C. L. Dake

PROCEEDINGS OF THE GEOLOGICAL SOCIETY OF AMERICA
FOR 1935

PP. 195-200, PL. 7. JUNE, 1936

MEMORIAL OF CHARLES LAURENCE DAKE

BY JOHN S. BROWN

Charles Laurence Dake, stricken by a cerebral hemorrhage, died in Denver, Colorado, September 2, 1934, at the age of fifty-one. By his death the science of geology lost, much too soon, one of its most devoted and capable disciples.

At the outset of his career, Dake deliberately subordinated all commercial temptation to the educational motive and the scientific spirit. On this point, I can do no better than to quote from his biography, as written for the American Association of Petroleum Geologists by Josiah Bridge, who was for several years his closest associate in teaching:

"Dake was primarily an educator. His most important contribution to geology is to be found in the large number of professional geologists who began their training in his classrooms. He had a tremendous enthusiasm for his subject, a clear and forceful manner of presentation. His students soon learned that it was not sufficient to be able to repeat what had been said in the lecture or what was contained in the text, for his examinations were almost invariably so framed as to require a student to reason from the facts rather than merely remember and repeat them. . . .

"Professor Dake . . . was greatly interested in the whole problem of engineering education and at the time of his death was chairman of the American Institute of Mining and Metallurgical Engineers' Committee on Engineering Education. Dake's own struggle for an education has never been fully told, but it left its mark, and made him bitterly intolerant of the student who came to college 'because he had to', or the one who came to 'have a good time'."

Born at Chaseburg, Wisconsin, April 2, 1883, Dake was the eldest son of George E. Dake and Mary A. Dake, his father being a farmer-carpenter. He completed high school at Sparta, Wisconsin, with highest honors, but ill health, which dogged him much of his life, together with lack of finances, prevented his continuing in college. He attended normal school at River Falls in 1906 and 1907, and it was Professor Taylor, at this institution, who first inspired in him a serious interest in geology. He entered the University of Wisconsin in 1908 and received his B.A. in 1911, his M.A. in 1912, and was elected to the honorary societies—Phi Beta Kappa, Gamma Alpha, and Sigma Xi.

At Wisconsin, he was student assistant in geology 1908–1910, Stern

Scholar in 1910–1911, and a fellow in 1911–1912. An excellent insight into his circumstances and character is contained in the following quotations from a letter by E. F. Bean, now State Geologist of Wisconsin, who was his close associate in student days:

"Physically he (Dake) was not strong. He was small in stature. His health was not good. His love for the outdoors and perhaps an instinctive feeling that his health made outdoor life necessary were factors in his decision to study geology. Neither physique nor health were ever an apparent handicap in field work. He held his own with the best in any group. None of us was conscious that he suffered any hardship on the most trying field trip. I never heard him complain.

"He 'earned his way' and at the same time did excellent work as a student. Naturally he had little time for social life, but he did belong to Acacia, a social fraternity. I was a fellow instructor in geology. We coined a word 'Daking'. This gives considerable insight into his character. Whenever any routine departmental work was to be done, he wished it done well in advance of schedule. 'Daking,' therefore, means to complete work before it is absolutely necessary."

Once Dake had chosen geology as a profession, he followed it with almost the zeal of a religious convert, yet always, too, with the analytical logic of a scientist.

One other passion filled his life. In 1912, he married Ella Hildegard Falkenstern, of Portage, Wisconsin, and to her and their three children he devoted himself with an attachment the depth of which could only be suspected by their most intimate friends. Financial necessity compelled him to forego further schooling after his marriage, and it was not until 1920–1921 that he was able to complete studies for his doctorate, which was taken at Columbia University.

Just as Dake's formative years were centered in Wisconsin, so, except for an interlude of one term at Williams College, all his years of fruition were connected inseparably with the School of Mines and Metallurgy at Rolla, Missouri. There he was assistant professor of geology from 1913–1918, associate professor 1918–1921, professor and head of department from 1921 until his death. Largely through his efforts the department became one of the most effective in the school and widely known throughout the United States. Proximity to the Mid-Continental oil-fields during the years of their vast expansion, naturally drew many of his students into petroleum geology, and Dake himself became an active and highly respected member of the American Association of Petroleum Geologists.

In his early years at Rolla, Professor Dake committed himself so ardently to serious aims, high ambitions, and hard work, that he found no time to make himself popular with the rank and file of students. He found his recompense in the smaller number who shared his viewpoint, who valued his deep sincerity, and who recognized in him a teacher of outstanding ability. In teaching, he advocated the use of multiple hypotheses, was a stickler for "evidence", and was nicknamed "criteria" for his insistence on listing the points for and against an interpretation. Fearlessly outspoken in his convictions, Dake never stooped to curry favor with authority. This, and the recognition of his sterling worth, ultimately gave him a high standing in the faculty, and slowly won the sober appreciation of the student body.

Aside from work, and usually in conjunction with his family life, Dake occasionally cultivated outside interests such as carpentry, stamp collecting, appreciation of operatic music, and poetry. Into these he poured temporarily the same enthusiasm that his regular work received continuously.

Although teaching was his forte, Professor Dake found time for a wide range of field work, which kept him in touch with the practical in geology. A summer in Cobalt, three on the Wisconsin Survey and private work in the iron ranges, another in Ontario reconnaissance, added to his instruction at Wisconsin, grounded him well in the pre-Cambrian geology of the North. At Rolla, he became, in summer vacations, one of the chief field workers for the Missouri Geological Survey, and contributed much to the knowledge of Paleozoic stratigraphy and structure in the Ozarks.

An odd summer with the Wyoming Geological Survey resulted in one of his most important contributions, the discovery of the Heart Mountain overthrust. This area also became the setting for his last endeavor. He had just completed a season assisting a party operating under a grant from the Penrose Bequest of the Geological Society of America in a re-study of this area, and was returning home, when he was fatally stricken.

His earlier years of field experiences gave Dake an intimate knowledge of those forms of transportation that are becoming less and less familiar to modern geologists, travel on foot, by canoe, on horseback, and in buckboards. Although far from robust, he was active and physically energetic and perhaps inclined to overtax his strength.

On two occasions, Professor Dake took a full year's leave and engaged in commercial work in petroleum geology. This gave him an excellent first-hand knowledge of the structure and stratigraphy of practically the entire southwestern United States. On the last occasion, he moved his family to San Antonio. The year spent there, together with one at Columbia University, in New York, became high lights in the family recollections. At Columbia, he is remembered as one of the finest types of graduate student. Everyone recognized his ability and great fund of knowledge as well as his capacity for critical observation and sound thinking. He was persistent, independent, and unusually reliable. He had faith in his own reasoning and was a redoubtable opponent in any argument. Such men help materially to create an atmosphere and ultimately a tradition.

In the summer of 1933, he did no field work but took probably almost the only long vacation of his career, touring boyhood scenes with his family, to their mutual delight. It is worthy of special note that he gave the same whole-hearted devotion to his enjoyments and play that he was wont to give to his scientific work.

Dake's published contributions exhibit wide range and variety, including, in earlier years, articles for encylopedias, and, later, official reports, contributions to geological journals, and two textbooks. Outside the local field of Ozark stratigraphy, where he became a recognized authority, he probably will be remembered longest by two things: his discovery and recognition of the significance of the Heart Mountain overthrust in Wyoming, and the little textbook on "Interpretation of Topographic and Geologic Maps." His interest in map interpretation was aroused by Eliot Blackwelder, augmented by Douglas W. Johnson, and expanded by himself into a course that took the form of a veritable treatise on geology and geomorphology. Early in his teaching career, he began buying United States Geological Survey fire-sale folios by the dozen, for the sake of the maps, which he mounted for individual use in the classroom. Probably nowhere else could one find a more complete or better organized set of teaching material for this subject.

Dake constantly encouraged research and publication by his associates, and was generous in aiding younger men to obtain recognition. The numerous joint titles in his publications of later years for the most part were the result of this policy.

At his death, Doctor Dake was a member of the following honorary and scientific societies: Phi Beta Kappa, Sigma Xi, Phi Kappa Phi, Gamma Alpha, American Association of Petroleum Geologists, American Institute of Mining and Metallurgical Engineers, Geological Society of America.

Surviving Dr. Dake at Rolla are his wife, two daughters, Helen Elizabeth and Emilie Louise, and a son, Laurence F. Dake, who probably will follow his father's footsteps in geology.

Quite appropriately, his ashes were returned to his native Wisconsin, in Baraboo Cemetery, not far from the happy experiences of his youth, where he first met the young woman who was to become his wife and helpmate.

BIBLIOGRAPHY OF CHARLES LAURENCE DAKE

1913

Salt. Journal of Geography, volume 11, pages 285–287.

1914

Iron. Journal of Geography, volume 12, pages 165–170.
Petroleum. Journal of Geography, volume 12, pages 197–202.
Gold. Journal of Geography, volume 12, pages 9–12.

Stream piracy and natural bridges in the loess of southeast Missouri. Journal of Geology, volume 22, pages 498–499.

1915

The formation and distribution of residual iron ores. American Institute of Mining Engineers, Bulletin 101, pages 937–946; Transactions, volume 53 (1916) pages 116–124.

The formation and distribution of bog iron ore deposits. [With discussion by A. C. Lawson and G. H. Cox.] American Institute of Mining Engineers, Bulletin 103, pages 1429–1436; Bulletin 108, pages 2475–2476; Transactions, volume 53 (1916) pages 106–115.

1916

Geological articles (unsigned) in the Encyclopedia Americana.

(With G. H. Cox.) Geological criteria for determining the structural position of sedimentary beds. Missouri University School of Mines, Bulletin 2, number 4, 59 pages.

1918

The Hart Mountain overthrust and associated structures in Park County, Wyoming. Journal of Geology, volume 26, pages 45–55.

The Valley City graben, Utah. Journal of Geology, volume 26, pages 569–573.

Sand and gravel resources of Missouri. Missouri Bureau of Geology and Mines, second series, volume 15, 274 pages, 47 plates, 2 figures.

1919

Glacial features on the south side of Beartooth plateau, Wyoming. Journal of Geology, volume 27, pages 128–131, 1 figure.

The horizon of the marine Jurassic of Utah. Journal of Geology, volume 27, pages 634–646, 10 figures.

1920

The pre-Moenkopi (pre-Permian?) unconformity of the Colorado plateau. Journal of Geology, volume 28, pages 61–74, 8 figures; [abstract] Science, new series, volume 51, page 492.

1921

Episodes in Rocky Mountain orogeny. American Journal of Science, fifth series, volume 1, pages 245–254; [abstract] Science, new series, volume 51, pages 520–521.

(With G. H. Cox and G. A. Muilenburg.) Field methods in petroleum geology. McGraw-Hill Book Company, New York.

The problem of the Saint Peter sandstone. [Doctor of Philosophy dissertation, Columbia University.] Missouri University School of Mines and Metallurgy Bulletin, Technical Series, volume 6, 225 pages, 30 plates.

1922

Derivation of the Peter sandstone. Pan-American Geologist, volume 37, pages 244–245.

Taxonomic significance of Peter sandstone. Pan-American Geologist, volume 37, pages 288–300.

1923

Memorial of Guy Henry Cox. Geological Society of America, Bulletin, volume 34, pages 15–18, portrait.

(With Josiah Bridge.) Subterranean stream piracy in the Ozarks. Missouri School of Mines and Metallurgy, Bulletin, volume 7, pages 3–14, 8 plates, 7 figures.

The scope of geologic teaching in mining engineering. Engineering Education, volume 18, pages 527–536.

1925

(With John S. Brown.) Interpretation of topographic and geologic maps, with special reference to determination of structure. 355 pages, 52 figures. McGraw-Hill Book Company, New York.

1927

(With Josiah Bridge.) Early diastrophic events in the Ozarks. [Abstract] Geological Society of America, Bulletin, volume 38, pages 157–158; Pan-American Geologist, volume 47, pages 155–156.

1929

(With Josiah Bridge.) Initial dips peripheral to resurrected hills. Missouri Bureau of Geology and Mines, Biennial Report of the State Geologist (1927–1928) pages 93–99, 1 plate.

1930

The geology of Potosí and Edgehill quadrangles. Missouri Bureau of Geology and Mines, second series, volume 23, 233 pages, 26 plates, maps.

1932

(With Josiah Bridge.) Faunal correlation of the Ellenburger limestone of Texas. Geological Society of America, Bulletin, volume 43, pages 725–741, 1 figure, 2 plates, map; [abstract] *ibid.*, volume 43, p. 133; *also* Pan-American Geologist, volume 57, page 64.

(With Josiah Bridge.) Buried and resurrected hills of the central Ozarks. Bulletin of the American Association of Petroleum Geologists, volume 16, pages 629–652, 4 figures; [abstract] Pan-American Geologist, volume 57, page 309.

Ore deposits of the Tri-State district. [Discussion of paper by George M. Fowler and Joseph P. Lyden.] American Institute of Mining and Metallurgical Engineers, Transactions, volume 102, pages 206–251. Discussed by Dake, pages 241–242, 244–245.

1933

(With L. A. Nelson.) Post-bolson faulting in New Mexico. Science, new series, volume 78, pages 168–169.

1934

Broadening engineering curricula. Mining and Metallurgy, volume 15, pages 172–178.

Basal Pennsylvanian transgression in the Ozarks. [Abstract] Geological Society of America, Proceedings for 1933, pages 74–75.

(With L. F. Dake.) Rôle of cap rock in oil accumulation. Bulletin of the American Association of Petroleum Geologists, volume 18, pages 1086–1091.

1935

Basal Pennsylvanian transgression in the Ozarks. Geological Society of America, Bulletin, volume 46, pages 697–714.