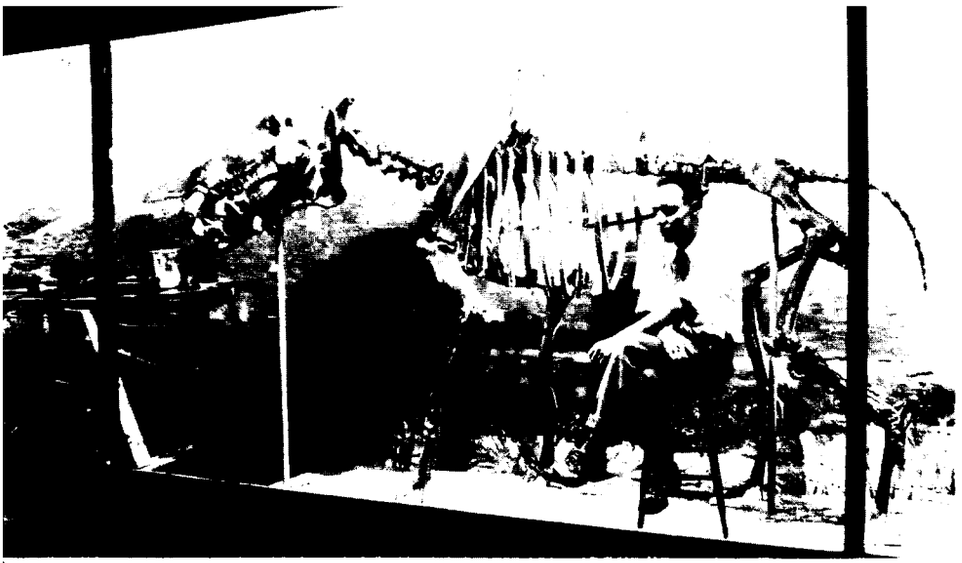

Dinohyus and Edwin Colbert at the University of Nebraska Museum. *Dinohyus*, "a giant enteledont . . . about the size of a bison and related in a very distant way to modern pigs . . . had a perfectly enormous skull, armed with huge canine teeth. Behind the skull was a strong skeleton, with long legs and feet—obviously an animal adapted for running across the land at a pretty good clip. . . . Our mount of *Dinohyus* was our best piece of work to date." [From *A Fossil-Hunter's Notebook*]

mounted in the museum at the University of Nebraska led him to work and study there and launched his lifelong quest for knowledge of the past life of the earth. His first love, forestry, fell by the wayside. In this autobiography, however, fossils become the central topic only after two rather long chapters on his life as a child and growing boy, which are only loosely related to the main theme of the book.

Colbert learned the fundamentals of paleontology at Nebraska under Henry Barbour, working in the laboratory and field and pursuing a formal education. From there he went to Columbia University and to the American Museum of Natural History, where he was to work until his retirement in 1970. Since then he has continued his researches at the Museum of Northern Arizona, in Flagstaff. After receiving his Ph.D. from Columbia in 1935, Colbert continued to concentrate his efforts on fossil mammals until 1943, at which time he shifted his emphasis to fossil amphibians and reptiles, filling a position opened up by the retirement of Barnum Brown. He began, almost at once, to concentrate upon the lower tetrapods of the Triassic period, and this decision colored most of his subsequent work. From his American Museum base his searches carried him to dinosaur quarries in the Ghost Ranch of New Mexico and much farther afield to Brazil, Africa, India, and Australia. The final venture was a bitter-cold exploration of fossil beds in Antarctica, graphically portrayed in the last chapter. The colorful descriptions of these operations are augmented by photographs. Though the emphasis in the later chapters is upon fossil hunting, the significance of the finds is discussed briefly.

Collecting, of course, is just one facet of paleontology, and Colbert devotes a full chapter to the problems of mounting and exhibiting materials and the attendant duties that occupy the time of a museum curator. Woven through all the chapters of his narrative are stories and anecdotes about the many paleontologists who were part of his work at one time or another. The very human sides of such giants as Henry Fairfield Osborn, William K. Gregory, Walter Granger, and Alfred S. Romer are there, as are stories of other paleontologists around the world. These informal glimpses of the greats and near greats, a breed of naturalist-paleontologist that is slowly passing from the scene, form a delightful part of the book. Colbert himself is one of the last of the breed.

From first to last the personal and professional aspects of the author's life are interlaced, along with the intimate details and minute changes in each that gave direction to the whole. Together they give the book a charm that neither one nor the other separately could carry. The book is well worth reading for an insight into paleontology, but perhaps mostly to better know and understand what makes and drives such paleontologists as Colbert.

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Fossil Birds

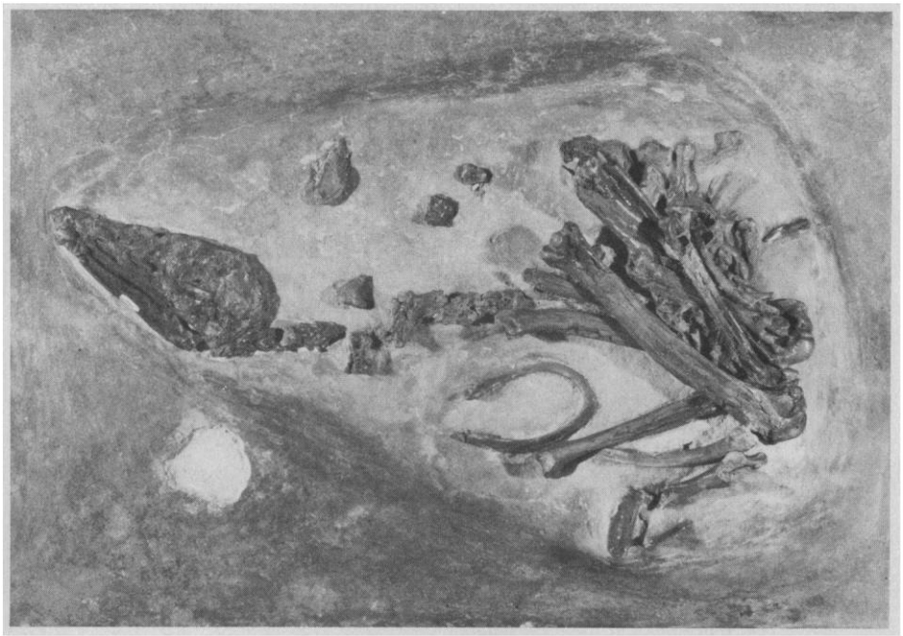
Papers in Avian Paleontology Honoring Hildegarde Howard. KENNETH E. CAMPBELL, JR., Ed. Natural History Museum of Los Angeles County, Los Angeles, 1980. xxxviii, 260 pp., illus. Paper, $20. Contributions in Science, No. 330.

The study of fossil birds is alive and well, and growing. No doubt its current healthy state owes much to those few whose interests and activities persisted through the field's recent dark ages. This festschrift pays tribute to one of the torchbearers, Hildegarde Howard, and it does the job well. Following appreciations of Howard, a résumé of her contributions, a bibliography of her publications, a list of the fossil birds she has described, and a reprinting of her still valuable illustrations of avian osteology are 19 papers on a wide variety of fossil bird topics.

The first paper is by G. G. Simpson, who gives his overview of paleornithology. He envisions three successive radiations of birds: (i) ancient paleognaths, including the living ratites; (ii) neognathous nonpasserines, including a highly specialized offshoot, the penguins; and (iii) neognathous passerines, which include the majority of living birds, the songbirds and their relatives. In the next paper Cracraft admonishes paleornithologists for not using cladistic analyses. I think I've heard this theme before (see the three references to Cracraft in his list of literature cited). Regardless, I question the perspicacity of including this paper in this volume.

Many of the remaining papers describe new taxa of extinct birds. But all go beyond description, and this is where the fresh new strength of avian paleontology lies. Paleoecology is the topic of several papers. Kurochkin discusses environmental conditions in western Mongolia in the Middle Pliocene, whence come three new fossil rails. Feduccia discusses the habitat of Kansas during the Sangamon Pleistocene after describing a new thick-knee from there. Campbell characterizes the habitat of north central Florida on the basis of the Itchtucknee fossil avifauna, which now totals 67 species.

Particularly exciting are the studies of the presumed habits of some extinct birds. Olson describes a new member of the pelecaniform family Plotopteridae. This family was described previously by Hildegarde Howard on the basis of a partial coracoid. Plotopterids are Northern Hemisphere counterparts of penguins in that they were flightless wing swimmers. (See Olson and Hasegawa



"The holotype, UNSM 1110, of *Anser thompsoni* new species approximately as it appeared in situ." [From Martin and Mengel's paper in *Papers in Avian Paleontology Honoring Hildegarde Howard*]

[*Science* **206**, 688 (1979)] for additional details.) Martin and Mengel describe an extinct goose of the modern genus *Anser* and then, using statistical data on limb proportions, attempt to understand some of its habits. Their work emphasizes the need for functional analyses of the skeletons of modern birds, for which series of complete skeletons can be obtained.

Several families are reviewed. Mourer-Chauviré erects a new family, Archaeotrogonidae, for several fossil taxa from the early Tertiary of France that show affinities with modern trogons and certain birds traditionally included in the Coraciiformes. Hoch describes a shorebird from the Eocene with strong perching feet and other features found in doves. Campbell and Tonni describe a new teratorn from Argentina with a wingspan of 7 meters and review this family of vultures. Brodkorb describes a new heron and provides a partial review of the family. Rich reviews the family Dromornithidae, extinct large ratites from Australia.

I have reserved last place for the paper that impressed me most, namely Steadman's review of the osteology and paleontology of the turkeys. On the basis of hundreds (probably thousands) of specimens from several epochs and numerous localities, Steadman concludes that three genera are recognizable, with several species in the type genus *Meleagris*. Because of the numerous specimens available, for some species Steadman can give quantitative as well as qualitative characteristics. As paleornithology progresses, which now surely it will, more such studies can be anticipated.

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A Mammalian Fauna

Pleistocene Mammals of North America. BJÖRN KURTÉN and ELAINE ANDERSON. Columbia University Press, New York, 1980. xviii, 444 pp., illus. $42.50.

The appearance in 1968 of Kurtén's *Pleistocene Mammals of Europe* was warmly welcomed, for the book drew together a great deal of information from widely scattered sources and helped to unravel the complex history of the Ice Age mammals of the region. The long-awaited companion volume on the corresponding North American fauna is equally welcome for similar reasons but has the added merit of a more strictly scientific presentation and a more comprehensive text. The European volume included the Villafranchian as the "Lower Pleistocene" and the new work includes the Blancan as well as the Irvingtonian and Rancholabrean, so both volumes cover approximately the last 3½ million years of geologic time. Kurtén has worked personally on most of the major collections in North America, and his collaboration with Elaine Anderson of Colorado, herself an authority on Pleistocene mammals, is a happy and successful one.

The book is divided into two parts, of very unequal length. Part 1 (96 pages) provides the geological framework, and part 2 (270 pages) is a description of the taxa recognized.

Chapter 1, entitled "Chronology," is unfortunately the weakest part of the volume, primarily because of its brevity—it is impossible in a mere three pages to do justice to this important topic. Discussions of rhythmites and the Milankovitch hypothesis, brief though they may be, are scarcely relevant, and the space might have been used more profitably. It is also curious that there is no discussion at all of the concept of the "local fauna" or of the way in which Land Mammal ages or stages are constructed, apart from a two-line definition and a reference to Tedford's admirable review of the complex principles and practices of mammalian geochronology in North America (*Proc. North Am. Paleontol. Congr.* 1969, vol. F, p. 666). However, this lack does not really affect the basic acceptability of the chronology set out in figure 1.1 to show the Land Mammal ages against a time scale controlled by paleomagnetic and radiometric data, although the exact fit of the glacial stages is still rather poorly known.

Chapters 2, 3, and 4 deal with the localities from which the local faunas have come and cover, respectively, the Blancan, the Irvingtonian, and the Rancholabrean. Each chapter begins with a very brief summary of the relative chronological placement of the major local faunas and of the dating controls. Each locality is shown on a distribution map. There follows a site-by-site description, with a brief account of the geological setting of each site and a short discussion of the important mammalian fossils represented; the number of taxa recognized from each site, which ranges from one for the Tabor Child Site to over 50 at a few localities, is noted. The authors have made their own assessments and place the faunas into subdivisions such as early, middle, and late wherever possible. References to the most important papers are given, and the locations of the major collections are indicated by acronyms for 46 institutions. Some 250 local faunas are covered, and there are few omissions.

The final chapter of part 1, entitled "Intercontinental correlation and migrations," is useful but suffers from overcondensation and presents rigid correla-