

CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

THE UNIVERSITY OF MICHIGAN

Vol. XIII, No. 11, pp. 289-295 (3 pls.)

SEPTEMBER 11, 1964

RESTORATIONS OF PREHISTORIC LIFE
IN CO-OPERATION WITH ERMINE COWLES CASE

BY
CARLTON WATSON ANGELL



from the
Ermine Cowles Case Memorial Volume

MUSEUM OF PALEONTOLOGY
THE UNIVERSITY OF MICHIGAN
ANN ARBOR

CONTRIBUTIONS FROM THE MUSEUM OF PALEONTOLOGY

Director: LEWIS B. KELLUM

The series of contributions from the Museum of Paleontology is a medium for the publication of papers based chiefly upon the collections in the Museum. When the number of pages issued is sufficient to make a volume, a title page and a table of contents will be sent to libraries on the mailing list, and to individuals upon request. A list of the separate papers may also be obtained. Correspondence should be directed to the Museum of Paleontology, The University of Michigan, Ann Arbor, Michigan.

VOLS. II–XII. Parts of volumes may be obtained if available.

VOLUME XIII

1. The Type Series of *Spinocyrtia* Fredericks and New Species of this Brachiopod Genus from Southwestern Ontario, by George M. Ehlers and Jean D. Wright. Pages 1–32, with 11 plates.
2. Silurian Ostracods collected by Dr. Carl Ludwig Rominger from Glacial Deposits in Germany, Parts I–III, by Robert V. Kesling and Philip L. Wagner. Pages 33–79, with 8 plates.
3. A Revision of A. W. Grabau's Species of *Mucrospirifer* from the Middle Devonian Traverse Group of Michigan, by Erwin C. Stumm. Pages 81–94, with 3 plates.
4. Upper Cambrian Trilobites from Michigan, by Erwin C. Stumm. Pages 95–102, with 1 plate.
5. The Appendicular Skeleton of the Permian Embolomeroous Amphibian *Archeria*, by Alfred Sherwood Romer. Pages 103–159, with 17 figures.
6. A New Calamite from Colorado, by Chester A. Arnold. Pages 161–173, with 4 plates.
7. Francis de Castelnau's *Essai sur le système silurien de l'Amerique septentrionale* and the Status of his *Spirifer huroniensis*, by George M. Ehlers and Jean D. Wright. Pages 175–180, with 2 plates.
8. Climatic Changes of the Past and Present, by Erling Dorf. Pages 181–210, with 1 plate, 3 figures, and 7 maps.
9. The Endocrine Glands and Evolution, No. 3: Os Cementum, Hypsodonty, and Diet, by Theodore E. White. Pages 211–265.
10. Cenomanian Ammonites from the Sierra de Tlahualilo, Coahuila, Mexico, by Lewis B. Kellum and Leigh W. Mintz. Pages 267–287, with 8 plates and 1 figure.
11. Restorations of Prehistoric Life in Co-operation with Ermine Cowles Case, by Carlton Watson Angell. Pages 289–295, with 3 plates.

RESTORATIONS OF PREHISTORIC LIFE
IN CO-OPERATION WITH ERMINE COWLES CASEBY
CARLTON WATSON ANGELL*

IN 1931 I had the good fortune to visit Europe and to see some of the treasures of its numerous museums. Among the several museums visited in Paris was the old and much respected Jardin des Plants with its galleries of anatomy. Here is a remarkable museum containing a veritable forest of skeletal material. But what interested me most of all in this museum were a number of small-scale models of prehistoric animals, beautifully executed, exhibiting exceptional technical skill and an intuitive capacity for penetrating the inner nature of those strange forms of ancient animal life. Here, it seemed to me, were examples of exceptional artistic achievement, closely bordering onto the fine arts, yet speaking the truth convincingly. In these there seemed no doubt that the artist must have felt a deep sense of pride and satisfaction.

On my return to the University of Michigan, I went immediately to see Dr. E. C. Case, Director of the Museum of Paleontology at The University of Michigan, to tell him of what I had seen at the Jardin des Plants, and to bring up the possibility of my preparing some small restorations for the Hall of Evolution. He listened with the patience and earnestness I was accustomed to expect from him. Before I had quite finished my request, however, I suspected his reply would be negative, and I had not long to wait. He told me at once that he wished to have no more plaster around his museum than was necessary (all restorations are cast in plaster). The subject thereupon was dismissed and I thought no more about it until shortly thereafter I received a call from Dr. Case inviting me to his office. Upon arriving I found him seated at his long table with a number of his personal sketches, many photographs and books spread out before him. He did not hesitate a moment to inquire if I would care to undertake to do a restoration of the *Brachysuchus* in a small-scale model. It was a happy surprise and I told him so, also that I would be delighted to try it. He suggested that I make a thorough study of the gavial of India, as we might see reflected in this living form some

* Died, June 1, 1962.

of the movements and some surface characters which could be applied to the model of the *Brachysuchus*. I set to work at once making drawings of bones, drawings of the animal in silhouette, and many sketches of plate patterns and of the head in the flesh. Following these I did a finished scale drawing of the whole animal.

This procedure has been extremely helpful in all, or nearly all, scale models created by us since this one. In this instance it showed me how to familiarize myself with the details of anatomy peculiar to this strange creature, and to form in my own mind a picture of the animal as it appeared millions of years before in its lakeland haunts of what is now the state of Texas.

The finished drawing was approved by Dr. Case, and then I proceeded to develop this drawing into a three-dimensional clay model. This was the first of our joint projects, and Dr. Case took an exceptional interest in the work as it progressed, and found great delight in counseling the sculptor concerning every detail. It is pleasant to recall this initial collaboration and it shall ever remain among my cherished memories, a most profitable and happy experience.

When we were satisfied that the modeling had progressed to the point where it made a convincing portrait, and also, I might add, to the point where it satisfied the mental picture Dr. Case had formed of the living animal, then I proceeded to prepare a plaster reproduction of the clay model for exhibition purposes (Plate I, Fig. 1.)

I discovered early in our association that Dr. Case was not given to formal expressions of praise or approval, but many times at the completion of a rather exacting work of restoration I have heard him remark, "I feel very sure we can defend this work."

This first project established a sort of basic pattern for the many which were to follow. Dr. Case was very patient, sincere, and practical in the application of his knowledge and years of experience, sensitive to every detail of animal anatomy, skillful in his manner of communicating this knowledge to others, and adept at finding a way to bring forth the best efforts of others in return. There were times when, after giving days of intensive thought to a multitude of minute details of great consequence, with the task at hand satisfactorily concluded, tension would be relaxed, and in this moment a sly humor would come into his face as his imagination began to suggest answers to momentous questions—questions as yet confounding science, as for example, should the *Brontosaurus*, Plate II, Fig. 2, have pink spots, or should we put a brilliant red eye on the mosasaur, Plate I, Fig. 2. Then he would purse his lips and chuckle together with the others present. On the occasion when we had completed

the sabre-toothed tiger model, Plate III, Fig. 2, I recall Dr. Case stood a short distance from the model and for two or three long moments surveyed it with great earnestness, then turning to me with all seriousness said, "Angell, there are three things you have overlooked in this model." Always a little uncertain as to what he might have in mind at the moment, but very curious, I begged him to "out with it." Assuming the whimsical expression we knew so well, he said, "There should be three long hairs in the tip of the tiger's tail," and again looking me straight in the eye, "and you should have thought of that." This was a typical route for a compliment from him to find the light of day, and it was most friendly, warm with sincerity, and charged with a deep understanding and regard for his fellow man.

During the next twenty-odd years (1930-1953) we co-operated on the restoration of more than thirty other scale models of fossil animals. Most of them are now on exhibit in the Hall of Evolution in the University Museums of The University of Michigan. Placed beside the original fossil skeleton on which the restoration is based, they show the animal as it appeared in life.

In the following list an asterisk (*) placed before the name indicates that the fossil specimen, on which the model is based, was collected and prepared by Professor Case or by W. H. Buettner, the preparator of vertebrates working under his direction in the Museum of Paleontology.

Aenocyon dirus (Leidy), the Pleistocene dire wolf from the tar pits near Los Angeles, California.

Archaeotherium, "Giant Pig," an Oligocene relative of the pig.

**Brachysuchus megalodon* Case, a phytosaur from the Permo-Carboniferous strata in Howard County, Texas, Plate I, Fig. 2.

Brontosaurus, a giant dinosaur from Wyoming, Plate II, Fig. 2.

**Brontotherium*, an Oligocene titanotherium.

**Buettneria perfecta* Case, a Triassic amphibian from Texas.

Cervalces scotti Lydekker, the Scott moose of the Pleistocene.

**Desmatosuchus spurensis* Case, a Triassic reptile from Texas, Plate II, Fig. 1.

**Diceratherium cooki* Peterson, a rhinoceros from the Miocene deposits of Nebraska.

**Dimetrodon incisivus* Cope, a Permian reptile from Texas.

**Dinictis felina* Leidy, an Oligocene cat.

**Diplocaulus magnicornis* Cope, a Permian amphibian from Texas.

**Edaphosaurus cruciger* Cope, a primitive reptile from the Permian of Texas.

Equus scotti Gidley, Middle Pleistocene horse from North America.

**Eusthenopteron*, the lobe-finned fish from the Devonian of Quebec.

- Hyracotherium (Eohippus)*, the dawn horse, from the Eocene of western North America.
- Mammot americanum* (Kerr), American mastodon, a Pleistocene relative of the elephant.
- Mammuthus jeffersoni* (Osborn), Jefferson's mammoth, a Pleistocene elephant of North America, Plate III, Fig. 1.
- Megaceros*, the Irish elk.
- Merychippus*, a Miocene horse, with reduced lateral toes, lived in North America.
- **Merycoidodon culbertsoni* Leidy, an Oligocene oreodon from the Big Badlands of South Dakota.
- Mesohippus*, a three-toed horse from the Lower Oligocene in North America.
- Parahippus*, a transitional form in the Miocene, from the old forest dwellers to modern plains-dwelling, grazing horses.
- Platecarpus coryphaeus* Cope, a swimming lizard from the Upper Cretaceous Chalk Beds of Western Kansas, Plate I, Fig. 2.
- Platygonus compressus* LeConte, peccary, late Pleistocene of Michigan.
- Pliohippus*, of the Pliocene, the first one-toed horse, and ancestor of the modern horse.
- Rangifer arcticus* (Richardson), Barren Ground caribou, late Pleistocene of Michigan.
- Seymouria*, an early reptile from the Red Beds of Texas.
- Smilodon californicus* Bovard, a Pleistocene saber-toothed tiger from the tar pits near Los Angeles, California. Plate III, Fig. 2.
- **Stenomylus*, a Miocene camel from Nebraska.
- **Symbos cavifrons* (Leidy), Woodland musk ox, late Pleistocene of Michigan.
- **Trachodon (Anatosaurus)*, the duck-billed dinosaur, from the Cretaceous deposits of Montana.
- **Trilophosaurus buettneri* Case, a cotylosaurian from the Triassic of Texas.
- **Trimerorhachis*, a Permian amphibian from Texas.

EXPLANATION OF PLATE I

- FIG. 1. *Brachysuchus megalodon* Case, Triassic, Texas.
- FIG. 2. *Platecarpus coryphaeus* Cope, a mosasaur, Cretaceous, Kansas.

PLATE I

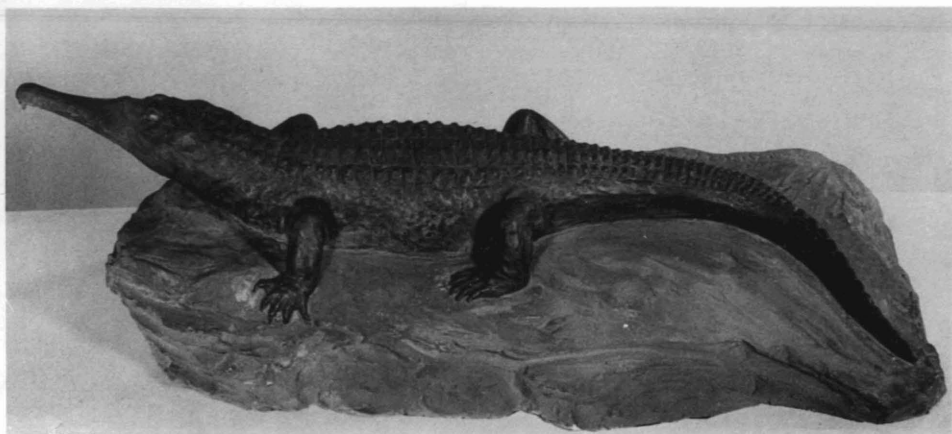


FIG. 1



FIG. 2

PLATE II

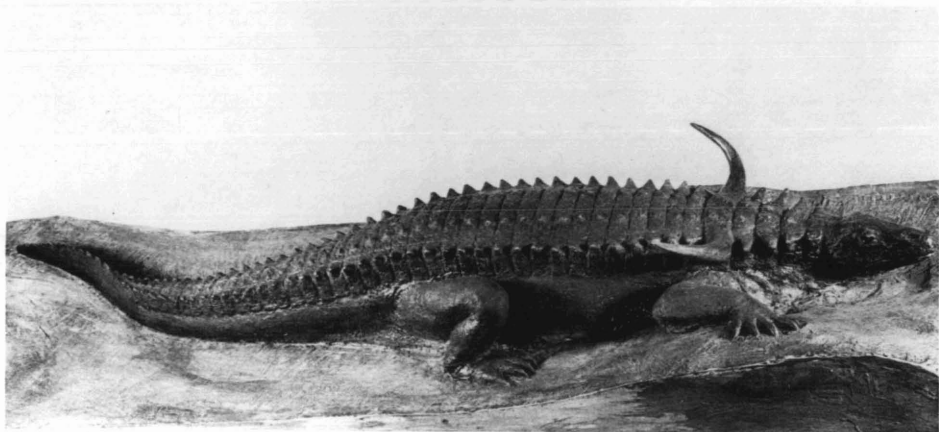


FIG. 1

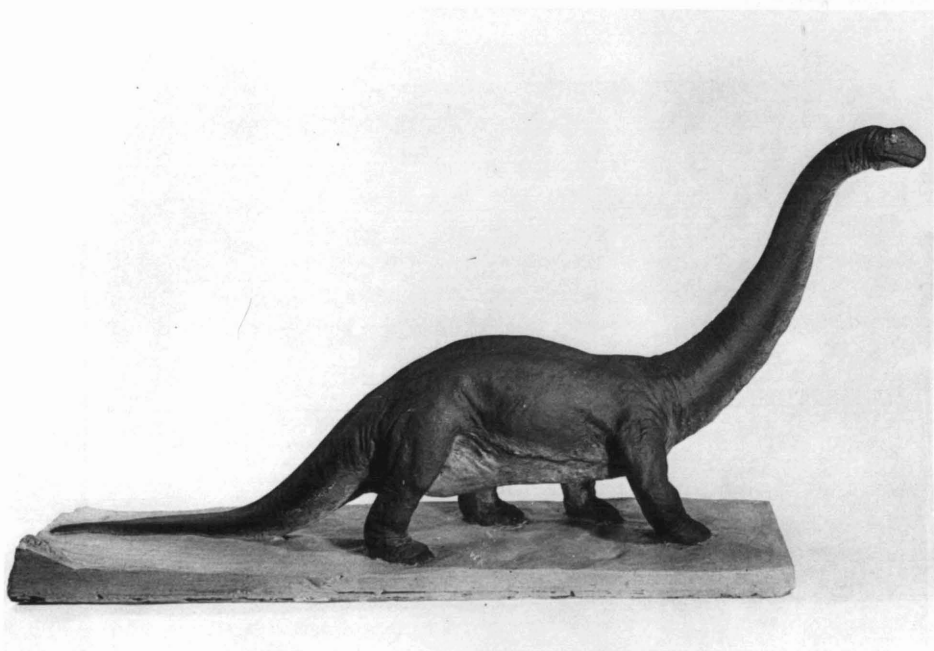


FIG. 2

EXPLANATION OF PLATE II

FIG. 1. *Desmatosuchus spurensis* Case, Triassic, Texas.

FIG. 2. *Brontosaurus*, Jurassic, Wyoming.

EXPLANATION OF PLATE III

FIG. 1. *Mammuthus jeffersoni*, Pleistocene, North America.

FIG. 2. *Smilodon californicus* Bovard, Pleistocene, California.

PLATE III

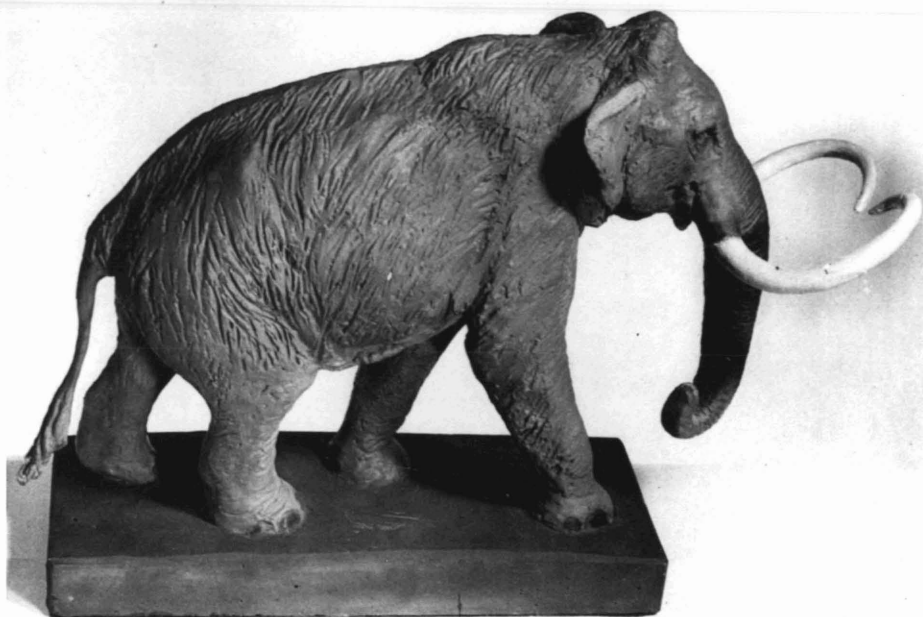


FIG. 1



FIG. 2

