INTERIM REPORT ON THE SKULL OF *SINANTHROPUS**

By Davidson Black

(*Cenozoic Laboratory, Geological Survey of China*)

Since my last report before this Society, work has progressed on the *Sinanthropus* skull specimen till at the present time its whole external surface has been freed from travertine, with which however its interior remains filled. During their preparation the major parts of both parietals and the whole of the frontal bone were separated from the stone filling the interior of the skull but these have temporarily been replaced so that the specimen as a whole could be photographed with its parts in approximately correct relation. Plates I to VI are natural size reproductions of these photographs but it should be noted that since the latter have all been taken with a short focus lens they do not represent geometrically correct projections.

The cracks which at this stage are so evident between various parts of the skull vault can be eliminated almost wholly when the specimen has been completely prepared. It is to be understood therefore that the following measurements which supplement and augment somewhat the tentative figures given in my first report** can only represent reasonable approximations which will be subject to subsequent corrections.

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**Preliminary notice of the discovery of an adult *Sinanthropus* skull at Chou Kou Tien. Bull. Geol. Soc. China, 1930, Vol. 8, No. 3, pp. 207-230.

TABLE I*

(*Linear measurements in millimeters*)

	Probable Sex	Glabella-Occipital Length	Maximum Interparietal Breadth	Least Frontal Breadth	Greatest Frontal Breadth	Biasterionic Breadth	Naso-Bregma Chord	Auricular Height	Interporial Breadth
La Chapelle	♂	207.7	156.2	109.2	123.6	130.5	106.9	114.1	132.0
Neanderthal	♂	199.2	146.7	105.0?	122.3	—	117.4?	—	—
Spy I	♂	200.6	144.3?	101.1?	—	121.2?	102.8?	111.2?	124.2??
Spy II	♀	200.0?	153.2	107.9	125.6	131.2?	—	113.5?	135.5
Gibraltar	♀	192.5	ca 149	102.5?	ca 122.5	—	—	106.0	—
La Quina	♀	204.2	138.3?	101.2	108.3?	112.4?	106.4?	111.1?	112.1??
La Quina	Juv	171.4	131.8	88.0	109.1	—	95.1?	106.0	95.8
Le Moustier	?	195.9	150.1	107.4	121.2?	—	108.2?	112.5?	133.3
Galilee	?	—	—	98.1	113.9	—	113.9?	—	—
Krapina C	?	ca 178	—	98.5	—	—	—	—	—
Rhodesian	♂	214 ?	149 ?	104 ?	120 ?	136 ??	125 ?	112 ??	140 ??
Pithecanthropus	?	184	131	85	—	—	—	—	—
Sinanthropus	♀?	192	132**?	83 ?	102 ?	121 ?	102 ?	97 ?	120 ??

The preliminary photographs and measurements demonstrate in unmistakable fashion certain of the major characters which serve sharply to distinguish *Sinanthropus* from other hominid types ancient or modern. In

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* Measurements of Neanderthal specimens quoted from G. M. Morant, Studies of palaeolithic man. Ann. Eugenics, Vol. II, Oct. 1927, up 318-381; measurements of *Pithecanthropus* quoted from E. Dubois, On the principal characters of the cranium and brain, the mandible and the teeth of *Pithecanthropus erectus*, Proc. Konink. Akad. van Wetenschap. Amsterdam, Nos. 3 and 4, 1924, pp. 1-14; measurements of Rhodesian specimen from cast by F. O. Barlow.

** Maximum skull breadth ca. 144 mm

Sinanthropus the maximum skull breadth falls between the supramastoid regions of the temporal bones, the narrower maximum interparietal breadth (v. Table I) lying between points not far removed from the postero-lateral angles of the parietals. Thus, though the parietal eminences are quite well developed, the sides of the cranial vault below them are markedly inclined toward one another.

The bones of the cranial vault show considerable variations in their thickness, being much thicker in certain regions (e.g. below the lambda) than was at first supposed. They are on the whole much above the thickness of the average modern skull but, at least in the fronto-parietal region, they fall short of being of the excessive thickness so characteristic of that region in *Eoanthropus*.

Certain unique morphological features which were obscure in the earlier stages of preparation are now to be seen in the lateral and basal views of the specimen (v. Plates II, IV and VI). In my preliminary note (l.c.) reference was made to what appeared to be a markedly developed post-glenoid process. The hard calcareous deposit in the mandibular fossae and about the external auditory passages has now been removed and it becomes clearly evident that the structure previously considered as part of a post-glenoid process is in reality a very peculiarly developed tympanic portion of the temporal.

The mid-part of the floor of the external auditory meatus is naturally deficient for some distance inwards (v. Plate VI), leaving a deep and narrow fissure between massive anterior and posterior parts of the tympanic element. In the latter the posterior moiety is developed to form a prominent crest which extends inwards to the base of the minute styloid process, if the small tubercle medial to the stylo-mastoid foramen can be designated as such. The anterior portion of the tympanic bone forms a massive rounded wall limiting the mandibular fossa and rising abruptly immediately behind the petro-tympanic fissure. Viewed from below as in Plate VI the glenoid cavities are thus seen to be obliquely placed deep fossae whose visible floors are formed wholly from the zygomatic elements of the temporal bones. In their depth, obliquity and in the prominence of the tubercula articularia, the mandibular fossae in *Sinanthropus* are thus wholly hominid in character. On the other hand the morphology and relations of the tympanic elements in this form are of extraordinary interest since here for the first time among hominids a stage of development is manifest which is much more archaic than that obtaining in Neanderthal man while at the same time it presents features recalling some of the relations characterizing this region in anthropoids (e.g. Chimpanzee).

Long ago Boule* pointed out that the morphology of the tympanic element in the La Chapelle skull recalled in certain respects the conditions obtaining in that region in the chimpanzee, presenting characters somewhat intermediate in type between the latter form and *Homo*. Similar observations have also been made by Martin** on the La Quina specimens both adult and child, and this typical Neanderthal tympanic morphology is also clearly evident in the left temporal bone from Krapina and on the Gibraltar skull. The relations of these parts in *Sinanthropus* may with propriety be termed pre-Neanderthaloid, representing an evolutionary stage preceeding the Neanderthal-like types. The morphological evidence so far available with respect to the position of *Sinanthropus* in the hominid scale would thus place the latter form not far removed from the type from which evolved both the extinct Neanderthaler and the modern *Homo sapiens*.

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* Boule, M. 1911. L'homme fossile de la Chapelle-aux-Saints. Ann. de Palcont. Tome VI, pp. 111-173

** Martin, H. 1923. L'homme fossile de la Quina. Arch. de Morph. Fasc. 15, pp.1-260.
1926. L'enfant fossile de la Quina. Recherches sur d'Evolution du Mousterien. Vol. 4, pp. 1-158.

Explanation of Plate I

PLATE I.

Frontal view of *Sinanthropus* skull specimen. The entire extent of the fronto-nasal suture is preserved on the frontal bone. The massive character of the base of the right zygoma and its continuation into the supramastoid crest is evident in this view. A sharp line of contact is evident between the dark travertine within the skull cavity above and the lighter plaster of Paris supporting the craiophore rod below. Natural size.

Explanation of Plate II

PLATE II.

Right lateral view of *Sinanthropus* skull. The relation between the supramastoid crest and the torus occipitalis is clearly evident. Note also the relations of the glenoid fossa, the peculiar tympanic element and the small but massive mastoid process. Natural size.

Explanation of Plate III

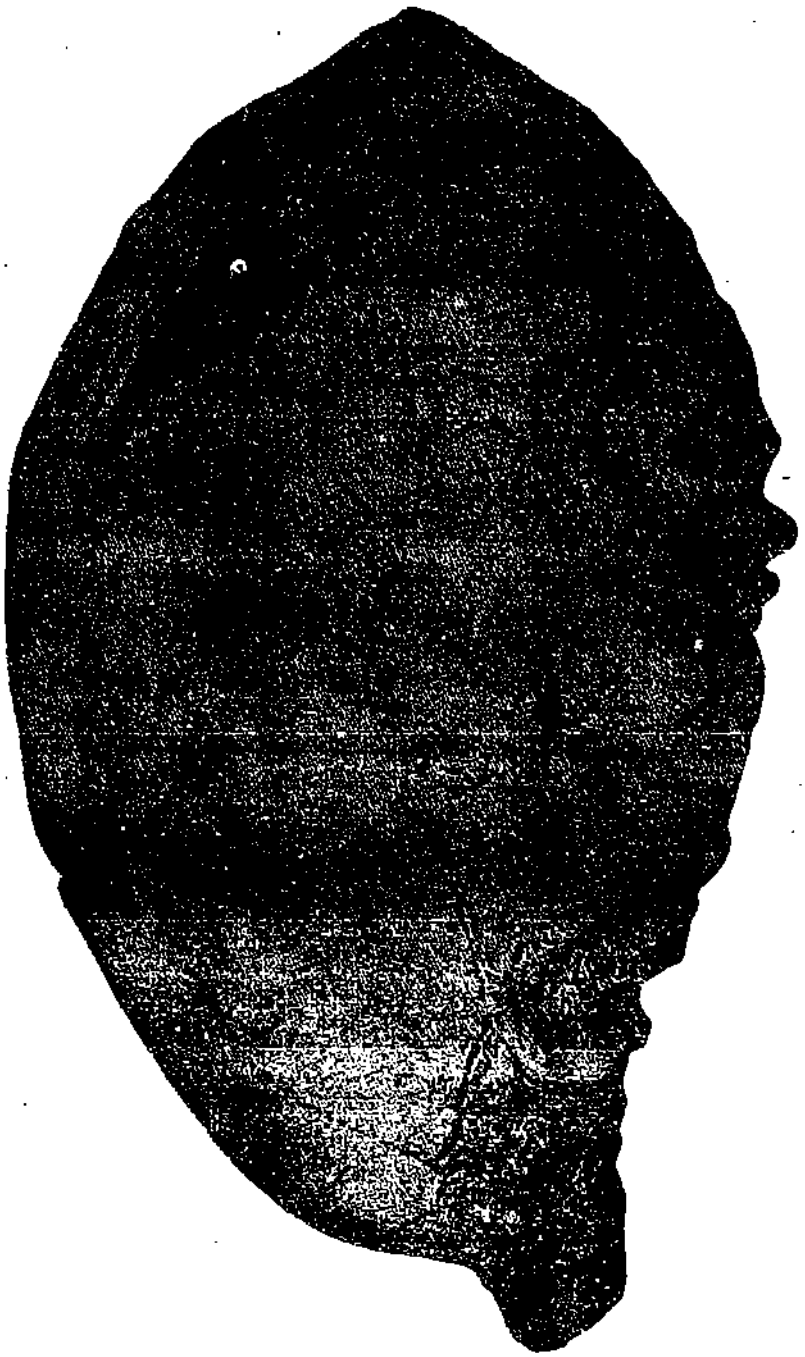
PLATE III.

Occipital view of *Sinanthropus* skull. The great width of the occipital bone, the prominence of the supramastoid part of the temporal bones, the size and relations of the mastoid processes and wide digastric fossae, the prominent parietal eminences, the sagittal crest and the general condition of the skull vault are clearly evident. Natural size.

Explanation of Plate IV

PLATE IV.

Left lateral view of *Sinanthropus* skull. Compare with Plate II. Natural size.



Explanation of Plate V

PLATE V.

Vertical view of *Sinanthropus* skull. The maximum skull breadth occurs far back as in Neanderthal skulls but the least frontal breadth in *Sinanthropus* falls much below the Neanderthal range. Natural size.

Explanation of Plate VI

PLATE VI.

Basal view of *Sinanthropus* skull. Note: extent of naso-frontal suture, opening of frontal sinuses, left orbital roof preserved as far back as optic foramen, peculiar morphology of tympanic elements, characteristically hominid shape of articular part of glenoid fossae, small massive mastoid processes in both of which the air cells are exposed by slight erosion of the bone. The irregular mass of plaster of Paris in the occipital and intertemporal region cements in place a steel plate to which is attached a bolt threaded to fit a standard adjustable craniophore clamp. By this means the heavy specimen may be supported in any desired position during its further preparation. Natural size.