

Honouring James A. Brierley – A Leading Biohydrometallurgist



Jim Brierley – The Flying Scientist

James A. Brierley was born in 1938 in Denver, Colorado. Jim began his scientific career at Colorado State University (B.Sc. in Bacteriology, 1962) followed by further education at Montana State University, where he received his M.Sc. degree in Bacteriology (1963) and his Ph.D. degree in Microbiology (1966) studying the contribution of microorganisms in the acid hot springs of Yellowstone National Park under the guidance of the eminent microbiologist Prof. Kenneth Temple, a specialist in chemolithotrophs.

Jim was the first scientist to discover thermophilic life in the Yellowstone! His discovery in 1965 of an extremely thermophilic, acidophilic chemolithotrophic microorganism, later named *Sulfolobus brierleyi* and renamed *Acidianus brierleyi* by Karl Stetter and his group, was fundamental to our insight into this habitat and to biohydrometallurgical commercial developments in the 1990s.

Jim joined in 1966 the New Mexico Institute of Mining and Technology at Socorro, New Mexico, where obviously many of his brilliant ideas were born and developed with colleagues like Arpad Torma and others. He became soon Assistant Professor of Biology and Microbiology and advanced rapidly to Professor of Biology and Chairman of the Department of Biology continuing his research on the role of microorganisms in the leaching of refractory sulfide minerals and the field conditions, under which these organisms exist.

During his sabbatical leave in the UK (1976) at the (now-closed) Warren Spring Laboratory with Norman Le Roux and at Prof. Don Kelly's laboratory at the University of Warwick, key discoveries relating to moderately thermophilic bacteria were made and published by Jim and collaborators.

In 1983 Jim Brierley's career took a new direction, when he became somewhat bored of pure academia and left university to pursue commercial developments in biohydrometallurgy together with his ever-supporting wife Corale. From 1983-1988 he was the research director at Advanced Mineral Technologies Inc. Golden, Colorado. This experience was followed by his 13-year tenure at Newmont Mining Corporation (1988-2001). There he researched, developed, published and patented technologies related to using archaea for leaching of ores including inoculation of ores for subsequent heap leaching. His excellent work led to Newmont's commercial application for enhancing gold recovery from low-grade, sulfidic-refractory gold ore.

In 2000 Dr. James A. Brierley was awarded the Society of Mining Engineers' Milton E. Wadsworth Extractive Metallurgy Award "For his extensive and pioneering contributions to the use and understanding of biotechnology for metals recovery", and in 2002 he was elected to the U.S. National Academy of Engineering for "recognizing the potential of high-temperature biomining, and for innovative industrial biomining practices". Membership in the Academy is among the highest professional distinctions awardable to an engineer and honors those, who have demonstrated unusual accomplishment in the pioneering of new and developing fields of technology.

Since 2001 Jim Brierley is consultant with Brierley Consultancy LLC in Colorado, and even after retracting from Newmont, who would have expected anything else, continues to keep a finger on the pulse of biohydrometallurgy.

Klaus Bosecker