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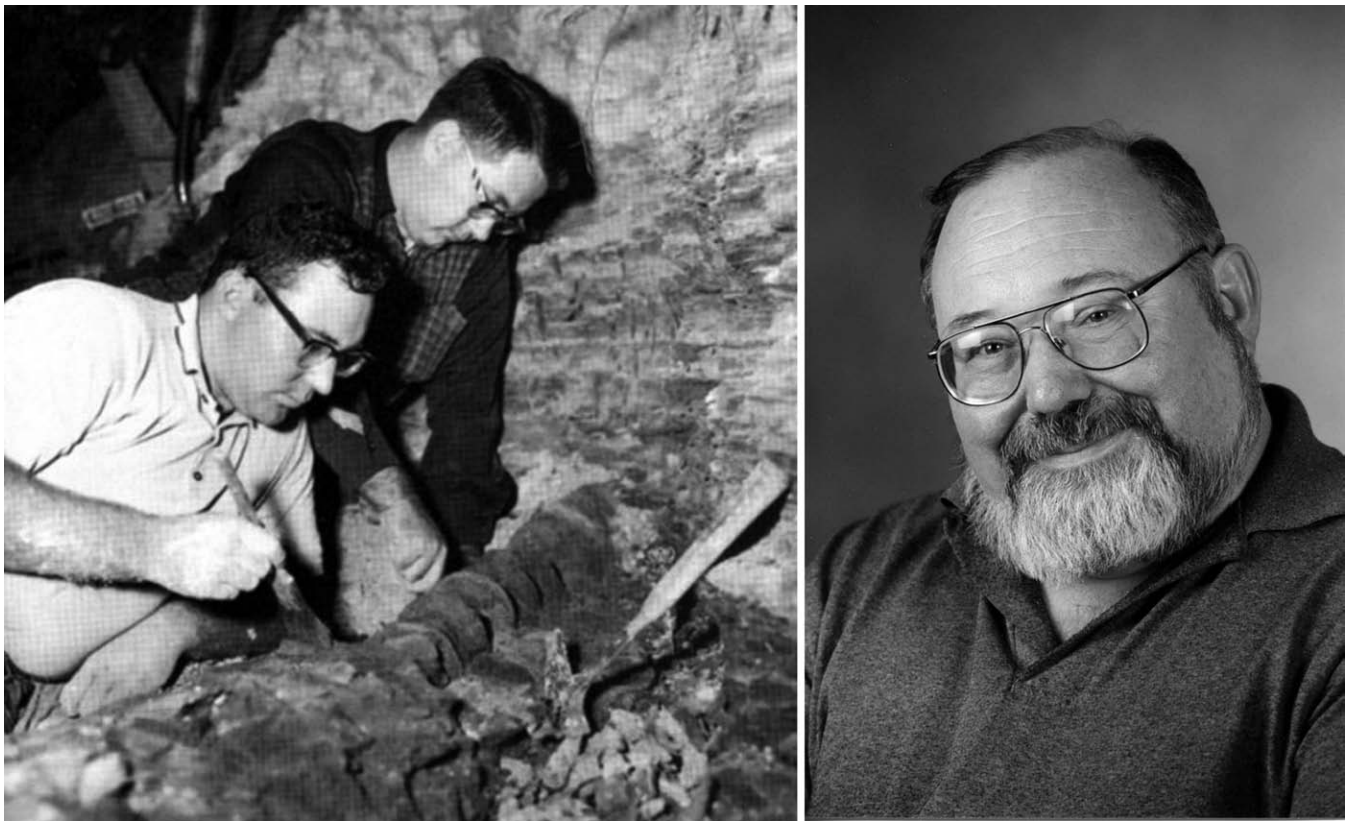
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IN MEMORIAM: LARRY DEAN MARTIN, 1943–2013

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Larry Martin in Nebraska in 1964, left, with older brother Don, examining a string of vertebrae of the Valparaiso plesiosaur; right, 2000 KU photo. (Left, from *Nebraskaland Magazine*, 1994; right, courtesy of KU University Relations, photo by R. Steve Dick.)

Larry Martin was a Renaissance paleontologist, with a primary interest in avian fossils and evolution, who practiced his trade at the University of Kansas (KU) for 40 years. He was brilliant, gleeful, immensely curious, and had a passion for unraveling the secrets of the world of fossils. He was born on 8 December 1943, and he died on 9 March 2013 at the age of 69, following an extended battle with lymphoma. He is survived by his remarkable wife Jean and two daughters, Amanda and Mary, and their families.

Larry was born in the Sand Hills of Nebraska, the son of devout Protestants who believed in literal Biblical truth, including

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the creation story; but Larry was a true scientist and would later become involved in the debate in Kansas over teaching evolution in schools. He took a B.S. in zoology (1966) and an M.S. in zoology at the University of Nebraska, where paleontology was big, and finished his Ph.D. in biology at KU in 1973. He would become professor of ecology and evolutionary biology and curator of vertebrate paleontology in KU's Biodiversity Institute, serving until the time of his death. In all, he published some 400 scientific works, including over 250 peer-reviewed papers, many in prominent journals such as *Nature*, *Science*, *American Scientist*, and *PNAS*. During his tenure, he directed 20 Ph.D. and 19 M.A. students.

An encyclopedic knowledge of paleontology led Larry into diverse fields, including but not limited to avian fossils and evolution (his primary interest), Quaternary paleoenvironments and community evolution, climate and evolution, fossil rodents and carnivores (particularly iterative evolution in large carnivores), fossil history of bone disease, and Plains Indians. He led field expeditions that collected over 200,000 specimens, now deposited at KU. In addition, he helped design and provided materials for 22 exhibits at KU's Museum of Natural History, including a mounted giant mosasaur and a giant squid. The KU paleontology program's high ranking was in no small measure due to Larry and the people he brought in to study.

Larry met Alan Feduccia in the early 1970s in Flagstaff, Arizona, and they formed a friendship and professional bond that endured through the years, publishing their first paper in 1976 on "The Eocene zygodactyl birds of North America." In a surge of activity during the 1990s, they focused on the newly discovered birds from the Early Cretaceous of China, with joint authorship on some 15 papers. Their last paper, with David Burnham, was published in 2012, covering a 35-year span of joint publication.

In 1992, Larry chaired the committee for the establishment of the Society of Avian Paleontology and Evolution, and at the 1992 meeting of the Society in Frankfurt, Germany, he presented the first evidence showing the early dichotomy of ornithurine and enantiornithine birds (published in 1995), now accepted by most paleontologists. Later, during the 1990s, scientists from China would meet at KU with new fossils, and we all enjoyed the wonderful hospitality provided by Larry and Jean at their home on Louisiana Street. During that period, descriptions emerged of the earliest known beaked bird, *Confuciusornis sanctus*, and a new species showing a diapsid skull, both published in *Nature*, along with a paper in *Science* on early adaptive avian radiation. Zhonghe Zhou was a Ph.D. student under Larry and joined in these studies along with Lian-hai Hou, a pioneering Chinese paleornithologist. Larry took a great deal of pride in his student Zhou, who would complete his degree, return to China, and become director of Beijing's Institute of Vertebrate Paleontology and Vertebrate Paleoanthropology and a member of the Chinese Academy of Sciences; he has been inducted into the U.S. National Academy of Sciences as a Foreign Affiliate. Larry traveled to China every few years, and he and Zhou continued to publish extensively on the emerging fossils, including a paper in *Nature* showing an *Archaeopteryx*-like skull in an enantiornithine bird, a recent description of avian crops preserved in the fossils in *PNAS*, and a paper on the distribution of the predentary bone in ornithurine birds.

Desui Miao joined KU's Natural History Museum as collections manager of the Vertebrate Paleontology Division in 1989 and worked closely with Larry for more than two decades. Larry always encouraged Miao to continue his research, and they published together over the years. Both are also known for their witty one-liners. Larry often talked about writing an "East meets Midwest" book with Miao after his retirement. During Zhonghe Zhou's graduate study at KU, he often joined Larry and Miao at lunch and enjoyed the duo's dialogues on a wide range of issues on current events, politics, history, philosophy, science, culture, linguistics, and religion. Both Larry and Miao were big fans of Loren Eiseley's writings, and Miao would like to quote Eiseley's poetic line "We loved the earth but could not stay," for Miao knows that Larry would have felt the same way before he left his beloved planet.

In 1998, Larry hired David Burnham as the state paleontologist and as his preparator. Both worked together on scientific model-making, another of Larry's passions, producing highly accurate versions of *Archaeopteryx* and *Microraptor*. They also mounted a real bone *Camarasaurus* for KU's Natural History Museum and enjoyed a cup of tea inside its belly for the grand opening. During those years, Burnham became Larry's doctoral student as well. They worked on the origin of flight and came up with a model of the four-winged glider *Microraptor* that could fly. Larry, Burnham, David Alexander, and a Chinese colleague, Enpu Gong, went on to publish papers on flight properties of four-winged gliders, and during the course of this research they discovered a possibly venomous dinosaur; both articles were published in *PNAS*. During his tenure at KU, Larry developed an incredibly productive atmosphere with his colleagues and the administration. His coworkers Miao and Burnham described this philosophy as the "Zen of Larry." Larry was part of a "dream team" of four organized to go to China in 1997 to study the newly discovered fossil compsognathid theropod *Sinosauropteryx*, the so-called "Chinese reptile wing" thought to show the presence of some sort of proto-feathers along the mid-dorsal line. Although the filaments have never been shown to have any affinity with feathers, Larry not only noted the presence of tuberculated scales on the body (later prepared away), but cleverly perceived that the real question was whether the fibers were above or below the surface of the skin (they are below the skin!).

In 1999, Larry organized a meeting at KU of Russian paleontologists, including Evgeny Kurochkin; a group from Oregon State led by John Ruben; Alan Feduccia; and developmental biologist Paul Maderson, to study the small enigmatic arboreal archosaur *Longisquama insignis*, which possessed integumentary appendages close in morphology to avian feathers. The result was a paper in *Science* (2000), and the morphological affinity of these "parafeather" appendages to avian feathers has been substantiated subsequently by German investigators.

To provide examples of Larry Martin's diverse interests, in the mid- to late 1970s, he published papers on biostratigraphy, microtine rodents, a new species of *Spizaetus*, scimitar-toothed cats, bears, zygodactyl birds, the toothed Cretaceous diver *Baptornis*, new rhinocerotids, land-mammal ages in North America, teeth in *Ichthyornis*, burrows of the Miocene beaver, and (with B. M. Gilbert and D. B. Adams) a cover article for *Science*: "A cheetah-like cat in the North American Pleistocene" (1977, 195:981–982). Throughout his career his interests remained diverse, adding material on *Archaeopteryx* and avian origins; contributing to our

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knowledge of pre-Clovis Paleo-Indians ("How the door opened: The peopling of the New World"; 1992, Human Biology 64:281–302); and delving into paleopathology, especially in collaboration with Bruce Rothschild, publishing in various journals such titles as "Paleopathology and diving mosasaurs," "Mosasaur ascending: The phylogeny of the bends," "Did Ice-Age bovids spread tuberculosis?," "Sharks eating mosasaurs, dead or alive?," "Bone cancer rates in dinosaurs compared with modern vertebrates," and a monograph entitled *Skeletal Impact of Disease* (2006, New Mexico Museum of Natural History and Science). In 2011, Larry's breadth of interest was again on display when he published a book with colleagues Virginia Naples and John Babiarz, *The Other Saber-tooths: Scimitar-tooth Cats of the Western Hemisphere* (Johns Hopkins University Press).

His studies of *Archaeopteryx* were impressive, discovering for the first time an avian propatagium in the Urvogel, adding to its long list of modern bird-like features, and producing the first authentic cast of the London specimen, directly from the actual bones. Larry was an advocate of an earlier origin of birds, from basal archosaurs, and found fault with the current dogma of a strict dinosaurian origin, ground-up flight and protofeathers, a view now with a substantial following, especially among ornithologists.

Larry Martin was a jovial, fun-loving man with a magnetic personality; he was a prince, and a joy to be around. He practiced his trade with impeccable integrity and would often say when studying new fossils, "We always have to be prepared to abandon our previous views if the evidence so dictates." Larry was a rare breed, indeed the epitome of the quintessential university scholar, contributing immensely to the field of paleontology and to his beloved institution, the University of Kansas. Still, to paraphrase Robert Browning, *Suddenly, as rare things will, he vanished.*

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