

# Memorial to John Stafford Brown

## 1894–1985

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After a long and distinguished career in economic geology, John Brown died on December 1, 1985, in Charlotte, North Carolina.

John was born in Brewster, Kansas, in 1894. As a youth he spent a year in the United Mine Workers Union mining coal in eastern Kansas. He attended high school in Lamar, Missouri, and received a B.S. degree from the Missouri School of Mines and Metallurgy at Rolla in 1917. There he was elected to Tau Beta Pi and served on the student council. He received an E.M. degree in 1935 and the Alumni Merit Award in 1972, and served as Secretary of the Board of Trustees. From 1917 to 1925 he was employed by the Ground-water Branch of the U.S. Geological Survey; he served in the armed services in 1918, emerging as a first lieutenant in the Engineer Corps. In 1922, he earned an M.S. degree from George Washington University, and he was awarded a Ph.D. degree by Columbia University in 1925.



Brown began his career with the St. Joseph Lead Company (now a division of Fluor Corporation) in 1925 as a geologist with its Kansas Exploration Division in the Joplin zinc-lead district. He was later stationed for a brief period in the Lead Belt in southeast Missouri. In 1926, he was assigned to examine certain mineral rights in St. Lawrence County, New York, which included the Edwards zinc mine of the Northern Ore Company and extensive holdings of the Fowler and Brodie estates. Following positive investigations, St. Joe formed its Edwards Division to operate the mine and prospect the region for additional metallic ore deposits. Brown took up residence at Edwards, where he remained 20 years as chief geologist connected with mining and prospecting in geologically complex Precambrian Grenville terrain. Twelve miles southwest of Edwards, the Balmat No. 2 orebody was discovered in 1928 by diamond drilling adjacent to some weak zinc mineralization (Balmat No. 1). The potential of Balmat, markedly greater than Edwards, led to construction of a new plant and the building of a zinc metal and oxide smelter in Pennsylvania. With little assistance, Brown ably fulfilled his duties as mine geologist and, at the same time, made significant refinements to the then-known geology of the region as a whole. His basic work and sage advice were invaluable to geologists who later joined the division staff and made further significant zinc discoveries that promise to assure St. Joe's position as a major producer for years to come.

In 1947, Brown moved to Bonne Terre to more intensively apply geologic principles to St. Joe's lead belt mining operations in southeast Missouri and aid the search for new orebodies. At Bonne Terre, he assembled an able geological staff and research facilities. His staff and facilities were principally concerned with the Midcontinent Region at first, but they soon became valuable to St. Joe's explorations elsewhere as well. New concepts were developed regarding the Cambrian Bonneterre Formation, and the relationships between ore and sedimentary features were effectively deciphered. Concrete results included the discovery of the Pea Ridge Precambrian iron deposit by deep drilling in 1953 and, in 1956, the Viburnum Trend of lead deposits with byproduct copper, zinc, and silver about 30 miles southwest of the Lead Belt.

While working in the New York and Missouri divisions, Brown was the company's chief geologist; as such, he was also involved with decisions concerning St. Joe's activities elsewhere—principally in the United States, Canada, Argentina, and North Africa.

Earlier, while with the U.S. Geological Survey, Brown recognized significant relationships in salt water encroachment that were utilized for many years. In 1925 he collaborated with C. L. Dake on the textbook *Interpretation of Topographic and Geologic Maps* which has been of long-standing significance.

The book *Ore Genesis*, published in 1948, effectively analyzed various shortcomings of the Hydrothermal Theory of ore deposition, which at the time was very much in vogue. As an alternative to the concept that ore solutions were generated by progressive differentiation of igneous magmas, Brown presented a theory that postulated ultimate ore sources deeper than the Earth's crustal zone. Such thinking was revolutionary and controversial at the time but has since gained a significant degree of credibility.

John and his wife Evangeline were a devoted and hospitable couple. Together they enjoyed their camp at Trout Lake near their home at Edwards in northern New York. They also studied Indian artifacts. They hosted such notable geologists as Harold Bannerman, Charles Behre, Arthur Buddington, Albert Engel, and Paul Kerr. Lively discussions—and arguments—took place over many years. One thoughtful and generous act of the Browns involved a picturesque area of huge, weathered granite boulders in southeast Missouri known as "The Elephant Rocks." When that feature was threatened by quarrying operations, they bought the land and donated it to the state of Missouri for a park.

Brown was a member of the American Institute of Mining, Metallurgical and Petroleum Engineers, The Society of Economic Geologists, and various other professional organizations. He was a Fellow of GSA since 1922, and in 1959 he was awarded the Penrose Medal of the Society of Economic Geologists. Following retirement in 1960, he moved to Towson, Maryland, and continued with various research projects of his own; the subject of lead isotopes particularly interested him. He remained active in various society affairs and, in 1967, edited the report of a United Nations Conference on "Genesis of Stratiform Lead-Zinc-Barite-Fluorite Deposits in Carbonate Rocks—The so-called Mississippi Valley Type Deposits." In 1972 he published the book *Back to Thirteen States*.

The ability to train, teach, and motivate his assistants was an attribute with which he was eminently endowed. He drilled his assistants on their powers of observation, sometimes exhaustively. Independent thinking and publishing were strongly encouraged. When asked questions, John would always take the time necessary to come up with well-reasoned answers. He was a modest, unassuming individual, but by no means did he avoid controversy.

It is an inspiration to those of us who knew John Brown to reflect upon his accomplishments, successes, and dedication to the science. He was a true gentleman and friend, and a genius as well.

John Brown's wife Evangeline (nee Moon) predeceased him by 10 years. They met while he was pursuing graduate studies at Columbia University and she was teaching geology at Hunter College. They were married in 1924 and had no children. He is survived by two sisters, Mrs. W. J. Oakley of Melbourne, Florida, and Mrs. E. C. Hoeman of Salt Lake City, Utah. Several nephews and nieces also survive him; among them is Mrs. Harold Moon, who lived near him in Charlotte the last few years of his life.

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