A NEW PROCOLOPHONID FROM NORTH-WESTERN SHANSI

CHOW MINCHEN SUN AI-LIN

(Institute of Vertebrate Paleontology and Paleoanthropology, Academia Sinica)

A year ago, the writers of the present note received from a geological party a fragment of reptilian bone collected from Lin-Chë-Yü, Pao-Tê, north-western Shansi*. The fossil which was embedded in a piece of purplish red sandstone was said to have come from the Triassic beds outcropped along the bank of the Huangho (Yellow River).

The specimen due to its unattractive preservation had been left unnoticed until recently when it was removed from the matrix. It soon attracted our attention because it is evidently a fragmentary piece of maxilla with three teeth of some procolophonid cotylosaur, a group of which only one specimen was known so far in Asia. This short note gives a brief description of this specimen.

The fossil under consideration is a piece of right maxilla from the middle part of the bone. It belongs to an animal medium in size for the group. The maxillary teeth preserved are most probably the second, third and fourth. They are of acrodont type comparatively typical in development for the group. The crowns of the teeth are very low, with broad base confluent with the bony substance of the maxillary to a varying degree. The most anterior one shows acrodont type of development. It is perfectly ankylosed to the bone without noticeable discontinuity. The last tooth (penultimate of the upper tooth row) shows a stage of transition from thecodont to acrodont type, for on its labial side which is well exposed for a closer observation under magnification it can be seen that the root of the tooth merges into the base of the maxillary. This peculiar mode of the tooth development confirms in addition to the general morphology of the dentition the correct systematic identification of this specimen to the Procolophonidae.

All these three teeth are transversely broad, crowded together in arrangement and progressively increasing in size from front to the back. The first tooth on the specimen (the second maxillary tooth) is perfect in preservation. It is well differentiated into two small conical cusps on the cutting edge divided by a median groove running forward down to the base of the crown, the posterior of which is partly embedded in the maxillary bone. Of the second tooth, only the external half is preserved. It was moderately worn though to a less extent than its posterior following one. This tooth also has a "bicusped"

* 山西西北保德林遮峪。

transverse cutting edge. The third or the penultimate one of the upper row had been worn nearly to the base of the crown. On its worn surface it can be indistinctly seen that its root is faintly demarcated from the surrounding substances of the maxillary bone by an elongate ellipsoid outline. The contact between the tooth and the alveolar border can still be seen on the anterior, lingual and posterior sides of the tooth respectively, though completely ankylosed together.

From the mode of development and the wearing of the teeth it can be noticed that the cutting surfaces of these three teeth were not in one plane and they had not been received the same degree of wearing at any one time. Consequently, while the last tooth had been worn to a considerable extent, the first one remained practically unworn. The anterior maxillary teeth in the procolophonids were probably never worn to much extent during the life of the animal. And the specimen at our disposal belongs probably to that of an individual comparatively advanced in age.

During the evolution of the procolophonids, several trends are shown in the specialization of the dentition which has been well summarized by Colbert (1946). Some of these features, such as reduction in number and differentiation of the maxillary teeth, the progressive broadening of these teeth from front to the back, and the formation of a bicusped cutting edge, etc., are in accord with the observations derived from our specimen. With these in view, the new procolophonid from Pao-Tê can be compared with the known genera of this group.

The permian forms of the group, such as *Nyctiphruretus* and *Nycteroleter,* have undifferentiated dentition and much greater number of teeth. They are certainly quite remote from our specimen. The lower Triassic South African genus *Procolophon* likewise have transversely broadened maxillary teeth, but in this respect theirs are evidently less specialized than in our specimen in which the number of teeth on each maxilla as can be inferred from the general arrangement and development of the dentition could not exceed seven. The dentition of the *Neoprocolophon,* the single known Asiatic genus, is also different from our specimen. The teeth of *Neoprocolophon* are rather unspecialized; they are also more numerous, smaller and not crowded together in arrangement.

As far as the structure of the maxillary teeth is concerned, it seems that our specimen can be more closely compared with *Hypsognathus* of the North American Upper Triassic. But in the latter genus the cutting surface of the teeth is not in one plane in contrast to that in ours which is in one plane.

On account of the fragmentary nature of the material, it is impossible at present to compare our specimen with all the other related genera such as *Leptopleuron, Sclerosaurus,* etc. But from the above description of the available material and from its geographical occurrence it seems more convenient at least for the present to consider the Pao-Tê specimen as a new genus of this Family, for which the name *Paoteodon huanghoensis,* gen. et sp. nov. is proposed.

As to the geological age of the fossil, it is difficult to ascertain at present chiefly on account of the scantiness of the material and the lacking of associating fauna. Its comparison with *Neoprocolophon* indicates that probably the bone-bearing horizon in this region may either be contemporaneous or higher than that of the Wuhsiang basin.

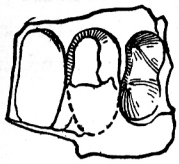

Fig. 1 *Paoteodon huanghoensis*, gen. et. sp. nov. Crown view of the middle part of right maxilla with 3 teeth. ×2.

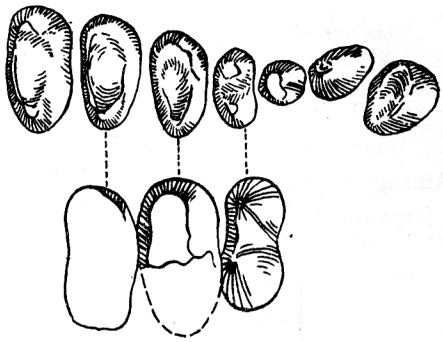

Fig. 2 The comparison of maxillary teeth between *Hypsognathus* (above) and *Paoteodon* (below). ×3.

All in all, the second discovery of the procolophonid remain in Shansi is significant in affording a clue to the further exploration of the Triassic reptilian faunas of the middle Huangho region where the reptilian-bearing horizons is now known to have much wider distribution than it was thought before.

References

Broili, F. and Schröder, J., 1936. Beobachtungen an Wirbeltieren der Karrooformation. XXI. Über *Procolophon* Owen. Sitz. *Ber. Akad. Wiss.* München, (2): 239—256.

Colbert, E. H., 1946. Hypsognathus, A Triassic Reptile from New Jersey. *Bull. Amer. Mus. Nat. Hist.* 86 (5): 231—274.

Romer, A. S., 1956. Osteology of the Reptiles. Chicago.

Seeley, H. G., 1905. On the Primitive Reptile *Procolophon*. *Proc. Zool. Soc. London.* 218—230.

Young, C. C., 1956. *Neoprocolophon asiaticus*, a New Cotylosaurian Reptile from China. *Vert. Palasiatica* 1 (1): 1—7.