Katanga. Here Joe heard about the race between the Americans and the Germans to develop the

atomic bomb. From Schuiling, he learned about the strength of the explosive force that would be unleashed from the splitting of the atom.

The Americans had come in Liberator Bombers to the Belgian Congo to obtain uranium ore, just as earlier, when the Germans invaded Belgium, certain armed Nazi units went straight to Oolen, where the uranium ore from the Belgian Congo had been sent for processing.

Returning to University, Joe told his professors and fellow students about the atom bomb and what he had learned during his summer vacation. He was greeted with some skepticism and amazement. After the bombing of Hiroshima on August 6, 1945, their disbelief was overtaken by reality.

In 1945, with two degrees under his belt, Joe joined East Geduld Mines on the Rand gold fields as an assistant surveyor. His efforts at this time were directed at obtaining his survey certificate—a necessary qualification if he wished to get ahead as a mining engineer.

By 1947, with his objective achieved, Joe was persuaded to move to the Rhodesian Copper Belt. One of the contacts Joe had made during his visit to Northern Rhodesia was W.G. (Bill) Garlick. It was because of Bill that Joe was enticed back to the Copper Belt. Joe saw this as an opportunity to collect data that could be used for an M.Sc. degree. His long-term plan was still to return to South Africa and resume his career as a mining engineer.

Joe's work on the Copper Belt started at the Roan Antelope Copper Mine as a mine geologist. From the beginning, he found his education as a mining engineer and his experience as a mine surveyor invaluable. He was able to understand mining problems and communicate in terms that were meaningful to his colleagues.

Meanwhile, Joe was fascinated with ore genesis. This interest and his search for answers resulted in his attending the 1948 International Geological Congress in London, England. It was Joe's introduction to the world outside of Africa. Many notables in the field of geology were at this congress. Joe had the opportunity to openly discuss the syngenetic concept for the Rhodesian Copper Belt mineralization and began a dialogue that would last for years.

Another major achievement during this time was his survival of a plane crash in the Sudan on the return journey to Northern Rhodesia. The plane he was on went down in flames. All the passengers and crew survived not only the crash but also the day spent in the desert without shelter or water before being sighted and picked up. The area of the crash was described as being an unmapped and featureless desert.

In 1949 Joe assumed the position of chief geologist at the Mufilira Copper Mines Ltd. He started to write up the geology of the Roan Antelope Copper Mines, producing his thesis for which he received a M.Sc. in Engineering from Witwatersrand University in 1951. Subsequently, he summarized this thesis and submitted it for publication to London's Institute of Mining and Metallurgy. In 1956, he was awarded the Consolidated Goldfields of South Africa Ltd. Premium of forty guineas for the best paper on geology during the year.

From 1951 until he left the Copper Belt in 1953, Joe held the position of chief geologist of Rhodesian Selection Trust. The years spent in Northern Rhodesia were busy and productive. With W.G. Garlick, he created the unconformity strata bound model for the Copper Belt, contrary to the commonly held notion at that time that these ore bodies were hydrothermal. His findings were successfully applied to the discovery of new deposits along the belt.

During this same period, less well known but just as significant, was Joe's support of exploration geochemistry research at a time when the western world was just learning about the subject. Most geochemists who graduated from the Royal School of Mines during that time were guided and supported by Joe Brummer in the application of geochemistry to mine-finding in the Northern Rhodesian Copper Belt. Discoveries such as the deeply buried Kalengwa Mine (see World Mining, June 1972) would be found using geochemical techniques developed under Joe's tutelage.

With this background in sedimentary ore deposits, Joe arrived at McGill University, Montreal, in 1953 to pursue his Ph.D. and to study and research the Gaspe Copper ore bodies. He mapped and described for the first time the alteration aureole about the deposits, and classified the Aiguille Mountain ores as replacement deposits and the Copper Mountain zone as a later staged porphyry-type ore body. This study still has significance for exploration geologists searching for these deposits. In 1955, Joe was awarded a Ph.D. in geology, magna cum laude for the thesis that resulted from this study.

At this time, Joe joined Kennco Explorations Ltd. (Canada) as a senior geologist, which was based first in Quebec City (1955–1957), then Vancouver (1957–1958), and later in Toronto (1958–1961). During these six years, Joe pioneered the application of stream-sediment geochemistry in the Precambrian of Labrador and in the western Cordillera. These efforts set the stage for exploration methodology for porphyry ore systems in the Cordillera which led to several discoveries by others in later years. Chris Gleeson has stated that by his bold, aggressive, and at times unconventional approach to mineral exploration, Joe laid the groundwork for systematic reconnaissance geochemical surveys in Canada.

While Joe explored and published his findings during these years, the most important discovery was that of his wife. In the summer of 1957, shortly after arriving in Vancouver, he met Eva Andersen, a public health nurse, who had been at McGill the same time as Joe, although their paths were not to cross until years later. They married July 12, 1958. Shortly after, they moved to Toronto. Their three-month-long honeymoon was spent traveling 4,000 miles in a jeep, visiting all the major mining camps in northern Ontario and Quebec––a most interesting beginning to the great forty-seven years they had together.

In 1961, Joe joined Falconbridge Nickel Mines Ltd. as exploration manager for central Canada. Although Joe worked in the northern Manitoba town of Wabowden, he initially lived in the Pas, and from 1965 to 1970 in Winnipeg––to provide a more comfortable lifestyle for his wife and two sons. Joe loved the challenges offered during these years, working seven-day weeks most of the year, and long hours each day. He applied geological concepts, geophysical methods (EM and seismic), and deep drilling techniques to the Manitoba Nickel Belt, which resulted in the discovery of such nickel deposits as Manibridge, Bucko Lake, and Bowden Lake. At Stall Lake, Manitoba, he and his team succeeded where others had failed, finding the down plunge extension of the Rod Cu-Zn deposit. At the same time, in Saskatchewan, Joe successfully applied boulder tracing and a study of the Pleistocene geology, to locate the George Lake zinc occurrence.

In 1970, Joe joined Canadian Occidental Petroleum, Mineral Division, based in Toronto, as exploration manager, and he remained in that position until 1983. Joe and the very capable staff he assembled made many significant discoveries. In 1976, he was responsible for the first reconnaissance Alpha meter survey carried out in the Athabasca uranium province. In 1979, under his leadership, a vertical hole through the center of an Alphameter-EM anomaly intersected ore grade uranium mineralization beneath 162 meters of Athabasca sandstone, and the McClean Lake uranium mine was born. This discovery was followed in 1982 with the discovery of the JEB deposit.

In a tribute, Gleeson wrote “Joe’s superb record of discoveries did not come about by chance. They resulted because he was a knowledgeable economic geologist with extensive experience. He was willing to try the untried, to encourage and support applied research in mineral exploration, to be straightforward in his approach, to use every aid at hand, to act quickly, and to be very supportive of his geological staff. He was thorough in his research and exploration efforts. He led in the development and application of new or relatively untried techniques especially in the search for deeply buried deposits and the evaluation of mineral belts.”

Retirement years gave Joe the opportunity to pursue, as a consultant, the search for diamonds in Canada. During the 1980s, he found kimberlites in the Kirkland Lake area of Ontario. His paper "Diamonds in Canada" (1978), written before there were any diamond mines in Canada, established Joe as one of the pioneers in Canadian diamond exploration.

Retirement also brought the opportunity for Joe and his wife to pursue their love of hiking. Annual trips to various parts of the European Alps provided challenges and much pleasure.

Throughout his geological career, Joe enjoyed collecting minerals. He had a particular love of agates. In addition to writing papers for earth scientists, Joe also wrote and presented to rock hounds. He was a keen supporter of the Toronto Mineral Club and the Earth Science Gallery of the Royal Ontario Museum.

Joe was a recipient of the Duncan Derry Medal in 1984—the highest award bestowed by the Mineral Deposits Division of the Geological Association of Canada—and a three-time recipient of the Barlow Memorial Medal awarded annually for the best geological paper published in Canadian Institute of Mining Publications.

Over a 40-year period, Joe published accounts of much of his work and authored or co-authored some 28 papers dealing with a variety of subjects. Joe is survived by his wife Eva, sons Douglas and William, and two grandchildren.

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