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The Maiolica Fm. of the Lessini Mts and Central Apennines (North Eastern and Central Italy): a correlation based on new bio-lithostratigraphical data from the uppermost Hauterivian

Paolo Faraoni[1], Agostino Marini[2], Giovanni Pallini[3] & Nicola Pezzoni[4]

[1] Via Sparapani 11c, 60123 Ancona (Italy); [2] Via Venezia 42, 61043 Cagli (PS) (Italy)

[3] Dipartimento di Scienze della Terra, Univ. "La Sapienza", Roma (Italy)

[4] Museo dei Fossili della Lessinia, 37030 Velo Veronese (VR) (Italy)

ABSTRACT - The occurrence of the "Faraoni Level" (uppermost Hauterivian, P. ohmi zone, P. catulloi subzone) is reported for the first time from several localities in the Lessini Mts. This guide level was first established in the Central Apennines: its recognition in the Venetian Alps provides further constraints for correlations in the Maiolica Formation.

KEY WORDS: lithostratigraphy, biostratigraphy, ammonites, Hauterivian, Maiolica Fm., Italy.

INTRODUCTION

Some previously undetected analogies between the Maiolica Fm. of the Venetian Alps (Biancone *Auctt.)* and the Maiolica Fm. of Central Apennines are herein reported, concerning fossil content and lithology of the uppermost Hauterivian. We confronted fossil collections from the Venetian Maiolica to the coeval Apenninic faunas, which are still under investigation.

Venetian ammonites from the Maiolica have been described by Catullo (1827, 1846, 1846-47), De Gregorio (1886), Parona (1890, 1897), Balestra (1897), Rodighiero (1919), Benetti (1976), Clari & Pavia (1987).

Apenninic ammonites of the Maiolica can be found in papers by Principi, 1921 (upper Tithonian and Berriasian, *cum bibl.)*; Ramaccioni, 1939 (Neocomian), Cecca. 1985 (Berriasian and Valanginian); Cecca *et alii*, 1990 (Berriasian); Bartolocci *et alii*, 1992 (upper Hauterivian-Barremian); Cecca *et alii*, 1993 (Hauterivian and Barremian); Cecca, 1995 (Valanginian); Cecca *et alii*, 1995a, b (Hauterivian and Barremian); Faraoni, Marini e Pallini, 1995 (Hauterivian).

THE FARAONI LEVEL IN THE LESSINI MTS

The Upper Hauterivian Faraoni level *Pseudoturmannia ohmi* zone [= P. *angulicostata*

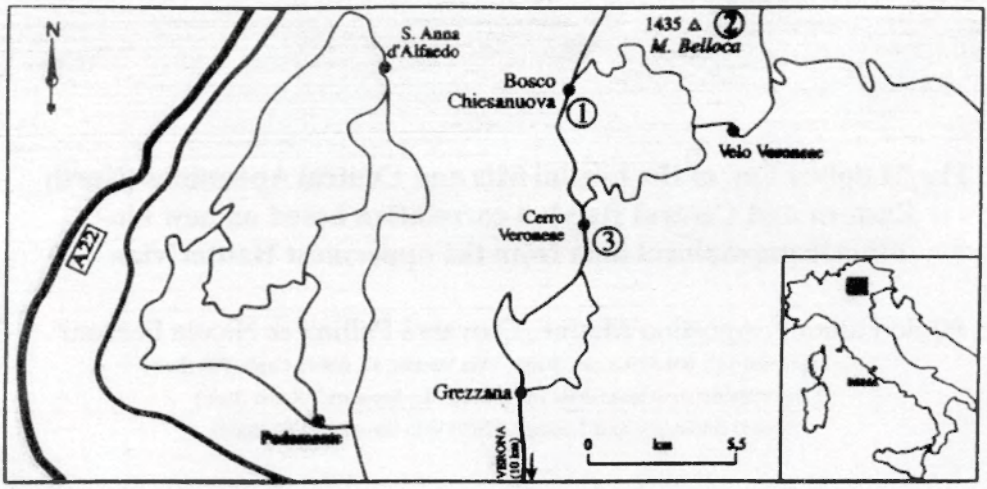

Fig. 1 - Location map of investigated area.

[(d'Orb. in Lepeyre 1974) according to Hoedemaekher & Leereveld, 1995], *P. catulloi* subzone. can be found in several localities of the Lessini Mts (fig. 1). In this preliminary note we will briefly describe the first three sections found in the Verona area.

These are:

1) Bosco Chiesa Nuova (fig. 2 - 1).

2) Selva di Progno - Conca dei Parpiri, Mt Belloca (fig. 2 - 2).

3) San Rocco dei Piegara, Cerro Veronese (fig. 2 - 3).

Lithology

The Faraoni level occurs with similar features to those described in Central Apennines (Cecca *et alii*, 1994), and is generally constituted by:

a) a lower interval (with subdivisions A, B, C);

b) the guide level (= subdivision D);

c) an upper interval (with subdivisions E, F, G);

(reference will be made to these subdivisions throghout text; individual subdivisions may be locally missing).

Bosco Chiesa Nuova (figs 2-1, 3)

a) This subdivision displays, bottom to top:

A - laminated black shales (10 mm);

B - calcareous level (50 mm);

C - laminated blackh shales (10 mm).

D - The guide level is 18 cm thick, with abundant, well preserved, ammonites bearing recrystallized test and geopetal structures. Marcasite nodules up to 10 cm across, produce rust brown stain, and make field identification of this bed easier.

E - black shales (10 mm),

F - calcareous level (15 mm),
G - laminated black shales (15 mm).
Interval G is again overlain by a calcareous level (10 cm) and then black shales (9 cm).

Selva di Progno (figs 2-2; 4, 5)

Bottom to top:
A - laminated black shales (2 mm),
B - calcareous level (20 mm);
C - laminated black shales (30 mm).
D - The guide level is 18 cm thick and has quite similar features to those described above.
E- laminated black shales (30 mm),
F - calcareous level (20 mm).
(Subdivision G is missing)

San Rocco dei Piegara (figs 2-3; 6, 7)

This section has major differernces with respect to the others. Bottom to top:
B - calcareous level (30 mm);
C - black shales (30 mm).

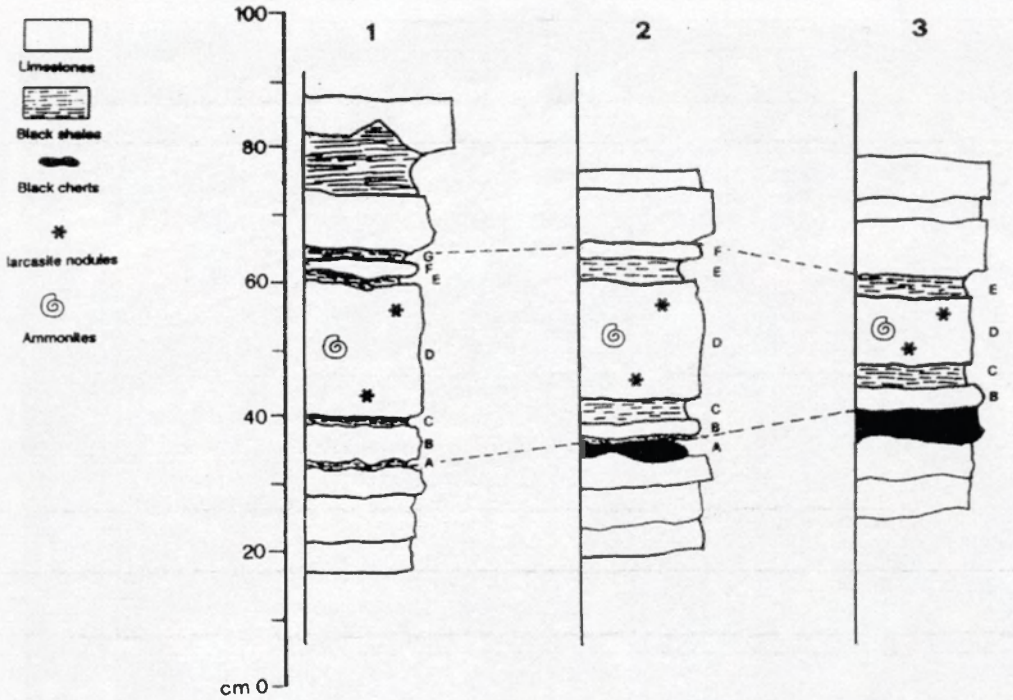

Fig. 2 - Stratigraphic columns of the studied sections where the Faraoni Level has been identified. 1) Bosco Chiesanuova, 2) Selva di Progno - Mt Belloca, 3) San Rocco dei Piegara - Cerro Veronese. Letters from A to G indicate layers described in the text.

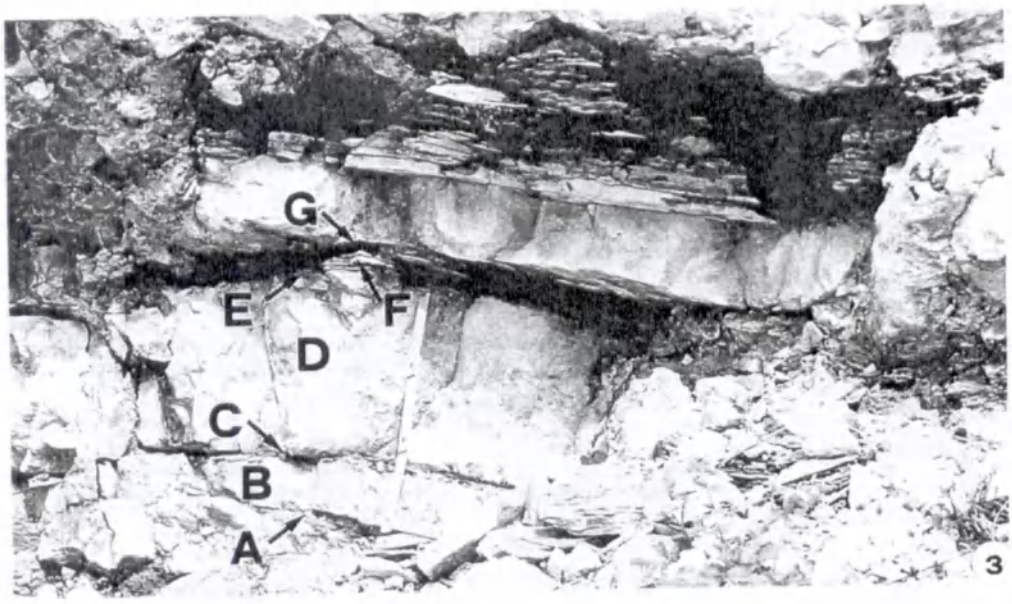

Fig. 3 - Bosco Chiesanuova, detail of the Faraoni Level.

Fig. 4 - Selva di Progno - Mt Belloca, general view of the Faraoni Level.

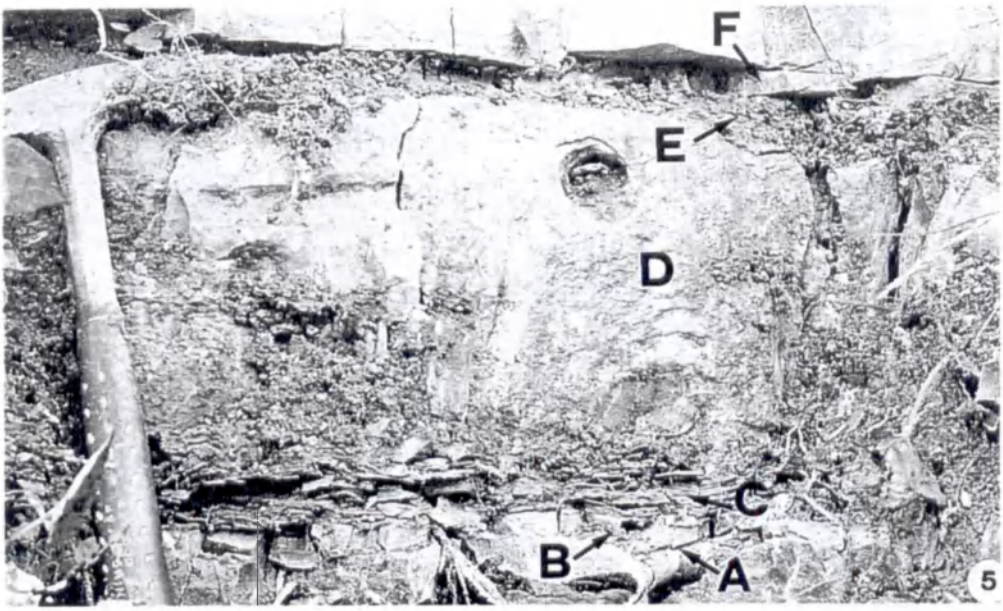

Fig. 5 - Selva di Progno - Mt. Belloca, detail of the Faraoni Level.

D - the guide level is only 9 cm thick, nevertless it has similar features to the other localities and has yielded large ammonites.

E - laminated black shales (20 - 40 mm),

(Subdivisions F and G are missing).

AMMONITE ASSOCIATION FROM THE GUIDE LEVEL

Abundant, well preserved ammonites (Pls 3, 4, 5) from our sections indicate the uppermost *Hauterivian P. ohmi* zone, *P. catulloi* subzone, in perfect analogy to the Apennines. Identified forms include: *Phyllopachyceras infundibulum* (d'Orb.), *Hypophylloceras tethis* (d'Orb.), *Eulytoceras anisoptychum* (Uhlig), *Neolissoceras grasi* (d'Orb.), *Pseudothurmannia ohmi* Winkler, *P catulloi* (Parona), *"Valdedorsella" compsense* (Kilian), *Psilotissotia* sp., *Psilotissotia (Buergliceras) favrei* (Ooster), *Plesiospitidiscus* sp., *Acrioceras tabarelli* (Astier), *Crioceratites (Emericiceras) thiollierei* (Astier), C. aff. clausum Sar. & Schön.

Several of these speciens are also present in the Sicily. We have under study some *Pseudothurmannia* sp. specimes found in the Rocche Rosse locality, near Galati (Messina). The Rocche Rosse "Neocomian" ammonite association was previously described by Maugeri Patanè (1932, pag. 154) who identified the following taxa: *Phylloceras infundibulum* d'Orb., *Phylloceras tethys* d'Orb., *Phylloceras rouyanum* d'Orb., *Lytoceras subfimbriatum* d'Orb., *Lytoceras* sp., *Hamulina subcylindrica* d'Orb., *Desmoceras* sp. aff. *D. cassidoides* Uhlig., *Parahoplites angulicostatus* d'Orb., *Crioceras duvali* Leveil., *Crioceras emerici* Leveil. and *Ancyloceras* sp. This locality was studied by Gemmellaro, 1884 (middle Lias) and, more recently, by Sirna, 1962 and Lentini, 1975.

Fig. 6 - San Rocco dei Piegara - Cerro Veronese, general view of the Faraoni Level.

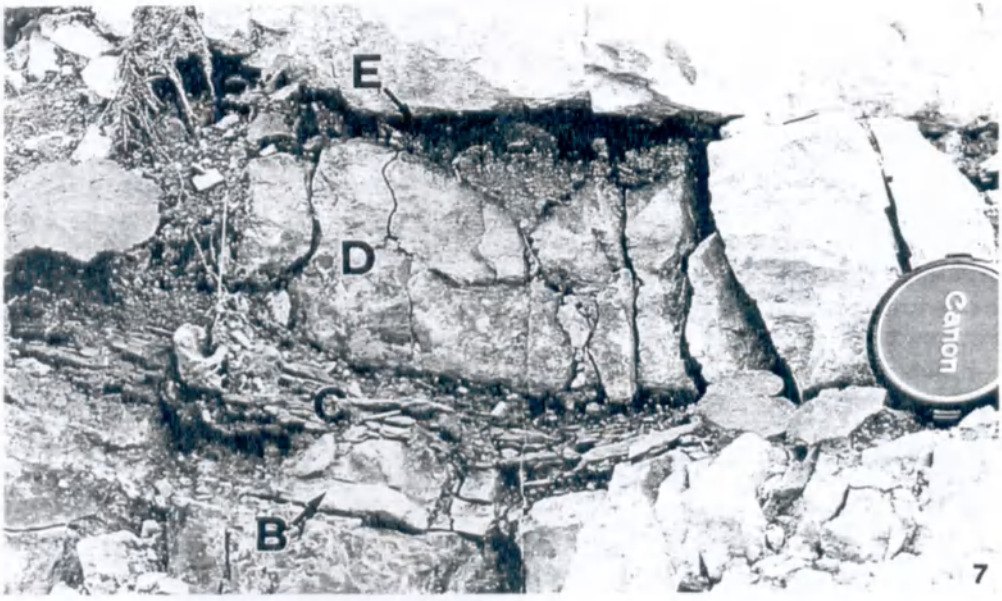

Fig. 7 - San Rocco dei Piegara - Cerro Veronese, details of the Faraoni Level.

CONCLUSIONS

The Faraoni Level, originally described in Central Apennines, is also characteristic of Venetian Maiolica Fm. of the Lessini Mts. It is a useful marker level of the upper Hauterivian, and could represent a further unifying element for the broad family of facies grouped in Wieczoreck's (1988) definition of Maiolica. The Faraoni Level is the earliest black shale level of the Maiolica, both in the Venetian Alps and the Apennines, and predates widespreasd black shale deposits of the Barremian.

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Plate 1

Fig. 1 - *Crioceratites sp. aff. C. clausum* Sarasin & Schondelmayer, Cr 1, x 0.7, San Rocco dei Piegara (VR), Upper Hauterivian, *P. ohmi* zone, *P catulloi* subzone. Coll. Faraoni.

Plate 2

Fig. 1 - *Valdedorsella campsensis* (Kilian), Va 6, Mt. Belloca.
Fig. 2 - *Phyllopachyceras* sp., PML 31, Mt. Belloca.
Fig. 3 - *Neolissoceras grasi* (d'Orb.), PML 34, Mt. Belloca.
Fig. 4 - *Pseudothurmannia catulloi* (Parona), PML 37, Mt. Belloca.
Fig. 5 - *Pseudothurmannia catulloi* (Parona), PML 35, Mt. Belloca.
Fig. 6 - *Pseudothurmannia catulloi* (Parona), PML 42 , Bosco Chiesanuova.
Fig. 7 - *Pseudothurmannia catulloi* (Parona), PML 36, Mt. Belloca.
Fig. 8 - *Pseudothurmannia catulloi* (Parona), PML 44, Bosco Chiesdanuova.
Fig. 9 - *Pseudothurmannia ohmi* (Winkler), Ps. 48, Mt. Belloca.
Fig. 10 - *Pseudothurmannia ohmi* (Winkler), Ps 53, Mt. Belloca.

All specimens natural size; Faraoni level, Upper Hauterivian, *P ohmi* zone, *P. catulloi* subzone. Figs - 2 - 8 Pezzoni Collection "Museo dei Lessini", Velo Veronese VR; Figs 1, 9, 10 Faraoni Collection.

Plate 3

Figs 1, 2 - *Psilotissotia (Buergliceras) favrei* (Ooster); Psl 51, Mt. Belloca. 1) lateral view, 2) normal view.
Figs 3 - *Psilotisotia* sp., PML 38, Mt. Belloca.
Fig. 4 - *Neolissoceras grasi* (d'Orb), PML 32, Bosco Chiesanuova.
Fig. 5 - *Eulytoceras anisoptychum* (Uhlig), PML 66, Bosco Chiesanuova,
Fig. 6 - *Psilotisotia* sp., Psl 52 Mt. Belloca.
Fig. 7 - *Plesiospitidiscus* sp. x 2, PML 74, Mt. Belloca.
Fig. 8 - *Phyllopachiceras infundibulum* (d'Orb.), PML 81, Mt. Belloca.

All specimens, unless specification, natural size. Figs 1, 2, 6 Faraoni collection, Figs 3 - 5, 7, 8, Pezzoni Collection "Museo dei Lessini", Velo Veronese VR.

Plate 1

Plate 2

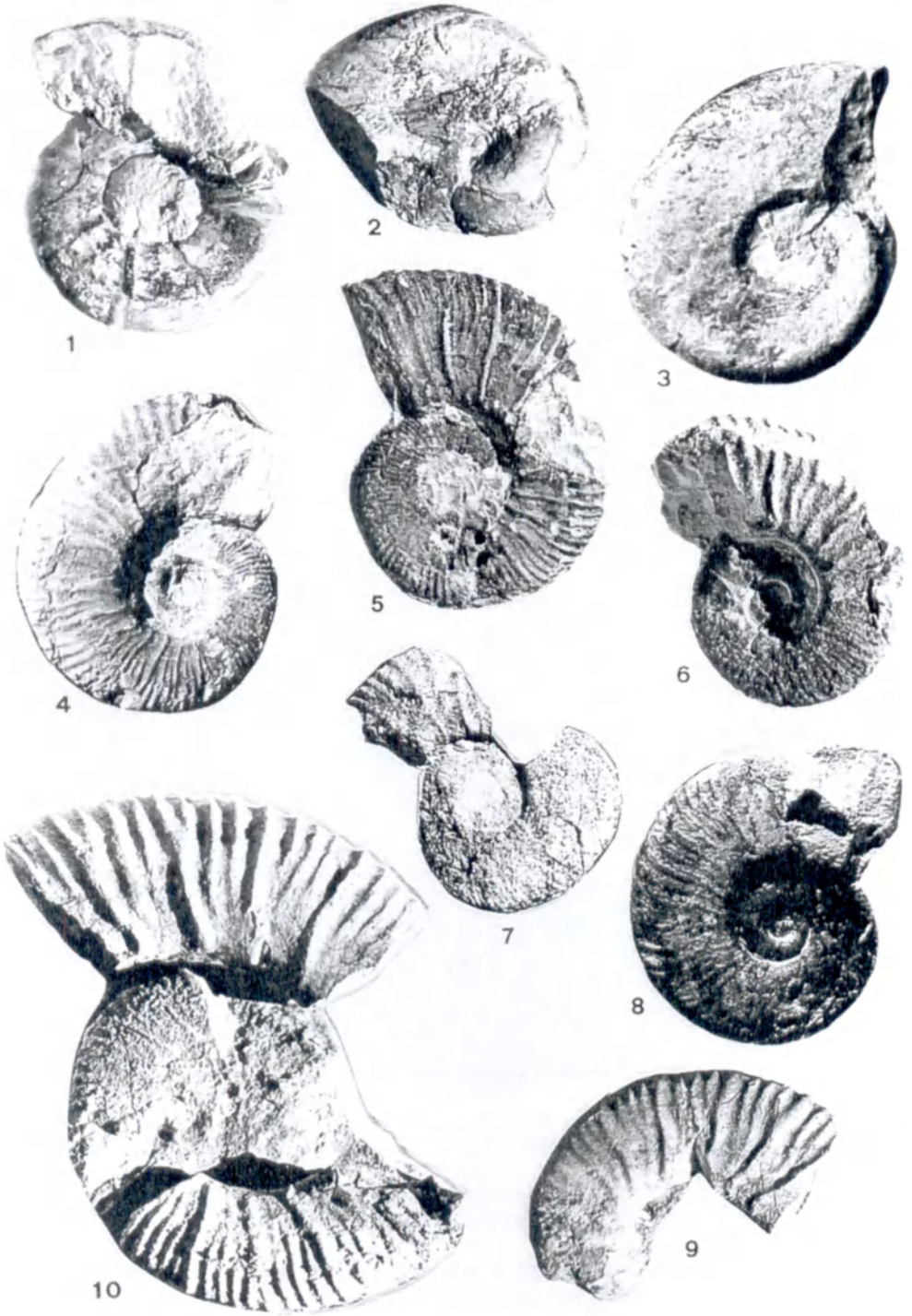

Plate 3

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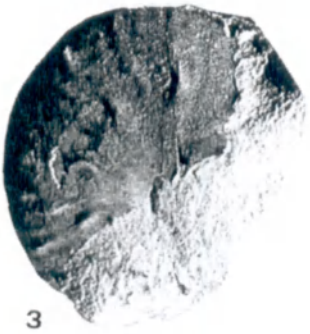

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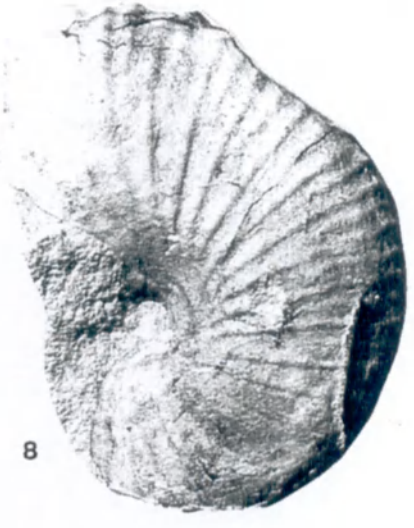

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