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ON THE DINOSAURS OF THE CONTINENTAL INTERCALAIRE OF  
THE KEM-KEM OF THE DAOURA \*

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ABSTRACT

Preliminary summary on bones coming from three layers of the Continental Intercalaire and description of a new genus and species of a large sauropod: *Rebbachisaurus garasbae*.

The Continental Intercalaire, of which one finds the equivalent to Baharia, in Egypt, provided already at several points of the indications and fragmentary remains of dinosaurs. Except the layers of Baharia, the most complete remains found up to now in the regions of the Sahara are those of which I have previously announced the presence in the layers of the Kem-Kem and on which I am going to give some details.

LAYERS.

All deposits are in thick sandy series, often red, have pronounced cross stratification, with intercalations of irregular beds of gravels and broken stones.

TABROUMIT (Coordinates 343 x 523), 10 km South of Hassi Zguilma. This layer is constituted by an isolated butte where one sees the Primary of the base covered unconformably by the secondary sandstone. The cover of Cretaceous limestone, entirely dismantled, exists only in the state of crumbled blocks. Of dinosaurs, this layer provided: an ilium, — a superior half of a femur in bad condition, — a metapodial, — several teeth of carnivores. The excavations that were opened for several cubic meters proved to be fruitless, only delivering a small number of fragments.

KOUAH TRICK (C. 375 x 548). This layer, situated close to Tamounrerin, to the foot of the main cliff of the Kem-Kem, is essentially a layer of subhorizontal alluvial surface. It provided: a tibia of a coelurosaurian, — a half of a femur of a large dinosaur, — teeth of carnivores.

GARA SBA (C. 390 x 552). This layer presents itself under the form of a butte of sandstone situated to the southwestern foot of Gara Sba (or Signal Chite SW of the Kem-Kem). The main deposit was constituted by a small shelf 3 m under the flat summit of the butte, western face, unfortunately incised by a small ravine to the west. The remains, coming certainly from a single individual, include: ten ribs, the right scapula, eleven vertebrae, the sacrum, a humerus, and two bones probably belonging to the pelvis. They were grouped in a semi-circle in a space not exceeding 30 m<sup>2</sup>; the six postsacral vertebrae had remained in series, merely laid down flat. The excavation has shown that upon a thin

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bed of clay one found a bed of gravel upon which rested all pieces. This layer of clay shifts more or less on its borders and becomes completely sterile. The butte provided, on the other hand, several isolated vertebrae, the teeth of carnivores, and other osseous pieces yet to be determined.

To 8 km to the northeast, another layer provided several long bone fragments, unfortunately in bad condition.

#### SUMMARY OF STUDY OF SOME BONES

ILIUM (Tabroumit). This ilium whose anterior part appears broken, has in its present state 65 cm of length. The cotyloid cavity measures 10 cm in diameter. It could not be the subject of detailed comparisons. At least it can be affirmed that it does not certainly belong to the same genus as the ilium figured by STROMER (1934, pl. III, fig. 15) as *Carcharodontosaurus saharicus*.

FEMUR (Tabroumit). Proximal half in bad state of the limb of an animal of large size. The remaining fragment is more than one meter long.

METAPODIAL (Tabroumit). This metapodial, broken at one extremity, has a length of 27 cm. Complete, it had to measure about 30 cm. The conserved extremity measures 12 cm by 5.5 cm. The diaphysis, triangular, measures 6.5 by 4.5 cm. It is very probably necessary to assign this bone to a large indeterminate sauropod.

TIBIA OF COELUROSAUR (Kouah Trick). This left tibia, in good condition, looks very much like the tibia of *Elaphrosaurus bambergi* figured by JANENSCH (1925, pl. VI, fig. 1). It is very slightly smaller (length: 63 cm). It also resembles very much the two tibiae figured by STROMER (1934, pl. III, fig. 1, 2) as cf. *Elaphrosaurus*. The relative orientation of the proximal and distal extremities is exactly the same as in the figure 1 b of STROMER. Certain detailed differences, notably in the development of the proximal antero-external crest, permit one to think that pertains to a distinct species.

PORTION OF FEMUR (Kouah Trick). This bone of very large size (articular extremity of 40 cm large) has not yet been prepared.

BONES OF LARGE SAUROPOD (Gara Sba). They belong to a sauropod of very large size. The right scapula, currently prepared, has 1 m 17 of proximo-distal length. It is very developed anteriorly at its distal extremity. It is very remarkable for the shape of the proximal region, widened and rounded in the shape of a racket. The curvature of the anterior border of this region is convex, whereas it is concave in the other sauropods known. This scapula is shorter, but at the same time larger and more robust than that of *Apatosaurus*. I could not get the figure allowing me to make the comparison with *Tornieria dixeyi*. The humerus is 1 m long. One of the vertebrae, one of the last dorsals, is in the course of preparation in Paris. It has been distorted slightly, and some partitions collapsed, but it is on the whole in a remarkable state of preservation. The vertebral centrum is very well preserved, and one can observe perfectly the median septum separating the two pleurocoels of very large size, and the partitions of bracing that help this longitudinal element to resist buckling. It is as large as high (23 x 23 cm) and anteroposteriorly measures 20 to 21 cm. The piece is remarkable at the time for its great development in height and for the small relative size of its vertebral centrum: from the inferior border of the centrum until the summit of the spinous process, it had to reach 1 m

and 45 and maybe 1 m 50 high, size that doesn't appear to be reached even by the genus *Apatosaurus*. According to GILMORE (1936), the 9<sup>th</sup> dorsal measures 1 m 35 in CM 3018 and 1 m 31 in FM. 7163, the 10<sup>th</sup> reached 1 m 34 in FM. 7163. Next to that, the vertebral body measures 23 x 23 in our sample against 36.5 by 40 cm in *Apatosaurus*, and 20 to 21 cm long against 24 to 25 in *Apatosaurus*. The processes are therefore especially slim in our specimen. The sacral vertebrae haven't yet been prepared. Four neural spines are fused together. The first caudals, very recognizable by the large aliform expansions of the transverse processes, have not yet been extracted from their plaster jacket.

The few characters that we are already able to specify indicate a sauropod of large size. The particular shape of its scapula and the characters of the dorsal vertebra permit to make, it seems, a new species and genus that we will call *Rebbachisaurus garasbae* nov. gen. nov. sp., the layer of Gara Sba being on the territory of Aït Rebbach.

TEETH. Next are the teeth of very large size of the type of those of *Carcharodontosaurus saharicus* or those figured by JANENSCH (1925, pl. IX, fig. 7-10), one finds other teeth of large size also greatly laterally asymmetrical, one face nearly flat, the other very greatly rounded. One of them is quite identical, in shape and measurements, to the third, left lower tooth of the specimen of *Tyrannosaurus rex* Am. Mus. 5057, known by its casts. One also finds teeth of small size, also finely serrated, very near to those that JANENSCH has attributed to some coelurosaurids. But one knows the difficulty of assignment of all teeth of carnivorous dinosaurs.

Outside of these elements, other isolated pieces, vertebrae, bony fragments, could not be yet inventoried in a detailed way. One can only announce caudal vertebrae, and one or two fragments possibly coming from an anterior skull.

All these pieces will be the subject of a later study, surely more detailed.

BIBLIOGRAPHY see original document

#### FIGURE CAPTIONS

FIG. 1. – SCAPULA OF *Rebbachisaurus garasbae* nov. gen., nov. sp., X 1/10.