

A RIGHT DENTARY OF RHABDODON PRISCUS MATHERON 1869 (REPTILIA: ORNITHISCHIA) FROM THE MAASTRICHTIAN OF HAȚEG BASIN (ROMANIA)

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INTRODUCTION

The Late Cretaceous dinosaurs from Hațeg Basin were studied by Franz Nopcea at the beginning of this century (1899-1929) and later restudied by Grigorescu, D. and Weishampel, D.B., Norman, D.B. & Grigorescu, D., since 1980 (3.4.5,10).

Among specimens from Hațeg Basin kept at the MCDRD, Natural Sciences Section, we have a nearly complete right dentary of an ornithopod dinosaur. The piece, collected during the summer of 1993 and referred to as *Rhabdodon priscus* Matheron, 1869, is the only of this type existing in the Romanian collections (FGGUB and MCDRD).

This piece, in a good state of preservation, was discovered on the right side of the Sibișel Valley (southward from Sânpetru), inside of a little fossiliferous pocket, housed in a coarse grey sandstone.

DESCRIPTION OF THE PIECE

The anterior part of the dentary, corresponding to the symphyseal region, unfortunately is missing (figs.4, 5, 6).

Caudally, there is a prominent but slender coronoid process, not conserved at its entire height.

The lingual side of the dentary is shared in two distinct parts. The alveolar region occupies more than half of the height of the dentary and are positioned along the extreme medial edge. This region, housing 10 alveolar chambers for teeth, has a crescent shape, so the height of the alveoli is different in size (fig.4).

The dental sockets diminish in size from the middle to the distal parts of the alveolar region. The posteriormost alveolus is smaller than the others.

The alveolar groves are about 9 mm wide, supported by vertical bony ridges (incomplete preserved, so it is difficult to measure their height). The strongly defined ridges rising above the sockets produce a sharp crenated upper border (fig.6).

The dorsal and ventral margins are parallel, forming with the axis of the coronoid process a right angle (fig.5).

In a small region is preserved the thin medial bony blade, which is adhering at the lingual side of the teeth. During the animal's life, only the

functional teeth protruded above this fragile bony blade. Missing on the specimen described in many regions, we can observe the replacement teeth, which are present in the fourth, sixth, seventh, eighth, and ninth alveoli starting from the front side. These germs show characteristic enamel ridges. No one from which teeth were functional, judging by the position in the alveoli. Maximum tooth size is just distal to the midpoint of the teeth row, with a decrease in size away from this position. The biggest tooth is half covered longitudinally by the thin bony blade to which it adheres.

The teeth show a more or less triangular crown (in lateral view) with parallel enamel ribs. Each ridge culminates in a denticle along the fifth alveolus, so we can observe the germ of another tooth. Enamel completely surrounds the crown. The teeth have a strong primary ridge arising from the middle of the enameled lingual surface.

The teeth were broken at the level of the fifth alveolus, so we can observe the germ of another tooth.

The splenial is not preserved so the medial face of the bone shows ventrally a deep Meckelian canal, which opens widely towards the rear and closes gradually forward (fig.4).

The coronoid process rises backward to the alveolar region. The beginning of the coronoid process forms on the lateral face of the dentary an vast oblique shelf, forming an obtuse angle. In connection with the presence of the shelf, the coronoid process is clearly displaced laterally, relative to the alveolar row. The medial surface of the coronoid process bears a depression limited by a bony ridge, probably a contact area for the antero-dorsal part of the surangular (2). This depression opens ventrally in the adductrice fossa.

On the shelf, there is a large foramen at level of the seventh alveolus. Other smaller vascular foramina are at the level of the third and ninth alveoli. No other foramina can be distinguished and no canal for the passage of the inferior maxillary vessels and nerves can be observed.

MEASUREMENTS

The length of the fragment: 120 mm;

The length of the alveolar region: 95 mm;

The maximum thickness of the dentary fragment: 245 mm;

The height of the dentary including the coronoid process: 60 mm;

The height of the lingual side of the dentary including the Meckelian canal: 40 mm;

The height of the lateral side of the dentary including the Meckelian canal, at the level of the last but one alveolus: 47 mm.

DISCUSSIONS

The systematic position of *Rhabdodon priscus* is doubtful: euornithopodan of uncertain affinity (6, 10).

On the synapomorphies of Hypsilophodontidae and Iguanodontia that bear on existing material of *Rhabdodon priscus*, two appear to ally *Rhabdodon priscus* with *Iguanodontia*: parallel dentary margins, absence of premaxillary teeth. However, other two: ridges confluent with the marginal denticles on maxillary and dentary teeth, cingulum at the base of maxillary and dentary crowns, suggest a hypsilophodontid relationship (11).

Ancestrally for Ornithopoda (and in fact for Ornithischia), the dorsal and ventral margins of the dentary converge rostrally. So, the parallel (or subparallel (10)) dentary margins, feature founded in *Rhabdodon priscus* is a primitive one.

In contrast, the presence of ridges confluent with marginal denticles of cheek teeth, is a derived condition (11), founded in *Rhabdodon priscus*.

The central placement of the primary ridge (which then culminates on the crown apex) of the dentary teeth is interpreted as the derived condition (11). This character is also found in *Rhabdodon priscus*.

The affinities of *Rhabdodon priscus* are problematic and will require a more complete treatment of the broad relationships of Euornithopoda (i.e. Hypsilophodontidae+*Iguanodontia*) (6).

The skeletal remains assigned to *Rhabdodon Matheron*, 1868 are especially variable morphologically. Further research may clarify whether such variation reflects sexual dimorphism within *Rhabdodon priscus* as suggested by F. Nopcsa, or the existence of a second species within the genus (1).

Brinkmann noted: "in fact what is surprising is that there should be so few morphological differences at least on the dentary between the specimens from the Campanian of Austria and those from the Maastrichtian of France and Transylvania" (1).

Nopcsa pointed out that an ontogenetic modification on the dentary of *Rhabdodon* should be existing. The juvenile dentary is long and thin. In time, the bone gets thicker and becomes more hard (3). Later, Nopcsa went back to this affirmation, basing on more measurements from more material of *Rhabdodon* (5).

So, if the specimen is male or female, adult or juvenile, small or big size it is not easy to decide basing on the dentary. We can only suggest that it is a young individual, or a small sized adult.

Detailed morphometric studies on all the dentaries from *Rhabdodon* housed in the collections abroad, will clarify this matter.

ABBREVIATIONS

FGGUB - Facultatea de Geologie și Geofizică Universitatea din București
MCDRD - Muzeul Civilizației Dacice și Romane-Deva, Județul Hunedoara
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REZUMAT

Piesa descrisă reprezintă singurul dentar aproape complet aparținând speciei *Rhabdodon priscus* Matheron, 1869, aflat în colecțiile din țară (FGGUB și MCDRD).

Exemplarul este atribuit unui individ tânăr, eventual unui adult de talie mică, fără însă a avea certitudinea acestei afirmații.

F. Nopcsa (7) a sugerat posibilitatea existenței unei modificări ontogenetice a grosimii dentarului la genul *Rhabdodon*, idee asupra căreia a revenit mai târziu, bazându-se pe măsurătorile asupra mai multor dentare aparținând acestei specii (5).

Studii morfometrice detaliate, bazate pe exemplarele de *Rhabdodon* aflate în colecțiile din străinătate ar putea clarifica această chestiune.

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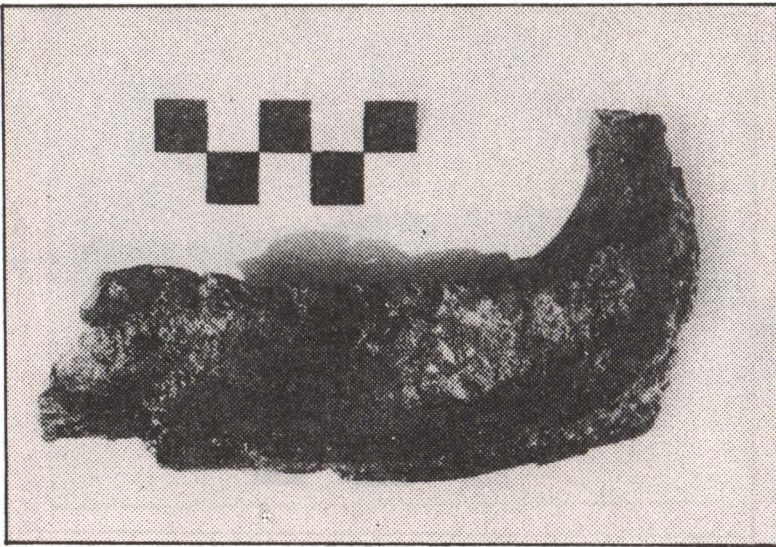
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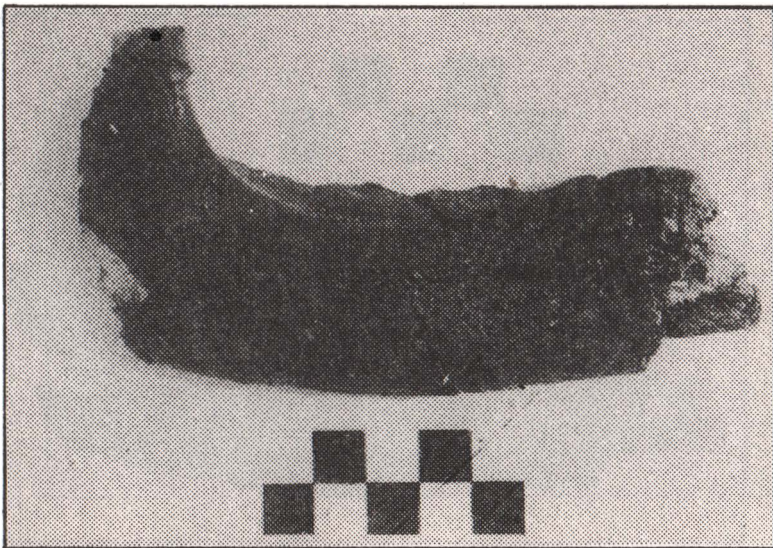
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*Fig. 1. - The medial view of the dentary before the preparation
Scale bar: 1 cm*



*Fig. 2. - The lateral view of the dentary before the preparation.
Scale bar: 1 cm*

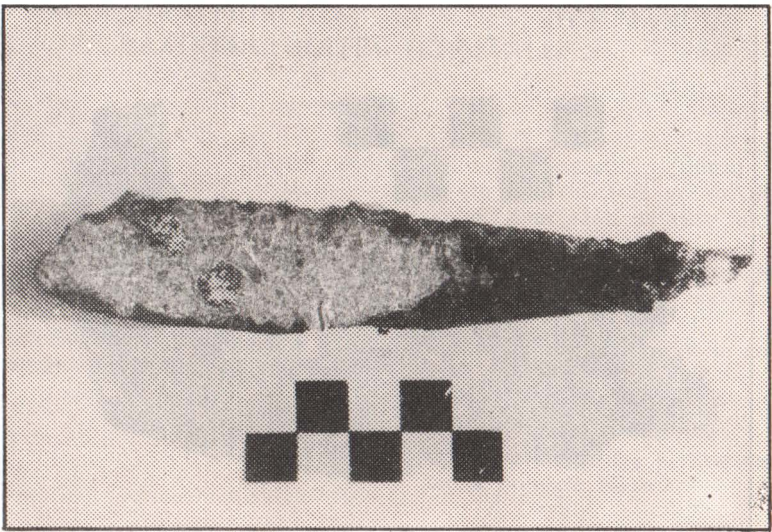


Fig. 3. - The dorsal view of the dentary before the preparation
Scale bar: 1 cm

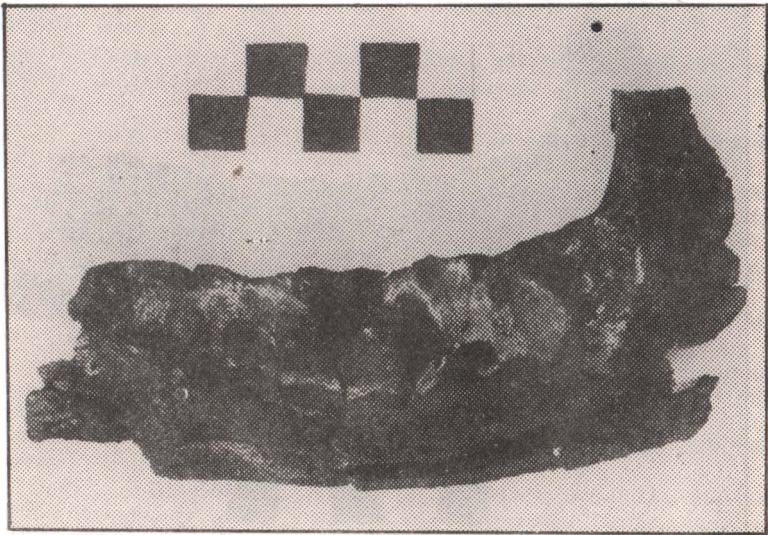


Fig. 4. - The medial view of the dentary after the preparation
Scale bar: 1 cm

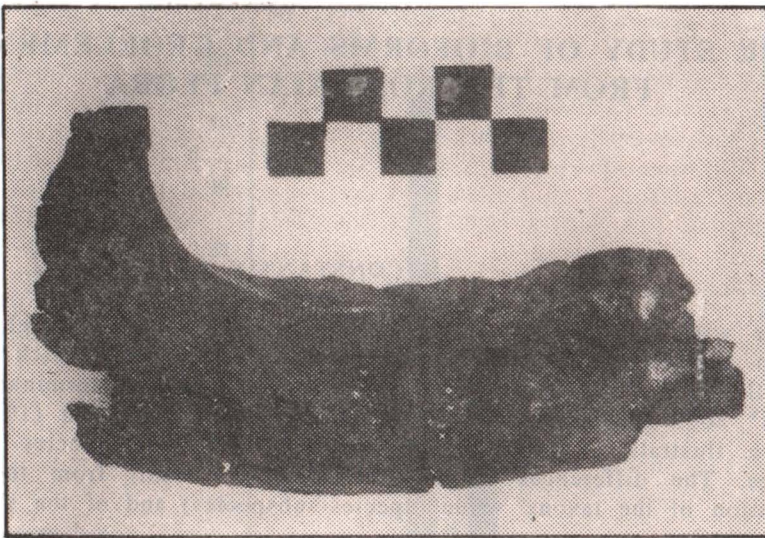


Fig. 5. - The lateral view of the dentary after preparation
Scale bar: 1 cm

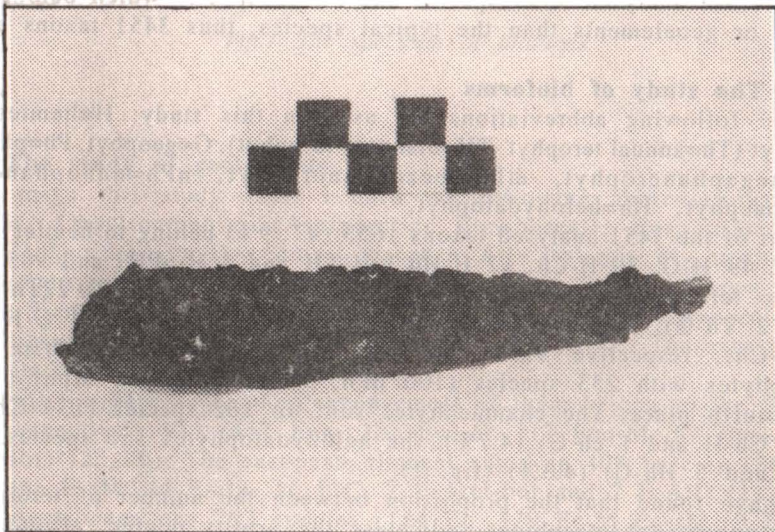


Fig. 6. - The dorsal view of the dentary after preparation
Scale bar: 1 cm