

loyal, and kindly man. He liked people and enjoyed their company. Although he was always forthright, rarely, if ever, would he downgrade a colleague or make unnecessarily critical remarks, and he would lean over backwards to avoid making a student uncomfortable. Among his very close friends, who included many in geology and mining and a coterie of nongeologist contemporaries in New Haven, he would shed most of the earnestness he was apt to wear among professional associates. To these he was a man of cheerful good nature, generous to a fault, enthusiastic in all that he did, and possessed of a refreshing sense of humor. They found him a delightful companion in all kinds of settings, and their stories about him reveal a light-hearted side of Alan that most of his younger professional associates had little opportunity to observe.

No one now living could know more than a few facets of this many-sided man, and it should be self-evident that this memorialist, like almost anyone else who might have prepared this memorial, would have to rely heavily on many associates of recent and former years. The sense of affection for Alan that pervaded so many of the letters received has been heart warming. This indispensable help is acknowledged with deep gratitude.

With the passing of Alan Bateman, economic geology has lost an outstanding teacher and editor to whom it will always be in debt; the mining industry and its affiliates in government have lost a highly respected, competent, and industrious servant; Yale has lost one of its most devoted sons; and the many

throughout the world who will continue to cherish their remembrance of him lost a kind and generous friend.

Selected Publications of Alan M. Bateman

The following selection of 10 of Bateman's many publications includes those deemed to be important or most representative of trends in his interests. Most of them are referred to in the memorial. A more complete list, excluding about 100 book reviews, is to be appended to a memorial being prepared for publication by the Geological Society of America, from which the above memorial has been abbreviated.

- (1914) Lillooet map area, British Columbia. *Can. Geol. Surv. Summary Rep.* **1912**, 188-210.
- (1920) (and McLaughlin, D. H.) Geology of the ore deposits of Kennecott, Alaska. *Econ. Geol.* **15**, 1-80.
- (1923) Primary chalcocite; Bristol copper mine, Connecticut. *Econ. Geol.* **18**, 122-166.
- (1930) The ores of the Northern Rhodesia copper belt. *Econ. Geol.* **25**, 365-418.
- (1942) *Economic mineral deposits*. John Wiley & Sons, New York, N. Y., 898 pages. 2nd Edition (1950), 916 pages.
- (1942) Magmas and ores. *Econ. Geol.* **37**, 1-15.
- (1946) Wartime dependence on foreign minerals. *Econ. Geol.* **41**, 308-327.
- (1950) *The formation of mineral deposits*. John Wiley & Sons, New York, N. Y., 371 pages.
- (1951) The formation of late magmatic oxide ores. *Econ. Geol.* **46**, 404-426.
- (1955) Economic geology [publication]. In A. M. Bateman, Ed., *Economic Geology, 50th anniversary volume, 1905-1955*. Economic Geology Publishing Co., Urbana, Illinois, pp. 1-37.

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Memorial of Donnel Foster Hewett June 24, 1881—February 5, 1971

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Donnel Foster Hewett, known by his many friends of all ages as Foster, was an enthusiastic and exuberant geologist who had a real devotion for minerals, particularly if they contained some manganese. He started his professional career in 1903 as a mining

engineer for the Pittsburgh Testing Laboratory and examined many mines in Canada, U.S.A., Mexico, and Peru. The highlight of this experience was his role in the discovery of the Mina Ragra in Peru which became the principal world source of vanadium for

more than thirty years. The new calcium vanadates hewettite and metahebettite from this mine were named in his honor.

Foster received the degree of Metallurgical Engineer in 1902 from Lehigh University where Joseph Barrell taught geology and encouraged Foster to consider geology as a career. Subsequently, Dr. Barrell became professor of geology at Yale University. In January 1909, Foster married Mary Amelia Hamilton and took his bride to Yale where he started his graduate studies in geology under his former teacher. He was awarded the Ph.D. degree from Yale in 1924.

In May 1911, Foster joined the U. S. Geological Survey and was active in its various functions until his death in February 1971. His early field assignments were in Wyoming, Idaho, and Oregon, and involved areal mapping and ore deposits. During World War I, Foster became interested in manganese resources, and he visited many domestic and foreign deposits for the following two decades. In addition, he started a comprehensive study of the ore deposits in the Ivanpah quadrangle in Nevada and California, which led to his love of the desert areas of the Southwestern States. Foster was made Chief of the Metals Section of the Geological Survey in 1935, a position he held during the hectic days of World War II when the Strategic Minerals Program expanded enormously in personnel. Foster spent considerable time and effort in recruiting able geologists for this program, and many remained with the Survey after the end of World War II. Two of these geologists subsequently became Director of the Geological Survey.

In July of 1944, relieved of administrative duties, Foster began his particularly happy days of research as a Staff Geologist. He moved to southern California, headquartering at the California Institute of Technology, so that he could be close to the Mojave Desert for continuing field studies. In 1950, he played an important role in the recognition of the economic importance of the deposit of bastnaesite, a rare-earth fluorocarbonate found near Mountain Pass in the Mojave Desert. During this period of time, active prospecting for radioactive minerals was taking place in the Mojave Desert, and many prospectors discovered that Foster was delighted to determine their minerals. This activity led to several publications by him and associates describing new mineral occurrences.

The growth of the Menlo Park Center in terms of equipment and personnel attracted Foster to move

to this center in 1955. He wished to return to his old love, manganese, and he started writing topical papers on the mineralogy and genesis of manganese deposits. During the remainder of his career, he wrote twelve papers, co-authored in large part by some of the Survey specialists. Foster took considerable pride in his expertise with the blowpipe and a piece of charcoal, a technique that he had learned at Lehigh University. He also recognized the value of modern sophisticated equipment, and he boasted that he was smart enough to seek the aid and advice of the younger experts in the Survey. During this last period of professional activity, Foster carried on a voluminous world-wide correspondence with geologists, and many shipped manganese samples to him. It was always a moment of excitement for Foster to open a box of these treasures, and he would select the most interesting specimens, rush to the diamond saw, and obtain a slab which he would polish and etch. Then his friends would provide spectrographic and X-ray diffraction data and, if the mineral or minerals were rare or exciting, his neighbors along the hall would hear the good news.

A controversy existed for many years as to supergene versus hypogene origin of manganese oxides, and the twelve papers that Foster wrote, starting in 1960, are among his most important scientific contributions. He was able to document examples of both origins and state which manganese oxides formed under each.

Foster Hewett was active in professional societies, serving on the Council (1931-33) and as Vice President (1935 and 1945) of The Geological Society of America and as President of the Society of Economic Geologists (1936). He was a member of the National Academy of Sciences and American Academy of Arts and Sciences. Lehigh University awarded him an honorary D.Sc. in 1942, the Society of Economic Geologists gave him its Penrose Medal in 1956, and The Geological Society of America presented him with its Penrose Medal in 1964.

Mary and Foster Hewett loved people and they had countless friends, young and old. In their earlier days of Survey life in Washington, D. C., their home was always open, particularly to the younger geologists facing their first assignment in the big city. In later years, they delighted in having large parties with one or two of the guests showing colored slides of recent trips to interesting countries. Mary and Foster had a wonderful time together. Mary Hewett survived Foster by 6 months.

Foster Hewett wrote many papers during his professional career and James Gilluly has prepared a complete bibliography that will be published in the Biographical Memoirs of the National Academy of Sciences. A selected bibliography of mineralogical topics is given below.

Selected Publications of Donnel Foster Hewett

- (1921) Orientite, a new hydrous silicate of manganese from Cuba. *Amer. J. Sci.* 5th ser. **1**, 491–506.
- (1925) (with W. T. Schaller) Hisingerite from Blaine County, Idaho. *Amer. J. Sci.* 5th ser. **10**, 29–38.
- (1928) (with E. V. Shannon) Zeolites from Ritter Hot Spring, Grant County, Oregon. *U. S. Nat. Museum Proc.* **73**, 18.
- (1930) (with O. N. Rove) Occurrence and relations of alabandite. *Econ. Geol.*, **25**, 36–56.
- (1937) Helvite from the Butte district, Montana. *Amer. Mineral.* **22**, 803–804.
- (1937) (with W. T. Schaller) Braunite from Mason County, Texas. *Amer. Mineral.* **22**, 785–789.
- (1947) The story of Mina Ragra, premier vanadium find. *Eng. Mining J.* **148**, 59–63.
- (1953) (with J. J. Glass) Two uranium-bearing pegmatite bodies in San Bernardino County, California. *Amer. Mineral.* **38**, 1040–1050.
- (1954) Foreword—History of the discovery at Mountain Pass, California. *U. S. Geol. Surv. Prof. Pap.* **261**, iii–vi.
- (1957) (with Jerome Stone and Harry Levine) Brannerite from San Bernardino County, California. *Amer. Mineral.* **42**, 30–38.
- (1957) (with Jerome Stone) Uranothorite near Forest Home, San Bernardino County, California. *Amer. Mineral.* **42**, 104–107.
- (1960) (with Michael Fleischer) Deposits of the manganese oxides. *Econ. Geol.* **55**, 1–55.
- (1961) (with C. W. Chesterman and B. W. Troxel) Tephroite in California manganese deposits. *Econ. Geol.* **56**, 39–58.
- (1963) Manganese is a clue to deep base and precious metals. *Mining World*, **25**, 26–38.
- (1963) (with Michael Fleischer and Nancy Conklin) Deposits of the manganese oxides. Supplement. *Econ. Geol.* **58**, 1–51.
- (1964) Veins of hypogene manganese oxide minerals in the southwestern United States. *Econ. Geol.* **59**, 1429–1472.
- (1966) Stratified deposits of the oxides and carbonates of manganese. *Econ. Geol.* **61**, 431–461.
- (1967) (with A. S. Radtke) Silver-bearing black calcite in western mining districts. *Econ. Geol.* **62**, 1–21.
- (1967) (with A. S. Radtke and C. M. Taylor) Aurorite, argentian todorokite, and hydrous silver-bearing lead manganese oxide. *Econ. Geol.* **62**, 186–206.
- (1968) (with R. S. Olivares) High-potassium cryptomelane from Tarapaca Province, Chile. *Amer. Mineral.* **53**, 1551–1557.
- (1968) (with H. R. Cornwall and R. C. Erd) Hypogene veins of gibbsite, pyrolusite, and lithiophorite in Nye County, Nevada. *Econ. Geol.* **93**, 360–371.
- (1971) Coronadite-modes of occurrence and origin. *Econ. Geol.* **66**, 164–177.
- (1972) Manganite, hausmannite, braunite: features and mode of origin. *Econ. Geol.* **67**, 83–102.

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Memorial of Colin Osborne Hutton January 10, 1910—December 13, 1971

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Colin Osborne Hutton died on December 13, 1971, at Stanford University Hospital following a short illness. With his untimely passing the Department of Geology at Stanford University, and the Mineralogical profession, lost a valued and respected scholar and colleague. His love and knowledge of the mineral kingdom had been communicated to a large number of students and colleagues both at Stanford and in New Zealand. His interest in, and knowledge of,

minerals was not limited to minerals as isolated entities, but was focused on the use of detailed mineralogical information in the resolution of broader geologic and petrologic problems.

Colin Hutton was born in Dunedin, New Zealand, on January 10, 1910, and was educated at John McGlashan College in that city. He entered the University of Otago, Dunedin, in 1930 and pursued studies in both Chemistry and Geology. On receiving