MEMORIAL OF JOHN PUTNAM MARBLE

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John Putnam Marble was born in Worcester, Massachusetts, May 30, 1897, and died suddenly in Washington, D. C., June 6, 1955. His scientific career was that of an amateur, one who cultivates his science from taste, without pursuing it for gain. As such, Marble was willing, and able, to undertake unrewarding tasks, necessary to the advancement of his chosen field, and which others more professionally inclined, neglected as not being sufficiently flamboyant. His strong sense of duty to science and to humanity undoubtedly stemmed in large part from his Quaker heritage. He traced his ancestry to the Pilgrim fathers; and counted, I understand, among his collateral forebears Peregrin Smith, the child born upon the Mayflower. He showed an early love for the out-of-doors, which led him to an appreciation of geology; the family dry-saltery business, on the other hand, developed an interest in chemistry. These two interests he later combined successfully into a career in geochemistry.

After attending Worcester Classical High School, he entered Williams College, where he attained Phi Beta Kappa in his junior year, and graduated *cum laude* in 1918, and as co-recipient of the John Sabin Adriance Prize in Chemistry.

He entered the Chemical Warfare Service of the Army in 1918, serving in the Research and Control Laboratory, Edgewood Arsenal, receiving his discharge in early 1919. After a brief interval as part-time special student at Clark University, he entered the family dry-saltery business, J. Russel Marble and Company.

In 1921 he married Adelaide Holme Maghee. Marble was not particularly interested in a career as merchant. With the urging of his wife, he decided to retire as drysalter, and become a scientist. He began advanced work at Harvard University in 1926, received his M.A. in chemistry in 1928, and his Ph.D. in analytical chemistry under G. P. Baxter in 1932.

His doctoral thesis at Harvard was a determination of the atomic weight of phosphorus, an exercise that required the preparation of his reagents in the purest possible form. This preoccupation with purity of preparations was an important requirement in his later researches in determining the absolute age of minerals.

In 1931 he began his association with the Committee for the Determination of Geologic Time, of the National Research Council, A. C. Lane, Chairman, as Research Associate. He began a program of geologic age determinations, based upon the lead-uranium and lead-thorium ratios of radioactive minerals. He also began the compilations of the

bibliography of the literature relating to the measurement of geologic time. In recognition of his devotion to the work of the committee he was made vice-chairman in 1936. Upon the death of its chairman Lane in 1946, he was named chairman. For a number of years Marble was essentially the Committee on the Determination of Geological Time; its annual report, widely recognized as one of the most valuable and popular of the National Research Council's reports, became almost completely his work.

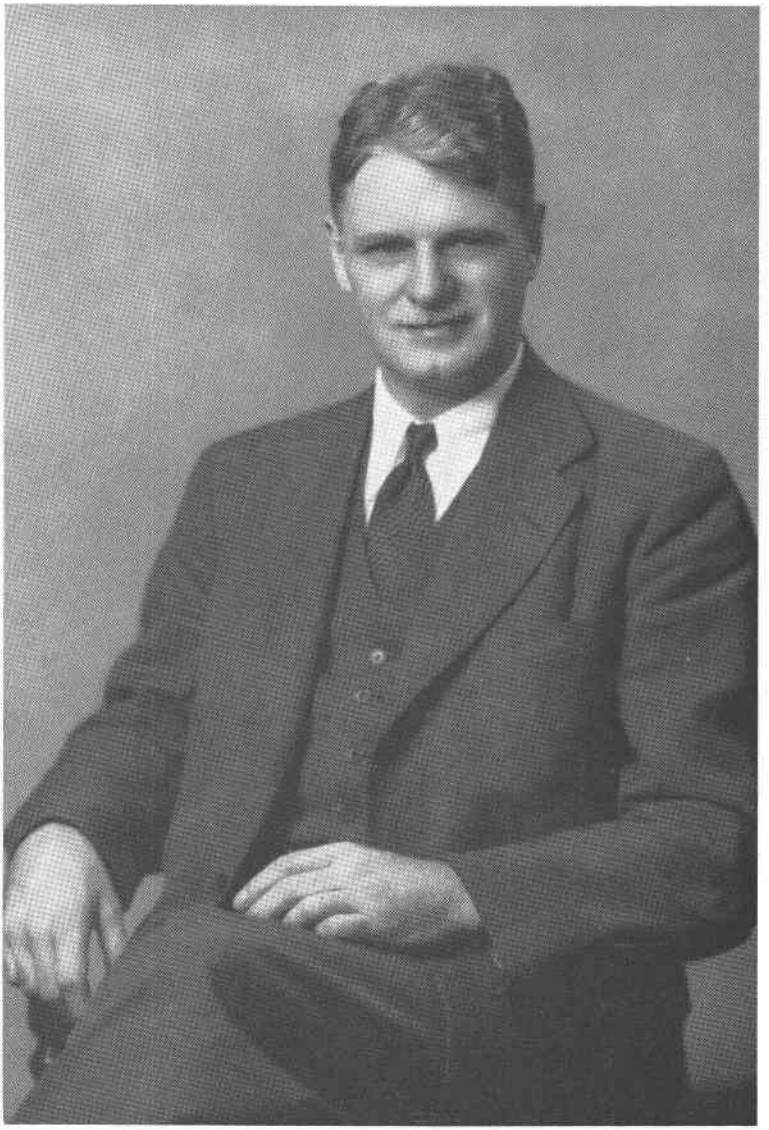
His work with the Committee for the Determination of Geological Time may be divided into two categories: (1) original researches on absolute geological age measurements; (2) collation of the published information relating to geochemistry, in the form of an annual summary and comprehensive annotated bibliographies.

When Marble began his researches upon the absolute determination of geological time, the only practical method was the laborious analysis of lead, uranium and thorium. Uraninite or pitchblende was the preferred material to work with, but this mineral was then considered a rarity, and restricted in geological environment. Allanite is more widespread but contains only traces of uranium and lead. Working, however, with considerable quantities of sample, and exercising care and patience, significant results could often be obtained with this mineral. Through months of tedious and meticulous chemical manipulation, the geological age of a number of such specimens were obtained.

The annual annotated bibliographies on geological time constituted a tremendous task for one person to complete singlehandedly. The world's literature was combed systematically, significant articles in many languages were read, evaluated and abstracted. The completeness of the published bibliographies, which do not include, of course, the numerous articles perused but rejected as without pertinence, attests to Marble's assiduous labor in their preparation. The last bibliography, covering the year 1953–1954, contains 635 entries.

In addition to these important contributions to the work of the committee, Marble maintained contact with other workers in this field throughout the world, arranging for interchange of ideas, of materials for study, or in other desirable ways. Sometimes the results of these contacts appeared as appendices to the Committee's report; translations of significant articles not readily available to American workers, or the personal reports of foreign collaborators.

Marble also continued his interest in his early work on the atomic weights of the elements, and spent the summers from 1931 through 1942 at Harvard working on problems in this field. One of these involved the determination of the atomic weight of scandium. In order to obtain sufficient material for this project he personally arranged for the reopening



JOHN PUTNAM MARBLE
1897–1955

of the thortveitite-bearing pegmatite at Iveland, Norway.

One must finally mention his interest in meteoritics, which manifested itself in a description of the Osseo, Canada, octahedrite. He was also a member of the International Committee for the Study of Meteorites, organized during the 18th International Geological Congress in 1948.

In 1935 Marble became associated unofficially with the Smithsonian Institution. In 1948 he was named Associate in Mineralogy, in recognition of his interest and assistance in the work of this Institution. He was appointed its official delegate to the 17th International Congress, U.S.S.R., the 18th, England, and the 19th, Algiers. He was secretary general of the American Geophysical Union, and attended the Tenth General Assembly of the International Union of Geodesy and Geophysics at Rome in 1954. In all these he contributed his own expenses. He was also secretary-treasurer of the American Geological Union, and a councillor of the American Association for the Advancement of Science. During World War II he served as technical aid and special assistant of the National Research Committee of the Office of Scientific Research and Development.

Marble was a fellow or member of a number of scientific societies, including the Mineralogical Society of America, Geological Society of America, American Geophysical Union, American Chemical Society, Electrochemical Society, American Meteoritical Society, American Association for the Advancement of Science, the Washington Academy of Sciences, and the New York Academy of Science.

Marble's work was a labor of love. He might have pursued his science desultorily in the manner of the usual dilettante. Instead he spent long hours daily in his scientific pursuits and took his responsibilities with inordinate seriousness. His independent position freed him of the common preoccupations of most scientists, and lent him the air of the old-school intellectual. The Spanish would class him as an "educated" man, which involves not only learning, but broad cultural attainments. His home life was gracious and dignified. His interests were broad and included not only his science, but art and literature as well. He was particularly interested in education, and in his capacity of Trustee of the Sidwell's Friends School, he studied the advances of progressive education as practiced in Europe.

Probably his most obvious attribute was unselfishness. Although he often groused good naturedly, he never refused a task imposed upon him.

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