

NEW MATERIALS OF *DRYOPITHECUS* FROM KEIYUAN, YUNNAN

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In a previous paper, five lower cheek teeth of the new species *Dryopithecus keiyuanensis* from the Hsiaolungtan Cenozoic lignite beds in Keiyuan, Yunnan were reported by the author (1957). Recently, five more teeth of *Dryopithecus* were sent to us by the Yunnan Provincial Museum in Kunming. The materials were alleged to come also from the Hsiaolungtan coal field in Keiyuan. They consist of the lower third and fourth premolars and the lower three molars, all of right side. Judged from the size, characters and color of the specimens, they seem to belong to the same mandible. All are of brownish dark color and highly fossilized.

According to Mr. Hsiung Yung-Hsian, geologist of the Yunnan Geological Bureau, the first five teeth of *Dryopithecus* reported before by the author were found from the horizon of the Hsiaolungtan Coal Series (N₂) as shown in the geological section (fig. 1) kindly supplied by him.

Description

The lower second and third molars and the lower fourth premolar were described in the previous paper by the author and the description of them applies pretty well to the present specimens. The only difference is that the present teeth (Pl. I, 4) are of much greater size. As the specimens are only slightly worn, the two secondary cusps jammed between the mesoconid and entoconid and between the entoconid and metaconid in the third molar are clearly shown. A serrated margin on the lingual side of the lower third molar is also clearly seen.

The measurements of the teeth are given in table 1.

The first lower molar (Pl. I, 3) has similar characters as the second lower molar. Besides its smaller size, the first lower molar has the mesoconid of about the same size as the entoconid and lying in a more central position. In the lower second and third molars, the mesoconid is displaced to the outer side of the crown in line with the protoconid and hypoconid.

The roots of the lower first molar are mostly well preserved. The posterior branch of the root projects markedly backward, especially on the buccal side, while the anterior branch is nearly straight and projects only a little anteriorward on the buccal side.

Geologic time		Index	Section	Thickness (M)	Lithologic characters
Era	Period				
Cenozoic	Quaternary	Q IV		10 ±	Sands and gravels
		Q I-III		70 ±	Peat clays and travertine
	Neogene	?N ₂ ³		145	Hotou coal series
		N ₂ ²		156	Marls
		N ₂ ¹		250	Hsiaolungtan coal series with remains of <i>Dryopithecus</i> and <i>Tetralophodon</i>
		Paleogene	Pg ₃		150
	Pg ₃			80	Luchaichung sandstone and shales
	Pg ₂			300	Hsiaohwasan conglomerate
	Mesozoic	Triassic	T ₃		?

Fig. 1. Geological Section of the Hsiaolungtan Coal Series, drawn by Mr. Liu Tung-Sen and Miss Chang Yu-Ping based on the data supplied by Mr. Hsiung Yung-Hsian but somewhat modified.

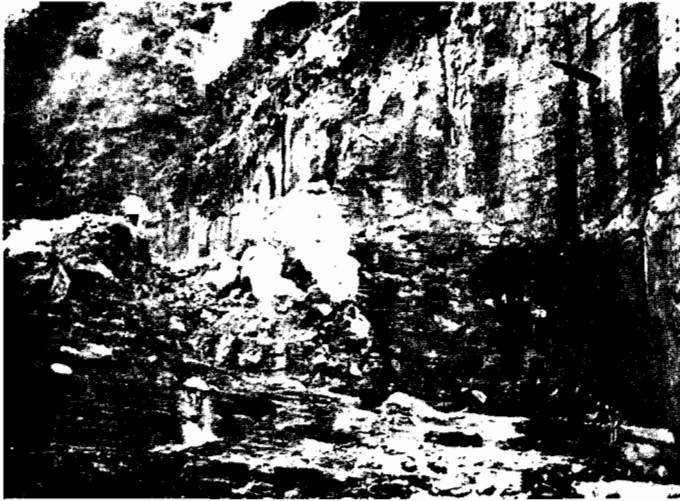


Fig. 2. View of the Hsiaolungtan Coal Field.
(Supplied by the Yunnan Geological Bureau)

Table 1 Measurements (in mm) and indices of the teeth

	P ₃ (D)	P ₄ (D)	M ₁ (D)	M ₂ (D)	M ₃ (D)
Height	(11.0)	(8.6)	(6.9)	(8.6)	(7.1)
Length	10.9	8.1	11.8	13.5	14.2
Breadth	9.0	9.3	10.5	12.1	11.9
Leng. Bread. index	82.6	114.8	89.0	89.6	83.8
Trigonid breadth			10.5	12.1	11.9
Talonid breadth			10.3	12.0	10.9
Trigonid index			100.0	100.0	100.0
Talonid index			98.1	99.2	91.6

It can be clearly seen from the measurements in the table that the three lower molars become bigger and especially longer successively from front backward. This seems to be the general characters of all species of *Dryopithecus* as shown in the measurements.

The lower fourth premolar (Pl. I, 2) of the present specimen is well preserved. It is shorter than the one previously described and approaching the molar pattern, especially in its posterior moiety or talon which bears two cusps, the hypoconid and entoconid. The metaconid is slightly higher than the protoconid. The antero-posterior sulcus is well marked and crack-like, separating the metaconid from protoconid. The fovea anterior and talonid fossa are well-developed. The inner wall is almost parallel to the antero-posterior axis, instead of being oblique to it. There is a slight cingulum only on the external side. The root is clearly subdivided into two branches on the external side, but is united

on all other sides. The internal side of the root is convex, but on both its anterior and posterior surfaces, there is a median longitudinal depression.

As the lower third premolar (Pl. I, 1) of the present specimen was the first one found so far, it deserves a little more description. As is to be expected, the lower third premolar is more ape-like than the lower fourth premolar. It is compressed and elongate. Its main axis runs obliquely from antero-buccalward to postero-lingualward with angulate junction of anterior lingual and buccal surfaces. Its oblique convex antero-external slope is worn, as in other anthropoids, by the posterior-internal face of the upper canine. The buccal cusp is well developed and there is only very beginning of the lingual cusp or metaconid represented by the blunt swelling at the base of the internal ridge.

The buccal surface is strongly convex, and the lingual surface is slightly convex. The base of the crown is surrounded almost on all sides by a projecting band which forms triangular prominences on the anterior and posterior sides. On the posterior slope of the enlarged protoconid is a longitudinal depression representing the incipient talonid fossa.

The basal portion of the root is preserved. It is divided into two branches, an anterior and a posterior.

Conclusion

As the present specimens differ from those of *Dryopithecus keiyuanensis* merely in the greater size, they are referred to the same species. And the differences in size in both specimens may be explained as due to sexual dimorphism.

References

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雲南開遠森林古猿的新材料

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摘要

1957年初作者曾報告了在雲南開遠第三紀小龍潭煤系中發現的森林古猿的五個牙齒化石，定為一新種。最近雲南省博物館又寄來森林古猿的五個牙齒化石，據稱也是在小龍潭煤田中發現的。這五個牙齒，大部保存得很完整，是右側下頷的 P_3-M_3 。本文對這些材料進行了研究和描述，由於 P_3 是首次發現的新材料，所以描述比較詳細，這些牙齒的形態特徵基本上與上次發現的相一致，因而歸入同一新種。但這批材料遠比上次的為大，可能的解釋是這批牙齒是屬於雄性個體的，而上次的是雌性。

本文並根據地質部雲南省地質局熊永先先生提供的發現地點的地質資料，稍加改動，由劉東生和張玉萍兩先生作成了小龍潭煤田柱狀剖面圖，附在文內*。

* 作者在此對雲南省博物館和熊、劉、張三先生的幫助，表示衷心的感謝。

Explanation of Plate I

Teeth of *Dryopithecus keiyuanensis*

1. Right lower third premolar, $\times 2$.
 - a. buccal view; b. lingual view;
 - c. mesial view; d. occlusal view.
2. Right lower fourth premolar, $\times 2$.
 - a. buccal view; b. lingual view;
 - c. mesial view; d. occlusal view.
3. Right lower first molar, $\times 2$.
 - a. buccal view; b. lingual view;
 - c. mesial view; d. occlusal view.
4. Occlusal view of right lower P_3-M_3 , a. $\times 1$; b. $\times 2$.

