

NEW REMAINS OF POSTSCHIZOTHERIUM FROM S.E. SHANSI

BY P. TEILHARD DE CHARDIN & E. LICENT

(Musée Hoangho-Paiho, Tientsin)

Postschizotherium chardini nov. gen., nov. sp., is the name created in 1932 by Dr. von Koenigswald¹ for the curious animal described in 1930 by Teilhard and Piveteau² as *Chalicotherid* nov. gen. ind. on two isolated teeth (upper molar and premolar) collected by F. Licent in the Villafranchian (=Saumenian) beds of Nihowan.

Since that time nothing more had been found leading to a better understanding of *Postschizotherium*, when recently, amongst an important fossil material sent to FF. Licent and Trassaert from the Yushê basin (S.E. Shansi)³ two important pieces were discovered clearly referable to this puzzling form.

We think advisable to give immediately a preliminary description of those specimens.

MATERIAL

1) The damaged anterior part of a skull broken in front of P⁴. Series P⁴-M³ well preserved on both sides of the palate, which is not crushed. The antero-external part of the maxillaries is also preserved, and the general shape of the muzzle recognisable.

2) The anterior part (two branches) of a mandible broken behind P. Symphyse complete, and teeth preserved on both sides.

1 Von Koenigswald, G.H.R. *Metaschizotherium fraasi* n.g.n.sp, ein neuer Chalicotheriide aus dem Obermiocän von Steinheim. Paläontographica, Suppl.-Band VIII, teil VIII, 1932, p. 21.

2 Teilhard de Chardin, P. & Piveteau, J. Les Mammifères fossiles de Nihowan (Chine). Annales de Paléontologie, t. XIX, 1930, p. 23.

3 Licent, E. & Trassaert, M. The Pliocene lacustrine series in Central Shansi. Bull. Geol. Soc. China, Vol. XIV, 1935, pp. 211-220.

These two pieces, embedded in the same matrix (a soft rusty sandstone) belong evidently to the same individual. The skull was apparently complete when dug out by the local fossil-hunters.

DESCRIPTION

1. *Upper jaw and muzzle* (Fig. 1). Palate short and very narrow in comparison with the size of the teeth. Anterior margin of the posterior notch not extending further forward than the second lobe of M^3 . Maxillary deep and short. Ante-orbital foramen large, single, set 31 mm. above P^1 . 10 mm. above this foramen, the margin of the nasal fossa is clearly marked (over a length of 30 mm.), this fact suggesting that the nasal bones were reduced and the premaxillary area short and steep. Palatal foramina set in the re-entrant between M^1 and P^1 .

2. *Upper teeth*. On the whole, the upper molars are remarkable by their large triturating area and by the depth of their labial side (the lingual side being decidedly brachyodont). This peculiar hypsodonty results into a strong curvature (external convexity) of the crown. Cement just so thick as in a Horse. Premolars much and abruptly smaller than the molars. Although M^3 is scarcely erupted, the anterior teeth (P^1 and M^1) are much worn, as if the molars had a tendency to erupt and to work in succession.

P^3 smaller than P^1 (judging by traces of alveoli).

P^1 small, and yet distinctly molarised. In the outline, the tendency to form two lobes is only indicated by a faint re-entrant on the outer and the inner walls of the crown. But on both anterior and posterior sides of the median pit two ridges parallelize clearly the paralophe and the metalophe of the molars, a rounded anterior cusp holding the place of the protocone.

M^1 much worn, and longitudinally reduced by wear. Built essentially as M^2 , but smaller, and probably shorter.

M^2 moderately worn. Paracone and metacone crescentic, with anterior and median columns (parastyle and mesostyle) very strong. A

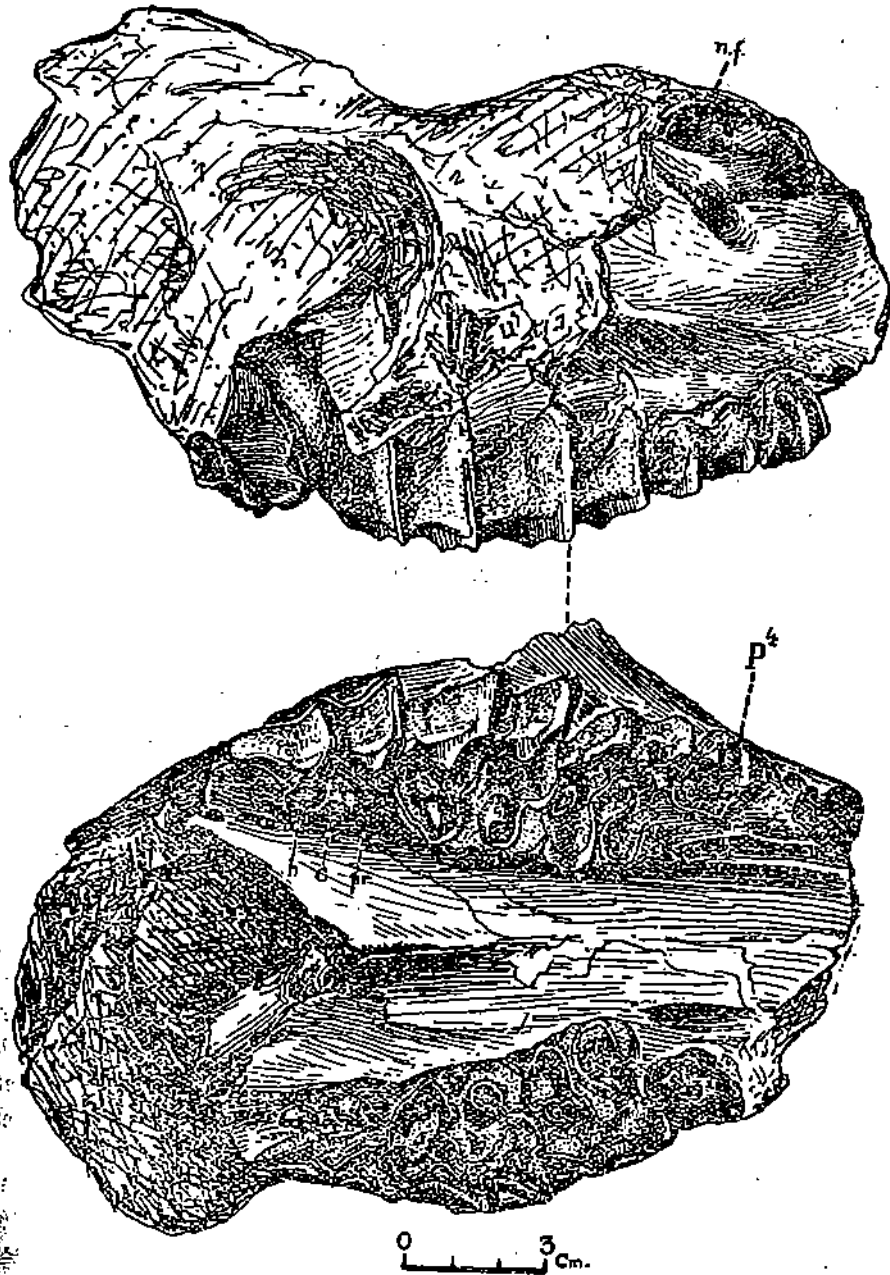


Fig. 1 *Postschizotherium chardini* v. K. Palate, from the right side, and from below. *n. f.*, nasal fossa. *P⁴*, fourth premolar. *pr*, protocone. *h*, hypocone. *c*, accessory cusp. Reduced approximately to 2/3.

ridge (paralophe) connects the paracone with the well rounded protocone; and another ridge (metalophe) the metacone with the convex, but less rounded, hypocone. A deep fossa, open lingually, runs between the two lophes; and another one, circular and closed, occurs between the metalophe and the posterior cingulum. These two fossae are largely filled with cement, but still with a narrow central open pit.

M³ scarcely erupted, and essentially built as M², but with crown more compressed, posterior lobe somewhat reduced, mesostyle much less projecting. Between the unworn conical protocone and hypocone, an accessory cusp *c*, coated with cement, has no clear equivalent on M¹ and M². In spite of this apparent reduction of its upper face, the crown observed labially expands antero-posteriorly and curls transversally in a most extraordinary way.

DIMENSIONS

	Shansi specimen				Nihowan specimen	
	P ⁴	M ¹	M ²	M ³	P ⁴	M ³
External length	15	28	37	29	21	44 mm.
Breadth	16,5	32	28,5	22	20	31
External breadth						
at the base	?	?	?	47		34
External height of						
the crown (in						
straight line)	19	?	?	55		54
Length M ¹ - M ³ , 87; P ⁴ - M ³ , 100.						

3. *Lower jaw* (Fig. 2.) Symphyseal area strong, deep and narrow. The two branches are completely fused, and the symphyse extends backward so far as the anterior part of P₁. A strong external muscular fossa runs externally below the premolars and the canine; and another one expands internally just behind the incisive border.

4. *Lower teeth.* Premolars four in number, closely set, extremely reduced. The crown, much worn, is of a clear Chalicotherid type

(rather elongated trigonid, and a talonid). Internal cingulum continuous, sharply indicated. Coat of cement distinct,

Canine rounded, very small, separated by a short diastema (10 mm), both from P_1 and from the following incisor.

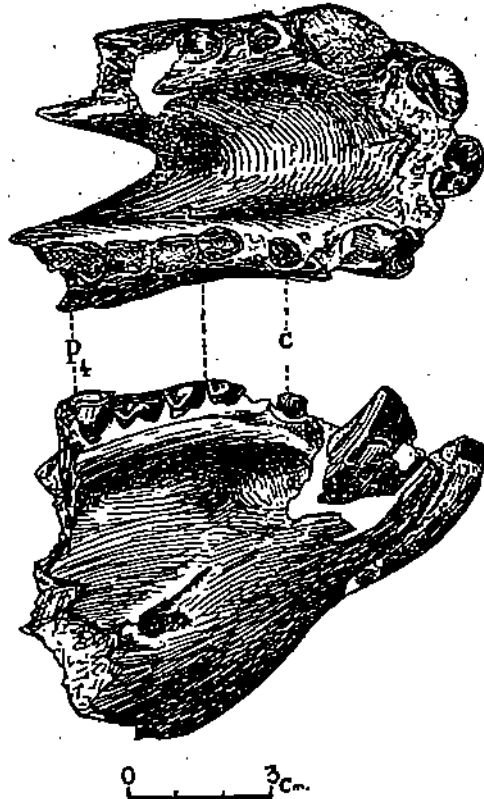


Fig. 2. *Postschizotherium chardini* v. K. Anterior part of the mandible, from above and from the right side. c, canine. P_4 , fourth premolar. Reduced approximately to 2/3.

Incisors large, two in number, separated by a short diastema (10 mm.). The anterior one is approximately built as is a Horse, and is completely coated with enamel. The posterior one (tip broken) apparently caniniform, has a curiously irregular cross section along the

inner side, and the enamel seems to be restricted to the external side of the crown.

DIMENSIONS

Maximum depth of the jaw (below P_4)	65 mm.
Length between the posterior side of P_1 and the anterior side of the anterior incisor	92
Internal length of the symphyse, in straight line	71
Transversal distance between the two canines (external side)....	48
Transversal distance between the two posterior incisors (external side)	55
Length and breadth of P_4 , 13,5/9; of P_3 , 9/8; of P_2 , 9/7; of P_1 , 8,5/6. Length P_1-P_4 , 41.	
Length and breadth of the canine, 6/5.	
Length and breadth of the caniniform incisor, 18/12.	
Length and breadth of the anterior incisor, 15/10.	

COMPARISONS

In spite of a somewhat smaller size, there is no doubt that the above described specimens belong to the same genus (and to the same species) as *Postschizotherium chardini* from Nihowan, and that they improve greatly the knowledge we had of this strange animal.

On the whole, the probability increases that *Postschizotherium* represents really an aberrant type of Chalicotherid. To this assumption point well the shortness of the muzzle and the shape of the lower premolars. Yet, by the hypsodonty of the molars, the extreme reduction of the premolars and of the canine, the thick cementation of the back-teeth, the transformation of the incisors, the form is still more specialized than we thought, and along a line strangely converging to the Notungulata of South America: the curvature of the upper molars reminds of a Toxodont, and the anterior lower jaw is built as in *Thootherium*.

It is unfortunate that no limb bones referable to *Postschizotherium* have been found so far,—and also that in the here described material the lower jaw is broken in such a way (just before the molar series) that we can not decide whether the lower molar from Choukoutien Locality 12 belongs really to this genus¹.

From a biological point of view, it remains uneasy to explain the peculiar shape of the upper molars in which the external hypsodonty of the crown (paracone and metacone) is countereffected by the brachydonty of the inner half (protocone and hypocone) (cf. Teilhard and Piveteau, loc. cit., p. 23, fig. 9). In fact, as shown by the Shansi specimen, the teeth, in spite of their extremely elongated outer wall, did not wear deeper than the height of the protocone.

HORIZON AND LOCALITY

Pliocene lacustrine beds of the Yushā basin, S. L. Shansi (King Yang Ping Tsunn),—most probably in the *Equus* beds (Villafranchian = Sanmenian).

1 Teilhard de Chardin, P. and Pei, W. C., New discoveries in Choukoutien. Bull. Geol. Sci. China. Vol. XIII, 1933-34, p. 376, fig. 5.