

BRACHIOPODS FROM THE "CALCARI OOLITICI DI S. VIGILIO" (TOARCIAN–AALENIAN) AND "ROSSO AMMONITICO" (UPPER BAJOCIAN) IN THE CENTRAL LESSINIAN ALPS (PROVINCE OF VERONA, ITALY): A PRELIMINARY NOTE

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ABSTRACT—A short overview is given on a recently discovered brachiopod fauna from the central Lessinian Alps. The age of the fauna is Toarcian to Late Bajocian.

INTRODUCTION

For the last ten years the authors of this study have been involved in obtaining palaeontological data in order to determine the age of the "Calcari Oolitici di S. Vigilio" Formation in the central Lessinian Alps. Previously only a few sporadic mentions have been made in monographs and paleontological notes on the fauna of the study area, whereas the sedimentological features and depositional environment were discussed in detail recently (CLARI and MARELLI 1983, SCHMIDT and SCHWEIGERT 1981).

It is well established in the palaeontological literature that the "Calcari Oolitici" of the Lessinian Alps lacks fossils of high biostratigraphic value, such as cephalopods. Only at Camposilvano were two specimens of Toarcian ammonites recovered: *Hildoceras semipolitum* BUCKMAN (BENETTI 1986) and *Hildoceras sublevisoni* FUCINI (BENETTI 1990) as well as a specimen probably belonging to the Aalenian genus *Erycites* (BENETTI 1970).

The oolitic limestone in this formation is overlain by the "Rosso Ammonitico Veronese" Formation by a basal bed rich in Late Bajocian (Parkinsoni Zone) ammonites. This sector of the Lessinian Alps was described by BENETTI (1970, 1977) and CLARI et al. (1984).

This paper is focussed on the brachiopods which are rather well represented in this unit. Four sections were studied in the central Lessinian Alps (municipalities of Boscochiesanuova, Velo Veronese, and Rovere Veronese).

Unfortunately the limited time available to research and identification of species precluded providing a detailed report, thus this study should be regarded preliminary with further results published in the near future.

DESCRIPTION OF THE SECTIONS

Chiusa di Camposilvano section

At Camposilvano CLARI and MARELLI (1983) iden-

tified the following lithofacies in "Calcari Oolitici di S. Vigilio": (a) Giallo Reale lithofacies; (b) micritic–oolitic lithofacies; and (c) reef lithofacies (Text-fig. 1).

Giallo Reale lithofacies

This lithofacies consists of packstone and grainstone. It was studied in an abandoned quarry located immediately west of the village of Chiusa di Camposilvano. The limestone, called "Giallo Reale" by the quarrymen and marketed as marble, was exploited here (BENETTI 1977).

Fossils contained within it include rare crinoids of the genus *Pentacrinus*, bivalves (Limacidae and pectinids), and some gastropods.

Brachiopods are very rare, represented by *Rudirhynchia* cf. *rudis* BUCKMAN, *Sphenorhynchia rubrisaxensis* (ROTHPLETZ), and *Kallirhynchia* sp.

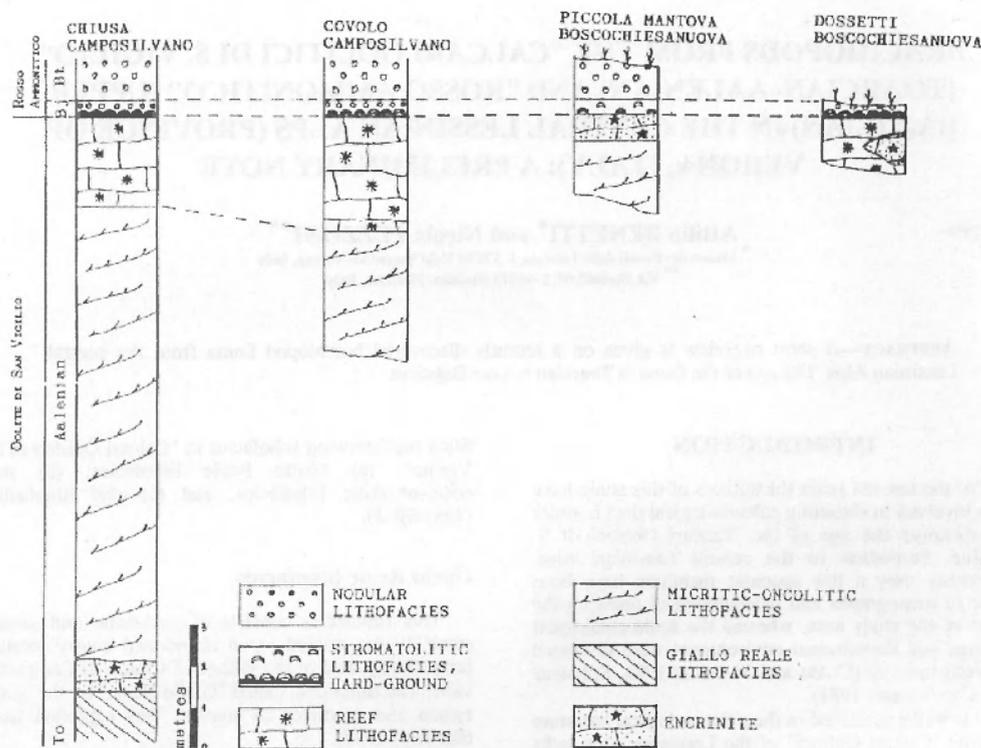
These beds are overlain by crinoidal limestone of varying thickness within a short distance. Regular echinoids and fragments of bivalves were also found in this rock type.

Micritic–oolitic lithofacies

This type of lithofacies is represented by a sequence of limestone beds of packstone and wackestone texture interbedded with thin argillaceous levels of several centimeter to tens of centimeters in thickness. The most common fossils are peduncles of *Pentacrinus*, regular echinoids, some gastropods, and bivalves (Limacidae). The brachiopods, especially at the uppermost levels, characterized by a limited number of species represented by numerous specimens. The following species were identified:

Lower strata:

- Stolmorhynchia?* *erycina* (DI STEFANO)
- Calcirhynchia?* aff. *plicatissima* (QUENSTEDT)
- Strirhynchia?* *szainockae* (DI STEFANO)
- Kallirhynchia* *corradii* (PARONA)



Text-fig. 1—Stratigraphic columns of the four studied sections.

Kallirhynchia sp.
Monticlarella fascilla (ROTHPLETZ)
 "Terebratula" sp. aff. *salvatoris* GRECO
 "T." *secco* PARONA.

Upper strata:

Squamirhynchia? aff. *belemnitica* (QUENSTEDT)
Cryptorhynchia cymatophora (ROTHPLETZ)
Globirhynchia? *infirma* (ROTHPLETZ)
Globirhynchia? *lessinorum* (DAL. PIAZ)
Globirhynchia? aff. *subobsoleta* (DAVIDSON)
Calcirhynchia? aff. *plicatissima* (QUENSTEDT)
Kallirhynchia corradii (PARONA)
Stolmorhynchia bilobata (BENECKE)
 "Terebratula" *secco* PARONA.

Reef lithofacies

The boundary of the "Calcarei Oolitici" is drawn within this subdivision which is characterized by boundstone and wackestone texture and corals of the genera *Latimeandra* and *Isastrea*. Crinoids (*Pentacrinus*), small gastropods and bivalves (Linaceae and pectinids) were also found. Brachiopods are rare

and almost always poorly persevered. This lithofacies yielded the following species:

Squamirhynchia? aff. *belemnitica* (QUENSTEDT),
Cryptorhynchia cymatophora (ROTHPLETZ), *Globirhynchia*? *lessinorum* (DAL. PIAZ).

Stromatolitic lithofacies

This lithofacies of wackestone and packstone texture characterizes the basal beds of the "Rosso Ammonitico Veronese" Formation. The bed consists of a few centimeter thick limonitic-manganiferous hard ground, followed by stromatolitic levels which contain a well preserved Late Bajocian (Parkinsoni zone) ammonitic fauna.

This zone was first reported by STURANI (1964) from the southern Lessinian Alps, and at Camposilvano by BENETTI (1970, 1977) and CLARI et al. (1984).

Apart from ammonites, belemnite rostra, pelagic bivalves, and some crinoids were also observed in this lithofacies. Brachiopods are limited to the following species:

Apringia? *atla* (OPPEL)
Septocrurella deflaxa (OPPEL)

Monsardithyris ventricosa (HARTMANN)
Zeilleria pterococoncha (GEMMELLARO).

Covolo di Camposilvano section

This section is situated about 100 m north-northeast of the village of Covolo (district of Velo Veronese). The lithofacies are the same as in the Chiusa di Camposilvano section (Text-fig. 1).

Giallo Reale lithofacies.

Exposures of this lithofacies are no longer accessible due to the development of a campground, hindering any further study. In the past a brachiopod fauna consisting of the same species as the Chiusa section (BENETTI 1970, 1977) was recovered.

Micritic-oncolitic lithofacies

Due to a recent landslide this lithofacies crops out only in the upper region. In the lower part (BENETTI 1970, 1977) the following brachiopods were identified: *Stolnorhynchia? clesiana* (LEPSIUS)
Globirhynchia? lessinorum (DAL PIAZ)
Globirhynchia? aff. subobsoleta (DAVIDSON)
Monticlarrella fascilla (ROTHPLETZ)
Squamirhynchia? aff. belemnitica (QUENSTEDT)
Cryptorhynchia cymatophora (ROTHPLETZ)
Calcirhynchia? aff. plicatissima (QUENSTEDT)
Kallirhynchia corradii (PARONA)
"Terebratula" seccoii PARONA.

Reef lithofacies

In this lithofacies rare bivalves and gastropods are noted. There is a coral-bearing layer with the genus *Latimeandra* and *Isastrea*, while in the region around the peak there are crinoidal beds with *Pentacrinus* and some regular echinoids. Brachiopods are also rare, represented by the following species: *Squamirhynchia? belemnitica* (QUENSTEDT), *Globirhynchia lessinorum* (DAL PIAZ), *"Terebratula" seccoii* PARONA, and *"T."* sp.

The Upper Bajocian "Rosso Ammonitico Veronese" Formation has the same lithological characteristics as in the Chiusa section. Its fauna, however, is generally richer, except for the ammonites reported by BENETTI (1970, 1977) and CLARI et al. (1984). In addition, there are belemnites, gastropods (*Pleurotomaria*), bivalves (*Bositra*), and crinoids. Among the brachiopods the following species were observed:

Apringia atla (OPPEL)
Septocurella? hemicosata (PARONA)
Gnathorhynchia? ximenesi (DI STEFANO)
Rhynchonellina? beggiatoi (PARONA)
Monsardithyris ventricosa (HARTMANN)
"Terebratula" seccoii PARONA
Linguithyris nepos (CANAVARI)

Waldheimia? tesinensis (BÖSE).

In the nodular lithofacies there are some poorly preserved lycoceratids.

Piccola Mantova section.

Piccola Mantova is a resort located immediately west of the center of Boscochiesanuova. A small outcrop exposing the uppermost layers of the "Calcarei Oolitici di S. Vigilio" and the Upper Bajocian was studied here (Text-fig. 1).

Micritic oncolitic lithofacies

This lithofacies yielded rare crinoids (*Pentacrinus*), echinoids, and fragments of brachiopods and bivalves. There is also a wedge of crinoidal limestone containing very rare regular echinoids.

Stromatolitic lithofacies

This lithofacies in the Piccola Mantova section lacks the hard-ground and the stromatolites do not form a continuous blanket. Ammonites are represented by Late Bajocian species. The following brachiopods were determined:

Apringia atla (OPPEL)
"R." cf. fischeri ROULLIER
Septocurella defluxa (OPPEL)
Septocurella hemicosata (PARONA)
"R." etallonii OPPEL
Gnathorhynchia? ximenesi DI STEFANO
Rhynchonellina? beggiatoi (PARONA)
Monsardithyris ventricosa (HARTMANN)
"Terebratula" seccoii PARONA
Linguithyris nepos (CANAVARI)
Zeilleria truncatella (ROTHPLETZ)
Z. pterococoncha (GEMMELLARO).

Nodular lithofacies

Except for a very corroded and thus indeterminate brachiopod specimen, no other macrofossil has been recovered from this lithofacies.

Dossetti section

This section comprises a small outcrop located about 2500 m north of Boscochiesanuova, and south of the Mount Valpiana (Text-fig. 1).

Reef lithofacies

The outcrops of this lithofacies are limited. The lithology is characterized by yellowish or whitish massive boundstone with small crinoidal lenses. On some bedding surfaces, highlighted by selective weathering,

silicified coral fragments are noted, probably belonging to the genera *Latimeandra* and *Isastrea*. Bivalves are represented by some poorly preserved specimens. No brachiopods were found.

Stromatolitic lithofacies

It occurs in the form of a stromatolitic blanket above the hard-ground. Its fauna consists of Late Bajocian ammonites, belemnites, few crinoid remains, and rare bivalves. Brachiopods are abundant. The following species were identified:

Apertinella uita (OPPEL)

"R." cf. *fischeri* ROULLIER

Septocrurella defluxa (OPPEL)

Septocrurella hemicostata (PARONA)

"R." *etalloni* OPPEL

Gnathorhynchia ximenesi (DI STEFANO)

Rhynchonellina? beggiatoi (PARONA)

Monsardithyris ventricosa (HARTMANN)

"*Terebratula*" *secco* PARONA

Linguithyris nepos (CANAVARI)

Zeilleria truncatella (ROTHPLETZ)

Z. pteronconcha (GEMMELLARO).

The nodular lithofacies is missing in this section due to erosion.

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