

A small, but interesting new ammonite fauna from the Western Lessinian Alps (preliminary note)

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RIASSUNTO

Un breve sguardo d'insieme è dato ad una fauna ad ammoniti recentemente scoperta in un filone sedimentario nei Lessini occidentali. L'età va dal Kimmeridgiano inferiore al Titonico. La fauna contiene molti degli elementi descritti nel secolo scorso da Zittel insieme ad elementi nuovi.

ABSTRACT

A short overlook is given on a recently discovered ammonite fauna from a neptunic dyke of the western Lessinian Alps. The age is Lower Kimmeridgian to Titonian. The fauna contains many elements described by Zittel in the last century as well as new elements.

KEY WORDS

Upper Jurassic Ammonites, Kimmeridgian-Titonian, Northern Italy, (Provincia di Verona).

INTRODUCTION

The studies presented here are dedicated to the memory of R. Piccini and A. Zittel who described similar ammonites from the Central Appenines and Poland in the last century. The new locality is situated in the vicinity of the commune Sant'Anna d'Alfaedo (northern part of the western Lessinian mountains). It will be published in detail, when the collecting, which is still going on, has been finished. The following report is based for part 1 on notes in Italian language provided by A. Benetti to A. Zeiss who translated them and added also some

supplements, especially to fig. 1, while part 2 has been prepared by A. Zeiss.

THE SECTION

The locality has been discovered by L. Ambrosio in 1886, who collected a large part of the ammonites and prepared them. Later, further fossils have been collected by us; in honour of the discoverer the locality has been named 'Ambrosi'. The outcrop contains in one bed a very well-preserved ammonite fauna, and also some bivalvs, gastropods, belemnites and aptychi. The very good preservation of the ammonites, of which many have still their 'pseudoshells' and which show full-body preservation, is due to the fact that they are imbedded in a micritic limestone.

This micritic limestone is forming a lentil (see fig. 1). Horizontal extension cannot be observed well, as in the eastern side it is passing under the road niveau, while on the other side the section is disturbed (not shown in fig. 1). The lentil has a maximum thickness of 0,85 m, and a minimum of 0,20 m. in the east. The lentil seems to represent a neptunic dyke, but further studies are necessary to give a more precise evidence. It is overlain by typical Ammonitico Rosso Facies (4.40 m) and Biancone (more than 2 m). In this part of the section only bad-preserved ammonites (not determinable), rare belemnites and aptychi, very rare bivalvs and brachiopods (with two species of *Pygope* and *Glossobyrus bouei*) have been found.

The Ammonitico Rosso contains in the lowermost bed nodules of manganese and stromatolites, while the uppermost bed is built up by typical nodular facies of red

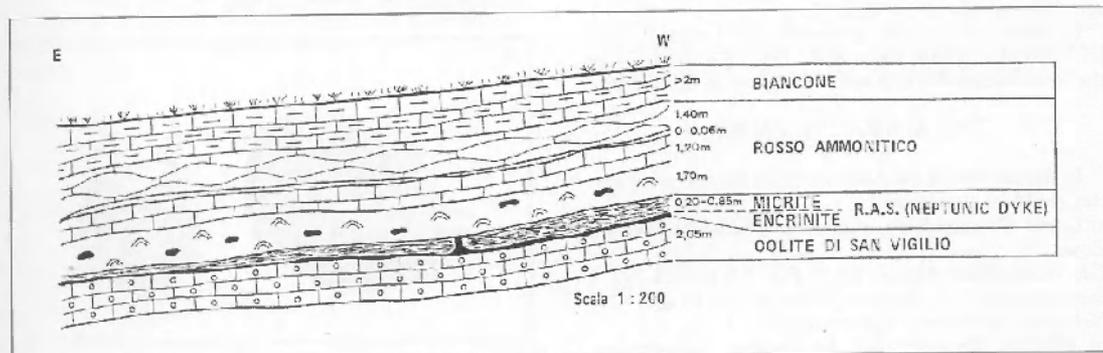


Fig. 1 Sketch of the northern part of the Western Lessinian Mountains (VR).

and white colour; this upper bed is separated from the middle one by a layer of marls and breccias of 0,06 m which is wedging out completely, at some points. The middle part consists of yellow to reddish limestones. As the exact position of the fossils mentioned above is not clear, the age of these beds can be assumed as to be of Upper Jurassic age, but Middle Jurassic cannot be excluded. Further studies are necessary to clear up the exact biostratigraphy of these layers.

The bed, in which the ammonites have been found, lies below the Rosso Ammonitico normal-bedded sequence. It is formed by a brick-red micrite with yellowish spots and showing a pseudostratification. To the top some intraclasts and pellets included in the micritic cement can be observed, partly substituted by pyrite or glauconite. Apart from some rare aptychi no other fossil remains have been found in these upper parts of the lentic bed. - The middle part consists of compact micrite and contains some geodes decorated with crystals of pure calcite; no fossils are occurring. - At the base of the bed, about 5 cm. above the lower boundary, nearly two thirds of the ammonites (30 specimens and 3 gastropodes) have been collected. Very small nodules of pyrite (dimension of some mm.) in discontinuous distribution are present; and where such "noduletti" are present in big numbers the ammonites are missing or of very bad preservation. The perfect preservation of the ammonites with their intact pseudoshells' (recrystallized shells) indicates that they had not to suffer from transport, post-mortem. The interior of the shells, empty, decorated or replenished by crystals of calcite demonstrates that the sedimentation was continuous and the lithification early. Especially at the base of this fossil bed also some other smaller lentils can be separated; they are formed by a mixture of remains of sea-urchin spines, crinoids and some ammonites, all cemented in a micritic matrix together with big crystals of calcite, either pure or turbid. The colour is yellow or greenish and veils of a greenish claystone are visible sometimes. One third of the ammonites have been collected from such lentils ('Encrinite' on fig. 1). The limits between the two facies of the ammonite bed are not very distinct ones.

Below the ammonite bed ('R.A.S.' in Fig. 1) solid limestone bancs of the 'Ooliti di San Vigilio' can be observed. Because of the absence of fossil remains statements are not possible about their exact age. In general the 'Ooliti di San Vigilio' are considered to be of Toarcian-Aalenian age (Clari & Marelli, 1982).

Compared with other sections in the Lessinian Alps (cf. Clari et al. 1984, Pavia et al. 1987) the thickness of the Ammonitico Rosso is astonishing low in this section.

THE AMMONITE FAUNA

In the micrites of the Ammonite bed the following species could be determined:

a) Lower Kimmeridgian ammonites (Platynota-Divisum Zone)

Glochiceras fialar (Oppel) (Pl. 1 Fig. 7-8 and 21-22)

Sutneria sp. juv., cf. *platynota* (Reinecke) (Pl. 1 Fig. 14-15)

Nebrodites macerimus (Quenstedt) (Pl. 1 Fig. 13)

b) Middle Kimmeridgian Ammonites (Acanthicum-Eudoxum Zone)

Sutneria aff. *lorioli* Zeiss (Pl. 1 Fig. 11-12)

c) Lower and Middle Tithonian ammonites (Hybonotum-Fallauxi Zone)

Hybonotoceras (*Hybonotoceras*) sp. n. (*harpeporum*-*lautharis* group) (Pl. 1 Fig. 28-29)

Hybonotoceras (*Hybonotella*) n. sp., cf. *gracillimum* Hoelder (Pl. 1 Fig. 3)

Tarmelliceras n.sp., cf. *succedens* (Oppel) (Pl. 1 Fig. 36-37).

Semiformiceras darwini (Neumayr) (Pl. 1 Fig. 39-40)

Semiformiceras birkenmajeri Kutek & Wierzbowski (Pl. 1 Fig. 23-24)

Tarmelliceras (*Parastreblites*) *waageni* (Zittel) (Pl. 1 Fig. 6)

Aspidoceras neoburgense (Oppel) (Pl. 1 Fig. 30)

Aspidoceras cyclotum (Oppel)

Haploceras leiosoma (Oppel)

Lytogyroceras aff. *lytogyrum* (Quenstedt)

? *Pseudolissoceras* sp., cf. *rasile inflatum* (Zittel)

Lytoceras aff. *municipale* (Oppel) (Pl. 1 Fig. 32-33)

Ptychophylloceras ptychoicum (Oppel)

Semiformiceras semiforme (Oppel) (Pl. 1 Fig. 1-2)

Cyrtosiceras collegiale (Oppel) (Pl. 1 Fig. 16)

Semiformiceras fallauxi (Oppel) (Pl. 1 Fig. 27)

In the 'Encrinite' lentils the following species of Lower and Middle Tithonian age (Hybonotum to Fallauxi Zone) have been collected:

Hybonotoceras mundulum (Oppel) (Pl. 1 Fig. 31)

Hybonotoceras mundulum striatulum Hoelder (Pl. 1 Fig. 38)

Simocosmoceras aff. *adversum* (Oppel) (Pl. 1 Fig. 4-5)

Semiformiceras fallauxi (Oppel) (Pl. 1 Fig. 25-26)

Richterella richteri (Oppel) (Pl. 1 Fig. 17-18)

Richterella (?) sp. (Pl. 1 Fig. 19-20)

Glochiceras tenuifalcatum (Neumayr, in Fontannes)

Semiformiceras cf. *semiforme* (Oppel)

Haploceras sp.

Cyrtosiceras aff. *collegiale* (Oppel)

Pseudbimalayites steinmanni (Haupt) (Pl. 1 Fig. 9-10)

Phylloceras aff. *serum* (Oppel) (Pl. 1 Fig. 34-35)

Aspidoceras vogoznicence (Zeuschner)

Semiformiceras birkenmajeri Kutek & Wierzbowski

Some further specimens, especially perisphinctids, come also from this fossil bed, but will be studied later. One specimen, which is of high interest, as it has not been found in Italy (except Sicily) until now should be mentioned here separately:

Sutneria platynota (Reinecke), a very well preserved typical & specimen in the collection of Attilio Benetti in Camposilvano, which will be studied later in detail with the other specimens of *Sutneria* (Fig. 2).



Fig. 2 - *Sutneria platynota* (Reinecke), Loc. Ambrosi near Breonio, 2x, Lower Kimmeridgian (first documentation of the species from Italy), Lateral and ventral view.

This reminds of another species, *Semiformiceras darwini* (Neumayr), which apparently has not been found again in Italy since its first description from the 'Sette Comuni' in 1873.

There seems to be not much difference in the faunal composition of the two facies of the ammonite bed; mainly we have to state that in the micritic facies Kimmeridgian and Tithonian ammonites are present, while the 'Enrinite' has delivered until now only Tithonian ones; but this may be a random effect. A full taxonomic study will be undertaken when the collecting has been finished, especially for the specimens belonging to genera *Sutneria*, *Hybonoticeras*, *Taramelliceras* and *Cyrtosiceras*, which have delivered new material. But certainly also the other genera will contribute new evidence, too.

The fauna is of high interest, as many of the species figured by Zittel (1870) from the Central Apennines and Poland can be rediscovered here in a very similar preservation: *Semiformiceras semiforme*, *S. fallauxi*, *S. birkenmajeri* (ex. *S. gemmellaroi* e.p.), *Virgatosimoceras adversum*, *Aspidoceras rogoznicense*, *Lytogyroceras* cf. *lytogyrum*, *Lytoceras* aff. *municipale*, *Richterella richteri*, *Cyrtosiceras collegiale* and others.

Also, and this is most important, forms can be identified in this fauna which have been found mainly in platform sediments of Europe like *Sutneria platynota*, *S. aff. lorioli*, *S. sp. indet.*, *Nebrodites macerimus*, *Hybonoticeras mundulum* and related forms of this subgenus, as well as *Glochiceras fialar*. This demonstrates that the differences between the submediterranean and mediterranean provinces are probably not so significant as assumed so far and perhaps more due to gaps in the documentation, at least at certain times.

Some of the specimens have been found in other parts of the Lessinian Alps (Benetti & Pezzoni 1983, 1985), especially those of the Semiforme and Fallauxi Zones.

The fauna is dominated by small specimens, but also some larger are existing. It seems very characteristic, that none of the specimens smaller than 3 cm. is preserved with the apertural margins; despite of the very good preservation in general, the last part of the body chamber is always broken away; this may indicate that all these specimens are eating-remains of predators, like fishes or malakosts racans. As no rests of those animals have been found, the ammonite shells may have been drifted here from other parts of the neptunic dyke or the open seafloor. More precise paleobiological and palaeobiogeographical conclusions the authors hope to be able to present together with the final taxonomic and biostratigraphic studies.

POSTSCRIPTUM

The thickness of the Rosso Ammonitico may be still lower, if we consider that the lower part of the series could be an equivalent of the 'Calcarei a *Skirroceras* del Capitello', (*sensu* Sturani 1964). Some hints for this have been received during a joint excursion with G. Pavia, who discovered Ammonites, most probably belonging to the Lower Bajacian genera *Stephanoceras* and *Emileia*, ca. 1,10-1,15 m above the neptunic dyke. - On the other hand one of the authors (A.B.) collected an ammonite only 0.30 cm above the lentil which is very similar to the Lower Tithonian *Dorsoplanitoides triplicatus*. As already mentioned above further studies are necessary to clear up the detailed stratigraphy of the beds here included in the Rosso Ammonitico formation. It should be added finally that the so-called 'Calcarei a *Skirroceras* del Capirello' do not much differ in lithofacies from the Rosso Ammonitico.

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Plate 1

- Fig. 1- 2: *Semiformiceras semiforme* (Oppel), ML.
 Fig. 3 : *Hybonoticerias* sp. nov., cf. *gracillimum* Hoelder, E.
 Fig. 4-5 : *Simocosmoceras adversum* (Oppel), 1,5 x, E.
 Fig. 6 : *Taramelliceras* (*Parastreblites*) *waageni* (Zittel), ML.
 Fig. 7-8 : *Glochiceras fialar* (Oppel), ML.
 Fig. 9-10: *Pseudhimalayites steinmanni* (Haupt) 1,5 x, E.
 Fig. 11-12: *Sutneria* aff. *lorioli* Zeiss, ML.
 Fig. 13 : *Nebroditis macerrimus* (Quenstedt), ML.
 Fig. 14-15: *Sutneria* sp. (*galar/platynota*-group), 2x, ML.
 Fig. 16 : *Cyrtosiceras collegiale* (Oppel), ML.
 Fig. 17-18: *Richterella richteri* (Oppel), E.
 Fig. 19-20: *Richterella* (?) sp., 1,5 x, E.
 Fig. 21-22: *Glochiceras fialar* (Oppel), ML.
 Fig. 23-24: *Semiformiceras birkenmajeri* Kutek & Wierzbowski, ML.
 Fig. 25-26: *Semiformiceras fallauxi* (Oppel), E.
 Fig. 27 : *Semiformiceras fallauxi* (Oppel), ML.
 Fig. 28-29: *Hybonoticerias* nov. sp. (*harpephorum/autbaris* group), ML.
 Fig. 30 : *Aspidoceras neoburgense* (Oppel), ML.
 Fig. 31 : *Hybonoticerias* (*Hybonotella*) *mundulum* (Oppel), E.
 Fig. 32-33: *Lytoceras* aff. *municipale* (Oppel), 1,5 x, ML.
 Fig. 34-35: *Phylloceras* aff. *serum* (Oppel), E.
 Fig. 36-37: *Taramelliceras* n. sp., cf. *succedens* (Oppel), ML.
 Fig. 38 : *Hybonoticerias mundulum striatulum* Hoelder, 1,5 x, E.
 Fig. 39-40: *Semiformiceras darwini* (Neumayr), ML.
- (All Figures in natural size, if not otherwise indicated: ML = Micritic layer, E = 'Encrinite')

