

Preliminary data on Early and Middle Famennian (Late Devonian) rugose and tabulate corals from southern Belgium

Bernard MOTTEQUIN, Jean-Marc MARION & Edouard POTY

Université de Liège, Unité de Paléontologie animale et humaine, Bât. B18, Allée du 6 Août, B 4000 Liège 1, Belgium; bmottequin@ulg.ac.be, jmmarion@ulg.ac.be, E. Poty@ulg.ac.be

Corals were severely affected by the Late Frasnian mass extinction and it is generally admitted that this major biological crisis preferentially affected the taxa living in shallow waters (e.g., SORAUF & PEDDER 1986). In southern Belgium (Namur-Dinant Basin), the last Frasnian corals disappeared in the Late *rhenana* conodont Biozone, ie. below the Upper Kellwasser Event. Their decline, which began in the Early *rhenana* Biozone, is a progressive phenomenon as is the case for the brachiopods (e.g., POTY & CHEVALIER 2007, MOTTEQUIN & POTY 2007). Their rarity in the Early and Middle Famennian siliciclastic succession of the Namur-Dinant Basin is probably due to unfavorable facies and ecological conditions. From the rugose coral standpoint, it was not until the base of the Latest Famennian (Strunian) that a major radiation began with the appearance of several new taxa developing morphological features, which are, for some of them, usually typical of those of Carboniferous age (e.g., POTY 1999).

Early Famennian rugose corals are particularly rare in southern Belgium as only a single reliable occurrence has been reported until now. PAQUAY (2002) illustrated small solitary non-dissepimented forms assigned to *Metriophyllum* from the lowermost part of the Hodimont Formation in the Vesdre area (Lambermont). These corals were collected from the beds immediately above an oolitic ironstone level (DREESEN's (1982) level I), which corresponds to a condensation horizon comprising least the Late *triangularis* and the Early *crepida* biozones (DREESEN 1982). POTY's (1986) record of *Neaxon* in the early Famennian-aged Famenne Formation has been rejected subsequently by this author (POTY 1999) as a thorough revision of the specimens and the sections yielding them has not confirmed this record. Although they are not frequent, Early Famennian auloporids (Tabulata) occur in the shaly Famenne Formation. They are found attached to brachiopods, which represented most probably the only hard substrate available for these encrusting organisms, such as those, illustrated by MOTTEQUIN (2008), fixed on the ventral and dorsal valves of the orthotetid *Floweria pseudoelegans* from the Early (?)/Middle *triangularis* biozones.

Middle Famennian rugose corals have been reported on several occasions in the calcareous siltstones of the Souverain-Pré Formation, notably by BOUCKAERT & DREESEN (1977), who pointed out the presence of solitary forms in the Badon section among a rich brachiopod fauna (Latest *marginifera* Biozone) (see also DREESEN 1978). They were subsequently assigned to an unidentified small-sized species of *Breviphrentis* by POTY (1999), who also reported the occurrence of an undescribed species of *Catactotoechus* (=Hillaxon?) in the Chevetogne section (Late or Latest *marginifera* Biozone). Furthermore, the Chevetogne section has yielded some auloporids. Recent sampling of the Sivry section, where MARION & BARCHY (2004) previously reported small solitary rugose corals, led us to enlarge the number of representatives of this small coral fauna, which is associated with crinoids, bryozoans, and spire-bearer (spiriferids and athyridids), orthid, and rhynchonellid (*Centrorhynchus letiensis* group) brachiopods.

The shales of the Sains-du-Nord Formation in the Etroeungt area (N. France) also belong at least partly to the *marginifera* Biozone. They have yielded large-sized solitary corals (POTY 1999) which could be assigned either to *Breviphrentis* or to *Breviphyllum* on the basis of the development or not of dissepiments in relation with constrictions and rejuvenescences. Therefore, they belong to a "Lazarus taxon" as *Breviphrentis* and *Breviphyllum* have never been recorded after the Givetian (Middle Devonian).

All these Middle Famennian corals became extinct well before the first Famennian coral radiation, which took place in the upper part of the stage.

BOUCKAERT, J. & DREESEN, R. (1977, *pro* 1976): Les barrages de l'Eau d'Heure. - Annales de la Société géologique de Belgique, **99**: 571-586.

DREESEN, R. (1978): Position stratigraphique de la Formation de Souverain-Pré dans le Synclinorium de Dinant et le bassin de la Vesdre. - Belgian Geological Survey, Professional Paper, **150**: 1-74.

- DREESEN, R. (1982): Storm-generated oolitic ironstones of the Famennian (Fa1b-Fa2a) in the Vesdre and Dinant synclinoria (Upper Devonian, Belgium). - *Annales de la Société géologique de Belgique*, **105**: 105-129.
- MARION, J.-M. & BARCHY, L. (2004): Notice explicative de la carte géologique de Wallonie à 1: 25.000, Sivry-Rance (n° 54/5-6). - Ministère de la Région wallonne, DGRNE, Namur, 50 pp.
- MOTTEQUIN, B. (2008): Late middle Frasnian to early Famennian (Late Devonian) strophomenid, orthotetid, and athyridid brachiopods from southern Belgium. - *Journal of Paleontology*, **82**: 1052-1073.
- MOTTEQUIN, B. & POTY, E. (2007): Aftermath of the Late Frasnian mass extinction on brachiopods and corals in the Namur-Dinant Basin (southern Belgium). - In OVER, D. J. & MORROW, J. (Eds), *Subcommission on Devonian Stratigraphy and IGCP 499 Devonian Land Sea Interaction: Evolution of Ecosystems and Climate, Program and abstracts*, Eureka, Nevada, 9-17 September 2007, p. 67.
- PAQUAY, F. (2002): Modalités de l'extinction des coraux à la limite Frasnien/Famennien (Dévonien supérieur) dans les coupes de Hony et de Lambermont. - Unpublished MSc thesis, Liège University, 65 pp.
- POTY, E. (1986): Late Devonian to Early Tournaisian rugose corals. - *Annales de la Société géologique de Belgique*, **109**: 65-74.
- POTY, E. (1999): Famennian and Tournaisian recoveries of shallow water Rugosa following the late Frasnian and late Strunian major crises, southern Belgium and surrounding areas, Hunan (South China) and the Omolon region (NE Siberia). - *Palaeogeography, Palaeoclimatology, Palaeoecology*, **154**: 11-26.
- SORAUF, J.E. & PEDDER, A.E.H. (1986): Late Devonian rugose corals and the Frasnian-Famennian crisis. - *Canadian Journal of Earth Sciences*, **23**: 1265-1287.