

AMERICAN MUSEUM NOVITATES

Number 137

Published by
THE AMERICAN MUSEUM OF NATURAL HISTORY
New York City

October 16, 1924

56.81,40(118:78.7)

A NEW CROCODILIAN FROM THE WASATCH BEDS¹

BY CHARLES C. MOOK

Among the fossil vertebrates collected by the American Museum expedition in Wyoming in 1911 is the skull of a crocodilian which differs from any hitherto described. The name *Orthogenysuchus* is proposed for this, in reference to the straight and parallel characters of the borders of the upper jaws and boundaries of many of the skull bones. The specific name *olseni* is proposed in honor of the discoverer of the specimen, Mr. George Olsen, of The American Museum of Natural History.

***Orthogenysuchus olseni*, new genus and species**

TYPE.—Skull, nearly complete, but flattened. (Amer. Mus. No. 5178).

TYPE LOCALITY AND LEVEL.—North Fork of Ten-mile Creek, Bighorn Basin, Wyoming. Wasatch beds.

GENERIC CHARACTERS.—Long snout with nearly parallel borders, very little notching or looping of borders of snout, anterior end of snout broad, tendency toward parallelism of longitudinal sutures in the skull, elongate orbits, pitting of skull surface very slight.

SPECIFIC CHARACTERS.—Orbits widely spaced from each other. Supratemporal fenestræ far apart, external narial aperture much broader than long.

GENERAL FORM

The snout is long, and is relatively broad at its anterior end. This character may have been emphasized by crushing, but if so only to a very slight extent. The notching, or looping, of the margins of the upper jaws, which is strongly developed in many crocodilians, is very slight in this skull. The sides of the snout converge to a very slight extent only, so that they appear practically parallel. The length of the snout is slightly less than two and one-half times its breadth at the base. The cross profile can not be obtained, having been destroyed by crushing. The interorbital plate is broad, and is deeply concave, in spite of the crushing.

The cranial table is small. Its length is only about one-sixth of the total length of the skull, and is about two-thirds of its own breadth. Its lateral borders are nearly parallel. A long postero-external process is present on the left side, but is not preserved on the right.

¹Contributions to the Osteology, Affinities and Distribution of the Crocodilia. No. 14.

The usual pitting of the skull surface is not present to any appreciable extent. The surface is irregularly roughened.

THE CAVITIES OF THE SKULL

EXTERNAL NARIAL APERTURE.—This cavity is very large and is subquadrangular in outline. A small process extends backward from the premaxillaries on the anterior border. A similar process, whose extent is unknown, extends forward from the posterior border; it consists of the anterior ends of the nasal bones. The breadth of the cavity is about one and one-half times its length. It is situated rather far back from the tip of the snout.

ORBITS.—The orbits are long and relatively narrow, the length of each orbit being about twice its breadth. They are irregularly oval in outline and are rather widely separated from each other.

SUPRATEMPORAL FENESTRÆ.—These cavities are relatively small and far apart. They are sub-round, and are situated about equally distant from the posterior, external and orbital borders of the cranial table.

PALATINE FENESTRÆ.—The anterior ends only of the palatine fenestræ are visible. These extend as far forward as the level of the twelfth maxillary teeth. They indicate that the cavities were of considerable size.

THE BONES OF THE SKULL

Most of the bones of the superior surface of the skull are moderately well preserved. The sutures are obscure in places, but in general the outlines of the bones are fairly discernible. Owing to incomplete preparation of the specimen, only a few characters of the bones of the palate can be made out.

PREMAXILLARIES.—The premaxillaries are broad in proportion to their length. The anterior plate, between the external narial aperture and the anterior border of the snout, is approximately equal in anteroposterior diameter to the anteroposterior diameter of the aperture itself. The central region of the premaxillaries, at their sutures with the maxillaries at the sides of the snout, is unusually broad for a long-snouted crocodilian. This is, of course, due to the absence of distinct lateral notching.

The posterior processes, on the surface of the snout, are not clearly outlined in the specimen, but appear to extend backward only as far as the level of the third maxillary teeth. The premaxillaries apparently each contained five teeth.

It cannot be definitely stated at present whether the large fourth mandibular teeth bit inside the margins of the upper jaws, as in the alligators and caimans, or outside, as in the tomistomoids and true crocodiles. The left side of the snout at this point is very nearly straight, with an almost imperceptible inward curve; a mandibular tooth could scarcely have been lodged outside this border. The right side is distinctly, but slightly, notched, and might have lodged a mandibular tooth outside the premaxillo-maxillary border. Crushing has had an effect in this region. This question requires study of the palatal region when that is sufficiently prepared.



Fig. 1. *Orthogenysuchus olseni* n. sp. Type, skull (Amer. Mus. No. 5178). About one-fourth natural size. Superior view.

MAXILLARIES.—The exact boundaries of the bones are somewhat uncertain, but their outlines can be made out approximately. It is clear that they are long and slender. Their sutures with the prefrontals and lachrymals appear to be unusually complicated. Each maxillary contained fifteen teeth, which were rather widely separated from one another. The teeth preserved are long and slender.

NASALS.—The nasal bones are very long and slender. Their outlines near their anterior ends are not clear, but they apparently reach the narial aperture. The naso-maxillary sutures diverge very gradually as far back as the level of the seventh maxillary teeth, then their continuations, the naso-prefrontal sutures, converge gradually to the level of the anterior ends of the orbits, where the nasals join the frontal.

PREFRONTALS AND LACHRYMALS.—These bones are unusually long and slender, each extending forward to about the level of the ninth maxillary teeth. The length of the prefrontals is about four times their breadth, and that of the lachrymals is about five times their breadth. The prefrontals are considerably larger than the lachrymals, in both anteroposterior and transverse diameters. The lateral borders of these bones are approximately parallel.

FRONTAL.—The frontal is relatively large. Its anterior process, which forms a small wedge between the posterior ends of the nasals, is short, extending scarcely farther forward than the level of the anterior ends of the orbits.

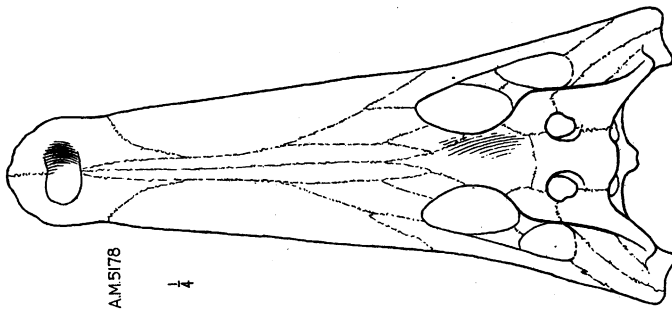


Fig. 2. *Orthogenysuchus olseni* n. sp. Type, skull (Amer. Mus. No. 5178). About one-fourth natural size. Reconstruction of superior view of skull.

The interorbital plate is broad. Its anterior half is flat, but its posterior half is decidedly concave. The posterior portion of the bone is not clearly bounded on the specimen, but apparently the frontoparietal suture is situated about half-way between the level of the posterior borders of the orbits and that of the anterior borders of the supratemporal fenestræ.

QUADRATES, QUADRATOJUGALS AND JUGALS.—These bones are partially preserved, but present no distinctive characters.

MEASUREMENTS

Length of skull, supra-occipital to tip of snout.....	334 mm.
“ “ “ anterior ends of orbits to tip of snout.....	232
“ “ right orbit.....	58
“ “ left orbit.....	58
“ “ narial aperture.....	22
Breadth of snout across narial aperture.....	62
“ “ right orbit.....	35
“ “ left orbit.....	30
“ “ narial aperture.....	35
“ “ snout at intersection of premaxillo-maxillary sutures with lateral borders.....	60
“ “ snout across fourth maxillary teeth.....	77
“ “ snout at anterior ends of orbits.....	97
“ “ cranial table at anterior end.....	72
“ “ interorbital plate.....	28
“ “ plate between supratemporal fenestræ.....	20