

# **Sauropod dinosaur vertebrae in the middle Callovian of Rhar Rouban (northern Algerian-Moroccan frontier)**

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In the course of a mining geology mission in the Rhar Rouban region (Algerian-Moroccan frontier, 15 km southeast of Oujda) in 1953, J. CASSEDANNE discovered eight vertebrae of a large reptile, arranged in a continuous series in a large bank of very hard calcareous sandstone from the Callovian of Déglen. The age of these remains is known with great precision because there are ammonites from the middle Callovian in this bank or in others nearby.

Three consecutive vertebrae of these were extracted by one of us and could be studied. They are middle caudal vertebrae from a large sauropod. The vertebral centrum is massive and as tall as wide (13 x 13 cm). The elements are slightly procoelous.

In the course of fossilization, calcareo-sandy sediment filled the interval between the vertebrae, undoubtedly replacing a cartilaginous zone; then the vertebrae slipped slightly relative to one another.

The structure of the bone is clearly visible thanks to brown siderite filling the canals. The chevron attachment joints are recognized on the posterior of the vertebrae. But no process is preserved, and the systematic position of this sauropod cannot be specified further. It is nevertheless rather important in signaling its presence in a Jurassic sediment in Algeria, where no dinosaur bone had been recognized so far.

A rapid recall of the geology of the region will allow better situating the locality, and evoking certain problems that it poses.

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The major trait is the existence of the Rhar Rouban horst, a long primary massif that is framed by faults, and which did not cease resisting subsidence from the middle Liassic to the Bathonian— so that the sediments formed at its surface during this lapse of time are much thinner than those of the same age deposited in nearby regions, even very close. The facies also reveal this fact: they are very neritic in the Liassic, but characterized by an intense stratigraphic condensation in the Dogger, while they are continuous and of bathyal character apart from the horst. It is only in the Callovian that the depths, while remaining notable, seem to be equalized, while little by little a detritic regime is established: initially, schisty clays with sandy limestone banks variably rich in ammonites (Callovian, lower Oxfordian: 350 m); then sandstone with rare lamellibranchs and plant debris (upper Oxfordian = Lusitanian *auct.*, 600 m). This strong and rapid sedimentation increases the rate of subsidence, which persists and transforms the region at the moment when the sandstones are deposited in a littoral plain which is largely inundated, sometimes by the sea and sometimes by freshwater lakes.

In the middle Callovian, the start of the establishment of this regime, the inundated littoral plain was rather near (30 to 50 kilometers) to the southwest; but to find the emergent terrains, one must undoubtedly go far to the south (Colomb-Béchar region) or southwest (Middle Moulouya, perhaps: Middle Atlas). It is at this moment that our sauropod must have been surrounded by the sea, perhaps as a carcass, in the company of remains of branches whose wood is unfortunately in a very poor state and indeterminable (putrefied before mineralization, in the opinion of Mr. Ed. BOUREAU, *in litteris*). Did it come from the inundated littoral plains? — or from the firm ground farther away? It is known that analogous remains can undergo very long transport, as for example the caudal vertebrae described by one of us from the Albian of Pays de Bray.

In any case, this discovery permits hoping from now on that the shallower marine series, or the estuarine formations of the Jurassic in western Algeria or eastern Morocco, perhaps will end up delivering vertebrate remains when complementary studies can again be carried out there.

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## BIBLIOGRAPHY

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