

Memorial to James Morton Schopf

1911-1978

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James Morton Schopf, outstanding paleobotanist and coal geologist, died on September 15, 1978. His death was felt in many quarters of the world because he was greatly respected for his intellectual acumen and forthright honesty. He was born in Cheyenne, Wyoming, June 2, 1911, the son of Ira Morton and Nettie Bufton Schopf.

Jim graduated from high school in Pine Bluff, Wyoming, in 1927, attended Kemper Military School, and received the B.A. degree from the University of Wyoming in 1930. While at Wyoming he served as a student assistant in the botany department. He received the M.S. degree in 1932 and the Ph.D. degree in 1937 from the University of Illinois. He was a teaching assistant in the botany department at the Univer-

sity of Illinois from 1930 until 1933. He served in the summer of 1932 with the Illinois Natural History Survey as an assistant botanist under the late Leo Tehon. Jim joined the Illinois State Geological Survey in 1934 as a research assistant in the Coal Division, working under Gilbert H. Cady, and was promoted to assistant geologist in 1935. Schopf continued to work for the Illinois Geological Survey until May 1943, at which time he accepted a position with the U.S. Bureau of Mines in Pittsburgh. He enjoyed his stay at Illinois in part because of his association with John T. Buchholz, Harold R. Wanless, and others at the University of Illinois. Colleagues at the Illinois State Geological Survey, including J. Marvin Weller, Chalmer Cooper, and others, were an inspiration to him. His association with Gilbert H. Cady was a special one, as Jim revealed in 1973 in his response to receiving the first Gilbert H. Cady Award of the Coal Division of the Geological Society of America: "During this period I came to have the greatest respect and admiration for Dr. Cady: this is not to say we did not have differences of opinion. . . . At the same time I must add that it was a type of pleasure (I didn't realize it at the time) and a privilege, to have a chance for such frank and open discussion with Dr. Cady. . . . Dr. Cady's encouragement, and above all, his example of courage and integrity, have been a continuing source of strength and inspiration."

While at Illinois, Schopf began a most productive career; between 1936 and 1943, he published 15 papers totaling 341 pages, in addition to nine abstracts. Two more manuscripts were completed before he left Illinois and were published in 1944 and 1948. Schopf's productivity, inaugurated at Illinois, was to continue throughout his career; he published more than 150 papers, reports, abstracts, and reviews, a combined total of more than 1,800 pages devoted to coal geology, paleobotany, and palynology. Space does not permit a review of these papers, but I will briefly touch on several of them. His description of the spores from the Herrin (No. 6) coal of Illinois (1938) is a classic report primarily on megaspores of an individual coal and serves as a model of detailed observation and description of spore morphology. His paper on *Mazocarpon oedip-*

ternum Schopf (1941) is a detailed report on the histologic and morphologic features of this taxon that provided data suggesting a close relationship with *Sigillaria*. Further, Schopf recognized that the spores classified under the Aphanozonati section of *Triletes* were of Sigillarian affinity. An annotated synopsis of Paleozoic fossil spores and definition of generic groups (1944), written with Leonard Wilson and Ray Bentall, provided a set of guiding principles to help resolve problems resulting from diverse methods classification.

Schopf joined the U.S. Bureau of Mines in Pittsburgh in 1943 as a paleobotanist, in part to further the work of Reinhardt Thiessen on the origin and constitution of coal. Schopf had great admiration for the work of Thiessen, and the opportunity at the Bureau of Mines was an added career stimulus. Ideas discussed previously with Cady served as a foundation for this research and resulted in a series of publications on the petrology of the botanical constituents of coals from both the eastern and the western United States.

From March to October 1947, Schopf was on leave from the U.S. Bureau of Mines to serve as Senior Research Associate with the Council of Scientific and Industrial Research and the South African Geological Survey at Pretoria. His mission was to demonstrate the use of coal petrographic techniques with South African coal. Upon returning to the United States in October 1947, Schopf was appointed a geologist in the Paleontology and Stratigraphy Branch of the U.S. Geological Survey and assigned to offices in the U.S. National Museum in Washington, D.C. Jim made many periodic trips to Pittsburgh to spend weekends with his family. During this period a paper undertaken at Illinois concerned with American species of *Dolerotheca* (1948) was published. Three new species of *Dolerotheca*, a pollen-bearing organ, from coal balls, were described in detail as to external form and internal organization. Further, a proposed hypothetical scheme was presented on pteridosperm relationships according to septangial interpretation of male fructifications. The paper, "Variable Coalification" (1948), has had a significant impact on coal studies and was in part the result of Schopf's experiences at Illinois and the Bureau of Mines. This paper deals with the changes that occur in plants and plant debris during coalification (fossilization).

In 1949, Schopf transferred to the Fuels Branch of the U.S. Geological Survey and established the Coal Geology Laboratory at Ohio State University. Under Schopf's leadership, this laboratory proved to be a training ground for a number of assistants and students. He was transferred to the Paleontology and Stratigraphy Branch in 1961, but remained in charge of this laboratory until his retirement from the U.S. Geological Survey in 1976, at which time he continued operation of the laboratory on a W.A.E. (when actually employed) basis, most ably assisted by his wife Esther. Concurrent assignments on a part-time basis included professorships in the departments of geology and mineralogy (since 1950) and the department of botany (since 1964) at Ohio State University.

Schopf was a delegate to the Botanical Congress meetings on nomenclature in Stockholm (1950), Montreal (1959), Edinburgh (1964), Seattle (1969), and Leningrad (1975). He was also a delegate to the Palynological Conference in Utecht (1966). Schopf, as a result of his interest in paleobotanical nomenclature, became deeply involved with the American proposals submitted to the VII International Botanical Congress held in Stockholm (1950). The majority of these proposals were adopted and incorporated in the Code of Nomenclature, including the conservation of such well-known fossil plant taxa as *Dolerotheca*, *Calamites*, and *Stigmaria*.

Initially the Coal Geology Laboratory was primarily concerned with coal petrology,

but in more recent years, the investigation of Antarctic paleobotany was added in association with the Institute of Polar Studies on the campus at Columbus. Schopf conducted field work in Antarctica in 1965–1966 and again in 1969–1970. The highest mountain of the Ohio Range in central Antarctica has been officially named Mt. Schopf by his Antarctic colleagues. Numerous other awards were accorded to James M. Schopf—including a Commendation of the U.S. Department of the Interior (1947) for civilian service during World War II, a Merit Award of the Botanical Society of America (1969), an Antarctic Service Award (1970), the Gilbert H. Cady Award of the Geological Society of America (1973), the Mary Clark Thompson Award, National Academy of Science (1976), the Fellowship Scroll and Medal, Paleobotanical Society of India (1977), and the Distinguished Paleobotanist Award, Paleobotanical Section of the Botanical Society of America (1977). In addition, the Paleontological Society Medal was awarded posthumously to members of the family at the Toronto meetings of the Society (1978).

Nine taxa of fossils have been named for James M. Schopf. Six of these are genera: *Schopfia* Janssen 1940, *Schopfiastrum* Andrews 1945, *Schopfites* Kosanke 1950, *Schopfipollenites* Potonié and Kremp 1954, *Schopfitheca* Delevoryas 1964, and *Schopfaspis* Palmer and Gatehouse 1972. In addition, the following species have been named honoring Schopf: *Azolla schopfii* Dijkstra 1961, *Uralonympha schopfi* Carpenter 1969, and *Lepidostrobus schopfii* Brack 1970.

Schopf was a member of 26 professional societies; at his death, he was president of the International Organization of Paleobotany. He was very active in a number of capacities for various societies for many years. During the years when coal geology did not have the stature it has today, the field of coal geology made significant progress through his leadership, and his paleobotanical contributions have set a standard for others to follow. James Morton Schopf was a dedicated scientist, a true and loyal friend, a tireless worker; he will be missed by all who knew him. His close friends appreciated his love for Dixieland music, a night out with the boys, and life. Good luck and Godspeed, Old Jim!

James M. Schopf is survived by his wife Esther and two sons, both of whom are geologists: Thomas J. M. Schopf of the University of Chicago and J. William Schopf of the University of California at Los Angeles.

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