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BULLETIN OF THE GEOLOGICAL SOCIETY OF CHINA.

PROCEEDINGS OF THE SEVENTH ANNUAL MEETING HELD IN PEIPING, MARCH 29-31, 1930.

MORNING SESSION OF SATURDAY, MARCH 29.

The first session was called to order at 10 A. M., March 29, 1930, in the Library hall of the National Geological Survey, 9 Ping Ma Ssu, Peiping by the Vice-President Prof. Wang Lieh. The chairman reviewed the activity of the Society during the preceding year. Five meetings have been held during 1929. The first meeting was held on Thursday 20th Feb. and Prof. Otto Jaekel delivered a lecture on the origin of the earth, Dr. W. H. Wong gave an account on his travels in Java on the occasion of the 4th Pacific Science Congress at the second meeting held in June; a third meeting was called in July to hear a lecture by Prof. J. S. Lee on his work and theory of geotectonics which he did with remarkable originality and learnedness; a fourth meeting in autumn had Prof. C. G. Seligman as lecturer on some problems of Chinese archeology and anthropology during which the lecturers pointed out a number of questions for discussion; and the last meeting on Dec. 28, 1929 was specially memorable by the announcement of the important discovery of an adult skull of *Sinanthropus* by Mr. W. C. Pei. Prof. Wang also mentioned with regret the death of Prof. O. Jaekel who died in Peiping shortly after his presence at the last Annual Meeting of the Society, and that of Y. T. Chao who met his sad end on Nov. 16, 1929 in Northern Yunnan during his work of exploration. A Memorial Meeting has been held by the Society on Dec. 8, 1929.

Owing the interruption again of different railways, the time was too short to receive all the ballots for the election of the new officers. The passing council has therefore decided to delay the announcement of election until the secretary has received all the expected ballots and he will then make the result of election known. This result is reported as follows:

President :	C. H. Chu	(朱家驊)
Vice-Presidents :	Y. C. Sun	(孫雲鑄)
	A. W. Grabau	(葛利普)
Secretary :	C. C. Sun	(孫健初)
Treasurer :	S. C. Chien	(錢聲駿)

New Councillors: C. Y. Hsieh (謝家榮)

H. C. Chang (章鴻釗)

C. C. Young (楊鍾健)

Other members of the Council are the following :

H. C. Tan (譚錫畴)

H. T. Lee (李學清)

W. H. Wong (翁文灝)

V. K. Ting (丁文江)

C. Y. Wang (王寵佑)

REPORT OF THE TREASURER

To the Council and Members of the Geological Society of China, the Treasurer begs to submit the following report of the finances of the Society for the period of Feb. 12, 1929—March 28, 1930.

Receipts (Feb. 12, 1929-March 28, 1930.)

1. Balance Credit, Feb. 12, 1929.....	104.68
2. Valueless bond & bank notes	55.00
3. Membership dues.....	613.86
4. Bulletins sold	430.70
5. Contribution from National University of Peking (for 1929)	400.00
6. Contribution from Geological Institute of N. R. I. (Sept.—Dec. 1929, Jan. & Feb. 1930.).....	360.00
7. Contribution from Geological Survey (July—Dec. 1929)	300.00
8. Contribution from Dr. W. H. Wong	10.89
9. Postage returned by Dr. Nystrom	1.70
10. Library fund.....	379.71
11. Interest	8.76
Total.....	82665.30

Expenditures (Feb. 12., 1929—March 28, 1930.)

1. Printing Bull. Vol. 7, No. 2,3-4; Vol. 8. No. 1 & 2.	1486.96
2. Binding	44.00
3. Postage	121.30
4. Administration	110.38
5. Miscellaneous.....	76.42
Total.....	\$1847.06

Total Expenditures	81847.06
Balance Credit	818.24*
	<hr/>
	82665.30

Cash on hand March 28, 1930.....	763.24
Valueless bonds & bank notes	55.00
	<hr/>

818.24* March 28, 1930
K. H. Hsu.

AFTERNOON SESSION OF MARCH 29.

(*Dr. W. H. Wong presiding*)

The following papers were read :

1. Observations on a newly recognised Cenozoic formation in Shansi and Shensi—The reddish clays and the history of the Yellow River, by Teilhard de Chardin and C. C. Young.
2. On the Mammalian remains from Chi Ku Shan, Chou Kou Tien, by C. C. Young.
3. New Palaeolithic finds in the Yellow River basin in Shansi and Shensi, by Teilhard de Chardin and C. C. Young.
4. Further progress of the preparation of the *Sinanthropus* skull from Chou Kou Tien, by Davidson Black.
5. Progress of palaeontological finds in the Cenozoic Laboratory of the Geological Survey, by C. C. Young and W. C. Pei.
6. The Chingshui Stage of Erosion and its significance, by G. B. Barbour.
7. Notes on the Tertiary and Quaternary History of Southwest Shansi, by P. Teilhard de Chardin and G. B. Barbour.

Dr. C. C. Young's paper will be published soon in the *Palacontologia Sinica*. The two papers 1 and 3 by Drs. Teilhard and Young will be incorporated in a Memoir Series A of the National Geological Survey. Dr. Black's paper will be printed in the present bulletin.

ANNUAL DINNER

The Annual Dinner was held at 7:30 in the Western Returned Students Club. Over forty members and guests were present. Prof. Wang

Lieh presiding. After the toast by Prof. Wang, Dr. Sven Hedin gave a short lecture on the recent progress of his expedition in Sinkiang. Then a series of moving pictures was shown by Dr. Black entitled "A visit to Chou Kou Tien" and a second roll showing the laboratory work on the *Sinanthropus* skull.

SPECIAL EXHIBITION IN THE MUSEUM OF THE GEOLOGICAL SURVEY

On the occasion of the Society's meeting, the Geological Survey threw open its Museum at 3, Feng Sheng Hutung with 2 special exhibits one of them the complete collection of *Sinanthropus* material in a special room upstairs. At the same time the new splendid palaeontological collection from Chou Kou Tien was open to public for the first time. Owing to the keen interest and great number of visitors, the days open to the public had to be extended from Sunday, March 30 to Thursday, April 3. Over two thousand visitors have signed on the registrar book.

MORNING SESSION OF MONDAY, MARCH 31.

(*Dr. W. H. Wong in the chair.*)

The following papers were read:

8. Presentation of some crystals of Topaz, by W. H. Wong.

The crystals are from a place near Urga, Mongolia, and from Hunyuan and Fanchi districts in North Shansi. A paper will be published in this bulletin.

9. The Tin Deposit of Nantan and Hochih districts in Kwangsi Province, by H. S. Wang.

The specimens were collected by Dr. V. K. Ting from Kwangsi, Mr. H. S. Wang's study will be published in the Bulletin of the Geological Survey.

10. On the discovery of Dorypyge in Central China, by Y. C. Sun. Read by title.
11. Graptolite zones in China, by Y. C. Sun. Read by title.
12. Some problems in the geology of Kwangtung and Kwangsi provinces, by K. L. Feng.

Mr. Feng pointed out a number of stratigraphical and physiographical problems in the two provinces. Discussed by Dr. Grabau, Mr. H. S. Wang etc.

AFTERNOON SESSION OF MONDAY, MARCH 31.

(*Dr. W. H. Wong presiding.*)

Continuation of the scientific paper reading.

13. On the Early Tertiary beds of Chang Hsing Tien, by W. C. Pei.

Mr. Pei has discovered some Early Tertiary fossils from this conglomerate bed southwest of Peiping. A short paper will be printed in this volume.

14. Field study, by Y. S. Chi.

15. The Cenozoic formation in Manchuria and Hailar, by Teilhard de Chardin and E. Licent.

16. On a newly discovered Sanmenian Mammal fauna in the mountains of Chen Ling Fu, by E. Licent.

17. The Panshan Intrusive, by G. B. Barbour.

18. The Niang Tze Kuan Tufa Deposits, by G. B. Barbour and P. Teilhard de Chardin.

19. Further data regarding deep wells in Peiping (by title), by G. B. Barbour.

20. Note on the Brachiopod fauna from Shitzepu shale, Kweichow, by Y. C. Sun. By Title.

21. A review of the Devonian, Carboniferous and Permian of Eur-Asia, by A. W. Grabau.

These papers will be published as received.

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.

* Received for publication April 2, 1930; being the substance of a report presented at a session of the Annual Meeting of the Geological Society of China held on March 29th.

**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	Biauricular Breadth	Naso-Bregma Chord	Auricular Height	Interparietal 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 ??
<i>Pithecanthropus</i>	?	184	131	85	—	—	—	—	—
<i>Sinanthropus</i>	♀?	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

* 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 culcareous 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*.

* Boule, M. 1911. L'homme fossile de la Chapelle-aux-Saints. Ann. de Paleont. 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 Moustérien. 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.