

山西中国肯氏兽动物羣的迷齿类*

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自許耐首次发表了在中国发見的迷齿兽以来(1958),我們陸續累积了一些这一类化石的材料。虽然这些材料也很破碎,但还有必要把它們記述一下,以补足武乡、榆社区的中國肯氏兽动物羣的研究。

迷齿类化石材料总計

1. 北盘頂,野外編号 5523,一左鎖骨,保存不全,标本登記号 V. 2710。
2. 中角沟,5534,若干头骨上的骨片,大多数不能鉴定。V. 2711。
3. 牛口壑,5535,許耐所研究材料之一即来自此一地点,沒有新材料。V. 950。
4. 苗沟,56154,有二十个上下保存相当好的間椎体,一間鎖骨, V. 2712。
5. 西什凹,56173,若干头骨碎片,多数不能鉴定。一些間椎体也很破碎。許耐所描述的一間椎体,即来自这一地点。V. 2713。
6. 花宝沟 56925,約有十二个間椎体,有的尚彼此連接(有些錯位)。可能有些四肢骨碎块,如肱骨、肢骨等。V. 2714。
7. (8)詳細地点不明,但大約也为武乡区,五个間椎体和一些不能鉴定的碎骨。V. 2715。

以上所列举的大多数地点,只有一个个体,但难以排斥一些地点(如 5 和 6),有一个以上个体的可能性。

在这些地点中,1、2、5 确与肯氏兽遺存共生。1、2、3、5 及 7 确与假鱷类共生(参看楊,1963,表 17),只有苗沟和花宝沟两地点,仅有迷齿类化石。

因为在大多数地点迷齿类和肯氏兽,或假鱷类,或者两者共生,而且仅以迷齿类为代表的两地点的化石性質和其他完全一样,所以我們认为,这些化石都是和其他化石一样,为同一时代产物,同一层位,那就是二馬营羣,为下三迭統上部或中三迭統下部。

应当指出,除 5523 和其他两个属区不明的地点以外,其他几个地点都比較集中在以假鱷类为主要产地的西什凹(56173)。

化石的描述

有一些碎片,可以当作头頂部部分,但由于保存太差,沒有一个能看出其在头上的确切位置。

多数头骨碎片来自 5534 地点。图版 I 第 1 图,可能代表顳骨和前額骨部分。其間之

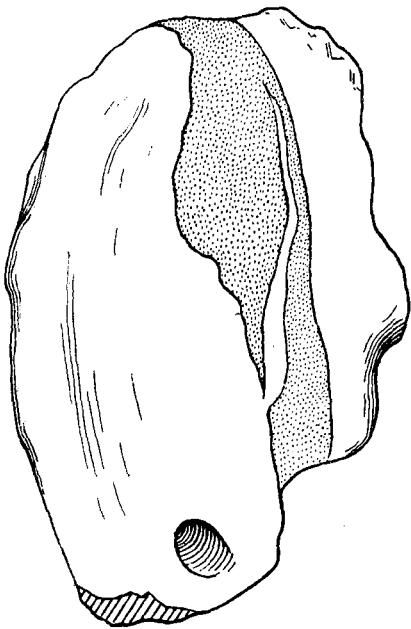
* 8 月 26 日收到。

缝合线尚清晰可辨。同一图版第 2 图似代表板骨 (tabular), 比较薄小, 具有向后伸的尖。同一图版的第 3 图, 具有一部分代表一孔的边缘。因为这个孔看来相当大, 所以只能代表眼孔, 而不是鼻孔。因此这个骨应位于眼眶后部。其他骨片不能鉴定。

应当指出许耐所描述的牛口整材料, 可能不象他所认为位于头骨中部, 而是前部。在许耐所示的这一骨的图的左上角, 可清楚看出有一孔的边缘部分。这个孔比起上一孔来很小, 只能代表外鼻孔, 所以, 这个骨看来应代表鼻骨或上颌骨的一部分。

所有头盖上的骨头, 都有很粗的雕刻花纹。在 56173 地点, 有一些头骨部分, 但太破不易鉴定。可能其雕刻花纹完全一样, 所以可判定同归一种。

头骨腹侧的骨头保存也不好。56173 地点有一骨片 (见图版 I 第 4 图), 可能为一右翼骨, 但不幸沿边全比较残破, 无需详细描述。另外一块, 也来自 56173 地点 (图 1) 代表头腹侧的前部, 好象应为右侧, 这部分的形状和迷齿类中一些头骨, 不很相同。伸长的圆孔应代表内鼻孔, 其位置较靠中间。



0 2 4 厘米

图 1. 大头龙, 属种未定 头骨前部腹视。
原大。

Fig. 1. *Capitosauridae*, gen. et sp. indet.
Skull fragment in ventral view showing the
anterior part of the skull. Nat. size.

关于脊椎骨方面, 多数以间椎体为代表, 也有若干神经弧和背棘。较好的标本见图 2。因为所有间椎体, 都是零星找见的, 因之不易确定其在脊柱上的确切位置。好象没有可归于寰椎、枢椎或荐骨脊椎的。大多数可归于背部。花宝沟的间椎体一般地比苗沟的大一些。

所保存的间椎体可以分为两类, 一类是半月状, 一类是椎体较大的, 其两边斜度较小或近于平行。前一类可能位于较前部, 后一类较靠后部。在多数情况下, 和肋骨接触的面保存很好, 其位置变化很大。

关于一些间椎体的大小见外文附表 (页 338)。

其他脊椎方面的骨头, 都太破碎, 无需叙述。56173 的一个背棘部分和康捷柯娃所描述的一种大头龙的背棘, 有些相似。背棘和横突都是短而粗。

花宝沟和苗沟两地点, 虽然不能排除有一个以上个体存在的可能性, 但十分可能还是一个个体。因为其大小和构造均大致相似。两个地点的间椎体, 并无确凿证据证明其为两种。

锁骨与间锁骨。北盘顶的锁骨很不完全, 但为一左边的。雕刻花纹很粗, 但有圆状点花纹的部分已受磨蚀, 不能看见。这一锁骨的大小, 与许耐所描述的间锁骨大小很相称, 也和以下描述的间锁骨相称。保存长度 71 毫米; 宽 59 毫米; 旁侧厚 19 毫米 (图 3A)。

在苗沟, 有一间锁骨和上述的间椎体一同发现。十分可能为同一个体 (图版 II, 图 1;

插图 3B)。

这个間鎖骨前边已损坏，后边保存較好。表面雕刻花紋很粗，大体形状和 *Benthosuchus* 的很象。雕紋可区分为三部分，一为中心圓状点，所占地方較小，二为围中心圓状点部分的长圓状花紋。最外边为放射状的条紋部分，位于边缘。和鎖骨接触部窄而光滑。

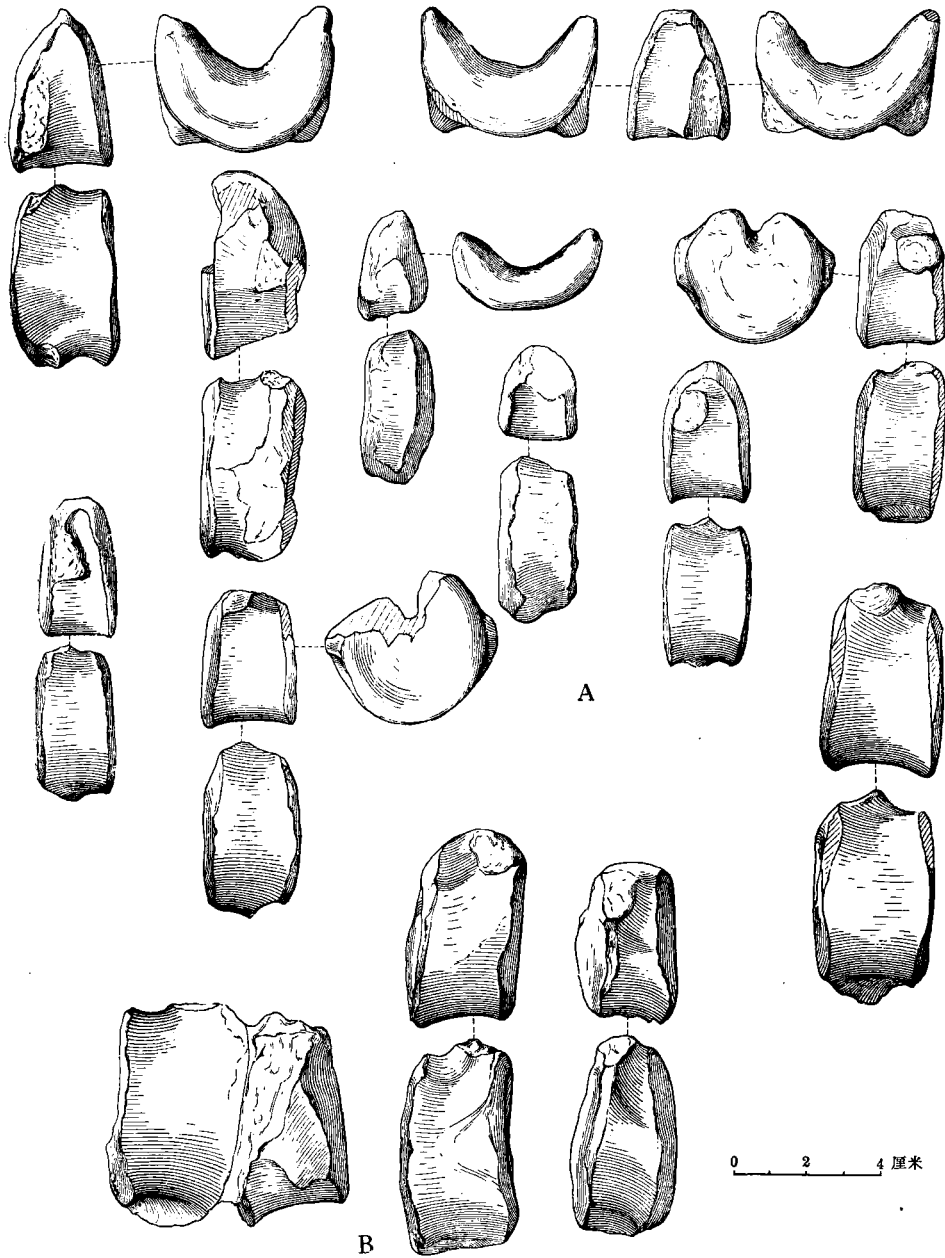


图 2. 大头龙, 属种未定 各代表性間椎体。A. 苗沟, B. 花宝沟。腹視、側視, 一部分前視或后視。原大二分之一。
 Fig. 2. *Capitosauridae*, gen. et sp. indet. Various intercentrums. A, from Miaokou B, from Huabaokou in different aspects. 1/2 nat. size.

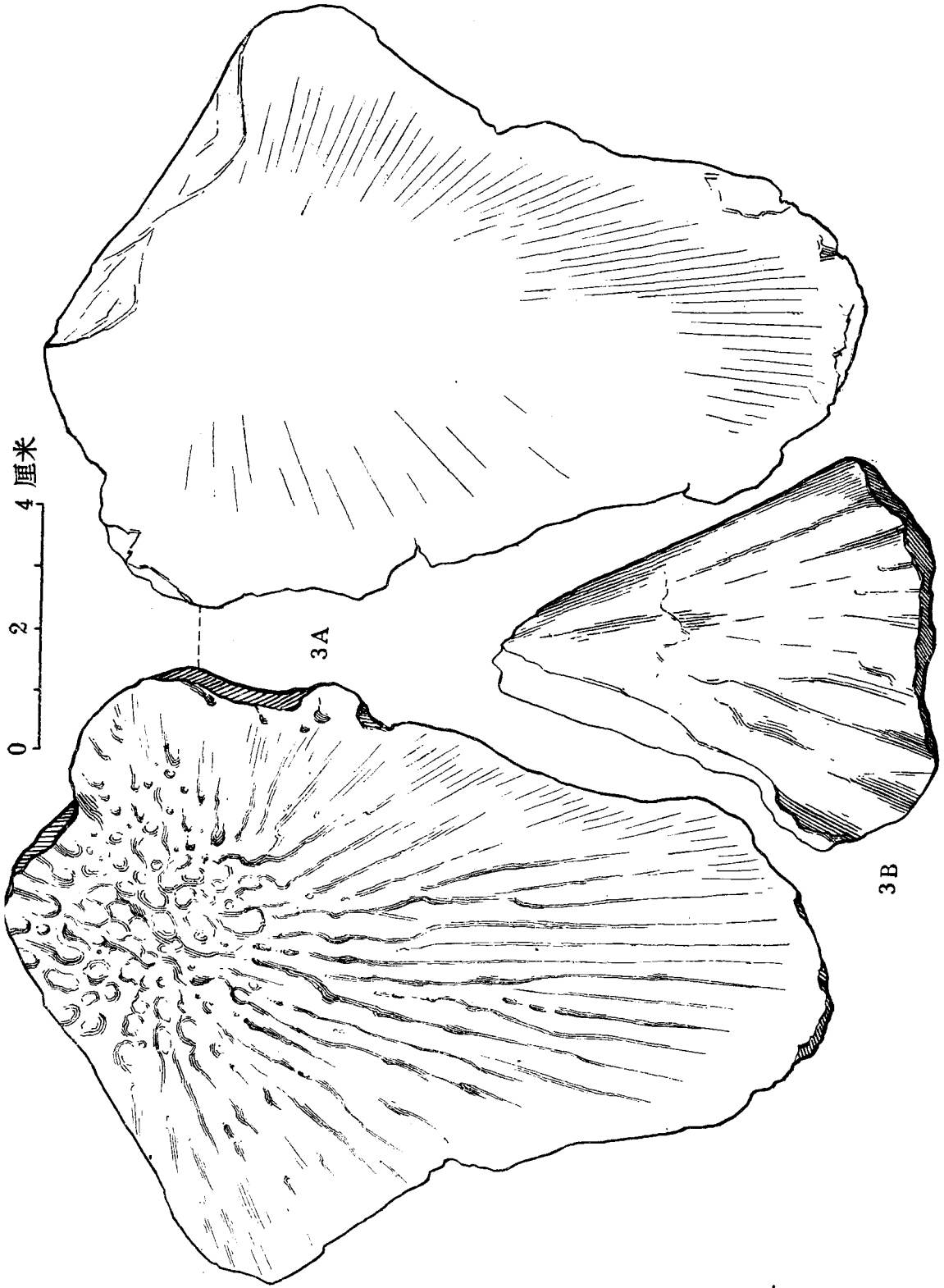


图 3. 大头龙, 属种未定 3A. 左锁骨, 3B. 间锁骨, 均原大。
 Fig. 3. *Capitosauridae*, gen. et sp. indet. 3A, left clavicle; 3B, interclavicle, Nat. size.

后端尖状部分較寬，从中心部逐渐向后变窄。这一性質不同于 *Heptasaurus* 的間鎖骨，它的两边几乎平行。間鎖骨的內面光滑而稍向外凸出。中部的高出部分如 *Benthosuchus* 所具有者相当明显。保存长 131 毫米。經過中心圓状点的寬为 97 毫米。虽然比許耐所描述的标本稍小一些，但大小还是相近的。至于两者的雕紋，則完全一样，可断定均同归一种。

許耐所描述的間鎖骨稍有变形，两边大小对称，厚薄不一。

其他头后骨骼。在花宝沟所发見的一些破碎四肢骨，很可能也归此种。在这一地点未有其他种化石存在，所以归于迷齿类的可能性特别大。所可辨認的有一肱骨的远端，一股骨近端，另一股骨远端，肱骨寬为 101 毫米，第一股骨寬 77 毫米，第二股骨寬 83 毫米，这些四肢骨保存欠佳，难作进一步判断。

鉴定与討論

虽然比許耐发表文章时，增加了不少大头龙的新材料，特別增加了不少間椎体，和另一間鎖骨，但作进一步鉴定还是有困难的。主要原因是保存不好，太破碎。保存較好的虽然有間椎体和間鎖骨，但这些材料所具有的性質，見于迷齿类的許多科属，不容易得出真正具有特点的性質。虽然如此，象許耐所指出的，間椎体的雕紋为标准的大头龙式的。我們的新材料，支持这一看法。間鎖骨的性質，和一些头上骨片較长的性質等，似均表示我們的标本应属于大头龙科，而不属于 *Metoposauridae* 科。

虽然新材料增加不少，也十分可能我們面对着一个大头龙科一新的属种，但在目前还不打算給以名称，而只叫作“大头龙科，属种未定”。

目前这一研究未能給地层上提供任何可靠的新看法，因为这一科自早三迭世到晚三迭世均有。可是也沒有和以前看法相矛盾的地方。看来現在这一大头龙代表下三迭統上部或中三迭統下部的一代表性迷齿类。它的一些和 *Benthosuchus* 近似的部分，說明其年代是偏老的。上述板骨形状，有些和南非早三迭世的 *Uranocentrodon* 相似，也支持这个看法。

在含有迷齿类的七个地点中，有五个都有假鱷类、肯氏兽，或两者共生，所以它們为这个动物羣中的一个組成部分是沒有任何疑問的。苗沟和花宝沟，虽无其他化石发見，但由丰富的間椎体等材料来看，应当是大头龙科的重要地点。

本文所描述的迷齿类，以武乡、榆社区域为限，到目前止，在其他地区还未发見過这一类化石的記錄。

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NOTE ON THE LABYRINTHODONTS OF THE SINOKANNEMERIAN FAUNA IN SHANSI

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Since the first announcement of the presence of Labyrinthodonts in China by F. v. Huene (1958), a considerable amount of remains of this interesting group has been accumulated. Although all them are very fragmentary, it is nevertheless worthwhile to give a full description of them in order to complete the fauna of Wusiang-Yüshe area.

LIST OF MATERIALS

1. Peipanching, 5523. Probably a left clavicle. V.2710.
2. Chungchokou, 5534. A few fragments of the skull roof, mostly indeterminable. V.2711.
3. Niukouho, 5535. The skull fragment mentioned by Huene was derived from this locality. (V.950) No new material has been recorded.
4. Miaokou, 56154. Ca. twenty more or less well preserved intercentrums and one interclavicle. V.2712.
5. Hsishihwa, 56173. A few fragmentary skull remains, mostly indeterminable. A few intercentrums, also poorly preserved. The interclavicle described by Huene is derived from this locality. V.2713.
6. Huabaokou, 56925. Ca. 12 more or less well preserved intercentrums and dorsal spine, two of the intercentrums being in natural but distorted connection, and probably distal part of a humerus, proximal part of a femur and distal part of a femur, and a few indeterminable bones. V.2714.
7. (8) No detailed locality, apparently from the Wuhsiang area. Five intercentrums and a few indeterminable bones. V.2715.

Most of the above enumerated localities yields only one individual, although the possibility of some localities with more than one individual is not excluded, such as 5 and 6.

In these localities only 1, 2, 5, are certainly associated with remains of kannemeyeriids, and 1, 2, 3, 5 and 7 with pseudosuchians (Young, 1963. Table 17), while the localities 4 and 7 (56925) are only represented by Labyrinthodonts.

Since most of the remains were found in association with either kannemeyeriids or pseudosuchians or both and those represented only by labyrinthodonts are anatomically the same as those of the other localities, we considered that all the fossils listed above are

derived from the same general level and thus of the same geological age that is to say lower part of Middle Triassic or upper part of Lower Triassic.

It is interesting to note that with the exception of the locality 5523 and other two without detailed information, all the other localities are concentrated in an area quite near the main center of Pseudosuchian locality 56173.

DESCRIPTION OF THE FOSSILS

There are many fragments which can be certainly considered as the skull roof. But on account of their poor preservation none of them can not be sure concerning the exact position on the roof of the skull.

Most of the skull roof fragments were derived from Chunchokou, 5534. The one illustrated in plate I figure 1 may be the part of the jugal and the prefrontal. The suture between both is clearly visible. Fig. 2 in the same plate is most probably the tabular which is more slender in possessing a rather pointed posterior end. The third one illustrated in plate 1 figure 3 with part of the boarder of an opening preserved. Since the boarder of the opening is large, as judged by the preserved portion this bone must belong to the part for making the orbit instead of the external nostril. The other fragments of this locality are not determinable.

It is interesting to note that the skull roof fragments described by Huene from Niukouho, 5535, is probably not belong to the middle part of the skull as suggested by him but to the anterior part, most probably the nasal. In the narrower end of the bone, there is curvature representing the part of the boarder of an opening. It can be clearly seen in the fig. 2 of Huene's paper at the upper left corner of the picture. This hole must be much smaller than other one described. It is either a part of the nasal or the maxilla.

All the roof bone are coarsely sculptured. In the locality 56173, there are a few roof fragments which are too poor for determination. But the sculpture of them is the same and thus most probably belong to the same form.

The ventral side of the skull is still less well preserved. The bone from 56173 shown in plate I figure 4 is probably a right pterygoid. It is so damaged along all the boarders that a accurate description is superfluous. The other one also from 56173 (fig. 1.) represents the anterior part of the ventral side of the skull. It is apparently the right side. The denoted feature is quite different from all the forms so far available for comparison. The elongated oval depression is the choane which is located rather medially.

Vertebrae. They are mostly represented by intercentrums but a few by dorsal spines. The better preserved specimen are shown in figure 2. Since nearly all of the intercentrums are found isolately it is almost impossible to determine their exact position in the column. There is no trace of atlas or axis or the sacrum. Most of them are considered as those of the dorsal part. Those of the locality Huabaokou are averagely larger than those of Miaokou. The intercentrums can be divided into two groups, one the half moonshaped, and the other almost true vertebra-like with the upper part weakly narrowed or almost the same as the ventral length. The former ones belong to the anterior part and the latter ones to the posterior part of the presacral vertebrae. In most cases the rib facet is well preserved which is rather variable in position.

A few selected intercentrums bear the following measurements: (in millimeters)

	Ventral length	Upper breadth	Height
Miaokou			
1	19	40	21
2	29	50	38
3	29	48	40
4	22	42	41
5	34	47	50
Huabaokou:			
1	24	57	46
2	29	55	53
3	30	53	48
4	50	62	60

The other part of the vertebrae is too fragmentary for description. The dorsal spine of 56173 is similar to those of capitosaurids especially that of *Mastodonsaurus torvus* (Konjukova, 1955. p. 71, fig. 42.). The spina dorsalis and the processus transversus are short and robust.

The intercentrums of the above mentioned two localities represents probably only one individual in each locality as judged by the size and structure. Those of Huabaokou are larger and yet there is no indication that they are different in species.

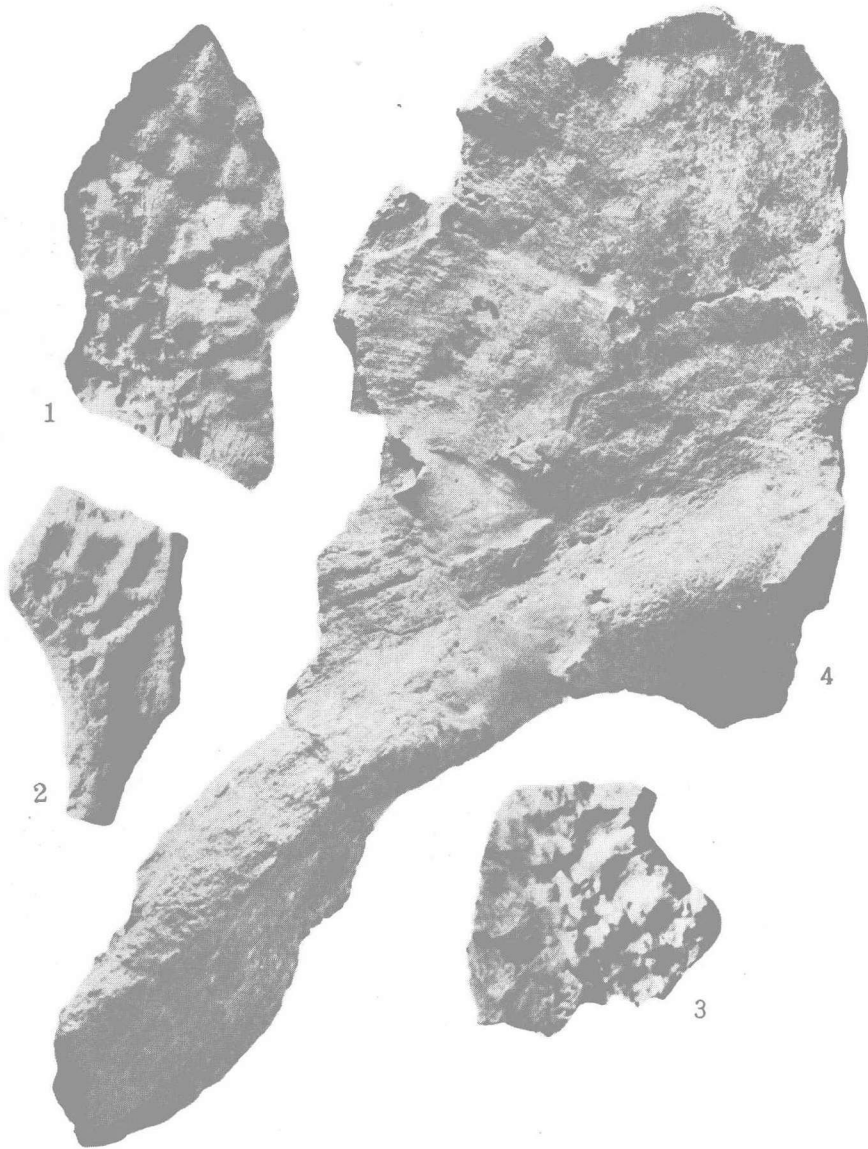
Clavicle and interclavicle. The *clavicle* of Peipanching is much damaged. It is a left one. It is coarsely sculptured, but the part with circular pits is not preserved. Its size fit well with the interclavicles of Huene's specimen and the new one described below. Preserved length, 71 mm, breadth, 59 mm, thickness of the lateral border, 19 mm. (Fig. 3A.)

From the locality Miaokou a nearly complete *interclavicle* was found in association with the vertebrae described above and most probably belonging to the same individual. (Plate II, Fig. 1; fig. 3B.)

The anterior part is broken while the posterior part is nearly complete. It is rather coarsely sculptured and the general pattern is very similar to that of *Benthosuchus*. The sculpture is made of three parts: the three circular pits which takes only small part; the elongated circular pits which surround the former area and the radiated striated part which forms the marginal part of the plate. The part in connection with the clavicle is narrow and smooth. The posterior tip is relatively broad and narrows gradually from the center part posteriorly. In this respect it is very different from the interclavicle of *Heptasaurus cappelenensis* of which the both borders are exactly parallel. The inner side is smoothly and weakly convex. The central swollen part (Eminentia centralis) can be recognized clearly. Preserved length, 131 mm, preserved maximum breadth across the center of the pitted part, 97 mm. It fits in size with the interclavicle from 56173 described by Huene although may somewhat smaller but the sculpture and the size of both leads to the conclusion that they are certainly the same species.

It must be noted that the interclavicle described by Huene represents an abnormal specimen. The both sides are not symmetrical and different in thickness.

The other postcranial bones. Very few postcranial bones are preserved. They are so fragmentary that none of them can be determined precisely.



图版 I. 大头龙, 属种未定。图 1—3. 头骨骨板, 均原大, 詳見正文。图 4. 可能为一右翼骨。原大。

Plate I. *Capitosauridae*, gen. et sp. indet. Fig. 1—3, dermal plate of the skull roof in natural size. For details see text. Fig. 4. ?Right pterygoid. Nat. size.



图版 II. 大头龙, 属种未定, 間鎖骨, 原大, 腹視。

Plate II. *Capitosauridae*, gen. et sp. indet. Interclavicle. Nat. size.

In Huabaokou where no remains of other form is recorded, the few bones belong most probably to the present species. It is probably a distal part of a humerus. Maximum distal breadth, 101 mm. There are a proximal part of a femur and the distal part of the same. Proximal breadth, 77 mm and 83 mm respectively.

DETERMINATION AND DISCUSSION

Although the material increases considerably since the publication of Huene on the first record of this interesting group, it is still very hard to give a precise determination regarding the genus and the species on account of their fragmentary state of preservation. Both the better preserved remains of the intercentrums and the interclavicle are not sufficient to draw a definite conclusion as quite diagnostic, as the features of them are found in many and rather different genera. However, as pointed out by Huene, the sculpture of interclavicle is typically that of capitosaurids. Our new specimens support this conclusion. This and the rather elongated shape of the dermal roofs point to the suggestion that our form is a member of the family Capitosauridae rather than metoposauridae.

Although it is most probably that we have to deal with a new form of this family we refrain from given a name to them at present. The present study gives no new clue concerning geological age of the fauna, but in no means in contradiction to our previous conclusion. The present capitosaurid represents certainly the leading labyrinthodont during the time of *Shansisuchus* and other pseudosuchians.

Among the seven localities yielding labyrinthodonts, five are found together with the remains of pseudosuchians or kannemeyerids or both, so that there is no doubt concerning their association with the whole fauna. In Miaokou and Huabaokou no other fossils have been found. The richness of intercentrums and other remains at both localities may someday prove to be a centers of this group of animal.

No remains of labyrinthodonts have been found any area other than Wuhsiang district.