Memorial to Charles F. Park, Jr.
1903–1990

KONRAD B. KRAUSKOPF
Department of Geology, Stanford University, Stanford, California 94305-2115

Charles Frederick Park, Jr., died 11 December 1990, a week before his 87th birthday. Thus ended a long and distinguished career as mining engineer, economic geologist, educator, and mineral economist. Charles will be greatly missed by his many former students, by his friends in all parts of the world, by his colleagues at Stanford University and the U.S. Geological Survey, by the mining companies to which he gave advice about the finding and processing of metallic ores, and by those who value his wise words about the political and economic role of the mineral industry.

Charles was born and spent his early life in Wilmington, Delaware. He was fond of recalling that his interest in rocks and minerals dated from a time in his boyhood when he found a collection of specimens that had been discarded by a widow in his neighborhood. After high school, to satisfy an urge to see the West, he embarked as a steerage passenger on a ship bound for Galveston. A chance acquaintance on the voyage persuaded him that the New Mexico School of Mines was a good place to pursue his geologic interests, so to Socorro he went. Here he distinguished himself as captain of the basketball team, and in 1926 was awarded a degree in mining engineering. There followed two years as a mine surveyor for the Empire Zinc Co. in Hanover, New Mexico, then a master's degree in geology from the University of Arizona (1929) and a Ph.D. from the University of Minnesota (1931). From 1931 to 1946 he was employed by the U.S. Geological Survey, rising to the position of Geologist in Charge of the Section on Metalliferous Deposits. Just after World War II he moved to Stanford University as professor of geology, then for 15 years was Dean of the School of Mineral Sciences (later Earth Sciences), then holder of the Donald Steel professorship. After retirement in 1968 he continued to teach part-time, was much in demand as a lecturer, and served for a term as visiting professor at the Massachusetts Institute of Technology and the University of Michigan.

While with the Survey he examined and wrote detailed reports on many mining districts in the U.S. and Latin America—gold ores in the southern Appalachians, iron in Alaska and the Lake Superior region, zinc and manganese in the Metaline district of Washington, groundwater in eastern Oregon, manganese in the Olympic Mountains and in Cuba, and manganese and iron in Brazil. His acceptance of an academic job at Stanford was on condition that his summers would be free for further studies of ore deposits, and now the work took him even farther afield—to Gabon, Libya, Chile, Peru, the Philippines, Australia—in addition to other areas in North America and in Brazil. Some of his study and evaluation was done with the Survey, some as consultant for mining companies, especially Bethlehem Steel, the Homestake Mining Company, and the Utah Construction Company. Near the end of World War II Charles was asked by the Army Corps of Engineers to evaluate the mineral resources of Germany, and in 1951 to survey the iron and manganese resources of Japan. He could boast that he had studied mineral deposits on all continents except Antarctica.

This long and varied experience gave him a basis for drawing conclusions about the origin
of metallic ores, for much thinking about the politics and economics of the extractive mineral industry, and for sympathetic understanding of the difficulties faced by developing countries in their efforts to become part of the industrial world. His ideas on such subjects found their way, of course, into his teaching at Stanford, where they were refined in lively discussions with the many able students who were attracted to his classes. His maturing thoughts about ore formation were expressed first in his reports on mineral districts and then were embodied in his widely used textbook *Ore Deposits*, written with Roy McDiarmid as coauthor. After three editions (1964, 1970, 1975) the book was extensively revised in collaboration with John Guilbert and retitled *Geology of Ore Deposits* (1986). In two other books, *Affluence in Jeopardy* (1968) and *Earthbound* (1974, 1981), Charles expressed his deep and growing concern about the future of a small planet on which the population is increasing exponentially and the nonrenewable mineral resources are limited and spottily distributed over its surface.

With regard to ore formation, in his early papers Charles accepted the then-current idea that most ore metals were deposited from hot solutions originating in or associated with intrusive igneous bodies, although even then he noted field evidence at some deposits that was not consistent with this notion. Later, using his own observations and a thorough familiarity with the work of others, he broadened his thinking to include a variety of possible origins. A focus of the later work was the relation of ore occurrences to structures in the surrounding rocks. His ability to adapt his thinking to changing ideas about structure is shown by one of his most recent papers (1984), in which he related the formation and distribution of ores to the new concepts introduced by plate tectonics.

In all his scientific work Charles put emphasis on observations in the field. Laboratory experiments were useful as a supplement to field work, of course, but for himself the detailed observing of ores as they occur in nature was the prime basis for speculation about origins. In published articles he voiced his annoyance at the apparent declining interest in field work and the growing dependence on “black boxes” for basic data. In some ways Charles resembled an old-time naturalist, a trait that was evident also in his extensive knowledge of birds and his success in cultivating exotic species of cactus. His love of nature made him a vocal defender of conservation, but conservation of a limited sort: in wilderness areas the exploration for and extraction of metallic ores should not be forbidden, he believed, but should be undertaken only with scrupulous attention to “good housekeeping” that would ensure minimum environmental disturbance.

In the academic world Charles was saddened by the apparent decline of interest in mining engineering and extractive metallurgy programs, and he tried valiantly to keep these programs alive at Stanford. It was an effort that could not succeed, because it ran counter both to national trends and to wishes of local administrators. In other respects Charles was an outstanding dean, even though he had accepted this administrative chore reluctantly. He revitalized the School of Earth Sciences after a period of faculty dissension, expanded its offerings, handled faculty differences and student complaints with understanding and a sense of humor, and was especially effective in cultivating cordial relations between the School and its supporters in the mining and petroleum industries.

Honors and professional responsibilities came his way in abundance. From the New Mexico School of Mines he received an honorary Doctor of Science degree, and from the University of Minnesota its Award for Distinguished Achievement. An active member of the Society of Economic Geologists from the time that he joined in 1933, he served as its president in 1963–1964. He was president also of the International Association on the Genesis of Ore Deposits (1968), and served on the Council and several committees of the Geological Society of America. He was a member of the American Mineralogical Society, the Geological Society of Brazil, and the American Institute of Mining Engineers. As a lecturer on ore deposits in foreign
lands and on the politics and economics of mineral resources, he was much sought after by both professional and popular audiences. He was kept busy as a consultant to mining and petroleum companies, both domestic and foreign, and as a member of the Boards of Directors of the Homestake Mining Company, the Golden Cycle Corporation, and the Freeman-Cooper Publishing Company.

Charles met Eula Blair during his days as a mine surveyor in New Mexico, and the couple married in Tucson in 1931. Charles's former students and faculty acquaintances often describe the pleasant occasions when he and Eula entertained them in their home, recalling especially the goodies that Eula prepared and Charles's obvious pleasure in recounting humorous incidents from his travels. The couple had three children: a daughter, Martha, who teaches mathematics in a junior high school in Portland, and two sons, Allan and Frederick, who have both followed their father's footsteps into mining geology. Also surviving are five grandchildren and four great grandchildren.

Stanford has lost a distinguished teacher and academic statesman, the country has lost an eloquent spokesman for the mineral industry in its relations to government and society, and many among the geological and mining community around the globe have lost a respected colleague and a good friend. To keep his memory alive, Stanford has established the Charles F. Park Fund for the benefit of future students.


SELECTED BIBLIOGRAPHY FOR C. F. PARK, JR.

—— Is geological field work obsolete?: Economic Geology, v. 59, p. 527–537.