

A review of the relationship between *Rhabdocidaris tournali* Desor, 1855 (Echinoidea, Eocene) and *Rhabdocidaris pouechi* Cotteau, 1863

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ABSTRACT - The scientific literature reviewed in this work forces to think that *Rhabdocidaris pouechi* falls into *Rhabdocidaris tournali*. But moreover it has been proved that *R. pouechi* was erroneously allocated to Cretaceous period instead to Eocene.

RESUMEN – Se recuerdan los datos que apoyan la entrada de *R. pouechi* en *R. tournali* y la pertenencia de *R. tournali* al Eoceno y no al Cretácico.

KEY WORDS - Palaeontology, Echinoidea, *Rhabdocidaris*, Synonymy, Eocene.

INTRODUCTION

After modern scientific literature (Cutress 1980; Smith & Kroh 2011) about *Rhabdocidaris tournali* and *Rhabdocidaris pouechi* it follows that the view proposed by Lambert & Thiéry, (1925), Lambert (1927) and Castex (1930) that *R. pouechi* is a junior synonym of *R. tournali*, has been forgotten without any justification. On the other hand the morphology of the two species has been compared and it has also found no differences between the two species that justify the validity of *R. pouechi*.

Furthermore moreover it has also been taken into account data provided by several authors indicates the species belongs to the Lower Eocene instead Cretaceous, as Desor (1855) pointed out by mistake. For this purpose it's shown herein an unpublished note attached to the label of the type specimen (housed in the Museum of the University of Lyon 1). This note provides data that support *R. pouechi* belongs to the early Eocene and more precisely to the middle Ilerdian.

RHABDOCIDARIS TOURNALI IN THE SCIENTIFIC LITERATURE

This section reports, in chronological order, all bibliographic data about *Rhabdocidaris tournali* from several authors and their views on the relationship with *R. pouechi*.

Desor, (1855, p. 42) briefly describes *Rhabdocidaris tournali* without any illustrations, and he points out about stratigraphic position as follows:

Néocomien sup. (?) de la Clape (Aude)
Coll. Michelin”

Leymerie & Cotteau (1856, p. 323) quoted in the “Catalogue des Échinides fossiles des Pyrénées” *Rhabdocidaris tournali* with the same locality of Desor (1855) but they point out that this species belongs to “Terrain crétacé inf. (aptien)”.

Cotteau (1867, p. 344, pl. 1082, figs. 1-9) studied the type specimen, he added a broad description and was the first author to figure the specie, but he did not mention Desor's doubt about geological age. He wrote as follows:

“Localité.- La Clape (Aude).
Très-rare (exempl. unique). Néocomien sup.”

Lambert & Thiery (1910, p. 137) in listing the species of *Rhabdocidaris* belongs to Neocomian include *Rhabdocidaris tournali*, but 15 years later, in a supplement the same work (Lambert & Thiery, 1925, p. 556) assert the following:

“*R. Tournali* Desor n'est ni du Néocomien, ni de l'Aptien de la Clape, mais du Lutétien de l'Aude et *R. Pouechi* tombe dans sa synonymie.”

That is, Lambert & Thiery (1925) corrected the stratigraphic position of *R. tournali* and they also considered *R. pouechi* Cotteau, 1863 a synonymous of *R. tournali*. In addition, it is recalled that Aude is a department of the southeast of France located between Narbona and the Mediterranean coastline which includes the massif “La Clape” with Cretaceous outcrops.

Because of Lambert & Thiery (1925) did not give data to support this synonymy and the assignation to a new geological age, it was decided to study the label attached to holotype, to find out whether it contains unpublished data on locality and stratigraphic position. The holotype belongs to “l'Ecole National Supérieur des Mines de Paris”, but it is stored in the Université de Lyon I, temporarily loaned, and registered under number EM40426. Staff of this University was so kind to send us the two labels attached to the holotype. In addition, the staff had sent us an unpublished typed note, also attached to holotype, with a additional information very interesting for our research. The oldest label is filled on both sides (fig. 1). The second label contains additional data concerning the publication of Cotteau (1867).

The fossil is glued to the oldest label and on the front side it can read:

“*Rhabdocidaris Tournali* . Desor:
ind. fig. par Cotteau: Pl. 1082
La Clape: Coll. Michelin”

The back side of this label provides us very useful information (fig. 1). At top of the label it can read:

“*Rhabdocidaris Tournali*
Desor
Figuré, pl. 1082 (paleonto. fran)
exempl. unique La Clape (Aude)
Néoc. Supérieur
Michelin”

At the bottom of the label (fig. 1) it can read: (= *R. pouechi*) with a different type of handwriting. It also states, with an unreadable spelling and a different handwriting, the following: “N que . .” and the code K.64-6 written in pencil. But the most interesting of all annotations is view that *R. pouechi* synonymous of *R. tournali*. It is recalled that this synonymy was proposed by (Lambert & Thiery, 1925, p.556).

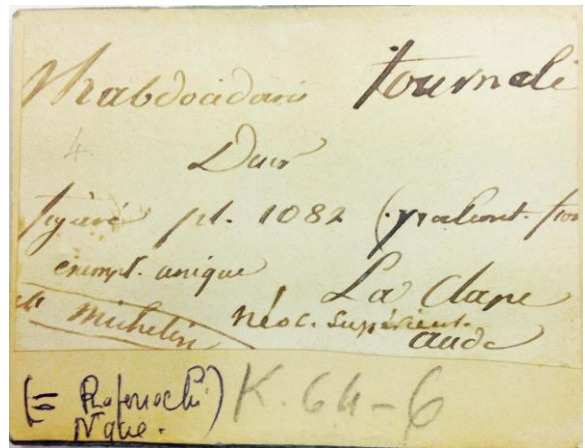


Fig. 1.- Back side of the historic label of *Rhabdocidaris tournali*. Ecole National Supérieur des Mines de Paris, Holotype of *Rhabdocidaris tournali* n° EM40426

In the second label, non figured here, the most recent, it appears the register number EM40426, Néocomien sup., La Clape (Aude), apart from the full information of Cotteau (1863) reference as follows: Coll. Michelin - Col. E.N.S.M., (acronym of the École National Supérieur des Mines de Paris).

As noted already besides, the “Université de Lyon I” sent us an unpublished typed note, also attached to holotype, which provided us a valuable information about the age of the specimen. Below the note is transcribed and discussed, but before it is follow the chronological order in the exposure of this historical summary.

Lambert (1927, p. 57) claims that *R. tournali* has been found in the French Pyrenees Eocene and published with the name of *R. pouechi* (e.g. *vide* Cotteau, p. 789, 1892). That is, the author stands by this synonymy proposed by Lambert & Thiery (1925, p. 556) and also its belonging to the Eocene.

Castex (1930, p. 9) agrees with Lambert & Thiery (1925) and believes that *Rhabdocidaris pouechi* has to be included in *R. tournali*. Also Castex (1930) believes that *R. tournali* was wrongly assigned to Cretaceous and reports the information from Douvillé and Lambert about the Eocene age of *R. tournali*.

That is, Castex (op. cit.) agrees with Lambert & Thiery (1925) on *R. pouechi* is synonym of *R. tournali* and also claims that Douvillé and Lambert conclude that *R. tournali* belongs to Eocene after a review the foraminifer of the gangue.

As noted already, the staff of the Université de Lyon 1 provided us with the scanned copies of the two labels attached to the holotype, plus an unpublished typed note undated, which is literally transcribed below (fig. 2). It follows from this note that the authors of this note could be the distinguished equinologist Jules Lambert (appearing as J.L.) and another, possibly Castex. In this note is quoted the valuable contribution of Douvillé, distinguished geologist, who identified the foraminifera from the gangue.

“V. 84 *Cidaris Tournali*, Cat. II-III; **Rhabdocidaris Tournali** Desor, Cat. IV; du Néocomien sup. (?) de la Clape (Aude), coll. MICHELIN, Syn. p. 42, mention de moule omise. V. 84 figure par erreur au Syn. p. 12, sous *Cidaris clavigera*, qui est un *Tylocidaris* bien différent. – Ce moule est attribué par DESOR à l’Urgonien (Néocomien supérieur) et par COTTEAU à l’Eocrétacé des environs de Narbonne: P.F.C. VII^e, p. 344, pl. 1082. – Le type de V. 84, de la Collection MICHELIN, étant conservé à l’Ecole des Mines de Paris, M. DOUVILLÉ et l’un de nous (J.L.) ont pu examiner la gangue assez différente des roches éocrétacées de la région de Narbonne et il a été reconnu qu’elle renferme plusieurs *Operculina ammonica*, foraminifère caractéristique du Lutétien. Il n’est donc pas douteux que le *R. Tournali* ne soit un fossile du Lutétien de la région de l’Aude et *R. Pouechi* Cotteau, de même origine, étant identique, tombe dans sa synonymie. – E.N. p. 137, à transposer p. 138, à l’Eocène. Ce même moule porte dans le série COTTEAU la notation C. 35.”

Fig. 2.-Literal transcription of the unpublished typed note attached to the holotype of *Rhabdocidaris tournali*.

It is also interesting the correction of stratigraphic level for *R. tournali*, incorrectly allocated to Cretaceous. It has been essential the finding of *Operculina ammonica* foraminifera inside the gangue to assign *R. tournali* to Eocene.

Furthermore, the synonymy proposed in this note (*R. pouechi* = *R. tournali*) agrees to Lambert & Thiery (1925, p. 556), Lambert (1927, p. 57) and Castex (1930, p. 9). It has also been compared two species and it has come to the conclusion there are not differences between two species, that is, taking into account the Principle of Priority of ICZN Code *R. tournali* is senior synonym and *R. pouechi* is a junior synonym, i.e., the oldest, *R. tournali* is the valid species.

Tosquella & al. (1998) and **Loeblich & Tappan** (1987) argued that *Assilina* includes the generic traditional denomination of *Operculina*, and they insure *Assilina ammonica* (Leymerie, 1846) characterizes the Middle Ilerdian. Therefore *Rhabdocidaris tournali* belongs to the middle Ilerdian. It have to suspect that every quotations of *R. tournali* and *R. pouechi* from French Pyrenees and Corbières (Lambert 1927, *vide supra*) also belong to the Middle Ilerdian (Lower Ilerdian = Ypresian in parts).

A new evidence showing that *R. pouechi* belongs to Ilerdian is given by Miquel (1905, p. 24) because of he found inside the “white marls” of Cayla and Aussille (Department of l’Herault, SE France) *Nummulites guettardi* D’Archiac and *Nummulites ataticus* Leymerie in the same stratigraphic level than *R. pouechi* (= *R. tournali*). These foraminifers characterize the Middle Ilerdian 1 and the Middle Ilerdian 2 respectively (Tosquella & al., 1998).

CONCLUSIONS

1. - *Rhabdocidaris pouechi* Cotteau, 1863 is placed as a junior synonym of *Rhabdocidaris tournali* Desor, 1855.
2. - It is confirmed that *Rhabdocidaris tournali* Desor, 1855 is an Eocene species, instead a Cretaceous species.

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