

**Article XXVIII.**—NEW CARNIVOROUS MAMMALS FROM THE  
FAYÛM OLIGOCENE, EGYPT.

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In an earlier contribution<sup>1</sup> describing the results of the American Museum expedition to the Fayûm a number of new mammals were described briefly, as follows:

*Ptolemaia lyonsi*

*Metaphiomys beadnelli*,

*Phiomys andrewsi*,

*Apidium fayumensis*.

The entire mammal collection, consisting of about 500 specimens, has now been very carefully worked up by Mr. Walter Granger, assisted by Mr. George Olsen. A collection received from Herr Richard Markgraff has also been prepared, but description is deferred out of courtesy to Professor Eberhard Fraas of Stuttgart, whose attitude toward our researches and explorations has been most cordial.

The writer is especially indebted to Mr. Walter Granger not only for the careful manner in which this material has been worked up, but also for valuable advice in the preparation of this second contribution.

ORDER CREODONTA.

*Family* HYÆNODONTIDÆ.

The American Museum collection is especially rich in the remains of carnivores, all of which belong to the archaic order Creodonta. There are altogether twenty-five specimens of jaws and skulls, chiefly from the lower beds. Besides the species of *Pterodon* and *Apterodon* described by Andrews, there are a number of new species and one new genus of Creodonts, all belonging to the family Hyænodontidæ but presenting a great diversity of form.

Genus **Apterodon** *Fischer*.

Syn.: *Dasyurodon* *Andrææ*.

The only figure of this animal is that of a jaw given by Andrææ,<sup>2</sup> con-

<sup>1</sup> 'New Fossil Mammals from the Fayûm Oligocene, Egypt.' Bull. Amer. Mus. Nat. Hist., Vol. XXIV, Art. xvi, Mar. 25, 1908, pp. 265-272.

<sup>2</sup> Bericht Senckenbergische natur. Gesellschaft, 1887, p. 125, pl. iv.

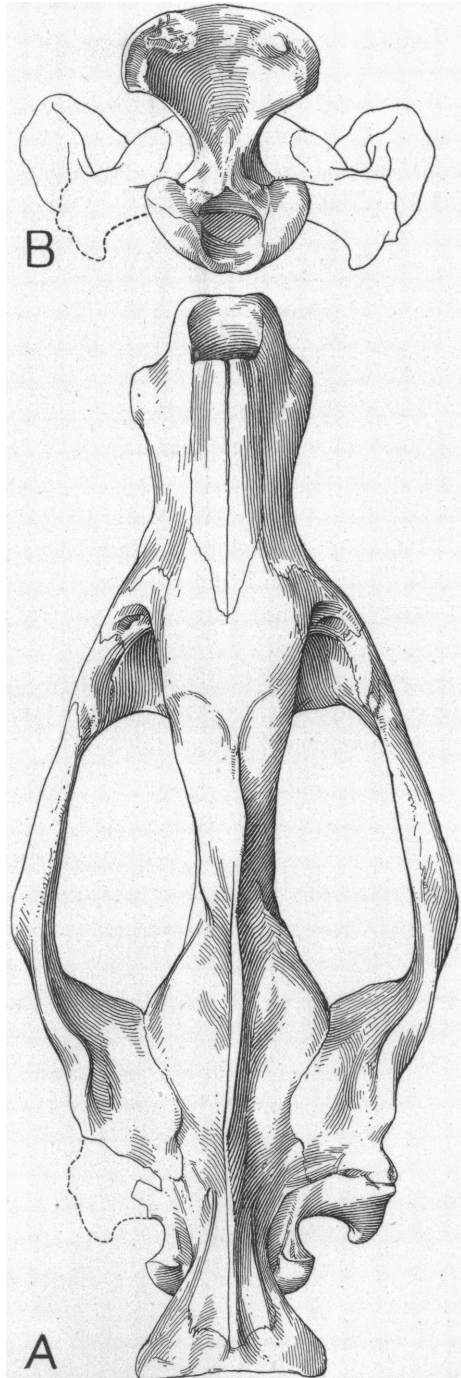


Fig. 1. Skull of *Apterodon macrognathus*, Amer. Mus. No. 13236. One-half natural size.  
A. Top view. B. Posterior view.

taining  $p_3$ ,  $p_4$ , and  $m_2$ ,  $m_3$ . In the molars of this specimen (type of *D. flonheimensis*) the talonid is sharp or laterally compressed, bearing a single cusp. We fortunately possess two skulls showing the entire upper series of teeth, which afford a new definition as follows:

*Generic characters.* Lower molars with paraconid, protoconid and more or less complex talonid. Upper molars triangular, as in *Tritemnodon* and *Sinopa*, with protocone prominent, subequal paracone, metacone, and styles. Teeth tubercular rather than sectorial.

***Apterodon macrognathus* Andrews.**

A jaw (Amer. Mus. No. 13241, Fig. 9, E.) found in Quarry A agrees closely in measurements with Andrew's type of this species.

*Measurements.*

	cm.
Series of true molars . . . . .	4.85
Second premolar to third molar inclusive . . . . .	9.8

The first lower premolar is represented by an empty alveolus, a feature observed in all these specimens. The premolar and molar cusps are of somewhat rounded form. The jaw is long and rather shallow, measuring 21.8 cm. from the posterior border of the canine alveolus to the condyle, and 9.8 cm. from the coronoid to the lower border.

A perfect skull (Amer. Mus. No. 13236) may be provisionally referred to this species (Fig. 1). It is of a typical dolichocephalic form, the cranium being greatly produced back of the orbital and dental region. The posterior nares are enclosed in a tubular elongation of the palatines, behind which the pterygoids surround a deep fossa. The high, thin sagittal crest, elevated occiput, and contracted brain case complete the aberrant character.

*Measurements.*

	cm.
Occipital condyles to incisive border . . . . .	27.7
Width across zygomatic arches . . . . .	11.95
Series of seven molars and premolars . . . . .	8.82
Three true molars . . . . .	3.57

Other specimens of inferior size are the skull Amer. Mus. No. 13237, represented in Fig. 2, which may belong to a female, and the lower jaws, Amer. Mus. Nos. 13239, 13240, 13242, 13245, 13246. The marked disparity in the size of the skull from the one above mentioned is indicated in the following measurements:

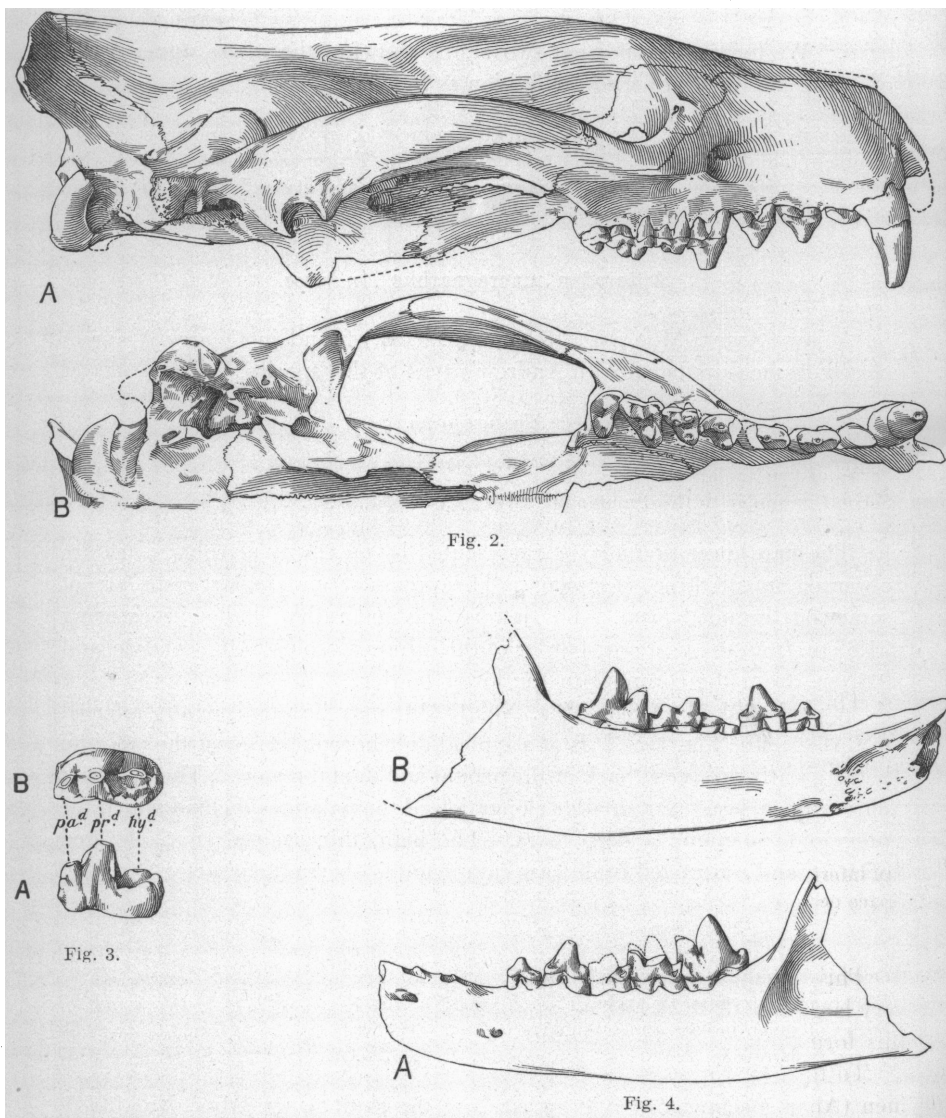


Fig. 2. Skull of *Apterodon macrognathus*, Amer. Mus. No. 13237. One-half natural size. A. Side view. B. Palatal view.

Fig. 3. First inferior molar, right side, of *Apterodon macrognathus*, Amer. Mus. No. 13242. Natural size. A. Internal view. B. Crown view.

Fig. 4. Lower jaw of *Pterodon leptognathus*, type, Amer. Mus. No. 13263. One-half natural size. A. External view. B. Internal view.

	cm
Incisive border to occipital condyles, est. . . . .	23.5
Width across zygomatic arches, est. . . . .	11.
Series of seven premolar-molar teeth . . . . .	7.6
True molar teeth . . . . .	2.87

The first and second superior molars in both these skulls (Amer. Mus. Nos. 13236, 13237) are sub-triangular, of tritubercular type, with prominent internally placed protocones, subequal parastyles and metastyles. M<sup>3</sup> is a simpler, transversely placed tooth, composed of protocone, paracone, and spur-like parastyle. The cusps are rounded and conical as compared with those of other members of this family, approaching the type displayed in the Mesonychidæ.

The first inferior molar (Fig. 3) is most perfectly preserved in the immature jaw of another specimen (Amer. Mus. No. 13242), in which the primitive character of the trigonid and talonid are displayed, the latter exhibiting vestiges of three cusps, as in primitive Creodonts generally. This tricuspid character contrasts with the simple trenchant cusp on the talonids of M<sub>2-3</sub> of Andreæ's type.

Genus **Pterodon** DeBlainville.

**Pterodon africanus** Andrews.

This more powerful Creodont is represented by two lower jaws (Amer. Mus. Nos. 13257, 13258; Fig. 9, A.) which agree with the measurements and figures of Andrews.

Measurements.		
	No. 13258	No. 13257
	cm.	cm.
Six inferior premolar-molar teeth, est. . . . .	15.5	16.
Space occupied by three premolars . . . . .	8.	8.3
" " " true molars, est. . . . .	7.5	7.7

This animal is characterized by a robust jaw, powerful symphysis, and very large canines. It is the most powerful carnivore hitherto discovered in this formation.

To this species may be referred perhaps a somewhat fragmentary specimen (Amer. Mus. No. 13251).

**Pterodon leptognathus** sp. nov.

The type of this species is a slender jaw (Amer. Mus. No. 13263, Fig. 4; Fig. 9, C.) of intermediate size, found in Quarry A of the lower beds.

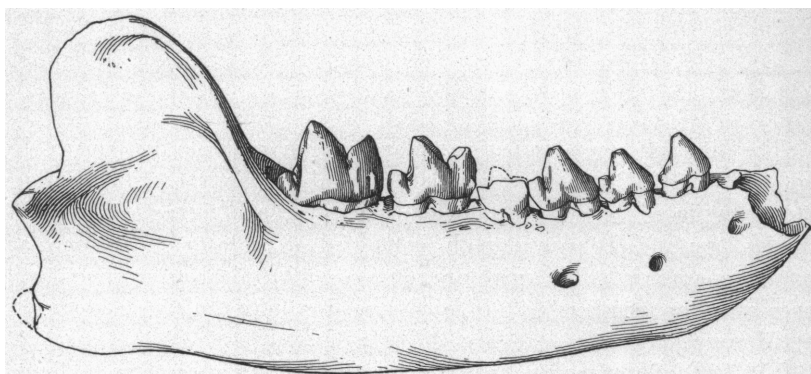


Fig. 5.

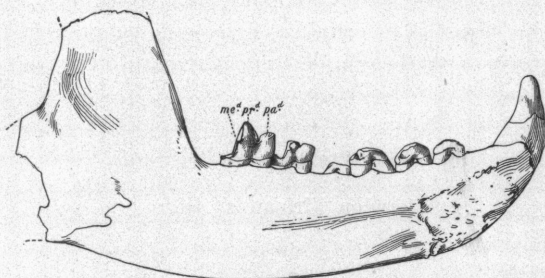


Fig. 6.

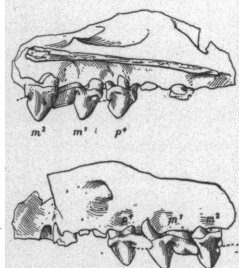


Fig. 7.

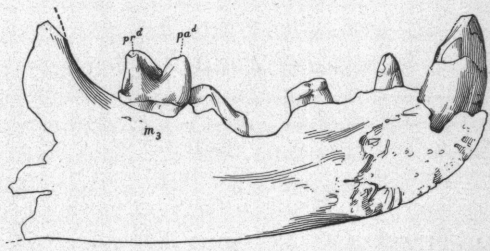


Fig. 8.

Fig. 5. Type jaw of *Pterodon phiomensis*, Amer. Mus. No. 13253. External view. One-half natural size.

Fig. 6. Lower jaw of *Metasinopa fraasii*, type, Amer. Mus. No. 14453. Internal view. One-half natural size.

Fig. 7. Left maxilla of ?*Metasinopa*, Amer. Mus. No. 14452. One half natural size.

Fig. 8. Lower jaw of *Hyænodon brachygnathus*, type, Amer. Mus. No. 13264. Internal view. One-half natural size.

The name is assigned in reference to its elongate character, evidently associated with dolichocephaly.

*Characters.* P 4, M 3. The first premolar is represented, as in all the other specimens, by an empty alveolus. Behind a narrow interval is the second bifanged premolar, which in turn is separated by a considerable interval from the greatly reduced, laterally compressed, and bifanged third premolar, which exhibits only a very rudimentary posterior basal cusp. The fourth premolar is slender, with a posterior basal cusp. Reduction and spacing of the premolars appears to be a distinctive character of this animal. The lower true molars exhibit the typical *Pterodon* character, except that the talonid is more reduced than in *P. africanus* or *P. phiomensis*.

Measurements.

	cm.
Space occupied by seven premolar teeth . . . . .	9.2
“ “ “ four inferior premolars . . . . .	5.05
“ “ “ three “ molars . . . . .	4.15

*Pterodon phiomensis* sp. nov.

The type of this species is the nearly perfect lower jaw (Amer. Mus. No. 13253; Fig. 5; Fig. 9, B.) discovered in Quarry A of the lower beds. It represents an animal of two-thirds the size of *P. africanus* and of a more slender, compressed jaw type. It is the same size as *Pterodon dasyuroides* from the Phosphorites of Quercy, but is distinguished by the more trenchant character both of the premolar and molar teeth. The jaw is moderately deep and powerful.

Measurements.

	cm.
Space occupied by six premolar-molar teeth . . . . .	11.35
“ “ “ three inferior premolars . . . . .	4.8
“ “ “ three inferior molars . . . . .	6.55

*Characters.* As compared with the teeth of *P. dasyuroides* those of *P. phiomensis* are more laterally compressed, blade-like, and trenchant throughout. Both in  $m_2$  and  $m_3$  the talonid and protoconid form a more open blade than in *P. dasyuroides*. The coronoid process is simple and rounded, quite different in form from that of *A. macrognathus*.

The second specimen (Amer. Mus. No. 13254) of this species displays the same characters and contains a perfectly preserved  $m_1$ .  $Pm_1$  is represented, as in *P. africanus*, only by a partly closed alveolus.  $P_{2-4}$  are laterally compressed.  $P_3$  has a rudimentary posterior basal cusp.  $P_3$  and  $p_4$  exhibit narrow posterior (talonid) and rudimentary anterior (paraconid) basal tubercles.  $M_{1-3}$  exhibit a typical paraconid, protoconid, and hypoconid of the *Pterodon* molar type.

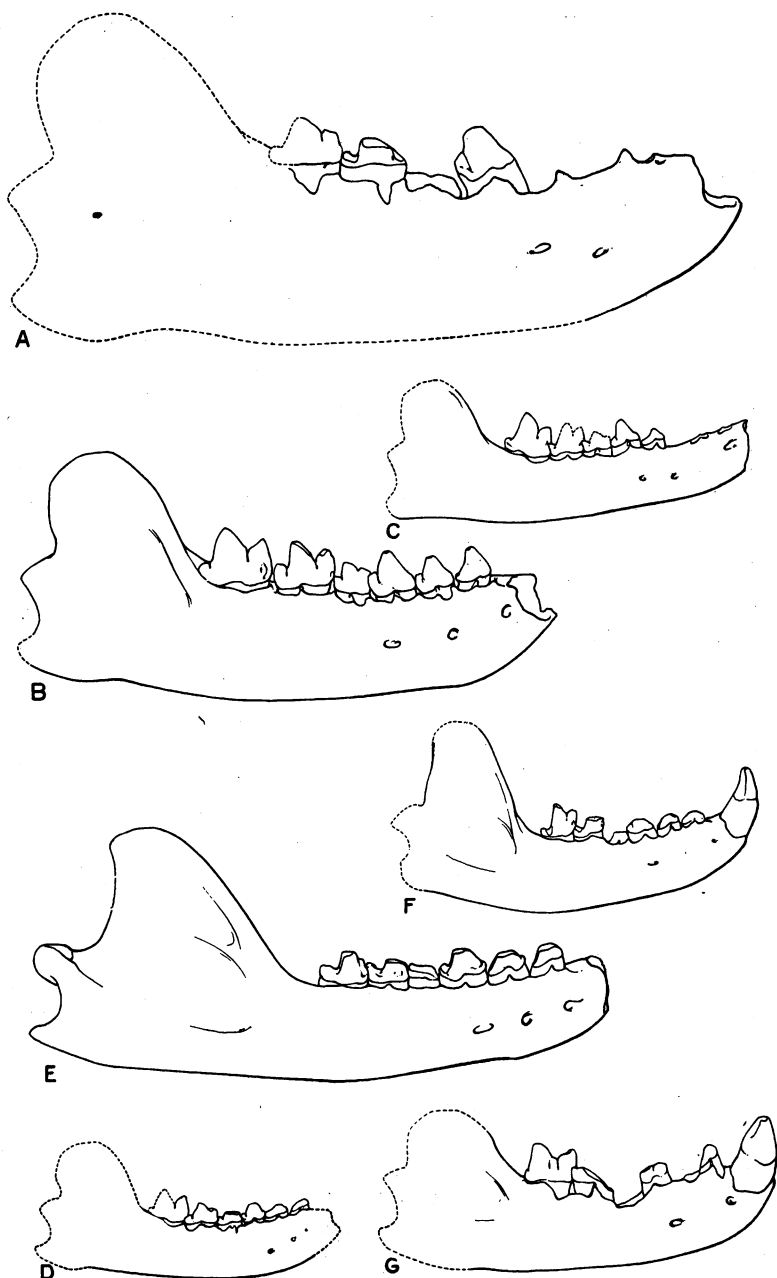


Fig. 9. Series of jaws of Creodonts. External view. All one-third natural size. A. *Pterodon africanus*, No. 13258. B. *Pterodon phiomensis*, type, Amer. Mus. No. 13253, partly restored from No. 13254. C. *Pterodon leptognathus*, Amer. Mus. No. 13263. D. *Pterodon* sp., Amer. Mus. No. 13262. E. *Apterodon macrognathus*, type, Amer. Mus. No. 13241. F. *Metasinopa fraasii*, type, Amer. Mus. No. 14453. G. *Hyenodon brachygnathus*, Amer. Mus. No. 13264.



**Metasinopa** gen. nov.**Metasinopa fraasii** sp. nov.

The type of this species and genus (Amer. Mus. No. 14453; Fig. 6; Fig. 9, F.) is a nearly complete lower jaw from the upper beds.

*Characters.* P<sub>3</sub>, M<sub>3</sub>. As in *Pterodon* and *Apterodon* a basal talonid is preserved; which distinguishes this animal from *Hyænodon*. A persistent metaconid on m<sub>2</sub> and m<sub>3</sub> distinguishes this animal from *Pterodon* and *Apterodon* and relates it to *Sinopa* and *Tritemnodon*, the Eocene ancestors of this family of Creodonts. The lower premolars are small and p<sub>1</sub> absent. Heels of lower molars small, trenchant.

*Measurements.*

	cm.
Anterior border of canine to condyle . . . . .	14.2
Series of six premolar and molar teeth . . . . .	6.5

This animal is probably generically the same as that which Andrews provisionally referred to *Sinopa*. It agrees with Andrews's type of *S. ethiopica* in the retention of the metaconid on the inferior molars; it differs specifically from *S. ethiopica* in the greater breadth of the talonid and in its much greater size. The jaw is moderately deep.

Of somewhat doubtful reference to the same genus is the maxilla, Amer. Mus. No. 14452 (Fig. 7). This specimen apparently agrees with *Hyænodon* in the possession of but two superior molars. It differs in the presence of a vestigial protocone on m<sup>1</sup> and m<sup>2</sup>, but still more decidedly in the less perfectly blade-like character of the paracone and metacone. It agrees in size with Andrews's type of *S. ethiopica*.

*Measurements.*

	cm.
Space occupied by four premolars, est. . . . .	2.85
" " " two molars, est. . . . .	2.45

Genus **Hyænodon** *Lazier and Parieu.*

The presence of *Hyænodon* in the Fayûm was suggested by Andrews from a single imperfect specimen. It is apparently more surely indicated by a nearly complete lower jaw (Amer. Mus. No. 13264, Fig. 8), the type of the species described below, which exhibits the deep, powerful, and abbreviated character seen in the species *H. brachyrhynchus* Filhol of the Phosphorites of Quercy. The reference to *Hyænodon* is based on the large size of the paraconid and the vestigial character of the talonid.

**Hyænodon brachycephalus** sp. nov.

This type (Fig. 8) is distinguished from the typical *Hyænodon* by the presence of a vestigial talonid on the third inferior molar.

*Characters.* The third inferior molar,  $m_3$ , exhibits only a cingulate vestige of the talonid, which is such a conspicuous character of all the contemporary specimens of *Pterodon* and *Apterodon* in the Fayûm. Moreover, the two blades of  $m_3$ , composed of the paraconid and protoconid, are subequal in size, whereas in *Pterodon* and *Apterodon* the protoconid is much the more prominent. The first premolar is entirely wanting, not being represented even by an alveolus, as in the specimens of *Pterodon* and *Apterodon*. The second premolar is a small or reduced tooth, still bifanged. The characters of the other teeth cannot be determined from this specimen.

*Measurements.*

	cm.
Canine to third molar . . . . .	9.92
Space occupied by six premolar-molar teeth . . . . .	7.6
"      "      " three inferior premolars . . . . .	3.23
"      "      "      "      " molars . . . . .	3.37