

Article XII.—THE SKULL OF *CROCODILUS ACER* COPE¹

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PLATES XVIII AND XIX

Crocodylus acer was originally described by Cope in the American Naturalist in 1882. The original description was very brief, and no definite type was mentioned. A figure accompanying this description clearly indicates American Museum Cope Coll. No. 1240. In the 'Tertiary Vertebrata' Cope described this skull more fully and figured both superior and lateral aspects of it. He stated in this description that the skull was the only one in his possession and that it was collected in the Manti Beds of Utah. This second description brings out the essential characters of the specimen but is in error in at least one point and fails to sufficiently emphasize certain diagnostic characters. It is the purpose of the present description to redescribe the type, giving proper emphasis to its diagnostic characters.

GENERAL FORM

In general form the skull is long and narrow; the snout is slightly over twice as long as it is broad at the base. The region of the external narial aperture is relatively broad. The superior surface of the snout is very flat; the surface of the cranial table is scarcely elevated above that of the snout. The cranial table is considerably broader than it is long, and the space between the supratemporal fenestræ is relatively broad.

THE CAVITIES OF THE SKULL

SUPRATEMPORAL FENESTRÆ.—These fenestræ are comparatively small, and are relatively far apart; in outline they are nearly circular.

INFRATEMPORAL FENESTRÆ.—The infratemporal fenestræ are relatively large. They face more nearly upward than in most of the living crocodiles.

ORBITS.—The orbits are of moderate size. They are conspicuously pointed anteriorly. Their internal and posterior borders are symmetrical curves, and their external borders are straight oblique lines. They are considerably longer than broad.

¹Contributions to the Osteology, Affinities, and Distribution of the Crocodilia. No. 9.

EXTERNAL NARIAL APERTURE.—This cavity is unusually large; it is considerably larger than either of the supratemporal fenestræ. Its anterior border is broadly rounded and its lateral borders converge slightly in the posterior direction. The nasal bones enter the cavity as a sharp process.

PREMAXILLARY FORAMEN.—The premaxillary foramen is very large; it is somewhat longer than broad. Its anterior end is sharply pointed; the remainder of its outline is smoothly rounded.

PALATINE FENESTRÆ.—The palatine fenestræ are very long and narrow; their length is over twice their maximum breadth. Their inner borders are nearly parallel; their external borders extend from their anterior ends (slightly posterior to the ninth maxillary teeth) parallel with the external border of the jaw to the level of the posterior ends of the dental series, then bend sharply inward and backward to the posterior ends of the fenestræ. Both anterior and posterior ends are rounded, but not broadly.

INTERNAL NARIAL APERTURE.—The internal narial aperture is small; it is subcircular in form, and is situated near the posterior end of the pterygoid plate, farther back than in most Eocene crocodiles.

THE BONES OF THE SKULL

PREMAXILLARIES.—The premaxillary bones are very long and slender. They occupy nearly one-third of the total length of the skull. Their slender posterior processes extend back to the level of the fourth maxillary teeth.

On the palate the premaxillaries extend backward only as far as the level of the first maxillary teeth. The premaxillo-maxillary suture is exceedingly irregular.

MAXILLARIES.—These bones are very long and narrow. Their sutures with the nasals occupy only one-third of their total lengths. Their sutures with the lacrymals and jugals are more nearly antero-posterior than transverse in direction.

On the palate the length of the maxillaries along the median line is considerable. Along the median line the maxillaries meet the palatines at the level of the ninth maxillary teeth, only slightly anterior to the anterior ends of the palatine fenestræ. The total length of the maxillo-palatine suture is not great, the maxillaries occupying only a very small portion of the inner border of the palatine fenestræ.

NASALS.—Like the preceding bones, the nasals are long and slender. They enter the narial aperture as a slender process. They broaden

gradually from their anterior extremities to the point of their maximum breadth, along their contacts with the lacrymals. From that level back to their posterior ends they decrease in breadth very rapidly. About four-fifths of their total length is included in the area anterior to the broadest point.

LACRYMALS.—These bones are long and narrow. Their longest diameters converge slightly in the anterior direction. They are considerably larger than the prefrontals; their sutures with the maxillaries are irregular.

PREFRONTALS.—The prefrontals are small; they converge slightly in the anterior direction. Their anterior ends are sharp.

FRONTAL.—The frontal is characteristic in form. It narrows regularly from its point of greatest breadth posterior to the orbits to its contact with the nasals. The interorbital plate is moderately broad and is flat. The contacts of the frontal with the prefrontals are direct continuations of the orbital borders of the frontal; in most crocodilians the fronto-prefrontal sutures are directed sharply inward from the orbit, then turn sharply forward. The anterior process of the frontal narrows very gradually; at its very irregular contact with the nasals it still has considerable breadth.

POSTORBITALS.—These bones are very small. Each occupies less than one-third of the lateral border of the cranial table, and that only at the surface, the anterior processes of the squamosals projecting outward so as to be visible beyond the postorbitals. The orbital border of each postorbital is greater than its lateral border.

SQUAMOSALS.—The squamosal bones are very large, especially in their antero-posterior diameters. Each occupies more than two-thirds of the lateral border of the cranial table, and its antero-inferior process, which extends forward beneath the postorbital, projects outward so as to be visible from above.

The transverse diameter of each squamosal is relatively small; it occupies considerably less than one-third of the posterior border of the cranial table, in correlation with the large size of the parietal and supraoccipital bones.

PARIETAL.—This bone is large, especially in the transverse direction. With the supraoccipital it occupies over one-third of the posterior border of the cranial table; at least half of this space is occupied by the supraoccipital, however. The space between the supratemporal fenestræ is relatively large.

SUPRAOCCIPITAL.—As noted by Cope, this bone is very large. It is relatively larger than in any other crocodilian, either living or extinct, examined by the writer. It occupies over one-sixth of the posterior border of the cranial table and extends forward almost to the level of the posterior ends of the supratemporal fenestræ. On the posterior surface of the skull it extends downward two-thirds of the distance from the superior border to the foramen magnum.

JUGALS AND QUADRATO-JUGALS.—These bones are characterized by their long, slender form.

QUADRATES, BASIOCCIPITAL, AND BASISPHENOID.—These bones are not especially characteristic.

PALATINES.—The palatine bones are long and slender. They extend only slightly farther forward than the level of the anterior ends of the palatine fenestræ. They extend to the level of the ninth maxillary teeth, while the fenestræ extend only to the tenth. The broadest portion is at the level of the eleventh maxillary teeth. The posterior end is anterior to the level of the posterior ends of the fenestræ. The palatine-ptyergoid suture is irregular and nearly directly transverse in direction. The two palatines together are little, if any, broader at their posterior ends than farther forward.

PTERYGOIDS.—The pterygoids are incompletely preserved, but enough remains to indicate that they were very short antero-posteriorly and broad laterally. They extend forward between the palatine fenestræ for a short distance.

ECTOPTYERYGOIDS.—The superior and anterior processes of the ectopterygoids are slender, and the postero-inferior process is stout. The anterior processes extend forward to the level of the twelfth maxillary teeth and lie internal to four maxillary teeth on each side. The ectopterygoids occupy over two-thirds of the external borders of the palatine fenestræ.

Measurements

Length, Total	38.7cm.
Length, Tip of Snout to Occipital Condyle	35.5
Length, Tip of Snout to Supraoccipital	34.0
Length of Snout	23.5
Breadth of Skull Across Quadrato-jugals	18.7
Breadth of Cranial Table, Anterior End	8.9
Breadth of Snout at Base	11.4
Breadth of Snout at Fifth Maxillary Teeth	6.95
Breadth of Snout at Notch	4.9
Breadth of Snout at Fourth Premaxillary Teeth	5.7

Length of Right Orbit	5.0
Length of External Narial Aperture	3.8
Length of Premaxillary Foramen	2.5
Length of Right Palatine Fenestra	9.6

PLATE XVIII

Skull of *Crocodylus acer* Cope
Amer. Mus. Cope Coll. No. 1240, type specimen
About one-half natural size
Superior view

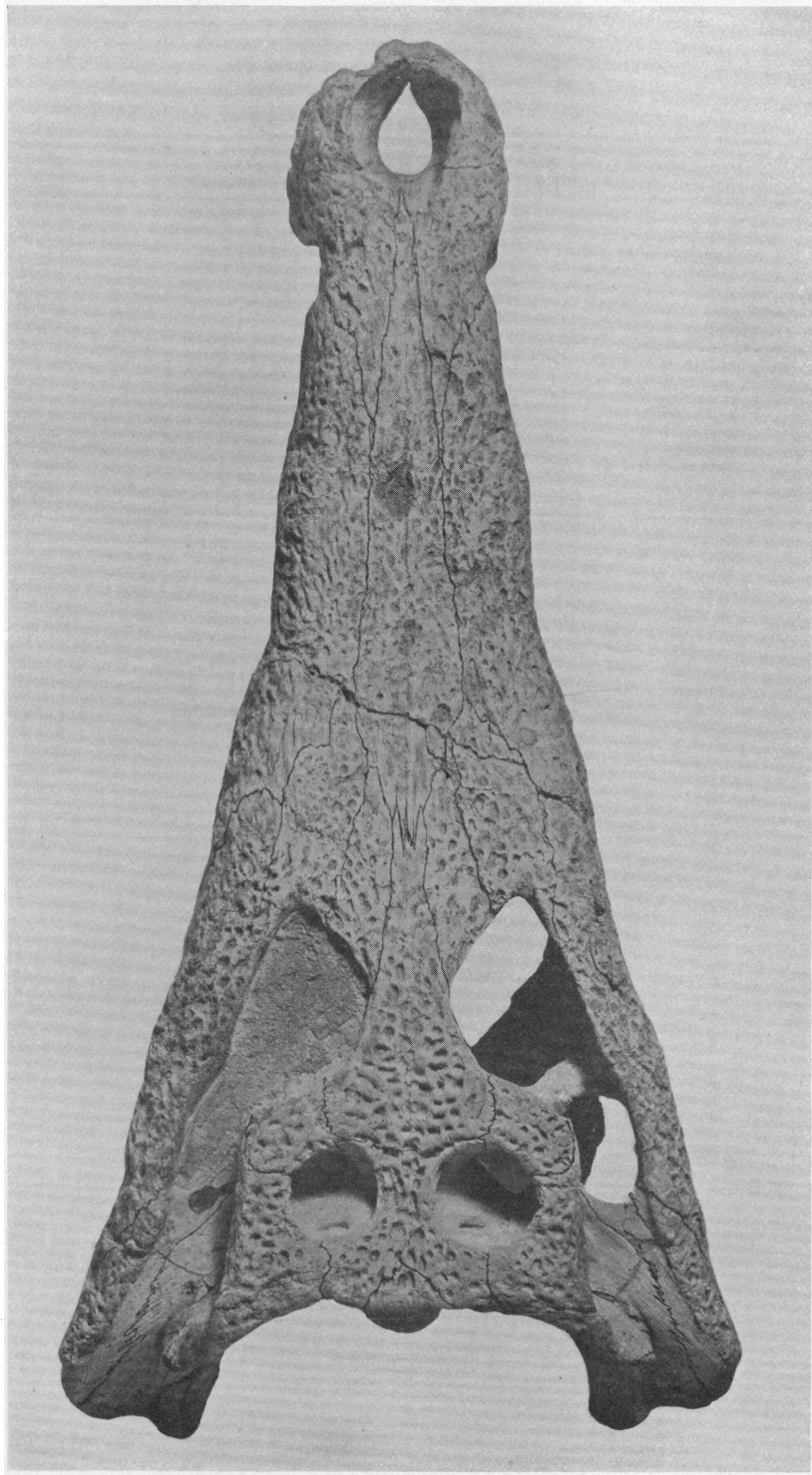


PLATE XIX

Skull of *Crocodylus acer* Cope
Amer. Mus. Cope Coll. No. 1240, type specimen
About one-half natural size
Inferior view

