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WALTER HERMANN BUCHER

1888—1965

A Biographical Memoir by
W. H. BRADLEY

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Biographical Memoir

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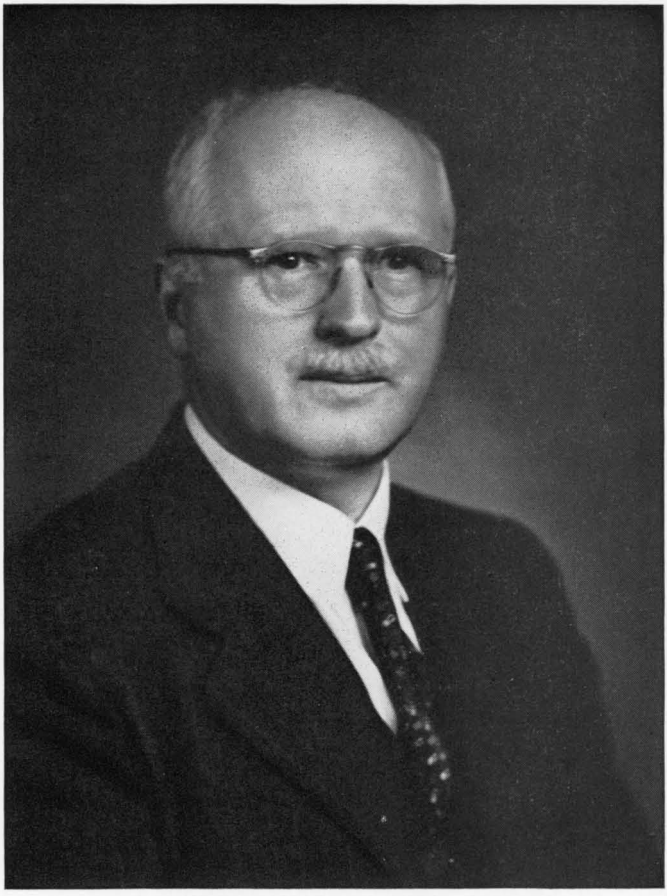

Walter H. Beecher

WALTER HERMANN BUCHER

March 12, 1888–February 17, 1965

BY W. H. BRADLEY

WALTER BUCHER was a man of almost unbounded enthusiasm, curiosity, and infectious good humor. The most common reaction on meeting him was a feeling of stimulation, whether it was a first meeting or the fiftieth. He had an eager and frank curiosity about nearly every aspect of natural history —an eagerness that was contagious. But this interest centered on dynamics: how and why the crust of the earth moved; how plants and animals lived and what they accomplished in the scheme of nature. Indeed, Bucher's interests reflected the buoyant flow of his own restless energy.

Bucher's father and his paternal grandfather and grandmother came from Switzerland, in or near Zurich. His mother and her parents all came from Württemberg in southern Germany, though all three lived at one time or another in Zurich. Without exception, all six of Bucher's immediate forebears were strongly religious, his mother almost fanatically so. Bucher's father and mother were both very fond of music and so were several of the grandparents. He inherited this love of music and was a skilled pianist. Rather curiously, the strong family inclination to religion seems to have touched him lightly. As a youngster he was much exposed to books and an intellectual atmosphere. His father was a scholarly man who had

a special interest in, and aptitude for, languages, especially Latin, Greek, and Hebrew.

Bucher's father came to the United States when he was only seventeen years old, and lived first in Wheeling, West Virginia, and later at Akron and Cincinnati, Ohio. Walter was born in Akron but when he was five years old he and his parents moved to Frankfurt-am-Main, where his father had been sent by the Methodist Church to teach Hebrew, Greek, and homiletics in a missionary school. As a consequence, Bucher acquired all his schooling in Germany, including four years at the University of Heidelberg, from which university he received his Ph.D., *summa cum laude,* in 1911. He entered the university to study zoology and paleontology, but under the influence of Professor Wilhelm Salomon-Calvi, he changed to paleontology and geology. After completing his university work he took a brief course in English, which by that time had become virtually a foreign language to him.

Bucher returned to the United States in 1911 and established residence in Cincinnati. He spent most of his time for the next two years at the University of Cincinnati attending lectures in geology and paleontology and improving his English. His gift for teaching and stimulating students must have been readily apparent, for he was soon asked to lecture on a volunteer basis. In 1913 he became a member of the faculty as an instructor. Thereafter he was appointed successively Assistant Professor (1915), Associate Professor (1920), Professor (1924), and, in 1937, Research Professor and Chairman of the Geology Department.

In 1914 Bucher married Hanny E. Schmid, the daughter of a close family friend. She survives him. There are four children, all married. One of them, John Eric Bucher, is a petroleum geologist. The other son, Robert W., and the two daughters, Mary Dorothy (Mrs. John Plunkett) and Margaret (Mrs. R. G.

Oellers), and their families live in New Jersey near the parental home.

Although never a student of Bucher's, I can readily understand what an exciting experience that must have been. I came to know him in the twenties through a mutual friend. We realized at once that we shared many interests in the fields of geology and natural history. For the next decade or so, I benefited greatly by reason of his interest in my research. With characteristic generosity he made his experience and knowledge freely available to me. He also made me acutely aware of the wealth of information available in the European literature, if I would only gain some facility with the languages.

Bucher was Chairman of the Geology Department at Cincinnati only three years. He left there to become Professor of Geology at Columbia University with the understanding that he was to specialize in structural geology. This, of course, was most agreeable to him because by this stage in his career he had already become deeply involved in the major tectonics of the earth, on which subject he had published many papers and his justly celebrated book, *The Deformation of the Earth's Crust.*

Bucher's published papers and books may be divided into two quite different categories. Those published in the interval between 1911 and 1919 have to do with paleontology and with the origin and significance of such minor features of sediments as stromatoliths, ripple marks, and oolites. These are important contributions to our understanding of the present-day processes that give rise to these features and that help explain similar structures found in sedimentary rocks almost from the beginning of the geologic record. They reveal his restless quest for understanding how things come to be.

Beginning in 1920 with the publication of his paper "The Mechanical Interpretation of Joints," the focus of his interest shifted to structural geology, where it remained, almost but not

quite exclusively, for the rest of his life. Moreover, his interest shifted rather soon into two aspects of structural geology, cryptovolcanic structures and the major deformation of the earth's crust.

Bucher was the first in this country to call attention to, and map systematically, some of these remarkable, nearly circular, complex structures known as cryptovolcanic structures. He was the first also to compare them with similar features in Europe. Curiously, his geologic mapping of two of these structures, Jeptha Knobs in Kentucky and Serpent Mound in Ohio, represents the only systematic geologic mapping he did, yet he had the keenest interest in seeing geologic features in the field for himself rather than depending solely on geologic maps made by others. Bucher explained these features as the result of gas explosions caused by intense heat rising from cupolas of igneous magma that never rose all the way to the earth's surface.

In later years many of these cryptovolcanic structures have been interpreted as the results of meteor impact, but Bucher remained highly skeptical of this interpretation. Indeed, his last published paper was a timely and carefully reasoned plea for caution against uncritically adopting the conclusion that all such features are of meteoritic origin.

Bucher's greatest contribution to geology came from his long-continued study of the major structural features of the earth's crust. His objective was to understand the physical properties of the earth's crust and the forces that operated to deform it. Much of his reasoning was based on analogy with the major structural features exposed in present-day mountain ranges, though he supplemented this with laboratory experiments which he designed and conducted himself.

In 1933 he published his conclusions in a book, *The Deformation of the Earth's Crust,* which was at that time a significant milestone in geologic thought. As he recognized himself,

parts of it were already out of date before it was published. I think it fair to say that one important cause of that was because his earlier papers on the same subject had stimulated others to concern themselves with one aspect or another of this major problem. Another, and probably greater, reason was that the geophysicists were making great strides in determining the physical properties of the earth's crust, especially at great depths below the surface.

In an Anniversary Day address before the Geological Society of America (1938) entitled "Deformation of the Earth's Crust," he brought his own thinking up to date and summarized the work of many others in a significant and still very valuable contribution to our knowledge of the major tectonics of the earth.

Had he lived just a few years more he surely would have been much excited by the enormously long, rectilinear features that are now being found on the ocean floor and, locally, on the continents. These large and apparently geologically very ancient structural features are strikingly reminiscent of the proportionately long, nearly rectilinear breaks he observed in his experiments with shrinking spheres.

As his bibliography shows, he continued to publish occasional papers dealing with paleontology, sedimentary structures, and geomorphology.

Perhaps two of the chief values of Bucher's works were the great stimulation they aroused in other earth scientists and the fact that he brought to Americans the conclusions and ideas of many Europeans, for he had an amazing grasp of the whole European literature.

Bucher was first of all a teacher of rare ability. But, in addition, he was a very productive research scientist. He engaged in both activities with his characteristic ebullient enthusiasm until he retired in 1956. During the latter part of his

career at Columbia he served as Newberry Professor of Geology. John T. Rouse and Charles H. Behre, Jr., in a memorial to Bucher published in the *Bulletin of the Geological Society of America* (in press), have written an appraisal of Bucher's role as a teacher at some length and far better than my information permits. Their excellent appraisal, fortunately, reveals as much about Bucher's warm and colorful personality as it does about his quality as a teacher.

After retirement Bucher became part-time consultant to the Humble Oil and Refining Company, and spent about half of each year at their laboratory in Houston, Texas. He died of heart failure while on duty there on February 17, 1965.

He was widely recognized as a leading figure in geology and was awarded a considerable number of honors and honorary positions. The responsibilities involved in the latter he discharged with his usual vigor. The following statement of these honors is quoted, with minor alterations, from Rouse and Behre's memorial cited above.

"Bucher was elected President of the Ohio Academy of Sciences in 1935 and to membership in the National Academy of Sciences in 1938. He became chairman of the Division of Geology and Geography of the National Research Council for the term 1940-1943 and was President of the New York Academy of Sciences in 1946. He was Vice President (1948) and President (1950-1953) of the American Geophysical Union. In 1953 he served as Vice President of Section E of the American Association for the Advancement of Science. In 1954 he was elected Vice President and in 1955 President of the Geological Society of America, which Society he had served earlier as Councillor (1935-1937).

"He was a Fellow of the American Academy of Arts and Sciences, an Honorary Member and Foreign Correspondent of Société Geologique de France, and an Honorary Member of

Société Geologique Belgique and of the Deutsche Geologische Gesellschaft.

"In 1955 he received the William Bowie Medal of the American Geophysical Union, in 1955 the Leopold von Buch Medal of the Deutsche Geologische Gesellschaft, and in 1960 the Penrose Medal of the Geological Society of America.

"Honorary doctor degrees were awarded him in 1947 by Princeton University, in 1957 by Columbia University, in 1962 by Durham University, England, and in 1963 by the University of Cincinnati."

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KEY TO ABBREVIATIONS

A.I.M.E. Tech. Publ. = American Institute of Mining and Metallurgical Engineers, Technical Publications
Am. Assoc. Petroleum Geol. Bull. = American Association of Petroleum Geologists Bulletin
Am. J. Sci. = American Journal of Sciences
Bull. Geol. Soc. Am. = Bulletin of the Geological Society of America
Econ. Geol. = Economic Geology
Geol. Rundschau = Geologische Rundschau
Geol. Soc. Am., Spec. Pap. = Geological Society of America, Special Paper
J. Geol. = Journal of Geology
J. Wash. Acad. Sci. = Journal of the Washington Academy of Sciences
Proc. Geol. Soc. Am. = Proceedings of the Geological Society of America
Trans. Am. Geophys. Union = Transactions of the American Geophysical Union
Trans. New York Acad. Sci. = Transactions of the New York Academy of Sciences

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