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Memorial of Max Hutchinson Hey
March 11, 1904–January 24, 1984

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Max Hutchinson Hey, Fellow of the Mineralogical Society of America and Roebling Medalist (1966), died peacefully in his sleep in the early hours of Tuesday, January 24, 1984. He was born on March 11, 1904, at Leyland, Lancashire, the eldest of a family of four sons and a daughter. He attended Balshaw's (Leyland) Grammar School from 1912 to 1918, when he went on to Manchester Grammar School. In 1921 he gained a "demyship" (scholarship) to Magdalen College, Oxford, where he read chemistry and crystallography, graduating as a B.A. with first-class honors in 1925. His final year's project, on the preparation and crystallography of diphenylacetic acid and related compounds, was the subject of his first publication (in German) and gained him a B.Sc. Of his many practical instructors at Oxford, J. J. Manley and T. V. Barker (a fellow Lancastrian) made the most lasting impact. Max never wore a lab coat, remembering Manley's dictum that anyone sloppy enough to need one would never make a good analyst. The morphological and optical crystallography that he learned under Barker, coupled with his talent for analytical chemistry, provided a formidable basis for his later work in mineralogy.

In November 1928 he was appointed assistant keeper (second class) in the Department of Mineralogy of the British Museum (Natural History), with sole responsibility for the running of the chemical laboratory. He must have settled in rapidly, for within a year he had produced analyses for the new minerals bismutotantalite and scawtite and had published a detailed study of the rhodonite-bustamite series. L. J. Spencer, who was then keeper, had set him the challenging task of examining and cataloguing the many zeolite specimens in the collection. Max set to work with a will, and, with his unique combination of diligence and skills, aided on the X-ray side by F. A. Bannister, published a now-classic series of nine papers on the zeolites; these gained him an international reputation and (in 1937) both a D.Sc. and promotion to assistant keeper (first class). But the zeolites, more than enough to have kept any ordinary young mineralogist busy, were by no means his sole preoccupation in these early years. In addition to other investigations of his own, he contributed analyses to studies by his colleagues. With Bannister, Max was a pioneer in recognizing the importance of relating chemical composition to the unit cell and density of a crystal. The continuing success of this collaboration led to their being jointly awarded the Lyell Fund of the Geological Society of London in 1943.

Familiarity with meteorites, resulting from his many chemical analyses and preparation of the meteorite collection for its wartime evacuation, led to his publication of a (second) appendix to Prior's *Catalogue of Meteorites* in 1940. He completely revised the full catalogue twice, producing a second edition in 1953 and a third edition in 1966. He was the natural successor to Campbell Smith as curator of the meteorite collection when the latter retired in 1952. The high point of this part of his career was the successful series of negotiations, starting in 1956, leading to the purchase in 1959 of a large part of the extensive Nininger Collection with the aid of a Nuffield Foundation grant of £50 000. This notable acquisition added specimens of over 200 falls and finds not previously represented in the museum's collection.

During the war years, he remained at the museum, taking his turns of duty in the team of fire-watchers and first-

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aiders. Much of the time he worked on chemical problems for various government departments, especially on explosives. One of these he found more than usually satisfying, since he was able to solve it easily by using crystal shape and optical properties to identify unstable impurities in TNT. Between these official, external problems, and with most of the mineral and meteorite specimens inaccessible in safe storage, he spent some of the time working with Miss Sweet, devising a systematic ordering for the mineral display in anticipation of its restoration to the gallery after the war. Extended as new species arrived in the collection, only now is this ordering in need of revision.

Outside inquiries of the museum are often interesting and sometimes lead to unexpected results. In 1942, Max was asked what silicates of magnesium were known in nature. Since there was no single reference to which he could turn, he had to make a complete listing; and after the immediate question had been answered, the resulting card catalogue continued to grow as a departmental work of reference. It proved so useful that it was published in 1950, as *An Index of Mineral Species and Varieties Arranged Chemically, with an Alphabetical Index of Accepted Mineral Names and Synonyms.* Priced at thirty shillings, it was an immediate success, and a second edition followed in 1955. A best seller among the museum's publications, a second and corrected printing was made in 1962, and two appendices followed, in 1963 and 1974. Better known by its short title, the *Chemical Index of Minerals,* or more familiarly as "The Hey Index," it is based on qualitative chemical composition and was intended primarily for determinative purposes. More of its users, however, consult the alphabetical glossary first, as a comprehensive and authoritative guide to nomenclature; and, with this in mind, Max planned the third edition (referring to it as the "Index Mineralium") with most of the information under the names in the alphabetical section. Moreover, having found many erroneous citations in secondary sources, he was engaged until October 1983 in the enormous task of checking all the original references that he could find. The work remains for others to complete.

In 1946 he became a principal scientific officer, as a result of the postwar reconstruction of the Government Service and the conversion of British Museum (Natural History) museum grades to scientific grades. In July 1952 his achievements gained him an "individual merit" promotion to senior principal scientific officer. Shortly afterward, following Bannister's early retirement due to ill health, he became acting keeper for a few months until G. F. Claringbull's appointment in 1954. Max did the job well, but greatly preferred his science to the managerial routine that he regarded as a necessary evil. On August 31, 1969, he retired from nearly 41 years of full-time service, at the age of 65; but he remained as busy as before, working at home and coming into the museum as often as the demands of his garden would permit.

He gave freely of his time and ability to outside organizations, especially to the Mineralogical Society, which he joined in 1929; an ordinary member of its Council 1936–1939, 1945–1948, and again in 1955, he was appointed editor of the *Mineralogical Magazine* in 1956. The post was designated principal editor in 1971, and he relinquished it at the end of 1980. An ex officio member of Editerra, the European Association of Earth Science Editors, he wrote the section on mineralogical nomenclature for its editors' handbook. Concurrently with his editorship, he was vice-president of the Mineralogical Society from 1963 to 1965 and concluded his presidency (1970–1972) by giving the Hallimond Lecture on one of his favorite topics, "Mineral Analysis and Analysts." The British delegate to the Commission on New Minerals and Mineral Names from its inception in 1960, he contributed greatly to its rapid acceptance as an arbitrating body by the mineralogical community and published progress reports; he was its vice-chairman at the time of his death. The new mineral heyite, a lead-iron vanadate from Nevada, was named in his honor in 1973.

It is impossible, in a short space, to do justice to his output of about 150 publications, since he was master of an amazing range of subjects in both theory and practice—chemistry in its various aspects; crystallography and crystal optics; systematic topographic, curatorial, and nomenclatural mineralogy; meteoritics; computational and statistical mathematics—and to all of these he made significant and lasting contributions. Yet this is by no means the sum of his professional achievement, since he was never too busy to help others, both in the museum and in his capacity as editor of the *Mineralogical Magazine.* Such was the growth of the subject that in 25 years, from 1956 to 1980, he edited more papers than the redoubtable L. J. Spencer had in 55; there can have been few of their authors who did not benefit from his advice. There is no secret to his success, which was founded in a unique blend of native genius, sound teaching, ever-inquiring mind and retentive memory, and above all the ability to keep several problems progressing simultaneously and commit them to paper.

We miss him, and shall not see his like again.

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