

## A revision of the Jurassic gastropod fauna from Cape San Vigilio (S-Alps, Italy), published by M. Vacek (1886)

By

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**Abstract:** This taxonomic revision is based on VACEK's originals, deposited in the Geologische Bundesanstalt in Vienna. One of the species represents a new genus, *Vacekia* (Trochidae), designed here and definitions are given for two new species which have been misidentified: *Bathrotomaria submandokii* sp.n. (instead of *Pleurotomaria subdecorata*) and *Neritopsis dumortieri* sp.n. (instead of *Neritopsis spinosa*). Almost all the other names needed some correction, too.

### INTRODUCTION

This systematical revision was made in the frame of a general reexamination to update the old Tethyan Jurassic gastropod faunistic sources for paleoecological, paleobiogeographical and stratigraphical evaluation. VACEK's fauna, found in the so-called "Oolite di S. Vigilio", is an especially important one because it is partially filling the gaps of knowledge between the relatively well-known Hettangian - Pliensbachian and Bajocian gastropod fauna of the Tethyan region.

The gastropods constitute only a small part of the enormous amount of fossils found in the same outcrop and discussed by VACEK (1886) in his monograph. Other gastropod collections from the locality were also studied by MENEGHINI (1879), de GREGORIO (1886), FUCINI (1892) and GIOLI (1887, 1888). Recently, the originals of the latter authors have not been available but they are planned to be studied as soon as it becomes possible; so this paper is only the first step toward a complete revision. Unfortunately, VACEK's non-figured material has also been lost.

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The dimensions are given in millimetres. Please, consider that sometimes the measurements are taken on slightly damaged shell portions. The following shortenings are used: H= total height of shell; HL= height of last whorl; HA= height of aperture; D= diameter of shell; W= width of aperture; A= apical (spiral) angle, consisting of two numbers in case of coeloconical and cyrtconical forms, the first one measured on apex the second one on the last whorl; L= length of patelliform shell (in anterior - posterior direction).

## LOCALITY

The material was collected in an outcrop of Cape San Vigilio at Lake Garda near the village Torri del Benaco (North Italy, Southern Alps). A nearly 1 meter thick bed in the uppermost part of the oolitic limestone sequence yielded the rich fauna. Recently this bed has not been found, only several, some centimetres thin, condensed limestone horizons are fossiliferous in the same stratigraphic level. They are containing elements of VACEK's fauna.

The section is a rather popular one, studied from point of views of stratigraphy and paleoecology by numerous geologists beside the cited authors. Here, we mention only some of the latest publications which give a revue of the older ones, too.

STURANI (1964), in accordance with BUCKMAN (1910) and ARKELL (1956), states that VACEK's material has come from different stratigraphical levels from Uppermost Toarcian (Aalensis Zone) to Lowermost Bajocian (Discites Subzone of Sowerby Z.). STURANI gave also an accurate description of the sequence and suggested a subdivision of the "Oolite di S. Vigilio".

BARBUJANI et al. (1986) took into consideration the Cape San Vigilio section in a re-modelling of the sedimentary environment and the controlling geodynamic factors. In this paper, the Cape San Vigilio sequence was formally subdivided into three formations and, as a whole, it assumed the status of a group. From environmental point of view "the rebuilding of the partially drowned platform margin" is ascribed to the San Vigilio Oolite.

In spite of the recent studies and the ever increasing knowledge of the lithological and sedimentological characteristics of the section, it was impossible to redefine the exact level(s) which provided VACEK's collection. The preservation of the gastropods confirms ARKELL's statement that they have come out of condensed limestone. The total lack of the well-dated Bajocian forms (CONTI and SZABÓ, in print) suggests that the gastropod-bearing levels could be below the "hardground", recognised by STURANI (Sturani 1964, p. 8., fig. 2) and ascribed by BARBUJANI et al. (1986) to the San Vigilio Oolite Fm. within the San Vigilio Group.

## SYSTEMATICS

Order ARCHAEOGASTROPODA Thiele, 1925

Superfamily Euomphalacea de Koninck, 1881

Family EUOMPHALIDAE de Koninck, 1881

Genus Discohelix Dunker, 1848

Discohelix aff. dictyota Wendt, 1968

Plate I: 1-2.

1886. Discohelix cf. reticulata Stoliczka - VACEK, S. 108, Taf. XVIII, Fig. 11.

aff. 1968. Discohelix (Discohelix) dictyota n. sp. - WENDT, p. 565, pl. 107, figs. 1-8; text-figs. 2A, 3E

Material: a fragmentary specimen (1886/5/62).

Description: The only specimen is a small, slightly excavated one. The visible part seems to be the spiral side but the embryonal shell is damaged, that is why the orientation remains uncertain. The peristome is not preserved so we can not decide whether it is an adult or a juvenile specimen. The cross-section of the whorls is trapezoidal with nearly equal width and height. There are definite carinae on both outer angulations of the whorls. Only collabral ornamentation is present between the two sutures, these are riblets, beginning immediately at the inner suture on a low, corrugated, longitudinal elevation. They end on the carinae of the outer angulations in tubercles, which are much stronger than those along the inner suture. The repetition of the riblets is not completely regular. A number of

them is bifurcate between an inner and two outer tubercles. Some others disappear around the halfway between the two sutures, they are in pairs of opposite direction but they do not meet each-other. A weak spiral lineation is observable only on the outer face of the penultimate whorl of the specimen.

**Remarks:** The shape of the shell and the characters of the transversal ornament are the same as in *D. dictyota*. Most important feature in common is the weak, corrugated, spiral elevation along the inner suture. This kind of ornament is not frequent in *Discohelix*. The only significant difference is that *D. dictyota* has a spiral lineation not only on the outer (dorsal) surface (like VACEK's specimen), but also on the spiral and umbilical sides at the same ontogenetic stage. In this regard the specimen is similar to STOLICZKA's *D. reticulata* but the dimensions are significantly different: the width of the whorls is bigger than the height in *D. reticulata*, while this ratio is just reversed in our case; the spiral elevation along the inner suture is present only on VACEK's specimen.

We use the open name "*D. aff. dictyota*" in spite of the mentioned few differences which do not bear too much significance in some other groups. Eg. in *Proconulus* (see CONTI and SZABÓ 1987) a great variety from presence to absence, different length, position and density of spiral lineation occur even in one species. This time, we have not yet had enough data to estimate the real taxonomic value of this feature in *Discohelix* species.

Superfamily Pleurotomariacea Swainson, 1840

Family PLEUROTOMARIIDAE Swainson, 1840

Genus *Bathrotomaria* Cox, 1956

*Bathrotomaria submandokii* sp. n.

Plate I: 3-6.

1866. *Pleurotomaria subreticulata* Münster - VACEK, S. 106, Taf. XVIII, Fig. 3.

**Holotype:** 1886/5/57 - **Name:** morphologically close to the Bajocian species *Bathrotomaria mandokii* Szabó, 1980 - **Type locality:** Cape San Vigilio - **Type strata:** San Vigilio Oolite Formation - **Diagnosis:** low conical shell with rounded angulation on whorls; selenizone just below angulation; outer face slightly concave on juvenile, flattened on last whorls; hardly convex, broadly phaneromphalous base; retiform ornament of collabral and spiral cords.

**Material:** a single specimen (1886/5/57).

<u>Measurements:</u>	H	HL	HA	D	W	A
	18	12	8	22	8.5	85°

**Description:** The shell is medium-sized, broadly conical. The angulation of the whorls is less definite in juvenile part but the last two whorls are gradate. The rather wide selenizone (roughly a sixth of distance between two sutures) runs just below the rounded angulation. The ramp is somewhat narrower than the outer face. They, and the selenizone are flattened on the adult shell portions, but the outer face is slightly concave on juvenile whorls. The wide, a little convex base is delimited by a rounded-angular periphery externally, but it gradually inclines into a broadly opened umbilicus internally. The embryonal shell and the peristome are not preserved.

Equally strong spiral and collabral cords compose the retiform ornament on the whorls and on the base. The interspaces of their pairs are different above and below the selenizone. Both the spiral and transverse elements are sparser on the ramp. The growth-lines are prosocline-slightly prosoclyrt on the ramp, opisthocline on the outer face, and reversed S-shape lines are reflected on the basal part of the inner mould.

**Remarks:** MÜNSTER's species *Pleurotomaria subdecorata* differs from the San Vigilio specimen in the position of the selenizone and in the ornament. Its selenizone runs in the middle of the outer face, which is really a *Pleurotomaria* character. Beside this, its collabral ornament is subordinate to spiral cords and the periphery is subnodose. D'ORBIGNY's

Pleurotomaria subdecorata, mentioned also in VACEK's synonymist has whorls without angulation, so it is not identical with Bathrotomaria submandokii sp.n., nor with the true Pleurotomaria subdecorata Münster.

A species most similar to this new one is the Bajocian Bathrotomaria mandokii Szabó, 1980, known from the Bakony Mts. (Hungary). However, VACEK's specimen has a spiral angle  $16^\circ$  bigger than the biggest value in Bathrotomaria mandokii specimens ( $68^\circ$ - $72^\circ$ ). Other measurements are also significantly different and, in Bathrotomaria mandokii, the adult whorls are ornamented by spiral grooves while B. submandokii is covered by spiral cords.

It is necessary to notice that B. mandokii and B. submandokii bear one feature in common: the position of the selenizone, just below the angulation of the whorls, which is a difference from the typical Bathrotomaria, having an anal band just on the angulation.

Genus Leptomaria, E. Eudes - Deslongchamps, 1864

Leptomaria aff. fasciata (Sowerby, 1818)

Plate I: 7.

- aff. 1818. Trochus fasciatus - SOWERBY, p. 221, pl. 220, fig. 1.  
 aff. 1844. Pleurotomaria fasciata Sowerby - GOLDFUSS, S. 64, Taf. 183, Fig. 1.  
 aff. 1849. Pleurotomaria fasciata var. platyspira - DESLONGCHAMPS, p. 54, pl. VI, fig. 2a-c.  
 aff. 1884. Pleurotomaria fasciata Sowerby - QUENSTEDT, S. 347, Taf. 198, Fig. 37-38  
 1886. Pleurotomaria fasciata Sowerby - VACEK, S. 106, Taf. XVIII, Fig. 2.  
 aff. 1895. Pleurotomaria fasciata Sowerby - HUDLESTON, p. 416, pl. XXXVI, fig. 3.  
 aff. 1907. Pleurotomaria fasciata Sowerby - SIEBERER, S. 32, Taf. IV, Fig. 5.

Material: a damaged inner mould specimen with shelly portions (1896/5/56).

<u>Measurements</u> :	H	HL	HA	D	W	A
	40	24	15	40	17	$87^\circ$ - $58^\circ$

Description: The specimen is a rather large, moderately cyrtconical one. The whorls are convex, without angulation, their cross-section is subquadrate. The base is slightly convex, with a largely opened umbilicus in the middle. A wide, flat selenizone runs just below the midwhorl, its width is about a sixth of the distance between the two sutures. The periphery is rounded angular, the peristome is not preserved.

A retiform ornament is present on the whorls and within the umbilicus. It consists of spiral cords and transverse threads, the latter are less regularly spaced. On the base, the spiral cords vary in width, many of them are really lace. The grooves, dissecting them, are more consistent in width. The orientation of the growth-lines is prosocline, somewhat prosoclyt above the selenizone and opisthocline-prosoclyt below it. Their shape is a reversed "S" at the base and slightly prosocline, straight within the umbilicus.

Remarks: The whorls of the true Leptomaria fasciata are less convex than those of this specimen, so the suture is in a less deep furrow. The umbilicus is not so broad as in Vacek's specimen. This latter has a distinct cyrtconical spire-outline, while the others are conical and cyrtconical only at the apical region. However, these differences do not seem to be satisfactory to separate the specimen from the "fasciata group", said to be extremely variable (HUDLESTON 1895), without comparison of materials.

Superfamily Fissurellacea Fleming, 1822

Family FISSURELLIDAE Fleming, 1822

Subfamily Emarginulinae Gray, 1834

Genus Austriacopsis Haber, 1932

Subgenus Balinula Dacque, 1933

Austriacopsis (Balinula) ? vaceki Haber, 1932

Plate I: 8-9.

1886. *Emarginula* sp. ind. - VACEK, S. 106, Taf XVIII, Fig. 1.

1932. *Austriacopsis* ? (*Austriacopsis*) *vaceki* Haber, 1932 - HABER, s. 257.

Material: a partially resorbed inner mould specimen (1886/5/55)

<u>Measurements</u> :	H	L	W
	9.5	24	20

Description: The specimen is a medium-sized, topee-shaped inner mould with a central apex and a rim of two millimetres, bending sharply outward near the peristome almost into a plane. In the curved region, there is the infilling of the anal opening. It is rather high, indicating a thick shell. It is impossible to decide whether the bending of the shell is only an inner character, or it is visible on the outer surface too. The thick shell permits to imagine both possibilities. The anal opening is near the peristome, and the print of the shell tends to close round it, but there is an opening toward the peristome more likely because of the preservation.

The ornament consists of radial ribs, continuing in short spines on the peristome. Finer ornamental elements are not reflected on the inner mould.

Remarks: If a peristomial slit were justified by another find, the right systematic position would be within *Emarginula*, but the hardly asymmetric position of the exhalant opening could also be a basis for further discussions about the exact systematic place.

Within *Austriacopsis*, the subgenus *Balinula* is defined as to have an anal trema near the peristome, but it bears an apex shifted almost above the posterior margin of the peristome. The systematic meaning of this difference also needs a clearing up.

Superfamily Trochacea Rafinesque, 1815

Family TROCHIDAE Rafinesque, 1815

Subfamily uncertain

Genus *Vacekia* gen. n.

Type species: *Vacekia gardana* (VACEK, 1886), see below.

Diagnosis: Medium-sized, slightly pupiform shell with somewhat convex whorls. Periphery strongly rounded on adult last whorl but subangular in juvenile stage. Base convex, anomphalous. Peristome not in one plane, outer lip strongly prosocline, columellar lip vertical. Ornament of nodose spiral laces with fine, regularly spaced collabral riblets between their pairs. False transverse costae, built up of nodes of different growth stages, less prosocline than growth-lines which run parallel to riblets. Axially elongated aperture.

Remarks: Most genera, comparable to *VACEKIA* gen. n., can be found in Trochidae (Chilodontinae and Monodontinae), but without the exact knowledge of the peristome further precisions in subfamilial position cannot be given. The juvenile shell and the characters of the ornament are similar to those of *Pseudoclanulus* (Chilodontinae), but they clearly differ in the shape of the last whorl, because it does not follow the earlier coiling in *Vacekia*. *Agathodonta*, from the same subfamily, resembles also, but it has more convex whorls, a deeper suture and a less prosocline outer lip. In Monodontinae, *Ozodochilus* is near in shape but it bears a less marked ornament and a different kind of peristome; its columellar lip is convex and without an angulation at the parietal region, while *Vacekia* gen. n., has a vertical columellar lip, meeting in an angle with the base. The aperture is roundish in *Ozodochilus* but transversally elongated in *Vacekia*. *Microschisa* (Pseudomelaniidae) is also similar, but it bears rounded periphery also on the juvenile whorls and an outer lip, much less prosocline than in *Vacekia*.

*Vacekia gardana* (Vacek, 1886)

Plate II: 5-6.

1886. *Littorina Gardana* nov. sp. - VACEK, S. 109, Taf. XVIII, Fig. 10.

Material: an inner mould specimen with shelly parts (1886/5/66).

<u>Measurements</u> :	H	HL	HA	D	W	A
	26	19	14	18	9.5	95°- 48°

Remarks: In VACEK's figure, an outer lip parallel to the false costae is visible, that was made artificially during preparation. The right outer lip must be much more prosocline and slightly opisthoclyt as the growth-lines show it.

Superfamily Craspedostomatacea Wenz, 1938

Family CODONOCHELLIDAE S. A. Miller, 1889

Genus Ventricaria Koken, 1896

*Ventricaria pupaeforma* (Vacek, 1886)

Plate II: 7-8.

1886. *Onkospira pupaeformis* n. sp. - VACEK, S. 106, Taf. XVIII, Fig. 8, 9.

1886. *Turbo trillus* de Gregorio - de GREGORIO, p. 18, tav. XI, fig. 25a-c.

Material: three specimens, well-completing each-other (1886/5/58)

<u>Measurements</u> :	H	HL	HA	D	W	A
	-	18	10.5	17	11	? - 38°

Description: The shell of this species is medium-sized, low spired, pupiform and very thin. The whorls are feebly convex and, on the juvenile part, angulate at the periphery but no angulation on the adult last whorl. The suture runs just on the angulation of the previous whorl (if it is present). The outer lip is circular, tapered, but internally thickened. The columellar lip is vertical with an angulation at the meeting to the outer lip. The parietal lip and the apex are unknown. The base is convex and possibly narrowly umbilicated. Fine network ornament covers the whole shell, of which the prosocline transverse threads are a bit rarer and more marked.

Remarks: The diagnosis of Ventricaria fits well on this species, disregarding the apical part. The most closely allied species is Ventricaria vesicula Szabó, 1983 which has a more depressed spire, so a subglobose shell and fewer whorls. The shape of Stylifer? (Pirper) caplus de Gregorio, 1886 is very near to those of the species mentioned here but, by the description, it has no ornament. However, it may be an inner mould of a Ventricaria specimen but the material has not been found since the second World War.

Superfamily Neritacea Rafinesque, 1815

Family NERITOPSIDAE Gray, 1847

Genus Neritopsis Grateloup, 1832

*Neritopsis abbas* Hudleston, 1894

Plate I: 10-11.

1886. *Neritopsis Philea* d'Orbigny - VACEK, S. 107, Taf. XVIII, Fig. 4.

1894. *Neritopsis Philea* var. *Abbas* - HUDLESTON, p. 341, pl XXVII, Figs. 11a-c.

Material: a damaged specimen (1886/5/60).

<u>Measurements</u> :	H	HL	HA	D	W	A
	36	34	27	33	24	106°

**Description:** The specimen is a rather large, subglobose, shelly one with a short spire. The whorls are strongly convex with a narrow ramp, running along the suture; its outer rim is rounded. The suture itself runs in a deep furrow. In cross-section the whorls are axially ovate, almost circular with an angulation at the suture. The spiral ornament consists of two kinds of lines; between the pairs of the stronger ones (cords), 2-4 threads are visible. The cords are lacking from the ramp. The only observable transverse ornamental elements are the prosocline growth-lines.

**Remarks:** VACEK employed the name *Neritopsis philea* d'Orbigny for this form, but there are some important differences why we have to make a correction. *Neritopsis philea* has transverse costae and small spines on them at the crossing points with the spiral cords, and these elements are absent from the San Vigilio specimen. For similar forms HUDLESTON (1894) suggested a "variety" of *Neritopsis philea*, named as "Abbas". The mentioned differences are enough to regard the Bradford Abbas and the San Vigilio specimens as independent species. Because HUDLESTON's remarks are containing all the necessary informations, the name "abbas" is employable.

The most comparable one of the similarly aged *Neritopsis* species is *N. baugieriana* d'Orbigny, but it bears regularly repeating transverse ridges along the suture on the last whorl, and only one intersecting thread between the pairs of the cords. The juvenile shell is distinguishable from the small sized species *Neritopsis subsulcosa* (d'Orbigny) on the basis of the uniform spiral lineation on this latter one.

*Neritopsis benacensis* Vacek, 1886  
Plate II: 1-4.

1886. *Neritopsis Benacensis* nov. sp. - VACEK, S. 107, Taf XVIII, Fig. 5.

1886. *Neritopsis igilis* de Gregorio - DE GREGORIO, p. 19, tav. XII, fig. 6-8, 12, 13.

1888. *Necitopsis Benacensis* Vacek - GIOLI, p. 8.

1899. *Neritopsis Benacensis* Vacek - GRECO, p. 124.

**Material:** a relatively well-preserved specimen (1886/5/61)

<u>Measurements:</u>	H	HL	HA	D	W	A
	17	15.5	13	17	11	120°

**Description:** The only specimen is a medium sized, very low spired one. Along the suture, there is a narrow, slightly convex ramp-like band, subangulate abaxially. The cross section of the whorls (and certainly the peristome) are elongated in a direction nearly parallel to axis. The embryonal shell is damaged, but it seems to be smooth. The post-nepionic shell is covered by alternating threads and lines, then, from a sudden onset, the last one and a half whorls are densely ribbed. These costae run from suture to suture (or to inner lip), repeating rather regularly and reflecting on the inner mould (so they are not varices).

**Remarks:** *Neritopsis* species with similar sculpture were common during the Jurassic Period. Unfortunately, the number of their morphological characters are not too high, so it is not easy to give clear distinction of the species without comparison of specimens. For lack of UHLIG's originals (1878) which have been lost, we are not quite sure whether the following method to separate *N. benacensis* Vacek from *N. haueri* Uhlig is reliable or not: UHLIG's species is more depressed, aperture and cross section are nearly circular (ovate in *N. benacensis*), and uniform spiral lines cover the shell while threads and lines are alternating on *N. benacensis*.

D'ORBIGNY's *Neritopsis bajocensis* has a similar shape, but its gradually weakening costae spread from the suture only to the periphery on the last whorl; the rounded angulation is present only on the species *N. benacensis* Vacek.

*Neritopsis elegantissima* Hörnes and the related species (e. g. *N. taramellii* G. G. Gemmellaro, 1879, *N. praeclara* Seguenza, 1895) are separable, besides the somewhat different shape, on the number and mainly on the existence of varices, which are not reflected on the inner mould.

*Neritopsis dumortieri* sp. n.

Plate I: 12-13.

1869. *Neritopsis hebertana* d'Orbigny - DUMORTIER, p. 135, pl. XXXV, fig. 5-7.

1886. *Neritopsis spinosa* Hebert et Deslongchamps - VACEK, S. 107, Taf. XVIII, Fig. 6.

?1899. *Neritopsis spinosa* Heb. et Desl. - GRECO, p. 124, tav. IX, fig. 18-20.

**Holotype:** 1886/5/59 - **Name:** after the first representative of the species - **Type locality:** Capo San Vigilio - **Type strata:** San Vigilio Limestone Formation - **Diagnosis:** medium sized shell with three spiral carinae on last whorl, uppermost one delimiting narrow ramp; rare collabral ribs, bearing long, hollow spines at crossing points with carinae; additional ornament of spiral threads and lines.

**Material:** a damaged, shelly specimen (1886/5/59).

Measurements:	H	HL	HA	D	W	A
	-	11	-	13 <sup>+</sup>	-	-
				21 <sup>++</sup>		

+ on basis of spine

++ on top of spine

**Description:** The given specimen is a medium sized, subglobose one. Its juvenile part is damaged but the adult characters are well visible. Three uniform spiral carinae are present on the last whorl; one delimiting a narrow, moderately convex ramp, another corresponds to the periphery and the lowermost one runs in the middle of the base. The most prominent transverse ornamental elements are the sparse collabral ribs, similar to the carinae in strength. Long, hollow spines with slit along their full length are sitting at the crossing points of the carinae and the costae. Spiral threads and intersecting lines cover the whole shell, and even the spines.

**Remarks:** This species was originally identified as *Neritopsis spinosa* Hebert and Deslongchamps by VACEK. Though under the name *N. spinosa* HEBERT and DESLONGCHAMPS (1860) depicted three forms, we could not find only one, really similar to the San Vigilio specimen. Certainly, the great variability, suggested by the figures was why the authors of the above synonym-list used the name *N. spinosa*. Only the specimen in Fig. 5b has long spines like *N. dumortieri* sp. n., but the number of carinae is four, and the peripheral one does not bear spines at all; specimens in Figs. 5a, c-d have three carinae, but their shape is significantly different, as well as that of the specimen in Fig. 5b; they are more depressed than *N. dumortieri* sp. n., and they have a circular whorl cross-section and aperture, while these are ovate in *N. dumortieri* sp. n. Only this latter one has a definite, almost flat ramp.

DUMORTIER named has find *N. hebertana* d'Orbigny, but this name covered a species with four carinae, dense collabral ribs and only nodes at the crossing points of the mentioned ornamental elements. The figured specimen agrees both in shape and ornament to the San Vigilio specimen.

The *N. "spinosa"* specimens, depicted by GRECO (1899), seem to belong also to *N. dumortieri* sp. n., but their preservation is rather bad.

From the spiny *Neritopsis* species group, the Bajocian *N. spinigera* Szabó, 1982 is the nearest one in age to *N. dumortieri* sp. n. but it has only one row of spines at the lower rim of the ramp.

Order CAENO GASTROPODA Cox, 1959

Superfamily Xenophoracea Deshayes, 1864

Family LAMELLIPHORIDAE Korobkov, 1955

Genus *Lamelliphorus* Cossmann, 1915

*Lamelliphorus supraliasinus* (Vacek, 1886)

Plate III: 1-10

1886. *Onustus supraliasinus* n. sp. - VACEK, S. 108, Taf. XVIII, Fig. 14-16.



1886. *Onustus glincus* De Greg. - DE GREGORIO, p. 18, tav. XI, fig. 28-30.  
 1888. *Onustus supraliasinus* Vacek - GIOLI, p. 6, tav. I, fig. 4.  
 1893. *Onustus supraliasinus* Vacek - BOTTO-MICCA, p. 171.  
 1899. *Onustus supraliasinus* Vacek - GRECO, p. 126, tav. IX, fig. 23.

Material: three specimens in a good state of preservation (1886/5/63), see also Lamelliphorus levis Vacek?.

<u>Measurements:</u>	H	HL	HA	D	W	A
Pl. III: 8-10	-	9	6.5	20	-	-
Pl. III: 3-7	-	11	6	22.5	14	-

Description: This species has a rather large, low coeloconical shell with sigmoidal surface of the whorls. The periphery is sharply angular on the juvenile shells and bears a wide frill on the adult last whorl. The flat base is concave along the frill and excavated in the middle. The extremely prosocline peristome has a weak thickening on the columellar-basal lip. Slightly opisthocline to slightly prosocline, straight or hardly curved ribs ornament the whorls. These ribs are sharply angulate to the growth-lines, which are rather prosocline on the juvenile and extremely prosocline on the adult whorls with gradual transition.

The ornament of the base consists of strongly opisthocyrt growth-lines, which may be riblet-like at the periphery of the basal deepening. Some obscure spiral lines appear also on the base of one specimen.

Remarks: The shape of juvenile *Lamelliphorus supraliasinus* is comparable with *L. rhombifer* (Uhlig), but the first species has only one while the latter one bears two kinds of transverse riblets, none of which runs parallel with the growth-lines. There is a significant frill on *L. supraliasinus* even on the juvenile shell, but only a granulate carina is present on the periphery of *L. rhombifer*.

*Lamelliphorus* sp. (cf. *supraliasinus* Vacek, 1886)  
 Plate III: 11-12.

1886. *Onustus levis* n. sp. - VACEK, S. 108, Taf. XVIII, Fig. 17.

Material: two specimens in a bad state of preservation (1886/5/64).

Description and remarks: Two large, smooth inner moulds are the material, having measurements which do not preclude the possibility of belonging to *Lamelliphorus supraliasinus* (Vacek, 1886); see above. The special opisthocline-opisthocyrt lines on the whorls are traces of the basal growth-lines in thin remains of basal shell portions, resorbed not completely. The conditions of the material are not satisfactory to state independence of the "species" *L. levis*.

Superfamily Strombacea Swainson, 1840  
 Family APORRHAIIDAE Adams and Adams, 1858  
 Genus *Piettea* Cossmann, 1904  
 Subgenus *Trieteteia* Conti and Szabó, 1987

*Piettea* (*Trieteteia*?) *mipa* (De Gregorio, 1886)  
 Plate II: 12-14.

1886. *Alaria* n. sp. indet. - VACEK, S. 109, Taf. XVIII, Fig. 12-13.  
 1886. *Alaria mipa* De Greg. - DE GREGORIO, p. 19, tav. XII, fig. 10a-b.

Material: two fragmentary, rather poorly preserved specimens (1886/5/67).

Description: The most prominent character in the shape of this species is the very low spiral angle on the shell part, following the juvenile whorls. Seemingly, the measurements of these whorls do not change, only the last whorl is obviously larger than the others. The

whorls are slightly convex and have a weak angulation just below the middle, it is expressed by a spiral cord. On the inner mould, the angulation is reflected near the peristome only, similarly to the lower, weaker angulation. The peristome itself is very poorly preserved, the apical and the columellar digitations are observable on one of the specimens, but the shape of the outer lip between them is uncertain.

Spiral threads cover the whole shell, two of them are stronger (cords); one on the angulation of the whorls. The other one is visible only on the last whorl below the first one, and it is just overlapped by the suture on the spire. The collabral ornament consists of fine, opisthocyrt growth-lines and, on the juvenile part, riblets with small spines at the angulation. The number of the spines are smaller than that of the riblets. The spines follow each other with more or less regular interspaces. About 120° before the peristome, a spine of an earlier peristome is visible.

**Remarks:** The habit of this form corresponds to the subgenus *Trietteia* Conti and Szabó, 1987. That is why we use the subgeneric name without sure knowledge about whether this species has a third digitation on the outer lip or not. A decision in this question needs further material.

Though DE GREGORIO's description and figures do not fit well on VACEK's specimens, we have to accept his specific name and him as author, because in the appendix to his paper he states the identity of his *Alaria mipa* and VACEK's *Alaria* n.sp. indet. DE GREGORIO's material has been lost, so a comparison is impossible.

The most closely related species is *Pietteia* (*Trietteia*) *trispinigera* Szabó, 1983 but it has a lower number of whorls and so a bigger sutural angle. In *P. (T. ?) mipa*, the ratio of the nearly cylindrical shell part is bigger in comparison to the total height.

#### Superfamily Littorinacea Gray, 1840

#### Family PURPURINIDAE Zittel, 1895

#### Genus *Purpurina* d'Orbigny, 1850

#### *Purpurina* cf. *elaborata* (Lycett, 1850)

Plate II: 9-11.

- cf. 1850. *Turbo elaboratus* Lycett - LYCETT, p. 416, pl. II, fig. 1.  
 1886. *Purpurina Bellona* d'Orbigny - VACEK, S. 109, Taf. XVIII, Fig. 7.  
 cf. 1887. *Purpurina elaborata* Lycett - HUDLESTON, p. 85, pl. I, figs. 1a-g.

**Material:** an inner mould with shelly portions (1886/5/65)

<u>Measurements:</u>	H	HL	HA	D	W	A
	22	17	7	16	10	65°

**Description:** Only a medium sized, littoriniform specimen is available. Its rather low spire is composed of convex whorls with sharp angulation at the upper third of the distance between the two sutures. This angulation delimites a moderately broad, concave ramp. The hardly convex outer face curves on the last whorl into the convex, anomphalous base gradually. The inner space of the whorls is ovate, the peristome is unknown. Except the ramp, the shell is covered by dense spiral laces with intersecting narrow grooves. Strong, regularly repeating varices give the transverse ornament. They do not reach the suture, and end just below the periphery abaxially. The growth-lines are a bit prosocline below the ramp angle, and opisthocyrt-prosocline on the ramp.

**Remarks:** *Purpurina elaborata* (Lycett) is the species, which bears a similarly dense spiral lineation, but VACEK's specimen has a somewhat higher spire and a bigger sutural angle. In these latter two characters this specimen resembles to HUDLESTON's (1887) *Purpurina* "var. or species" in pl. I, fig. 2, but its lineation is sparser and much more marked. *Purpurina bellona* d'Orbigny has a quite sparse lineation.

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## EXPLANATION OF PLATES

### Plate I.

- 1- 2: *Discohelix* aff. *dictyota* Wendt, 1968; 1= nat. size, 2= x4.7
- 3- 6: *Bathrotomaria submandokii* sp. n., holotype; 3-5= nat. size, 6= oblique view, showing ornament, x4.5
- 7: *Leptomaria* aff. *fasciata* (Sowerby, 1818), x1.2
- 8- 9: *Austriacopsis* (*Balinula*)? *vaceki* Haber, 1932, nat. size
- 10-11: *Neritopsis abbas* Hudleston, 1894, nat. size
- 12-13: *Neritopsis dumortieri* sp. n., holotype, x2

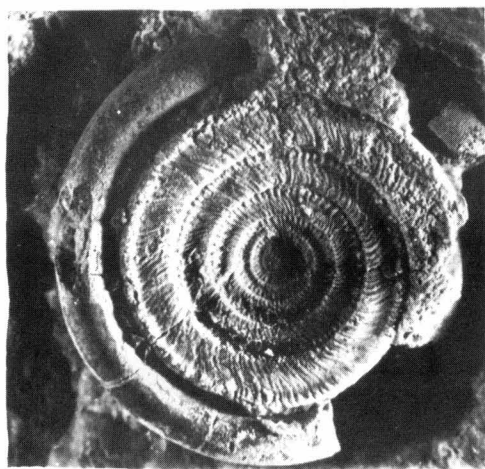
### Plate II.

- 1- 4: *Neritopsis benacensis* Vacek, 1886; 1-2= nat. size, 3-4= x2
- 5- 6: *Vacekia gardana* (Vacek, 1886), type species of *Vacekia* gen. n.; 5= nat. size, 6= x2
- 7- 8: *Ventricaria pupaeforma* (Vacek, 1886); 7= nat. size of lectotype, 8= another specimen, showing the ornament x3; the lectotype corresponds to the specimen in Vacek's fig. 8.
- 9-11: *Purpurina* cf. *elaborata* (Lycett, 1850); 9-10= nat. size, 11= x2.2
- 12-14: *Pietteia* (*Trietteia*?) *mipa* (De Gregorio, 1886); 12= lectotype, nat. size, 13= juvenile part of lectotype, x4, 14= ornament of adult whorls on another specimen, x4

### Plate III.

- 1-10: *Lamelliphorus supraliasinus* (Vacek, 1886); 1-4, 8, 10= nat. size, 5-7, 9= x2; 3-7= lectotype
- 11-12: *Lamelliphorus* sp. (cf. *supraliasinus* /Vacek, 1886/= "*Onustus laevis* Vacek, 1886", nat. size

PLATE I.



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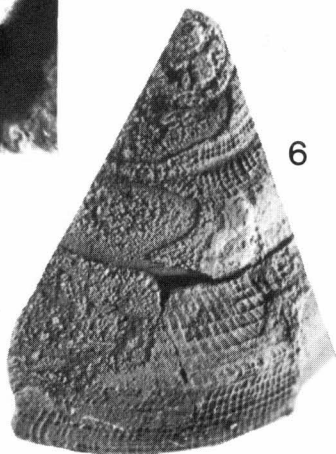


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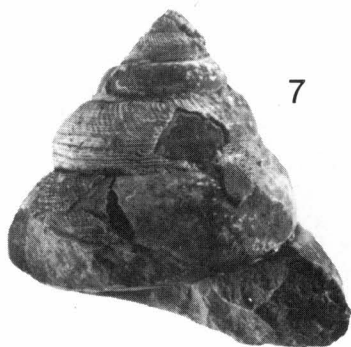


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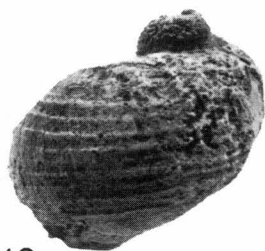
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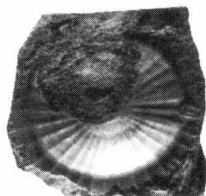
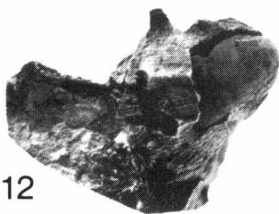
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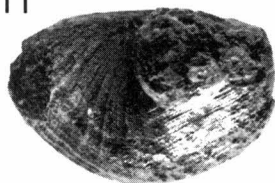


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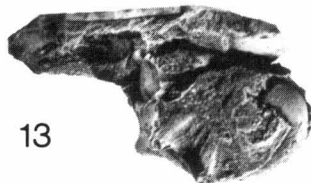


PLATE II.

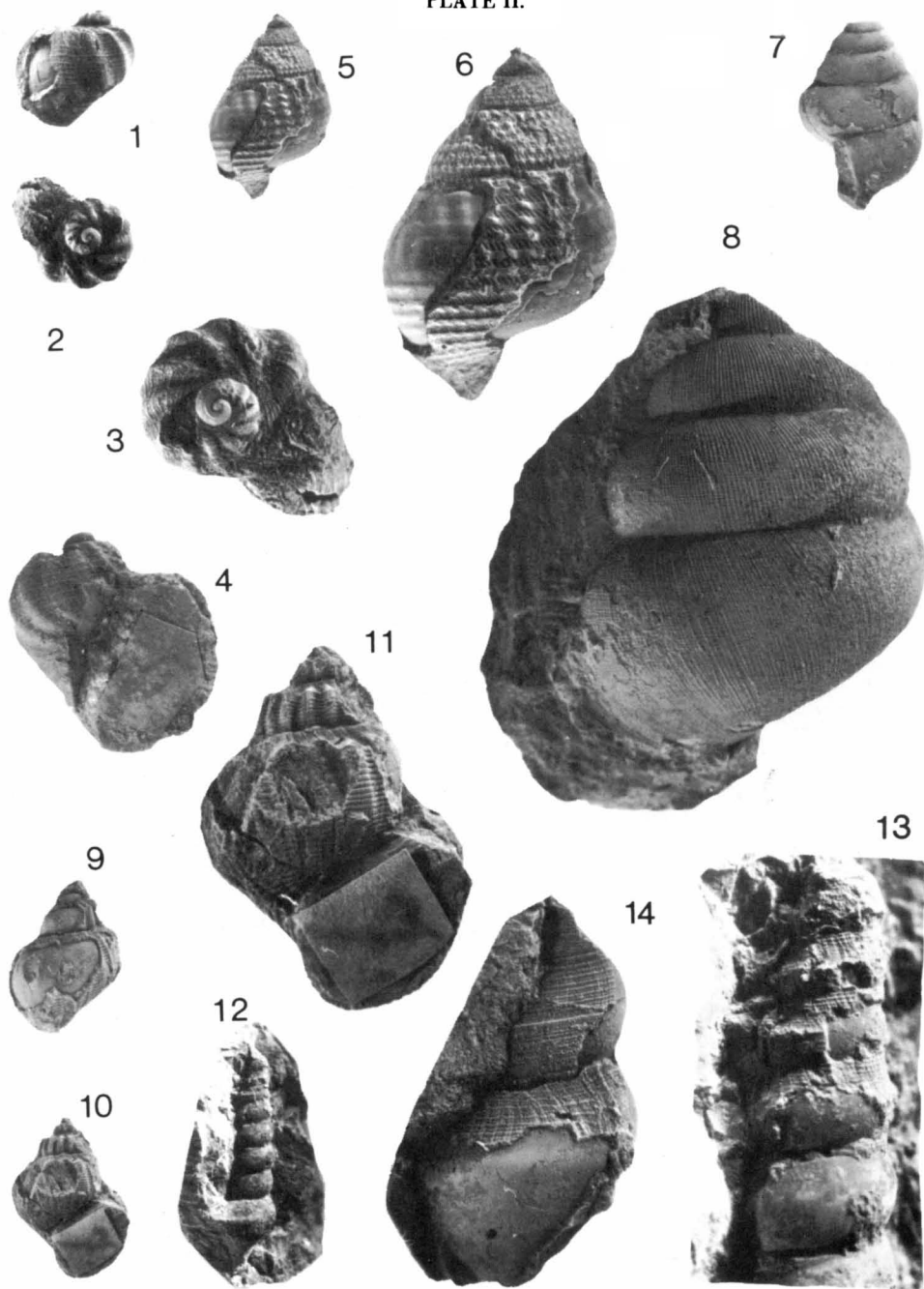


PLATE III.

