

Archamphiroa jurassica Steinmann 1930, revisited

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Archamphiroa jurassica was described by Steinmann (1930) from carbonate deposits of the central Argentinean cordillera (Negro brook, confluent of Malargue river), assigned to the Lower Callovian. Based on the general morphology and the internal structure of the identified fragments, Steinmann considered them as belonging to the coralline algae. Comparisons made with some fossil and extant coralline species lead him to the conclusion that *Archamphiroa jurassica* best resembles species of the genus *Amphiroa*.

Except for the compilation of Johnson (1964) on Jurassic algae, where some specimens illustrated by Steinmann (1930) are reproduced, we know of no other mention of this alga in the literature. Many specimens of *Archamphiroa* were recently identified in samples collected by two of the present authors (W.K., R.S.) from the Cotidiano Formation in the Lago Fontana region, southern Chubut (Patagonia, Argentina). The Cotidiano Formation (Ramos, 1976) is a limestone unit deposited on andesitic volcanic rocks assigned to the Lago la Plata Formation. Limestones of the Cotidiano Formation comprise mudstones, wackestones, packstones and boundstones of lagoonal to reefal facies (Ramos, 1978, 1981). The formation has a quite limited exposure in only three small areas (Río Toqui, Arroyo Pedregoso and the type locality Arroyo Cotidiano). Our material stems from the type locality (44°50' S, 71°39' W) where the 15 m thick Cotidiano Formation rests conformably on andesitic breccias. Stromatoporoid-coral patch reefs are surrounded by lagoonal limestones, which mostly consist of bivalve packstones and algal wackestones and packstones. Corals, stromatoporoids and crinoids are also common in the lagoonal sediments. *Archamphiroa* Steinmann is the only floral element recognised in the algal limestones. Most of the micrite apparently stems from abraded algal thalli.

The Cotidiano Formation was previously broadly assigned to the Late Jurassic (Ramos, 1981). A tuffitic sandstone bed conformably overlying the Cotidiano limestones bears large trigoniid bivalves allowing for a more precise age assignment (Olivero, pers. comm. 2002). Findings of *Steinmanella* (?*Macrotrigonia*) and *Megatrigonia fontanaensis* and the close similarity to ammonite-dated faunas at Arroyo Pedregoso permit an assignment to the late Tithonian. It is thus likely that the algal bearing limestones of the Cotidiano Formation can also be assigned to the Tithonian, perhaps late Tithonian.

The specimens of *Archamphiroa jurassica* found in the samples from Cotidiano Formation fit well in the description given by Steinmann (1930). Steinmann gave a good and detailed description of the most important morphological characters, and generally provided an adequate interpretation of the internal structure of this alga. Nevertheless, following the progress made in the study of recent and fossil coralline algae since 1930 we consider that the specimens identified in the southern part of the Argentinean cordillera represent a good material for:

- designating a type (lectotype or neotype) because Steinmann (1930) did not designate a holotype;
- giving a genus and a species diagnosis that correspond to essential features of the alga at the two taxonomic levels;

- giving a description that corresponds to the modern terminology used in the study of recent and fossil corallinaceans;
- providing an adequate illustration that constitutes a good support for the new description and facilitates a rapid identification of the alga in the future.

Increasing the knowledge of this oldest (?) corallinacean is essential for understanding the evolution of coralline algae.

References

- Johnson J.H. 1964: The Jurassic algae. Quarterly of the Colorado School of Mines 59(2): 1-129.
- Ramos V.A. 1981: Descripción geológica de la Hoja 47 ab - "Lago Fontana": Provincia del Chubut. Servicio Geológico Nacional, Boletín 183: 1-135.
- Ramos V.A. 1976: Estratigrafía de los lagos La Plata y Fontana, provincia del Chubut, República Argentina. Actas Primer Congreso Geológico Chileno I (A): 43-64.
- Ramos V.A. 1978: Los arrecifes de la Formación Cotidiano (Jurásico superior) en la Cordillera Patagónica y su significado paleoclimático. Ameghiniana 15: 97-111.
- Steinmann G. 1930: Sobre *Archamphiroa jurassica* una coralinea del Jurásico de la Cordillera argentina. Revista Museo Univ. La Plata, 32: 1-8.