

PROCEEDINGS  
OF THE  
NEW ENGLAND ZOÖLOGICAL CLUB

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NEW GENERA AND SPECIES OF  
PELYCOSAURIAN REPTILES

BY ALFRED SHERWOOD ROMER

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IN the course of recent collecting trips by the Museum of Comparative Zoölogy and a re-study of pre-existing collections, a number of new types of Permo-Carboniferous pelycosaurs have come to light. I hope to discuss these reptiles in a general review of the group, which is approaching completion. This study has been aided by a grant from the Penrose Fund of the Geological Society of America, and the present preliminary diagnoses of the new types are published with the permission of the Society.

*Eothyris parkeyi* gen. et spec. nov.

Genoholotype, M.C.Z., 1161, (figured): a skull and jaws, found about one mile west of the former Woodrum ranch-house, south of Dundee, Archer County, Texas; horizon Belle Plains

Formation, Wichita Group. A small primitive pelycosaur, the type skull about 65 mm. in length as preserved. The skull is relatively broad and low, and the face short, (although this appearance is increased by distortion and damage in the type); the orbit and temporal region are relatively elongated. The postorbital has a broad posterior expansion above the small temporal vacuity. The parietal is very primitive, in extending far back of the pineal. The supra-temporal is relatively large. Despite the large size of the orbits, the pre- and post-frontals are in contact. The jugal has little anterior expansion below the orbit. The lacrimal apparently extended from orbit to naris in primitive fashion. The unarched quadrato-jugal extends far forward. An advanced feature is the fact that a pair of maxillary 'canines' is prominent.

The specific name is in honor of Mr. J. R. Parkey, of Mankins, Texas, in whose pastures and through whose courtesies to collectors many interesting fossils have been discovered.

I hope to discuss this interesting type further in my forthcoming general review. In many respects it is by far the most primitive known member of the order.

#### *Stereophallodon ciscoensis* gen. et spec. nov.

Genoholotype, M.C.Z., 1535, associated fragments including centra, quadrate, articular and part of a maxilla. Found four miles southeast of Windthorst, Texas; horizon presumably Pueblo Formation, Cisco Group. The vertebrae and the region of jaw articulation are typically ophiacodont, indicating a reptile about the size of '*Theropleura*' *retroversa*. The maxilla, in contrast with the usual ophiacodont condition, shows a huge canine followed by a series of very short and apparently blunt teeth. This form is from a lower horizon than any pelycosaur heretofore described from Texas.

#### *Lupeosaurus kayi* gen. et sp.

Genoholotype, M.C.Z., 1455, a presacrum and scapulocoracoid, found near the Creek, Archer County, Texas; horizon Formation, Wichita Group. A pelycosaur resembling *Edaphosaurus* in caudal vertebrae, pelvis and femur, but differing in that the vertebrae are without the crossbars of the latter genus. The skull is unknown. Several specimens of the type are definitely referable to this genus, specimen 4006 of the American Museum collection. The type is from the 'Revision of the Pelycosauria,' 1907, pp. 1-2, the type of '*Dimetrodon*' *gigas*. The specimen of Mr. John Kay, geologist, of Wichita, Texas, aided us greatly in field work.

#### *Varanosaurus wichitaensis*

Holotype, M.C.Z., 1353, a pelvis, found near Dundee, Archer County, Texas; horizon Formation, Wichita Group. *Varanosaurus* is known only from the Clear Fork beds. This is the first found from the lower part of the Clear Fork beds. It is a pelvis showing the characteristic of the genus, and similar in size to the genoholotype, however, is shorter, extending only about one-third forward from the prominent tubercle.

#### *Sphenacodon ferocior* sp.

Type, M.C.Z., 1489, a skull and a humerus, found in Jemez Canyon, east side, about four miles from Jemez Springs, New Mexico; Abo Formation.

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*Lupeosaurus kayi* gen. et spec. nov.

Genoholotype, M.C.Z., 1455, a presacral vertebral column and scapulocoracoid, found near the head of Cottonwood Creek, Archer County, Texas; horizon presumably Moran Formation, Wichita Group. A pelycosaur of large size, resembling *Edaphosaurus* in caudal vertebrae, presacral centra, pelvis and femur, but differing in that the spines, although elongate, are without the crossbars characteristic of that genus. The skull is unknown. Several specimens other than the type are definitely referable to this genus, such as specimen 4006 of the American Museum collections. This last (*cf.* Case, 'Revision of the Pelycosauria,' 1907, pp. 120-122, etc.) is not the type of '*Dimetrodon*' *gigas*. The specific name is in honor of Mr. John Kay, geologist, of Wichita Falls, Texas, who has aided us greatly in field work.

*Varanosaurus wichitaensis* sp. nov.

Holotype, M.C.Z., 1353, a pelvis, found four miles south of Dundee, Archer County, Texas; horizon Belle Plains Formation, Wichita Group. *Varanosaurus* has heretofore been known only from the Clear Fork beds. The present specimen is the first found from the lower part of the Texas fossiliferous beds. It is a pelvis showing the characteristic features of the genus, and similar in size to the genoholotype. The pubis, however, is shorter, extending only about three fifths as far forward from the prominent tubercle.

*Sphenacodon ferocior* sp. nov.

Type, M.C.Z., 1489, a skull and a number of vertebrae from Jemez Canyon, east side, about four miles south of Jemez Springs, New Mexico; Abo Formation. A form similar to *S.*



ological features, but 50 per cent larger sizes.

the specimens of *Sphenacodon* from Carboniferous vary considerably in material at present available it is apparent that adult specimens sort into two distinct groups: one of the genoholotype and of much of the other about 50 per cent larger, mentioned (about the size of the largest and Yale specimen, no. 818. These specimens, for a skeleton at hand even type of *S. ferox*, appears to be mature. Differences between sexes; in *Dimetrodon*, closely related to *Sphenacodon*, variation appears to extend little

#### *Chamaesaurus* gen. et sp. nov.

no. 464, a fragmentary postcranial skeleton from El Cobre Canyon, New Mexico. It may be defined as a small sphenacodont, related to *Varanops breviostris*. The ventral surface of the centrum, characteristic of typical *Sphenacodon*, is developed, appearing only to a slight degree on the vertebrae. The ends of the centra are truncate. The proximal face of the deltopectoral foramen is a large triangular area in con-

trast to *Chamaesaurus*, etc., is clearly sphenacodont. It differs in a number of respects from any other known material. It is probably a relatively primitive member of the group, and awaits future discoveries. The spe-

cific name is in honor of Mr. and Mrs. W. B. Greenlee, of Chicago and New Mexico, whose hospitality the writer enjoyed while collecting at El Cobre.

#### *Nitosaurus jacksonorum* gen. et spec. nov.

Genoholotype, American Museum of Natural History, no. 4782, from the Abo formation of El Cobre Canyon, New Mexico. A small reptile, represented mainly by remains of the pelvis and limb bones. Its size may be judged from the fact that the ilium is but 30 mm. across its base, the breadth of the femur 28 mm. proximally and 31 mm. distally. Of the vertebrae, only two proximal caudal centra are well preserved. In general it resembles closely *Lupeosaurus*, but differs in such features as lesser development of the ventral ridge on the femur. Apparently associated, are incomplete remains of upper and lower jaw. In the lower jaw the incomplete tooth row shows about 20 teeth in 30 mm. The teeth are isodont, short and apparently blunt. The maxillary teeth are somewhat longer, with a slight increase toward the middle of the row. Except for the fact that it is twice as large, the jaw appears to resemble the type (lost) of *Chamasaurus*, and it is possible that the genera may prove to be synonymous. Both dentition and postcranial skeleton are suggestive of *Mycterosaurus*. The specific name refers to the Jackson family of Colorado Springs, owners of the El Cobre region.

The problem of speciation in *Dimetrodon* is a difficult one, particularly in the lower Texas beds, the Wichita Group, in which remains of this genus are very common. Large specimens are usually assigned to *D. incisivus* (properly *D. limbatus*), small ones to '*Clepsydraps natalis*'. The latter is a species of *Dimetrodon* and the smallest of the genus. Two Wichita species, including forms of intermediate size, are here established.

***Dimetrodon milleri* sp. nov.**

Holotype, M.C.Z., no. 1365, an almost perfect skeleton, complete to tip of tail and toes, found one mile southwest of Archer City, Texas; horizon probably the summit of the Putnam Formation, Wichita Group. The presacral vertebral column is about 64 cm. in length, the animal thus being about two thirds the length of the larger specimens of *D. limbatus*.

The vertebrae are short, a cervical centrum being only about 10 per cent longer than wide, a typical dorsal 5 per cent longer. The elongate dorsal spines lack the anterior and posterior grooves characteristic of most species, but have irregular longitudinal striations. The specific name is in honor of Curator Paul C. Miller, of the Walker Museum, the discoverer of many fine skeletons of other Permian vertebrates.

***Dimetrodon booneorum* sp. nov.**

Holotype, M.C.Z., 537, a fragmentary skeleton including fragments from nearly all major elements. From the north side of the Little Wichita River, southeast of Fulda, Baylor County, Texas; horizon Belle Plains Formation, Wichita Group. A form little larger than the last, as judged by the strength of the vertebrae, the dorsal centra being about 30 per cent longer than the average width of 23 mm. found in the type. The dorsal spines, in contrast with the last, have the 'figure-eight'-shaped section, characteristic of many other species. The specific name has reference to the Boone brothers of Baylor County, Texas, whose hospitality the writer and other collectors have enjoyed, and on whose ranch many interesting fossils have been discovered.

***Dimetrodon kempae***

Holotype, M.C.Z., 1361, a humer bed, Baylor County, Texas; horizon A Group. That small dimetrodons a Fork beds has long been obvious, from small bones in these deposits, usually to '*Clepsydrops*.' To include such material is erected, with its type a small but length of 127 mm. From contemporaries in its much smaller size and more specific name is in honor of Mrs. J. Texas, fossil-hunter and friend of fossils.

***Dimetrodon loomisi***

Holotype, Walker Museum, 1322, found in a bed, Baylor County, Texas; horizon A Group.

The common *Dimetrodon* of the Carboniferous (specimen mentioned (described by the Geology, Vol. 35, 1927, pp. 673-689) usually referred to as *D. dolloianus*. This species, however, appears to differ in several respects from an earlier horizon. *D. loomisi* is characterized as resembling *D. gigas* but differing by being about 12½ to 15 per cent larger in linear measurements and having a lower jaw teeth (over 30) than in any other species of the genus. The specific name is given in honor of Professor Frederic B. Loomis of Amherst College.

no. 1365, an almost perfect skeleton, skull and toes, found one mile southwest of horizon probably the summit of the Putchita Group. The presacral vertebral number in length, the animal thus being about of the larger specimens of *D. limbatus*. Short, a cervical centrum being only about one-third as wide, a typical dorsal 5 per cent longer. The spines lack the anterior and posterior processes of most species, but have irregular longitudinal processes. The specific name is in honor of Curator of the Walker Museum, the discoverer of many Permian vertebrates.

*Dimetrodon booneorum* sp. nov.

no. 537, a fragmentary skeleton including nearly all major elements. From the north of the Wichita River, southeast of Fulda, Baylor County, Texas, Belle Plains Formation, Wichita Group. The holotype is larger than the last, as judged by the measurements of the dorsal centra being about 30 per cent greater average width of 23 mm. found in the same horizon. The spines, in contrast with the last, have the same shape in section, characteristic of many other species. The name has reference to the Boone brothers of Texas, whose hospitality the writer and other workers enjoyed, and on whose ranch many interesting fossils were discovered.

Holotype, M.C.Z., 1361, a humerus, from Craddock bonebed, Baylor County, Texas; horizon Arroyo Formation, Wichita Group. That small dimetrodonts are present in the Clear Fork beds has long been obvious, from the presence of numerous small bones in these deposits, usually but erroneously ascribed to 'Clepsydras.' To include such materials, the present species is erected, with its type a small but mature humerus with a length of 127 mm. From contemporary species this form differs in its much smaller size and more slender proportions. The specific name is in honor of Mrs. J. F. Kemp, of Seymour, Texas, fossil-hunter and friend of fossil-hunters.

*Dimetrodon loomisi* sp. nov.

Holotype, Walker Museum, 1322, from the Craddock bonebed, Baylor County, Texas; horizon Arroyo Formation, Clear Fork Group.

The common *Dimetrodon* of the Clear Fork, of which the specimen mentioned (described by the writer in the *Journal of Geology*, Vol. 35, 1927, pp. 673-689) is the best example, is usually referred to as *D. dolloianus*. That poorly known species, however, appears to differ in several respects, and appears to be from an earlier horizon. *D. loomisi* may be briefly characterized as resembling *D. gigashomogenes* in most respects, but differing by being about 12½ to 15 per cent smaller in linear measurements and having a much larger number of lower jaw teeth (over 30) than in any other known member of the genus. The specific name is given in memory of the late Professor Frederic B. Loomis of Amherst College.

PLATE V

*varkeyi*, X1, lateral and dorsal views.

