

corresponds to the supposed orbit of *Pteraspis*, does not, I think, admit of any reasonable doubt.

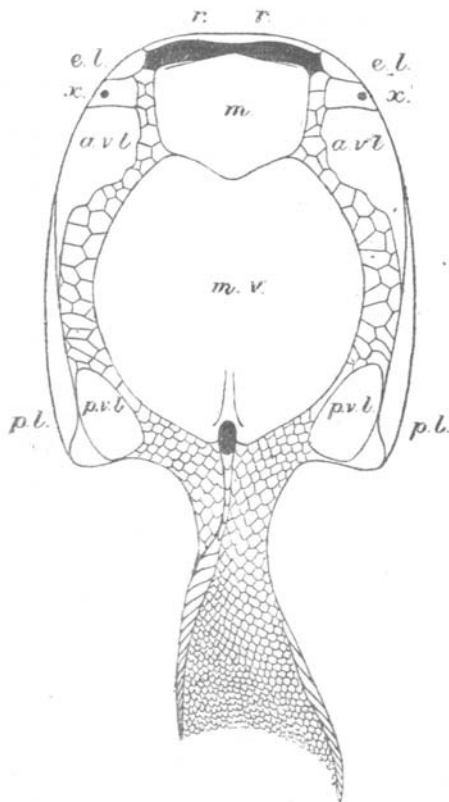


FIG. 2.—Restored outline of the ventral aspect of *Drepanaspis Gemündenensis*, Schl. Surface ornament omitted, and the tail twisted round so as to appear in profile. *r.* rostral or upper labial plates; *e.l.* external labial plates; *x.* sensory openings (orbits?); *a.v.l.* anterior ventro-lateral plates; *m.v.* median ventral; *p.v.l.* posterior ventro-lateral; *p.l.* postero-lateral or cornual plates. Mouth and supposed cloacal opening indicated in black.

II.—PRELIMINARY NOTE ON SOME RECENTLY DISCOVERED EXTINCT VERTEBRATES FROM EGYPT. (PART III.)

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MORE detailed examination of the material collected by Mr. Beadnell and myself in the Fayûm in 1901 has led to the recognition of two additional species of *Mærittherium*, and has made it clear that the Sirenian belongs to a distinct genus, which presents some characters of much interest and is nearly related to *Prototherium* (*Halitherium*) *veronense*, described by Zigno from remains found in beds of Upper Eocene age at Monte Zuello in Northern Italy.

It is desirable to give brief preliminary notes on these species, the full description of them being reserved for the monograph on the whole collection which is being prepared.

MÆRITHERIUM GRACILE, sp.n.

This species is a smaller and rather more lightly built form than *M. Lyonsi*. The skull is more elongated in proportion to its width, the palate is narrower, and the squamosal region of the side of the skull is swollen so as to form a slight rounded protuberance, owing apparently to the great development of the diploe in the squamosal and its consequent thickening. The occipital surface also presents some differences from that of *M. Lyonsi*, particularly in the comparative narrowness of the escutcheon-shaped plate formed by the supra-occipital and in the smaller extent of the periotic that is exposed.

The teeth present the most easily recognized peculiarities. The cheek-teeth are much smaller than in *M. Lyonsi*. They are arranged in perfectly straight lines, the right and left series being almost parallel with one another; the palate is very narrow.

The chief points in which the tooth structure is distinguished from that seen in *M. Lyonsi* are:—

(1) In p.m. 2 and p.m. 3 the shelf-like surface on the postero-internal border is wanting, and in p.m. 3 at least there seems to have been a distinct postero-internal cusp in its place, but none of the specimens are very well preserved.

(2) The cingulum is much more strongly developed than in *M. Lyonsi*, and the enamel is marked by a peculiar sculpture consisting of fine irregular vertical fluting. The form and arrangement of the incisors and canines are as in *M. Lyonsi*.

The dimensions of the upper teeth are:—

| | | | Length. | | Width. |
|------------------------------------|-----|----------------|---------|-----|---------|
| p.m. 2 | ... | ... | 22 mm. | ... | 18 mm. |
| p.m. 3 | ... | ... | 20 " | ... | 23 " |
| p.m. 4 | ... | ... | 20 " | ... | 21 " |
| m. 1 | ... | ... | 23 " | ... | 23 " |
| m. 2 | ... | ... | 24 " | ... | 25 " |
| m. 3 | ... | ... | 28 " | ... | 24 " |
| Total length of p.m. and m. series | | | | | 137 mm. |
| " | " | p.m. series... | ... | ... | 62 " |
| " | " | m. series | ... | ... | 75 " |

In *M. Lyonsi* the length of the p.m. and m. series is approximately 160 mm. and of the p.m. series is 74; and in the width of the teeth the difference between it and *M. gracile* is still greater: thus in *M. Lyonsi* the width of p.m. 3 is 27 mm. and m. 2 27, while in the present species the same teeth measure 20 and 24 respectively.

MÆRITHERIUM, sp.

The other species is known only by a nearly complete vertebral column, differing from that of *M. Lyonsi* both in its larger size and in many small structural points. In the absence of any well-preserved remains of the skull and teeth of this form it seems advisable for the present to refrain from giving it a name until

further material is available. The occurrence of these three species of *Mæritherium* in a small area seems to point to the conclusion that these animals were a dominant type of the fauna of the region, and possibly it will be found that they form a group divisible into several genera.

EOSIREN LIBYCA, gen. et sp. nov. (Figs. 1–3.)

Two species of Sirenians have already been discovered in the Eocene beds of Egypt, both being from the white Mokattam Limestone of Cairo. Of these one was described by Owen under the name *Eotherium ægyptiacum*,¹ on the evidence of a natural cast of the cranial cavity; the other was described by Filhol from three lower molars, and was named *Manatus Coulombi*.² Since both these species, if indeed they are distinct, occur on nearly the same horizon as the specimens from the Fayûm, it will be necessary to consider whether the latter may not be identical with one or both of them.

According to Filhol the lower molars, which he made the types of *Manatus Coulombi*, differ only in small details from those of *Manatus australis*, and he did not think that they could belong to *Eotherium ægyptiacum*, because the brain of that species indicates a much more primitive type of Sirenian than the living genus. In any case, whether he was right in referring his species to *Manatus* or not, the dentition of the Fayûm species is widely different from that of the Manatees, and therefore it must be assumed to be distinct from *M. Coulombi*.

In the case of *Eotherium ægyptiacum*, as already mentioned, the type is the cast of the brain-case, and fortunately it has been possible to make a similar cast from one of our specimens, so that the two forms are directly comparable. Dr. Elliot Smith³ has examined these casts, and he has come to the conclusion that the two forms are distinct.

It thus appears that our species is distinct from those previously described from Egypt, and its relations must be sought elsewhere. From the Eocene of Italy Zigno has described several Sirenians, the best known being first named *Halitherium veronense*,⁴ but afterwards referred by the same writer to a new genus, *Prototherium*,⁵ which, however, he never fully defined, merely stating that it included Eocene Sirenians in which the mandible bears a prominent posterior (surangular) process. In many respects, e.g., in the general form

¹ Owen: Quart. Journ. Geol. Soc., vol. xxxi (1875), p. 100. The generic name *Eotherium* had been previously employed by Leidy in 1853 for a genus of Perissodactyla, and therefore, strictly, the name *Eotheroides* suggested by Palmer (*Science*, n.s., vol. x, 1899, p. 494) should be employed for this Sirenian, but in the present paper I prefer to continue to use the name by which it is best known.

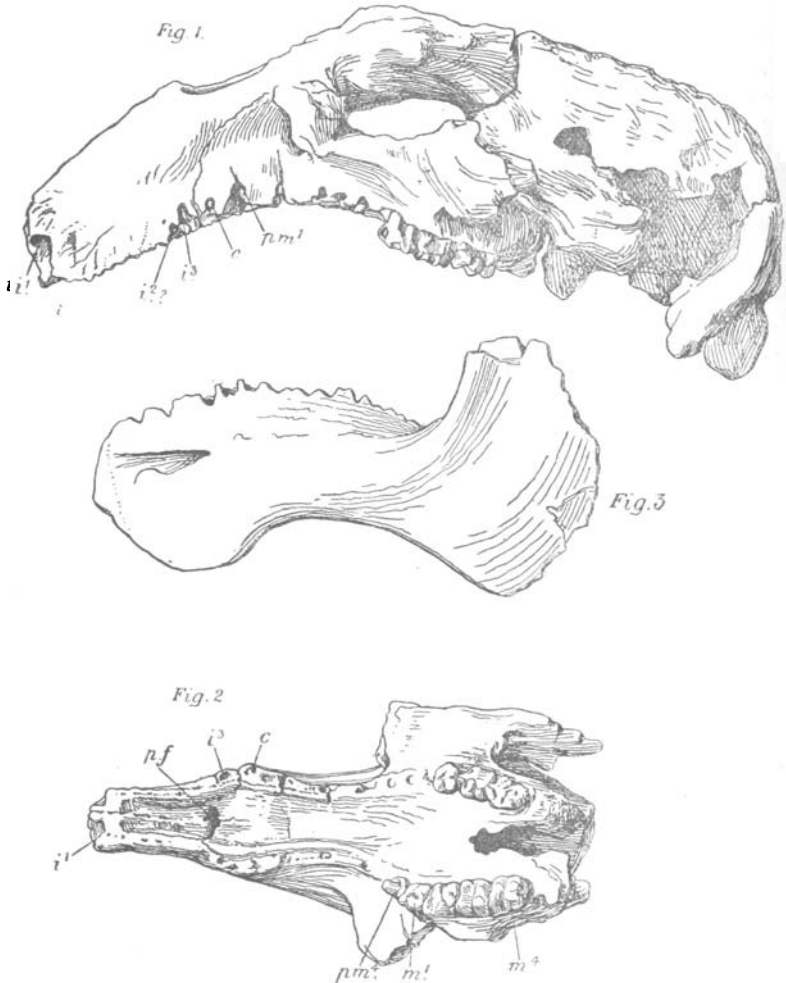
² Bull. Soc. Philomathique de Paris, ser. vii, vol. ii (1878), pp. 124–5.

³ Dr. Elliot Smith's descriptions of these and other brain-casts from the Fayûm will be published in the proposed monograph on that district.

⁴ Zigno, "Sireni fossili trovati nel Veneto": Mem. Inst. Veneto d. Sci., vol. xviii (1875), p. 445.

⁵ Zigno, "Quelques Observations sur les Sirenians fossiles": Bull. Soc. géol. France, vol. xv (1887), p. 731.

of the skull, particularly of the rostrum, *Prototherium veronense* seems to be closely similar to the Fayûm form, but since it is very doubtful on the one hand whether it possessed canines and posterior incisors, and on the other, whether the process on the mandible which characterizes it, is present in the Egyptian form, it is best to establish a new genus for the reception of the latter.



Skull and mandible of *Eosiren libyca*. One-third natural size.

Figs. 1 and 2.—Skull. Fig. 3.—Mandible.

pf. palatine foramen; *i*¹, first incisor; *i*², *i*³, second and third incisors; *c*, canine.
*pm*¹, *pm*² last premolar; *m*¹, *m*⁴, first and fourth molars.

The name *Eosiren* may be adopted for this genus, which will include Eocene Sirenians in the upper jaw of which the anterior

incisors (i^1) are modified to form a pair of downwardly directed tusks, and there are also one or two pairs of small laterally placed incisors (i^2 , i^3) near the premaxillo-maxillary suture. Canines (c) were present; both these and the posterior incisors were probably shed early in life. The upper cheek-teeth are eight in number, consisting of four single-rooted teeth (premolars) and four double-rooted molars, the crowns of which are bilophodont, each ridge being distinctly composed of two tubercles. (Figs. 1, 2.)

The downwardly deflected symphyseal region of the mandible is greatly thickened and very massive; it bears the alveoli of four pairs of teeth, apparently the incisors and canines. The anterior pair of these alveoli is comparatively shallow, and in all probability the teeth were lost early, this region being covered by a horny sheath. There were probably three single-rooted and five double-rooted cheek-teeth; but this is uncertain owing to the want of well-preserved specimens. There are indications that a replacement of the molars from behind was already established in this early form, at least in the mandible. (Fig. 3.)

The vertebral column is much like that of *Halitherium*, and the scapula is characteristically Sirenian in form, having a backwardly curved, sickle-shaped blade. The rudimentary os innominatum is similar to that of *Halitherium Schinzi*, but the acetabulum is more strongly defined. The species from the Fayûm may be called *Eosiren libyca*. The dimensions of the type skull are:—

| | mm. |
|---|-----|
| Extreme length in straight line | 290 |
| Width at occipital condyles | 75 |
| Width of foramen magnum | 34 |
| Height of foramen magnum | 22 |
| Width between supra-orbital processes | 87 |
| Width of cranial roof between the temporal fosse | 47 |
| Width of snout in front of external nares | 45 |
| Length of dental series from canine to last molar... .. | 114 |
| Length of molar series | 56 |
| Length of external narial opening | 64 |
| Width of external narial opening | 30 |

The mandible figured was not associated with the skull, but was found on the same horizon and in the same locality.

It is interesting to note that the alveoli for the posterior incisors and the canines are not borne on the alveolar border of the upper jaw, but seem to have been thrust somewhat outwards on to the facial surface, probably through the development of the horny plate which formed the actual biting surface of the anterior portion of the jaw. It is remarkable that, except in the presence of posterior incisors and canines, this early (Middle Eocene) Sirenian is scarcely at all more generalized than the later *Halitherium*, and it appears that the Sirenia must have branched off from their parent stock at an extremely early period. In some respects, particularly in the structure of the teeth and of the humerus, there is a certain similarity with *Mærittherium*, and it seems not improbable, therefore, that the relationship between the Sirenia and the Proboscidea suggested by Blainville and others may have a real existence.