

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



his degrees at Otago, B.Sc. in 1933 and M. Sc. in 1935, he was engaged in research at the University as a Duffus Lubecki Research Fellow. His admiration and respect for Professor W. N. Benson at Otago in large part led to his decision to pursue graduate work at Cambridge, where he was awarded a Shirtcliffe Fellowship and began his Ph.D. work there in 1936. At Cambridge, he studied under Professor C. E. Tilley and completed research on progressive metamorphism in the Otago Schists, Lake Wakatipu region. In collaboration with Professor F. J. Turner, then a senior lecturer at the University of Otago (1936), he introduced a field classification of the chlorite zone of progressive metamorphism. This subdivision into four subzones proved to be an important advance in the understanding of metamorphic zonation, and was based purely on textural criteria and the amount of reconstitution suffered by rocks of greywacke composition with low-grade metamorphism of a regional type. The now classic mineralogical descriptions of the metamorphic minerals of the Otago Schists (1940) illustrate the careful and critical approach of Colin Hutton. After receiving his Ph.D. at Cambridge in 1938, he returned to New Zealand as the first petrologist of the New Zealand Geological Survey. At that time only a very few indi-

viduals were aware that new uranium deposits would be needed. One of the few possessing such information was Sir Ernest Marsden, permanent Secretary of the Department of Scientific and Industrial Research, who realized the need for a mineralogist-petrologist to provide the necessary skills. Colin's tenure with the New Zealand Survey (1938-1946) encompassed the years of World War II and much of his work was concerned with problems related to the international emergency. He accompanied one of the major expeditions organized in New Zealand as part of a search for uranium- and thorium-bearing minerals of Fiordland, a remote area along the west coast of the South Island of New Zealand. His studies of the samples collected during this expedition and from other localities in New Zealand led to the classic paper on studies of heavy detrital minerals (1950). While with the New Zealand Survey he organized and developed a Petrology Section that still benefits from his insistence on careful collections and records, along with accurate descriptions of materials collected by field geologists.

Colin Hutton left his post as petrologist with the New Zealand Survey in 1946 and succeeded F. J. Turner as Senior Lecturer in Geology at the University of Otago. Professor D. S. Coombs recounts his stay. "In his short time on the staff, Colin made a big impact both on students and faculty members of the University generally. All who knew him here will remember the gay extrovert streak of his character. Almost daily near lunch time he was to be seen standing on the steps of the Geology Department, a group of students sitting around him, hopefully in the sun, listening while Colin, eyes flashing, told funny stories and spread the lore of geology." Colin recalled that he lectured in paleontology, as well as mineralogy and petrology. His displeasure at this situation was instrumental in the increase in staff from two to three with the appointment of D. S. Coombs as Assistant Lecturer in early 1947. Later that year Colin left New Zealand to join the faculty at Stanford University. The move of both Colin Hutton and Frank Turner to sister universities in California was a great loss to New Zealand Science, but the presence of these two men in American universities influenced many undergraduate and graduate students. Colin was instrumental in importing to this country the Cambridge approach to mineralogy and petrology.

Colin Hutton joined the faculty at Stanford University in 1947 as Associate Professor of Mineralogy

and was promoted to Professor of Mineralogy the following year. He was a dedicated and conscientious teacher with unusually high standards. His lectures and laboratory instruction were superbly organized, with every minute being utilized for meaningful content. Colin was a rigorous and exacting teacher and supervisor of research, expecting fully as much from his students and colleagues as he gave himself. His research and teaching laboratories were immaculate and maintained in outstanding operating condition. These laboratories were enthusiastically made available to students working under the direction of all faculty members, with the understanding that they were to be left in the same condition as found. Rarely would he enforce his requirements for neatness in the laboratory with verbal exhortations; more commonly the miscreant student (or faculty member) would find a brief, pointed note on the piece of misused or dirty apparatus. Many of these notes are cherished classics of understatement. The extensive mineral collections, to which he added his own personal acquisitions, were fully as important in his eyes as the teaching and research laboratories. He thoroughly enjoyed working with this material and the organization and utility of the research mineral collection was the envy of all who worked with similar materials.

In a sense, it was surprising to hear from Professor Coombs that Colin Hutton was so outgoing at Otago. Most of us who knew him at Stanford regarded Colin as somewhat withdrawn on all other than scientific and professional matters. In retrospect, this seems to have been produced by a desire not to be brought into the morass of departmental and institutional politics. For many years Colin served on the departmental and School (of Earth Sciences) graduate admissions committees. His insight and capability for critical evaluation proved particularly valuable in this role. Colin was very much concerned with providing the students with the very best possible instruction and research opportunities in Mineralogy and Petrology and devoted much of his effort in this direction. To those of us at Stanford his manner was somewhat reserved; however, he was continually available to serious students and colleagues. His reserve vanished when discussing minerals, their chemistry, structure, occurrence, and particularly the light they could shed on complex petrologic problems. At times such as this no one could possibly fail to be infected with a degree of his excitement and enthusiasm.

As is the case with so many of his Cambridge contemporaries, Colin was primarily a geologist who was concerned with the use of mineralogic data and the insight gained from detailed mineralogic studies in the solution of broader geologic problems. His interest did not stop at minerals as individual, discrete, entities; rather it began there. This attribute is exemplified by his decade-long study of the mineralogy and petrology of Nevis, Leeward Islands, British West Indies, on which he was working at the time of his death. The Nevis study, supported by the National Science Foundation, involved detailed mineralogical research on the rocks of nine eruptive centers of the island as well as on the alteration products resulting from late stage fumarolic activity. On the basis of the present, nearly complete, manuscript it seems clear to us that the results provide additional constraints on hypotheses concerning the origin and development of andesitic rocks in orogenic zones. Although the work is largely mineralogical, it rests on several years of arduous and thorough field work, and careful and critical examination of hundreds of thin sections.

His scientific reputation is international, with eighty-three papers published in at least three countries.¹ Many of his articles are cited repeatedly. Colin was affiliated with the Royal Society of New Zealand, the Geological Society of London, the Geological Society of America, the Mineralogical Society of America, the California Academy of Sciences, the Cambridge Natural History Society, the Mineralogical Society of Great Britain, the Mineralogical Society of Canada, and the Mineralogical Society of Japan. In 1951 Cambridge University awarded Colin the Sc.D. degree, the highest of Cambridge's degrees in science. Colin received a Guggenheim Fellowship in 1953. From 1953 to 1956 he was a member of the Council of the Mineralogical Society of America. In addition to academic renown, Colin Hutton gained recognition in government and industry, serving as a consultant to many corporations and to the U.S. Atomic Energy Commission.

Outside his professional activities, Colin Hutton was a man of remarkably catholic interests. His early experiences in mountaineering in the Western

¹A bibliography of Hutton's published works may be obtained by ordering NAPS Document Number 02046 from Microfiche Publications, 305 East 46th Street, New York, N. Y. 10017. Please remit in advance \$1.50 for microfiche or \$5.00 for photocopies. Please check the most recent issue of this journal for the current address and prices.

Otago and Southland regions of New Zealand led to a life-long love of hiking, characteristically in some of the more remote areas of the globe. In 1954 he hiked in Northern Malaysia and Southern Thailand, and in later years spent much time in thoroughly investigating the islands of the Lesser Antilles in conjunction with his geological studies. His love of nature began at his own door. His intense interest in gardening is mirrored in the beautiful surroundings of his home, achieved entirely without professional assistance. When the garden did not claim his efforts, he and May relaxed in the enjoyment of music, particularly that of the 17th and 18th centuries. Following a visit to Fiji, he developed a strong interest in the life, history, and art of the Polynesians, with particular reference to New Zealand, the Chatham Islands, the eastern part of the Fiji Archipelago, and the Cook Islands. In his usual fashion, he developed this interest into a knowledge little short of authoritative.

In all aspects of his life and work, Colin was marked by a strong sense of responsibility and by the most careful attention to detail. He was devoted to his students; although his illness had begun in early summer and was advanced by the time Autumn

Quarter began, he insisted on teaching a regular schedule which must have taxed his physical strength enormously. There was no way to deter his indomitable will or to prevent his discharging what he regarded as an obligation to his students and to the University.

Colin Hutton married May Piggot in 1940 upon his return to New Zealand from Cambridge. To be invited for tea with Colin and May at their beautiful home was considered a special treat by his students, looked forward to by all. To quote May Hutton: "I consider Colin's role as a husband surpassed all his other achievements; to have shared his successful, happy marriage of 31 years was indeed a privilege". Survived by his wife, May, and a sister, Mrs. Tui Todd of New Zealand, Colin Osborne Hutton will be missed not only by them, but by students, faculty members and fellow scientists.

We would like to thank our colleagues at Stanford University and the U.S. Geological Survey, Menlo Park, and particularly Professor D. S. Coombs, University of Otago, and D. W. A. Waters, New Zealand Geological Survey, for their assistance in the preparation of the memorial.

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Memorial of Arthur William Gerald Kingsbury June 27, 1906—August 3, 1968

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At the time of his sudden death on August 3, 1968, Arthur Kingsbury was the leading authority on British minerals. For several months, through the kindness of Professor E. A. Vincent of Oxford University, he had been spending two or three days a week in the British Museum (Natural History) annotating and putting in order the mineral collection of his old friend Sir Arthur Russell—a task which only he had the extensive knowledge and experience to perform. The distinction between the amateur and the professional mineralogist crops up as a subject for heated dispute from time to time, and Arthur Kings-

bury was one of the few who have managed to bridge the uneasy gap by being both.

He was born on June 27, 1906, at East Meon, Hampshire, the eldest son of Gerald Kingsbury. He received a classical education at Bradfield College, Berkshire, and amongst other activities played the part of Eurydice in a performance of *Antigone* in 1922. His headmaster, recognizing his gifts, was unsuccessful in persuading his parents to send Arthur to university, and to his lasting regret he was articled to a London firm of lawyers. In 1929 he took his final examinations and practised as a solicitor (at-