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THE ANTERIOR OF THE PALATE IN *EUPARKERIA*

by

C. E. Gow

INTRODUCTION

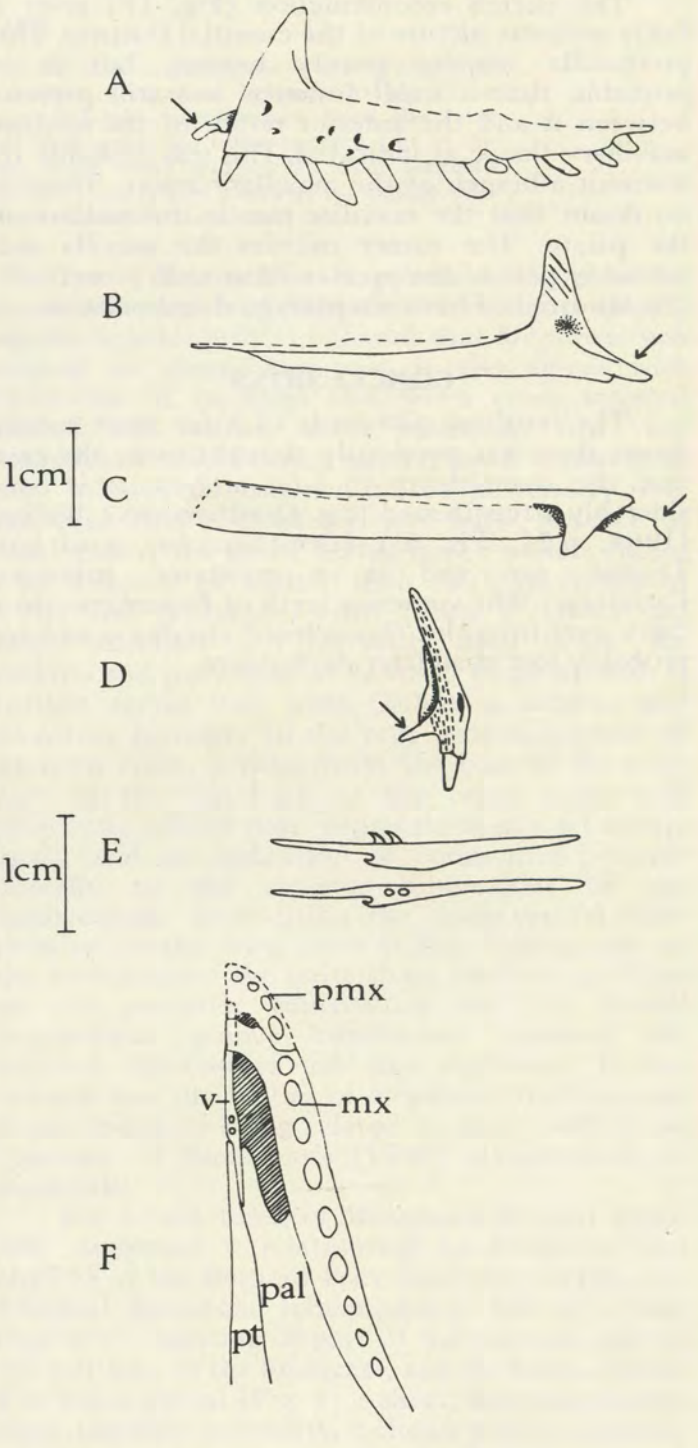
Ewer (1965) has given a careful and comprehensive description of the anatomy of the thecodont *Euparkeria*, but erred if anything on the side of caution in her preparation of the material. This is a commendable approach, but it has meant that certain details remained unknown. Recently Cruickshank (1970) has redescribed and reinterpreted the braincase as being surprisingly primitive. The present author's current interest lies in the origin of the lizards, and this necessarily implies an interest in Archosaur origins. In this regard an important element of the skull is the vomer; this will become apparent when recently completed work on the Millerosauria is published (Gow 1971). The important feature is the nature and disposition of vomerine teeth. Not surprisingly the vomer is not known in detail in any "Eosuchian" or early lepidosaur, as it usually lies hidden by the symphysis of the lower jaws and in any event requires delicate preparation.

In view of the central position of *Euparkeria* in the accepted phylogeny of the Archosaurs it was considered necessary to examine the vomer, and to this end one of the skull blocks listed by Ewer (SAM 6050) was prepared in formic acid. This yielded in addition to the vomers, important new information on the internal structure of the maxillae. The vomer stresses the primitive nature of the animal while the structure of the maxilla considerably strengthens its affinities with later archosaurs.

The maxilla

The important feature of the maxillae is that they have anterior median flanges which meet in the midline of the palate (arrowed in the figure). The lateral view of the left maxilla (Fig. 1A) shows how this flange projects well forward internally beyond the external limit of the maxilla. The lingual view (Fig. 1B) shows the area of attachment of the maxilla to the nasal (hatching) and below this a circular depression (stippled). The apparent discrepancy in depth of the bone between Figs. 1A and B is because lateral and lingual margins have been used respectively. Fig. 1C shows the maxilla in dorsal view. Of interest here are the delicate notch at the anterior tip of the median flange and the considerable width of the bone above the tooth row (cf. Ewer (1965, Fig. 1B)). In anterior view (Fig. 1D) the attachment area of the premaxilla is hatched. Note that this extends along the median flange up to the notch mentioned above.

DESCRIPTIONS (Fig. 1 A-F).



The vomer

Palatal and lateral views of the left vomer are given in Fig. 1E. This is a long narrow element with

considerable depth. It bears two strongly recurved teeth, similar in form and mode of attachment to the rest of the palatal teeth described by Ewer.

THE PALATE RECONSTRUCTED (Fig. 1F).

It is not possible to relate the features described above to Ewer's reconstructions of the skull, as the latter embody several inaccuracies unavoidable at the time. A complete and accurate reconstruction would be a major project and beyond the purpose of this paper.

The sketch reconstruction (Fig. 1F) gives a fairly accurate picture of the essential features. The premaxilla remains poorly known, but it is probable that a small foramen was still present between it and the anterior notch of the median maxillary flange as indicated. This was probably to transmit a branch of the maxillary artery. There is no doubt that the maxillae met in the midline of the palate. The vomer overlies the maxilla and probably part of the premaxilla as well; posteriorly it is sandwiched between pterygoid and palatine.

CONCLUSIONS

The resulting picture is of a far more robust snout than was previously thought to be the case and the resemblance to later archosaurs is considerably strengthened (e.g. *Ornithosuchus*, Walker (1964, p.71, Fig. 6)). (*Ornithosuchus* is of late Triassic age and is a presumed primitive Carnosaur). The vomerine teeth of *Euparkeria* are a carry over from the "Eosuchian" condition and are probably lost in all later Archosaurs.

It is tempting to suggest that a similar state of affairs will be found to exist in the contemporaneous and structurally similar *Erythrosuchus*. In any event the anterior of the palate may prove to be of considerable importance in determining the evolutionary sequence of Early-to-Middle Triassic Archosaurs.

ACKNOWLEDGEMENTS

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