

Pyramidellidae (Mollusca, Gastropoda, Heterobranchia) collected during the Dutch CANCAP and MAURITANIA expeditions in the south-eastern part of the North Atlantic Ocean (part 2)

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Key words: Pyramidellidae; new species; North Atlantic Ocean.

The species of the Pyramidellidae collected during several expeditions in the south-eastern part of the North Atlantic Ocean are listed, with locality data, depth ranges, and notes on nomenclature, systematics and distribution. The samples classified with the genera *Eulimella* (partly), *Anisocycla*, *Syrnola*, *Chrysallida* and *Odostomella* are dealt with in this paper. In total 70 species are reported from the research area, 24 of which are described as new to science. A lectotype of *Obeliscus gracillima* Smith, 1872 (= *Eulimella variabilis* de Folin, 1870) and neotypes of *Chrysallida multicostata* (Jeffreys, 1884) and *Jaminia obtusa* Brown, 1827, are designated.

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Introduction

For a general introduction to the Dutch marine expeditions in the North Atlantic Ocean during the period 1976-1988, and references to the literature, see part 1 of this series (van Aartsen et al., 1998).

In this second part of our report on the Pyramidellidae collected during the CANCAP and MAURITANIA expeditions we deal with those species of the genus *Eulimella* Forbes & MacAndrew, 1846, that were not yet treated in part 1, and all the species

of the genera *Anisocyclus* Monterosato, 1880, *Syrnola* A. Adams, 1860, *Chrysallida* Carpenter, 1856, and *Odostomella* Bucquoy, Dautzenberg & Dollfus, 1883. During the composition of this report, the third part of a series of articles on West African Pyramidellidae was published by Peñas & Rolán (September 1998), a few months later than our paper on pyramidellids from that region (van Aartsen et al., June 1998). The publication by Peñas & Rolán deals with the genus *Chrysallida* as defined by those authors, which is somewhat different from our definition (see sub *Chrysallida* in the Systematic part).

It is remarkable that there is so little overlap between the lists of species dealt with in the two articles on *Chrysallida*, although Peñas & Rolán also report on Pyramidellidae of the African coast and the Cape Verde Islands. Only four species from our collections that we recognised as undescribed were also found by Peñas & Rolán and described first by those authors as new to science, viz. *Chrysallida anselmoi* [Mauritania], *C. herosae* [Mauritania], *C. mauritanica* [Mauritania] and *C. pyrgulina* [Cape Verde Islands]. On the other hand, Peñas & Rolán introduced only three nominal species as new which proved to be junior synonyms of species that we described some months earlier, and classified in other genera, in part 1 of this series, viz. *Chrysallida jordi* Peñas & Rolán, ix.1998 [= *Folinella moolenbeeki* van Aartsen, Gittenberger & Goud, vi.1998], *Chrysallida gubbioli* Peñas & Rolán, ix.1998 [= *Folinella holthuisi* van Aartsen, Gittenberger & Goud, vi.1998] and *Chrysallida eugeniae* Peñas & Rolán, ix.1998 [= *Odostomia meijeri* van Aartsen, Gittenberger & Goud, vi.1998]. These three species are from the African mainland coast.

The fact that there is so little overlap strongly suggests that the pyramidellid fauna is still incompletely known and that many species have relatively small geographical ranges. Only a few species occur in both West Africa and Congo or Angola, whereas the Cape Verde Islands seem to have a pyramidellid fauna consisting mainly of endemics. This is corroborated by the results of Peñas & Rolán (1999a, b), published while this report was already submitted for publication.

The species of Pyramidellidae described by Dautzenberg (1889) and Dautzenberg & Fischer (1896) from the Azores, were practically absent from our material. We studied the types of these species, which will be redescribed and figured in an appendix to part three of our series.

In our publications on CANCAP and MAURITANIA expeditions' material we have not followed the supra-generic classification of Schander et al. (1999), because this system was not yet available when we started. We considered it impractical to change halfway the series. As compared to our classification, several taxa are classified at a higher systematic rank by Schander et al. (1999). *Eulimella* is classified with the Turbonillidae Bronn, 1849, *Anisocyclus* with the Anisocyclidae van Aartsen, 1995, and *Syrnola* with the Syrnolidae Saurin, 1958. In their system, the genus *Chrysallida* is one of the genera in the Chrysallidinae Saurin, 1958, a subfamily of the Odostomiidae Pelseneer, 1928. Together with the Amathinidae Ponder, 1987 and the Pyramidellidae Gray, 1840, these families form the superfamily Pyramidelloidea Gray, 1840. This superfamily, sensu Schander et al. (1999), is still dealt with as the family Pyramidellidae in our series.

Material and methods

Additions to the chapter with the same heading in part 1 of this series (van Aartsen et al., 1998): RMNH stands for Nationaal Natuurhistorisch Museum (formerly Rijksmuseum van Natuurlijke Historie), Leiden; ANSP for Academy of Natural Sciences of Philadelphia.

Systematic part

Genus *Eulimella* Forbes & MacAndrew, 1846 [supplementary to part 1 of this series]

In shells of *Eulimella angeli* Peñas & Rolán, 1997, *E. boydae* spec. nov., *E. endolamelata* Schander, 1994, and *E. vanhareni* van Aartsen, Gittenberger & Goud, 1998, there may be list-like teeth in the aperture on the inside of the outer lip. Such teeth have never been found in the majority of the *Eulimella* species. We see no reason to introduce a new genus (or subgenus) for species occasionally possessing such teeth in the shell aperture as long as so many nominal genera are only poorly known (see Schander et al., 1999). Apart from that, the presence of such teeth, sometimes in only a minority of the specimens in a population (see *E. angeli*), is not associated with additional characters. See also van Aartsen et al. (1998).

For authorship and date of publication of *Eulimella*, see van Aartsen (1988), who demonstrated that Forbes & MacAndrew (1846) are to be considered the authors of *Eulimella*, instead of Gray (1847), as was indicated incorrectly in the past and recently by Peñas & Rolán (1999b: 156).

Eulimella scillae (Scacchi, 1835) (figs 1, 2)

Melania scillae Scacchi, 1835: 11, pl. 2 fig. 2.

Eulima macandrei Forbes, 1844: 412, pl. 10 fig. 2.

Eulimella scillae; Schander, 1994: 31, pl. 3 fig. g; van Aartsen, 1994: 98, 108, fig. 17; Peñas et al., 1996: 29, 34, figs 66-68; Peñas & Rolán, 1997: 90.

Material.— Mauritania: M.034/3, M.035/2, B2/3.

Distribution.— This well-known species, the type species of the genus *Eulimella* has already been reported from the Canary Islands, Madeira, the Cape Verde Islands and the west coast of Africa by Jeffreys (1884: 361) and Watson (1897: 298). In addition, it has been indicated from the Azores by Dautzenberg & Fischer (1896: 469).

Notes.— The figured shell (fig. 1) is from M.035 [2.6 × 1.1 mm]. For comparison we also figure a specimen from Sletvik, Norway, 50 m depth (fig. 2) [3.7 × 1.2 mm].

Depth range.— 99-200 m.

Eulimella schlumbergeri (Dautzenberg & Fischer, 1896)

Turbonilla schlumbergeri Dautzenberg & Fischer, 1896: 472, pl. 20 fig. 2.

Material.— Azores: 5.051/8 + several fragments.

Nomenclature.— On the basis of a study of the type series, consisting of 6 syntypes, we concluded that this species belongs to *Eulimella*, not *Turbonilla* Risso, 1826.

Distribution.— *Eulimella schlumbergeri* is only known from the Azores. The specimen described from the Mediterranean (“St. Raphael”) as *E. schlumbergeri continentalis* by Nordsieck (1972: 120, pl. 7 fig. 6), from the collection Fasseaux, turned out to be a well-preserved shell of *E. acicula* (Philippi, 1836) (van Aartsen & Menkhorst, submitted).

Depth.— 620 m.

Eulimella acicula (Philippi, 1836)

Melania acicula Philippi, 1836: 135.

Eulima subcylindrica Dunker, in Weinkauff, 1862: 342, pl. 13 fig. 7.

Eulimella commutata Monterosato, 1884: 98.

Eulimella laevis (Brown, 1844); Warén, 1991: 113, fig. 39E, F; Schander, 1994: 29, pl. 4 fig. d.

Eulimella acicula; van Aartsen, 1994: 96, pl. 108 fig. 15; Peñas et al., 1996: 33, 35, figs 69, 75; Peñas & Rolán, 1997: 86.

Material.— Canary Islands: 2.075/1, Mauritania: B2/1.

Distribution.— *Eulimella acicula* is by far the most common *Eulimella* species in North Atlantic European and Mediterranean waters. It is apparently very rare in our study area, from where it has been mentioned before only by Peñas & Rolán (1997: 86), from the Canary Islands.

Nomenclature.— We follow van Aartsen (1994: 97) in considering *Pyramis laevis* Brown, 1827, a nomen dubium, and *Eulima subcylindrica* Dunker, in Weinkauff, 1862, a synonym of *E. acicula*. The name *Eulimella commutata* was introduced by Monterosato (1884: 98) as “= *Melania acicula*, Ph.– Non *Auricula acicula* Lk.1815, specie di *Eulimella* del bacino di Parigi.”. Therefore we do not understand the comment by Schander (1994: 32) about the doubtful synonymization of *Melania acicula* and *Eulimella commutata*. *Auricula acicula* Lamarck, 1804 (not 1815) does not belong to *Eulimella* and, consequently, is not a secondary homonym of *Melania acicula*. It is the type-species of the genus *Puposyrnola* Cossmann, 1921, by original designation.

Depth range.— 99-550 m.

Eulimella trewae spec. nov.
(fig. 3)

Material.— Holotype (RMNH 59158): 3.133, off Mauritania; 18°59'N 16°37'W; depth 75 m, sandy mud with shells; van Veen grab; 29.x.1978.

Paratypes (RMNH 59159-59177; ZMA 3.99.023-027). Mauritania: M.030/2, M.031/>25, M.032/4, M.033/5, M.034/2, M.035/2, M.077/2, M.078/2, M.079/10, M.085/6, M.086/5, M.087/5, M097/1, M.099/14, M.135/20, 3.113/1, 3.123/1, 3.133/>25, 3.194/>25, B1/3, B2/9, B5/20, B7/>25, B8/3.

Description.— Shell white, very slender conical, with a blunt top. Embryonic whorls helicoid, measuring 300-350 µm in diameter. Teleoconch with six to seven flat whorls, separated by a moderately deep suture. There is a prominent spiral

microsculpture. Some irregular axial folds may also be present. The growthlines are orthocone. There is no umbilicus but a very vague fold on the columella may be discernible. The inside of the outer lip is smooth.

Dimensions: H. 2.7-3.5 mm, W. 0.8-1.0 mm; holotype 2.7 × 0.8 mm.

Differentiation.— Because of the helicoid protoconch, the flat whorls and the spiral microsculpture, this species is most similar to *Eulimella acicula*. However, in comparison to that species the microsculpture of *E. trewae* spec. nov. is much more pronounced, the protoconch is clearly larger, and the shells are more clearly cylindrical, with growthlines that are orthocone instead of slightly prosocline.

Depth range.— 26-200 m.

Etymology.— This species is named after Mrs A. Trew, curator in charge of the molluscan collection at the National Museum of Wales at Cardiff.

Eulimella vanderlandi spec. nov.
(fig. 4)

Material.— Holotype (RMNH 59178): 6.077, Cape Verde Islands, SW of Boa Vista; 15°56'N 23°06'W; depth 171-179 m, sand and fine shell gravel; van Veen grab; 13.vi.1982.

Paratypes (RMNH 59179-59180). Cape Verde Islands: 6.077/2, 7.048/1.

Description.— Shell whitish, slender conical. Embryonic whorls helicoid, measuring 250-300 µm in diameter. Teleoconch consisting of four to five flat whorls, separated by a moderately incised suture. Growthlines opisthocline, sometimes forming axial folds resembling faint axial striae. There is only a rather vague spiral microsculpture. Outer lip straight, smooth inside. An umbilicus is lacking. A tooth or fold is absent.

Dimensions: H. 2.0-2.7 mm, W. 0.7-0.8 mm; holotype 2.7 × 0.8 mm.

Differentiation.— *Eulimella vanderlandi* spec. nov. reminds of *E. acicula* (Philippi, 1836) because of the spiral microsculpture, which is less prominent, however. The growthlines are opisthocline instead of slightly prosocline; the embryonic whorls are smaller than in *E. acicula*.

Depth range.— 166-179 m.

Etymology.— This species is named after Dr J. van der Land, scientific coordinator of the CANCAP expeditions, at the Nationaal Natuurhistorisch Museum, Leiden, The Netherlands.

Eulimella variabilis de Folin, 1870
(fig. 5)

Eulimella variabilis de Folin, 1870: 211, pl. 28 fig.12; Schander, 1994: 29, pl. 4 fig. B; Peñas & Rolán, 1997: 90, 93, 95, figs 249, 250, 260, 261.

Obeliscus gracillima Smith, 1872: 734, pl. 5 fig.16. Lectotype (design. nov.): BMNH 1870.1.12.23.

Eulimella chasteri Dautzenberg, 1912: 58, pl. 2 figs 20, 21.

Material.— Mauritania: M.002/4, M.005/2, M.014/4, M.029/2, M.043/2, M.044/2, M.045/3, M046/3, M.064/3, M.065/3, M.077/3, M.078/1, M.084/2, M.097/1, M.113/3, M.122/1, 3.109/>25, 3.113/1, 3.172/2, I/14, II/6, III/3, V/1, VII/4, IX/5, B7/2, B8/>25.

Nomenclature.— *Eulimella variabilis* is a very variable species indeed. We agree with Peñas & Rolán (1997) in synonymizing *Eulimella chasteri* Dautzenberg, 1912, with this species. We studied syntypes of *Obeliscus gracillima* Smith, 1872 (BMNH 1870.1.12.23). There are fifteen shells in this sample, eleven of which correspond exactly with the current interpretation of *E. variabilis*. We have chosen the originally figured specimen as lectotype [5.9 × 1.2 mm] (fig. 5). Three syntypes belong to other *Eulimella* species. One specimen seems to belong to the genus *Aclis* Lovén, 1846 (Aclididae).

Depth range.— 0-62 m.

Eulimella ignorabilis Peñas & Rolán, 1997
(figs 6, 51)

Eulimella ignorabilis Peñas & Rolán, 1997: 92, 93, figs 251-253.

Material.— Mauritania: M.013/2, M.030/1, M.043/2, M.044/1, M.084/1, M.106/2, M.109/1, M.111/1, M. 113/1, M.115/1, M.118/4, M.121/6, 3.133/1, 3.172/13, 3.179/1, 3.181/1, 3.189/3, 3.194/2, III/4, IX/2, B6/4.

Differentiation.— Our largest specimen, from Station 3.172 [5.2 × 1.7 mm], is figured (fig. 6). *Eulimella ignorabilis* is similar to *E. variabilis* de Folin, 1870, but the whorls are somewhat more convex and much higher at the same width, whereas the fold on the columella is much less pronounced.

Depth range.— 0-75 m.

Eulimella bogii van Aartsen, 1994

Eulimella bogii van Aartsen, 1994: 89, 90, fig. 5; Peñas et al., 1996: 33, 35, 37, figs 74 - 78.

Material.— Canary Islands: 2.011/1, 2.075/1, 4.044/1, 4.139/1.

Note.— This species has not been reported before from our study area.

Depth range.— 100-550 m.

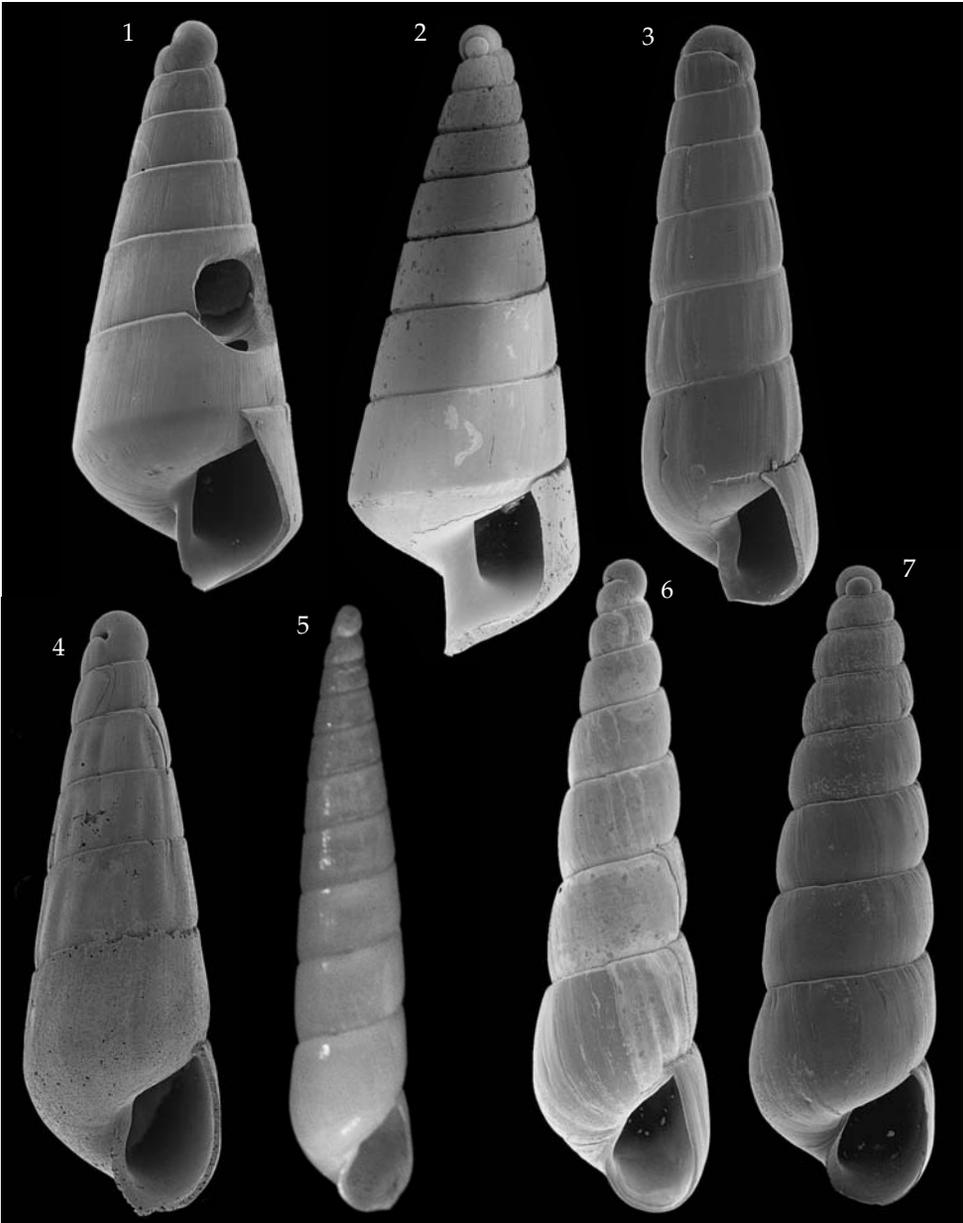
Eulimella zornikulla Schander, 1994
(figs 7, 52)

Eulimella zornikulla Schander, 1994: 31, pl. 3 fig. h; Peñas & Rolán, 1997: 86, 87, figs 229-231.

Material.— Mauritania: M.013/1, M.030/3, M.046/1, M.077/3, M.078/1, M.079/1, M.084/1, M.085/1, M.097/2, M.115/2, 3.128/1, 3.133/2, 3.189/2.

Differentiation.— Because of its helicoid protoconch and the convex whorls, this species can easily be recognised. Our largest specimen measures 4.4 mm, which is considerably larger than the 2.3 mm high holotype.

Depth range.— 19-75 m.



Figs 1-7. *Eulimella* species. 1, *E. scillae* (Scacchi), 2.6 mm, sta. M.035, off Mauritania, 18°45'N 16°42'W, depth 200 m, 9.vi.1988; 2, *E. scillae*, 4.5 mm, Trondheimsfjord, Norway, coll. van Aartsen (AD16832); 3, *E. trewae* spec. nov., holotype (RMNH 59158), 2.7 mm, sta. 3.133, off Mauritania, 18°59'N 16°37'W, depth 54 m, 29.x.1978; 4, *E. vanderlandi* spec. nov., holotype (RMNH 59178), 2.7 mm, sta. 6.077, Cape Verde Islands, SW of Boa Vista, 15°56'N 23°06'W, depth 171-179 m, 23.vi.1982; 5, *E. variabilis* de Folin, 5.9 mm, lectotype of *Obeliscus gracillima* Smith (BMNH 1870.1.12.23), Whydah, West Africa; 6, *E. ignorabilis* Peñas & Rolán, 5.2 mm, sta. 3.172, off Mauritania, 20°21'N 17°17'W, depth 34 m, 1.xi.1978; 7, *E. zornikulla* Schander, 3.1 mm, sta. M.030, off Mauritania, 18°49'N 16°24'W, depth 36 m, 9.vi.1988.

Eulimella buijsi spec. nov.
(figs 8, 53)

Material.— Holotype (RMNH 59181): 6.013, Cape Verde Islands, S of São Tiago; 14°52'N 23°31'W; depth 710 m, grey clay; van Veen grab; 5.vi.1982.

Paratypes (RMNH 59182). Cape Verde Islands: 6.013/2.

Description.— Shell whitish to slightly cream-coloured, forming a slender cone. Embryonic whorls planorbic, type AI; diameter about 400 µm. Teleoconch with four and a half to five and a half slightly convex whorls. The first teleoconch whorl somewhat covers the embryonic ones. Suture well-marked, somewhat incised. Growth-lines nearly orthocline. Shell smooth, without a spiral microsculpture. Outer lip evenly rounded, smooth inside. There is neither an umbilicus, nor any tooth or fold on the columella.

Dimensions: H. 3.0-3.6 mm, W. 1.0-1.2 mm; holotype 3.7 × 1.2 mm.

Differentiation.— This species is somewhat like *Eulimella robusta* van Aartsen, Gittenberger & Goud, 1998, from Mauritania. However, that species is larger, has flat or even slightly concave whorls, and a less clearly inclined suture; unlike in *E. buijsi* spec. nov., there is also a vague fold on the columella.

In one of the paratypes the first whorl of the teleoconch is corroded in such a way that all the embryonic whorls are exposed (fig. 53); the intact apex of the shell looks quite different (fig. 8, showing the holotype).

Depth.— 710 m.

Etymology.— This species is named after Mr J.P. Buijs, Den Haag, The Netherlands, fellow-malacologist.

Eulimella angeli Peñas & Rolán, 1997

Eulimella angeli Peñas & Rolán, 1997: 88, 91, figs 239-246.

Material.— Mauritania: M.031/2, M.033/2, M.034/1, M.035/2, M.044/1, M.079/2 fragm., M.087/2, M.088/1, M.135/7, 3.128/1, 3.133/1, 3.194/3 fragm., B1/1, B2/2, B7/3.

Variation.— Only three of our shells have list-like teeth on the inside of the outer lip. Nearly all the specimens are of the type depicted by Peñas & Rolán (1997: fig. 240), with a very pronounced carina at the base of the last whorl. The growthlines, inverted-S-shaped, are always discernible. See also the notes with the next species.

Depth range.— 18-200 m.

Eulimella paucisulcata Peñas & Rolán, 1997

Eulimella paucisulcata Peñas & Rolán, 1997: 89, 93, figs 247, 248.

Material.— Mauritania: IX/1.

Differentiation.— According to Peñas & Rolán, *Eulimella angeli* and *E. paucisulcata* can be distinguished by the protoconchs. The protoconch is completely free from the first teleoconch whorl only in *E. paucisulcata*. Furthermore, the growthlines are opisthocline and inverted-S-shaped in *E. angeli*, and straight and orthocline in *E. pau-*

cisulcata. Only in *E. angeli* there may be list-like teeth inside the outer lip. However, these teeth are present only occasionally and, therefore, this character cannot be used in most cases. The protoconch-teleoconch boundary of *E. paucisulcata* as figured by Peñas & Rolán (1997: 93, fig. 248) is most characteristic. We found it in one shell only.

Depth.— 0 m.

Eulimella endolamellata Schander, 1994
(figs 9, 54)

Eulimella endolamellata Schander, 1994: 28, pl. 3 fig. d.

Material.— Mauritania: M.035/1, M.046/1, M.087/1, 3.128/3, 3.133/5, 3.194/1, B1/3, B2/2, B7/3.

Differentiation.— This species can be recognised immediately by its very low whorls. There are four or five list-like teeth on the inside of the outer lip. Such teeth are only rarely found in *Eulimella* species (see the note with *Eulimella*).

Note.— Peñas & Rolán (1999a: 134) place this species in *Syrnola* but we agree with Schander and leave it in *Eulimella* s. l.

Depth range.— 30-200 m.

Eulimella boydae spec. nov.
(fig. 10)

Material.— Holotype (RMNH 59183): 6.061, Cape Verde Islands, SE of Boa Vista; 15°55'N 22°45'W; depth 80 m, coarse sand, calcareous algae and shells; van Veen grab; 12.vi.1982.
Paratypes (RMNH 59184). Cape Verde Islands 7.080/4.

Description.— Shell white and shiny, elongated conical, somewhat cyrtoconoid in older specimens, without a spiral microsculpture. Embryonic whorls helicoid, measuring about 250 µm in diameter and somewhat inclined towards the mouth of the shell. Teleoconch with eight to nine, relatively low whorls; the initial ones flat and the younger ones slightly convex. Suture clearly marked and rather horizontal. Growth-lines orthocline to somewhat opisthocline; without additional sculpture. Outer lip evenly curved; with several list-like teeth inside, two of which clearly above the middle of the lip. There is a clear fold on the columella, but neither an umbilicus nor a prominent columellar tooth are present.

Dimensions: H. 2.8-3.1 mm, W. 0.7-0.8 mm; holotype 3.1 × 0.8 mm.

Differentiation.— *Eulimella boydae* spec. nov. is very similar to *E. endolamellata* Schander, 1994. However, in *E. boydae* the embryonic whorls pass into the first teleoconch whorls much more gradually (compare figs 10 and 9) and the initial teleoconch whorls are flat, not pagoda-like as in *E. endolamellata*. The shells are more slender in *E. boydae* spec. nov.; at a length of 3.0 mm the width is 0.8 mm, whereas the corresponding width in *E. endolamellata* is 1.0 mm.

Depth range.— 74-80 m.

Etymology.— This species is named after Ms S. E. Boyd, curator of Mollusca at the Museum of Victoria, Australia.

Eulimella kobelti (Dautzenberg, 1912)

Turbonilla kobelti Dautzenberg, 1912: 64, pl. 3 figs 11, 12.

Eulimella kobelti; Peñas & Rolán, 1997: 82, 85, figs 221-224.

Material.— Mauritania: M.064/1.

Differentiation.— We found only a single, not quite full-grown shell which differs from shells of *Eulimella polygyrata* Dautzenberg, 1912, by its flat whorls, less inclined suture and slightly larger protoconch. We tentatively classify this specimen with *E. kobelti* sensu Peñas & Rolán (1997).

Depth.— 24 m.

Eulimella polygyrata Dautzenberg, 1912

Eulimella polygyrata Dautzenberg, 1912: 59, pl. 2 figs 16, 17; Schander, 1994: 32, pl. 4 fig. a.

Eulimella acusangusta Peñas & Rolán, 1997: 82, 84, figs 219, 220.

Probably not *Eulimella polygyrata*; Peñas & Rolán, 1997: 80, 84, figs 216, 217.

Material.— Mauritania: M.013/4, M.014/2, M.043/3, M.046/3, B8/2.

Differentiation.— We have carefully compared our specimens with the holotype of *Eulimella polygyrata* (in MNHN), which, also according to Dautzenberg (1912: 59), measures 4.9×0.9 mm. The holotype of *E. acusangusta* measures 4.6×0.86 mm, as calculated from the photograph (4.9×1.8 mm according to Peñas & Rolán, 1997: 82). The figures of *E. polygyrata* published by Dautzenberg (1912: pl. 2 figs 16, 17) and those of *E. acusangusta* by Peñas & Rolán (1997: figs 219, 220) are so similar that we consider them without doubt of the same species, which implies that in our view *E. acusangusta* Peñas & Rolán, 1997, is a junior synonym of *E. polygyrata* Dautzenberg, 1912. The specimen figured as *E. polygyrata* by Peñas & Rolán (1997: figs 216, 217) most probably belongs to a different species. Our largest specimen measures 4.6×0.9 mm and has about ten whorls.

Depth range.— 15-33 m.

Eulimella ventricosa (Forbes, 1844)

Parthenia ventricosa Forbes, 1844: 188.

Eulimella ventricosa; van Aartsen et al., 1984: 50, 123, fig. 242; Warén, 1991: 111, fig. 37B; Van Aartsen, 1994: 100, 109, fig. 21; Peñas, 1996: 36, 35, figs 72, 73, 77; Peñas & Rolán, 1997: 97.

Material.— Canary Islands: 2.012/1, 2.075/1, 2.114/2, 4.038/1, 4.041/1, 4.044/2 fragm., 4.090/7, 4.092/6 fragm., 4.158/1 fragm., B2/3.

Distribution.— This species was reported from Madeira and the Cape Verde Islands by Jeffreys (1884: 363) and Watson (1897: 298), and from Tenerife (Canary Islands) by Nordsieck & Talavera (1979: 190).

Depth range.— 65-480 m.

Eulimella ventricosa var.
(figs 11, 12)

? *Eulimella protofunis* Peñas & Rolán, 1999b: 160, figs 18-22.

Material.— Cape Verde Islands: 6.011/7, 6.012/1, 6.035/1, 6.039/2, 6.103/2, 6.105/5, 6.134/>25, 6.138/1, 6.149/3, 6.164/12, 7.007/1, 7.028/3, 7.050/15, 7.061/1, 7.080/7, 7.119/7, 7.121/6, 7.128/3, 7.129/7.

Notes.— We found several specimens with a planorbid protoconch, and smooth, convex whorls with orthocone to slightly prosocline growthlines. Most of these shells are less slender than the European representatives of *Eulimella ventricosa*. Two shells are figured to show the range of variation of the Cape Verde material (figs 11, 12).

Maybe *Eulimella protofunis* Peñas & Rolán (1999b: 160, figs 18-22) belongs to this form.

Depth range.— 67-605 m.

Eulimella cerullii (Cossmann, 1915)

Odostomia praelonga Jeffreys, 1884: 350, pl. 26 fig. 6. Not *O. praelonga* Deshayes, 1861.

Syrnola cerullii Cossmann, 1915: 60. New name for *Odostomia praelonga* Jeffreys, 1884.

Eulimella cerullii; van Aartsen, 1994: 100, pl. 109 fig. 20; Peñas, 1996: 34, 35, figs 64, 65; Peñas & Rolán, 1997: 97.

Material.— Madeira: 3.051/9.

Distribution.— *Eulimella cerullii* has been reported from the African west coast (Jeffreys, 1884: 350). We found only one sample of this well-known pyramidellid from deeper water. A similar species from the Azores is described below as *E. fontanae* spec. nov.

Depth.— 1100 m.

Eulimella fontanae spec. nov.
(fig. 13)

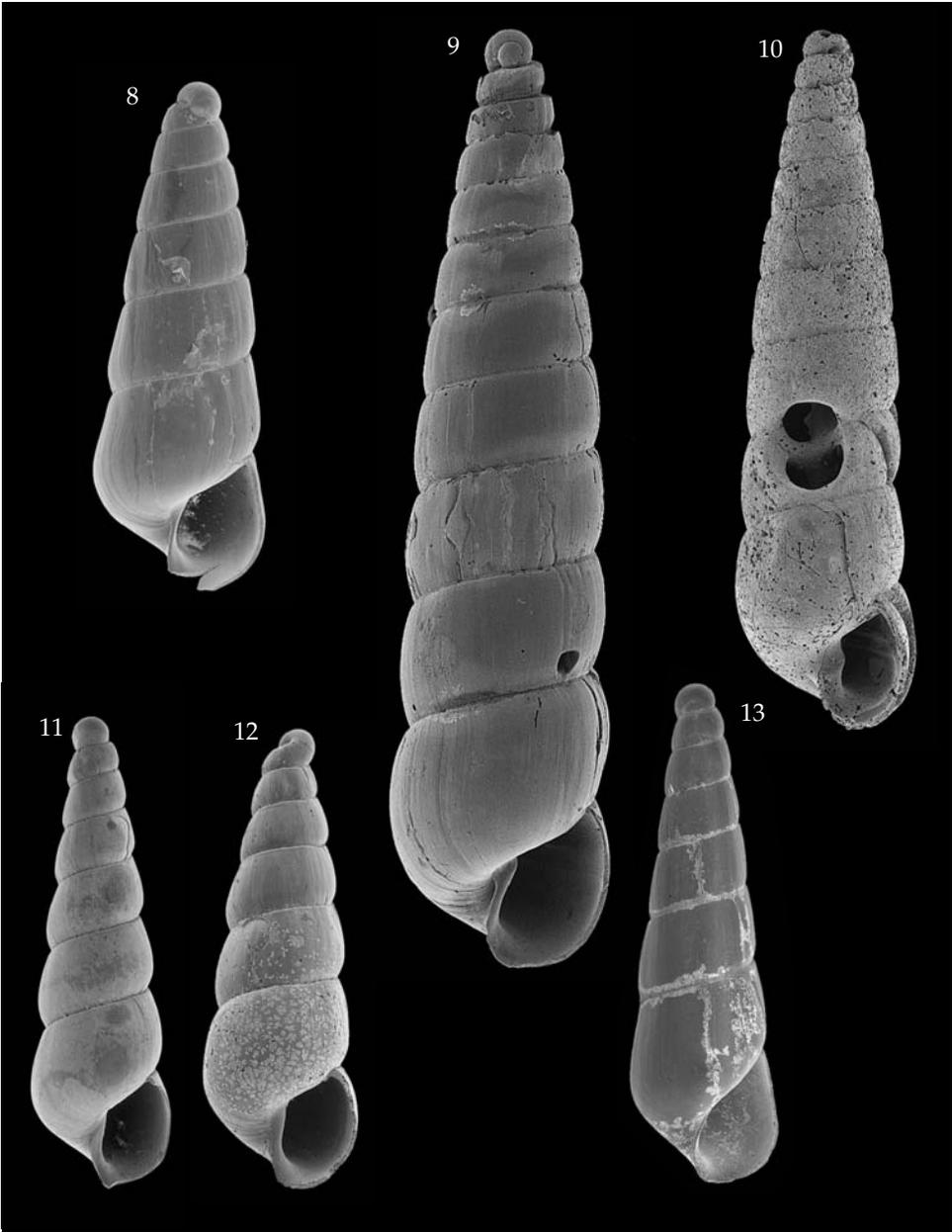
Material.— Holotype (RMNH 59185): 5.122, Azores, N of São Jorge; 38°39'N 27°54'W; depth 400 m, muddy mixed sand with shell gravel; van Veen grab; 4.vi.1981.

Paratypes (RMNH 59186-59187 & ZMA 3.99.009). Azores: 5.051/6, 5.122/5.

Description.— Shell white, slender conical. Embryonic whorls planorbid, with a diameter of 250-300 µm. Teleoconch consisting of six to seven flat whorls which are relatively high with respect to their width, and are separated by a moderately deep suture. Growthlines inverted-S-shaped, about orthocone. Without additional sculpture. Mouth oval. Outer lip nearly straight adapically and evenly curved lower down. Without an umbilicus. There is a prominent fold on the columella.

Dimensions: H. 3.5-4.3 mm, W. 1.0-1.2 mm; holotype 3.6 × 1.0 mm.

Differentiation.— This species may be confused with *Eulimella digenes* (Dautzen-



Figs 8-13. *Eulimella* species. 8, *E. buijisi* spec. nov., holotype (RMNH 59181), 3.7 mm, Cape Verde Islands, S of São Tiago, 14°52'N 23°31'W, depth 710 m, 5.vi.1982; 9, *E. endolamellata* Schander, 4.3 mm, sta. 3.133, off Mauritania, 18°59'N 16°37'W, depth 54 m, 29.x.1978; 10, *E. boydae* spec. nov., holotype (RMNH 59183), 3.1 mm, sta. 6.061, Cape Verde Islands, SE of Boa Vista, 15°55'N 22°45'W, depth 80 m, 12.vi.1982; 11 & 12, *E. ventricosa* var., 2.3 & 2.2 mm, sta. 6.134, Cape Verde Islands, S of São Vicente, 16° 45'N 25°02'W, depth 110-120 m, 19.vi.1982; 13, *E. fontanae* spec. nov., holotype (RMNH 59185), 3.6 mm, sta. 5.122, Azores, N of São Jorge, 38°39'N 27°54'W, depth 400 m, 4.vi.1981.

berg & Fischer, 1896) but its shell is more slender, with perfectly flat whorls and a clear fold on the columella, absent in *E. digenes*.

Compared with *E. cerullii* Cossman, 1915, *E. fontanae* spec. nov. has much smaller protoconch whorls and one whorl more in shells of the same length.

Depth range.— 400-620 m.

Etymology.— This species is named after Mrs M.A. Fontana Angioy, editor of the journal *La Conchiglia*.

Eulimella herosae spec. nov.

(fig.14)

Material.— Holotype (RMNH 59188): 6.024, Cape Verde Islands; bay on W coast of São Tiago; 15°00'N 23°44'W; depth 540 m, muddy volcanic sand; van Veen grab; 7.vi.1982.

Paratypes (RMNH 59189-59191), Cape Verde Islands: 6.105/1, 7.048/2, 7.102/1.

Description.— Shell slender conical with a very blunt apex and slightly convex sides. Embryonic whorls planorbic, somewhat intorted. Boundary between the embryonic whorls and the first teleoconch whorl brown; apart from that, shell white to light cream. Five to six, flat to slightly concave and somewhat turreted teleoconch whorls. Suture clearly marked. Growthlines prosocline, crossed by a very vague spiral microsculpture. Neither a tooth on the columella nor teeth at the inside of the outer lip are discernible.

Dimensions: H. 2.9-4.3 mm, W. 1.0-1.3 mm; holotype 2.9 × 1.0 mm.

Differentiation.— This species may be confused with *Eulimella tydemani* van Aartsen, Gittenberger & Goud, 1998, from which it can be distinguished by the brown borderline between the whitish embryonic and the teleoconch whorls, the absence of a brown spiral band on the teleoconch whorls, the prosocline growthlines and the absence of a columellar fold.

Depth range.— 165-540 m.

Etymology.— This species is named after Mrs V. Héros of the MNHN, Paris, France.

Eulimella digenes (Dautzenberg & Fischer, 1896)

(fig. 15)

Turbonilla digenes Dautzenberg & Fischer, 1896: 470, pl. 20 fig. 6.

Material.— Cape Verde Islands: 6.095/1.

Differentiation.— We found only a single shell of this species, measuring 3.0 × 0.9 mm (fig. 15). It corresponds well with *Eulimella digenes* by its planorbic embryonic whorls, the slightly convex teleoconch whorls, the inverted-S-shaped, orthocline growthlines, and the columella without any tooth or fold.

Distribution.— *Eulimella digenes* is known from deep water (1385 m depth) off the Azores, after only two shells. We identify a specimen from the Cape Verde Islands with it, collected at 930 m depth. This implies a considerable extension of its range. It is unclear why this species is not mentioned by Peñas & Rolán (1999b: 197, 198).

Eulimella shelaghae spec. nov.
(fig. 16)

Material.— Holotype (RMNH 59192): 2.038, Morocco, W of Cape Yubi; 28°03'N 13°26'W, depth 1100 m; van Veen grab; 26.viii.1977.

Paratypes (RMNH 59193-59195). Morocco: 2.038/1, Canary Islands: 2.062/1 fragment, 4.087/1.

Description.— Shell white with a slight tinge of cream, slender conical with slightly concave sides and a very obtuse apex. Embryonic whorls planorbic of type B, nearly completely hidden by the first teleoconch whorl, measuring at least 500 µm in diameter. There are c. five, moderately convex, teleoconch whorls in the three shells available for study. Suture determined by only the general curvature of the adjoining whorls, not additionally indented.

Apart from the orthocline growthlines there is neither a micro- nor a macrosculpture. Mouth oval; outer lip evenly curved, smooth inside. There is no umbilicus. A columellar tooth is absent.

Dimensions: H. 3.3-3.5 mm, W. 0.9-1.1 mm; holotype 3.4 × 0.95 mm.

Differentiation.— *Eulimella shelaghae* spec. nov. is clearly most similar to *E. nana* Locard, 1897, a species from deep water, from which only the holotype is known. *Eulimella nana* Locard, 1897, however, has nearly eight, rather flat teleoconch whorls at a length of 3.8 mm (measured on the holotype), whereas *E. shelaghae* spec. nov. has only five whorls at 3.5 mm. The embryonic whorls of *E. nana* measure barely 400 µm in diameter, whereas those of *E. shelaghae* spec. nov. reach 500 µm or more. The protoconch whorls of *E. shelaghae* spec. nov. are nearly completely hidden within the first teleoconch whorl, whereas these whorls can clearly be seen in *E. nana* (Peñas & Rolán, 1997: 97, 89, fig. 238).

A specimen from 900 m depth off Morocco, figured by Schander (1994: 63, fig. 4e) as *E. nana*, may belong to *E. shelaghae* spec. nov. as well.

Depth range.— 700-1520 m.

Etymology.— This species is named after Mrs Shelagh M. Smith, associated with the National Museums of Scotland, Edinburgh.

Eulimella polita de Folin, 1870
(fig. 17)

Eulimella polita de Folin, 1870: 208, pl. 28 fig. 7; Schander, 1994: 28, pl. 3 fig. c; Peñas & Rolán, 1997: 84, 87, figs 225-228.

Material.— Mauritania: M.030/5, M.032/1, M.033/5, M.045/1, M.113/1, 3.133/3, B1/1, B2/1.

Note.— The continuous peristome sets this species (and the next one) apart from most of the other species of *Eulimella*. We agree with Schander (1994) and Peñas & Rolán (1997) to keep it in the present genus. Our largest specimen measures 2.1 × 0.7 mm, which is larger than the dimensions reported in the literature.

Depth range.— 36-152 m.

Eulimella alia (Peñas & Rolán, 1999)
(fig. 18)

Odostomia alia Peñas & Rolán, 1999a: 48, figs 106, 107.

Material.— Mauritania: M.030/17.

Description.— Shell white, relatively small, slender ovoid. Embryonic whorls helicoid. With about four, turreted, smooth and shiny, teleoconch whorls. The last whorl occupies two-thirds of the total shell height. The growthlines are prosocline. The mouth has a continuous peristome without any fold on the columella. The inside of the outer lip is also smooth.

Dimensions: H. 1.6-1.7 mm, W. 0.7-0.8 mm.

Note.— Because of the continuous peristome, *Eulimella alia* is somewhat similar to *E. polita* de Folin, 1870. It differs from that species, however, by its less slender shape, the absence of a fold on the columella, and the turreted whorls. Shells of *E. alia* are also smaller.

As did Peñas & Rolán (1999a: 48), we noted small differences between the shells from Ghana and Congo, and those from Mauritania. We agree in regarding these differences as intraspecific variation.

Depth.— 36 m.

Eulimella gofasi (Schander, 1994)

Bacteridella [sic!] *gofasi* Schander, 1994: 14, 60, 68, figs 1b, 9d.

Eulimella gofasi; Peñas & Rolán, 1997: 79, 81, figs 205-207.

Eulimella monolirata; Peñas & Rolán, 1997: 80, 83, figs 212-215. Not *Eulimella monolirata* de Folin, 1874.

Material.— Mauritania: M.013/1, M.030/4, M.046/1, M.079/1, M.135/1, 3.133/5, B2/1.

Variation.— Several of our specimens correspond exactly with the description and figures published by Schander (1994), and with the figures of Peñas & Rolán (as *Eulimella gofasi*). These shells show four or five incisions on each of the whorls. Our largest specimen measures 3.0 × 0.6 mm, which is larger than the size mentioned in the literature. Several shells of exactly the same form and in our view conspecific, have nearly smooth whorls. Sometimes there is one incised spiral line just below the adapical suture. These specimens are very similar to the ones figured by Peñas & Rolán (1997) as *E. monolirata* de Folin, 1874 (see Nomenclature). We suppose that the sculpture of the whorls may vary in prominence and suggest that these shells also belong to *E. gofasi*.

Nomenclature.— *Aclis monolirata* de Folin (1873: 178, pl. 7 fig. 6), the type species of *Ebalina* Thiele (1929: 236, fig. 241), has a prominent spiral cord below the adapical suture and, moreover, originates from Hong Kong. It is very improbable that this Indo-Pacific species also occurs along the West African coast.

According to Kisch (1959: 101) there are two syntypes of *Eulimella monolirata* (de Folin, 1873) from Hong Kong in the de Folin collection (MNHN) and, therefore, we cannot accept the neotype designation by Peñas & Rolán (1997).

The genus *Bacteridiella* Saurin (1959: 274) is described as “Coquille très petite, cylindrique, lisse, à embryon volumineux. Ressemble à *Bacteridium* Thiele (1931) (!), mais en diffère par l'absence des stries spiral.”. The type species (by monotypy) is figured by Saurin (1959: pl. 9 figs 18,19) and does not at all agree with the drawing of the “holotype” by Schander (1994: 75, fig. 16). Consequently, we do not use the generic name *Bacteridiella* (not *Bacteridella* as written by Schander) Saurin, 1959, but tentatively place this species in *Eulimella*, where it is aberrant because of its sculpture.

Depth range.— 20-152 m.

“Eulimella” pyrgidium (Tomlin & Shackleford, 1915)
(fig. 19)

Turbonilla pyrgidium Tomlin & Shackleford, 1915: 309, pl. 5 fig. 3; Peñas & Rolán, 1997: 6, 7, figs 3-5.
Oceanida graduata de Folin; Gofas et al., 1985: 102, pl. 42 fig. a.

Material.— Mauritania: M.011/5, M. 064/4, IX/2.

Variation.— The shells described from São Thomé by Tomlin & Shackleford (1915) as *Turbonilla pyrgidium* and those figured with that name by Peñas & Rolán (1997) have axial ribs, whereas our material as well as the shell figured by Gofas et al. (1985) as *Oceanida graduata* do not show any sculpture. In our view, *Oceanida graduata* de Folin, 1871, is a Caribbean species belonging to the Aclididae (van Aartsen, 1984: 133).

Because it is known that shells of *Eulimella* species may have rather regular axial folds or ribs (maybe ecophenotypical variation in relation to depth), and in view of the characteristic form of the whorls, we prefer to classify this species in *Eulimella* s.l. rather than in *Turbonilla*.

Depth range.— 0-24 m.

Genus *Anisocyclus* Monterosato, 1880

Type species (designated by Gougerot & Feki, 1980): *Aciculina scalarina* Deshayes, 1861.

In accordance with van Aartsen (1995) we use *Anisocyclus* Monterosato, 1880, instead of *Ebala* Leach in Gray, 1847. We agree with Warén (1994) that the species of this group are very different from those classified in *Eulimella* and warrant a separate genus or even family. This is not only apparent from the characters mentioned by Warén, but is supported additionally by the totally different structure of their protoconchs (van Aartsen et al., 1984: 50, 123, figs 243-245).

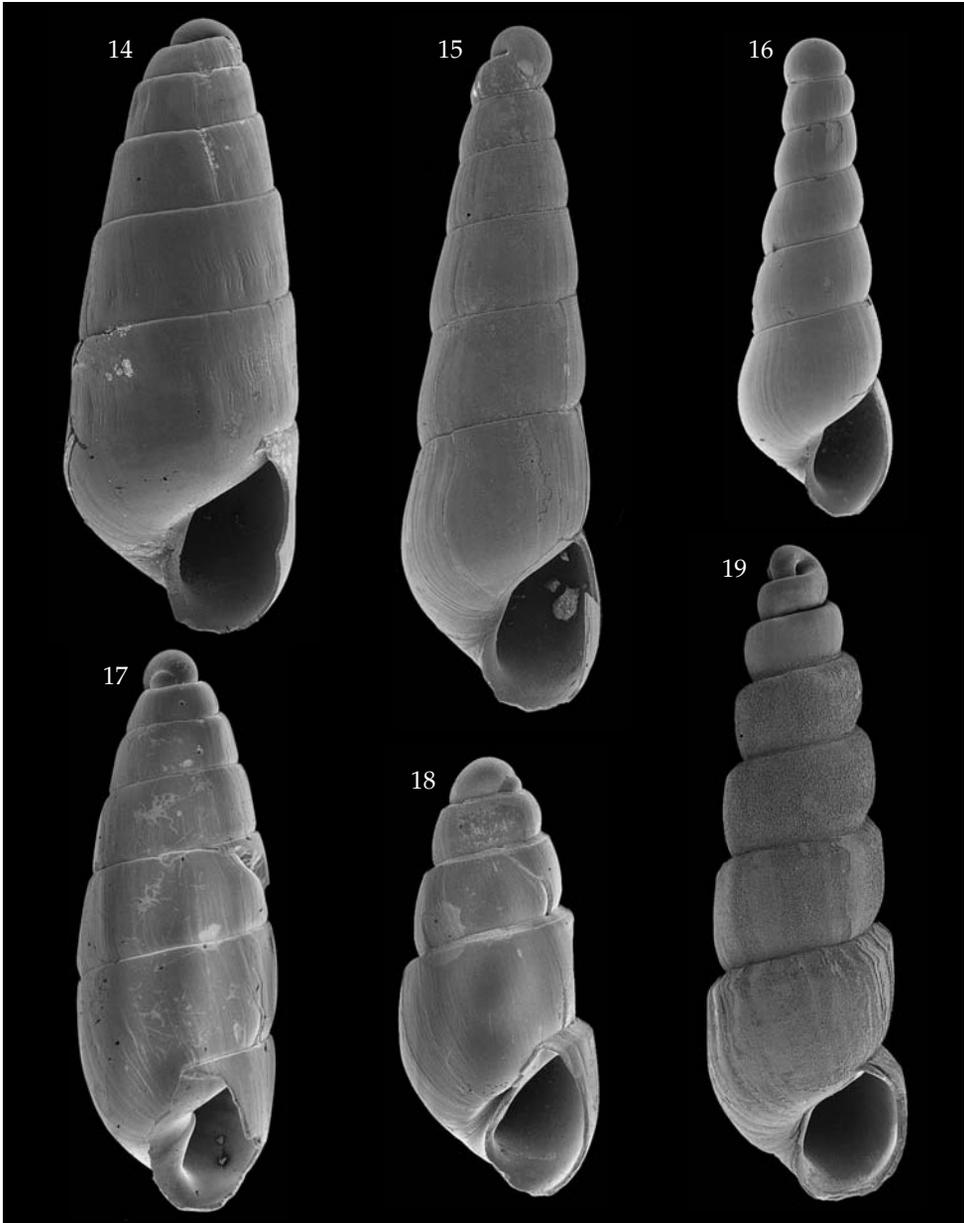
We do not accept the (sub)genus *Bacteridium* Thiele, 1929, based on only a spirally striated shell, like in *A. striatula* (Jeffreys, 1856).

Anisocyclus nitidissima (Montagu, 1803)

Turbo nitidissima Montagu, 1803: 299, pl. 12 fig. 1.

Eulimella striata de Folin, 1870: 210, pl. 28 fig. 10.

Ebala nitidissima; Rodriguez Babio & Thiriot-Quévieux, 1974: 542, pl. 6 fig. C; Peñas et al., 1996: 41, 74,



Figs 14-19. *Eulimella* species. 14, *E. herosae* spec. nov., holotype (RMNH 59188), 2.9 mm, sta. 6.024, Cape Verde Islands, W of São Tiago, 15°00'N 23°44'W, depth 540 m, 7.vi.1982; 15, *E. digenes* (Dautzenberg & Fischer), 3.0 mm, sta. 6.095, Cape Verde Islands, SW of Razo, 16°35'N 24°37'W, depth 930 m, 15.vi.1982; 16, *E. shelaghae* spec. nov., holotype (RMNH 59192), 3.4 mm, sta. 2.038, Morocco, W of cape Yubi, 28°03'N 13°26'W, depth 1100 m, 26.viii.1977; 17, *E. polita* de Folin, 2.2 mm, sta. M.033, off Mauritania, 18°47'N 16°34'W, depth 114 m, 9.vi.1988; 18, *E. alia* Peñas & Rolán (RMNH 59196), 1.6 mm, sta. M.030, off Mauritania, 18°49'N 16°24'W, depth 36 m, 9.vi.1988; 19, "*E.*" *pyrgidium* (Tomlin & Shackelford), 3.1 mm, sta. M.064, Mauritania, off Banc d'Arguin, 20°00'N 17°11'W, 13.vi.1988.

figs 87, 92.

Anisocyclus nitidissima; van Aartsen et al., 1984: 50, 123, fig. 243; van Aartsen, 1994: 94, 108, fig. 121.

Material.— Mauritania: M.046/2, I/7, III/3, VII/3. Canary Islands: Gran Canaria (25/84)/1 [in ZMA]. Azores: 5.054/5.

Distribution.— This well-known European species has been reported before from Mauritania (Baie du Lévrier) by de Folin (1870: 210), from Madeira by Watson (1897: 297), and from the Canary Islands by Nordsieck & Talavera (1979: 190).

Nomenclature.— Study of the syntypes of *Eulimella striata* de Folin, 1870 (four shells in MNHN) did not show any appreciable differences between that species and the wide-spread *Anisocyclus nitidissima*. Consequently, we regard both names as synonyms.

Depth range.— 0-110 m.

Anisocyclus pointeli (de Folin, 1868)

Turbonilla pointeli de Folin, 1868: 100, pl. 11 fig. 4.

Anisocyclus pointeli; van Aartsen, 1994: 94, 108, fig. 13.

Ebala pointeli; Peñas et al., 1996: 37, 75, figs 82, 83.

Material.— Canary Islands: Gran Canaria (25/84)/4 [in ZMA].

Distribution.— Previously, this well-known Mediterranean species has been reported only once from our research area, viz. from Madeira (Watson, 1897: 297).

Depth.— 0 m.

Anisocyclus cf. *carinata* (de Folin, 1870)
(fig. 20)

Eulimella carinata de Folin, 1870: 209, pl. 28 fig. 8; Schander, 1994: 14, 60, fig. 1c.

Bacteridium carinatum; Peñas et al., 1996: 37, 73, fig. 81.

Material.— Cape Verde Islands: 6.059/12, 6.066/2, 7.065/12, 7.066/23, 7.067/2, 7.068/1, 7.079/3, 7.080/7.

Nomenclature.— According to Kisch (1959: 99) there should be three syntypes in MNHN. We found only two poorly preserved apical fragments. The form of these fragments is very much like that of the topwhorls in *Anisocyclus striatula* (Jeffreys, 1856), as discussed by van Aartsen (1994: 95, 108, fig. 14), but the fragments are smooth like our shells from the Cape Verde Islands. We figure a specimen [1.4 × 0.4 mm] from Station 6.059 (fig. 20). The imperfect specimen from Angola figured by Schander (1994) does not help to characterise this species.

Distribution.— *Anisocyclus carinata* has only been reported before from West Africa and Angola. Because of the uncertainty in the interpretation of the original description of this species and the syntypes, and the high degree of endemism in the Cape Verdian fauna, we are not completely sure of our identification.

Depth range.— 39-74 m.

Genus *Syrnola* A. Adams, 1860

Type species (by monotypy): *Syrnola gracillima* A. Adams, 1860.

This generic name was used in different ways by authors in the past, mainly because its type species cannot be identified unequivocally. There seems to be no type specimen left. The original diagnosis is as follows (A. Adams, 1860: 405):

“Testa subulata, recta, vitrea, polita; anfractibus planis; suturis impressis. Apertura oblonga; labio in medio plica obliqua instructo; labro simplici, acuto.

This genus bears the same relation to *Obeliscus* [e.g. *Pyramidella* Lamarck, 1799] that *Chrysallida* does to *Pyramidella* [e.g. *Otopleura* Fischer, 1885], and will include all the slender species of the former group with a single plait on the columella. It differs from *Monoptygma* [e.g. *Adelactaeon* Cossmann, 1895] in being vitreous and polished, and from *Odostomia* in texture and in its subulate or aciculate form”.

From this text we deduce that the species of this genus should have smooth, slender shells with a clearly defined tooth on the columella. Whether this combination of characters defines a natural entity is unknown. Pending further study, we do not agree with Peñas & Rolán (1999a: 131, 134), who include *Eulimella endolamellata* Schander, 1994, and *E. vanhareni* van Aartsen et al., 1998, in *Syrnola*. In shells of these two species there is only a fold, not a tooth on the columella.

Boyd & Phillips (1985: 62) indicate the presence of a potential syntype of *Syrnola gracillima* in the Museum of Victoria [F31357], bought from the Adams collection. We studied this shell, which consists of the lower whorls only, so that the important protoconch is absent. Moreover, there is no trace of a tooth on the columella. Evidently, this specimen does not conform to the original description and cannot be considered a syntype.

The genus *Syrnola* is used here for species characterised by very slender shells, i.e. much more aciculate than in the *Odostomia* species, with smooth whorls, and a prominent columellar tooth.

Syrnola candida (de Folin, 1870)
(figs 21, 22)

Turbonilla candida de Folin, 1870: 207, pl. 28 fig. 13.

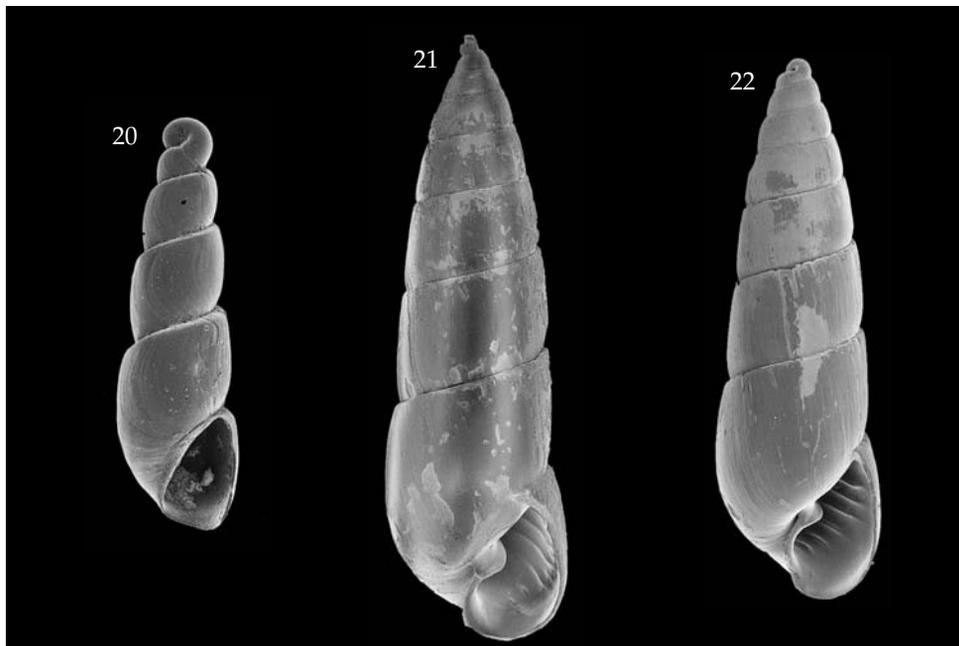
Odostomia etiennei Dautzenberg, 1912: 57, pl. 2 figs 28, 29.

Odostomia lamothei Dautzenberg, 1912: 57, pl. 2 figs 22, 23.

Material.— Mauritania: M.030/4, M.033/1, M.046/1, M.065/1, M.077/1, M.078/7, M.084/1, M.085/>25, M.086/1, M.087/5, M.097/2, M. 099/>25, 3.133/2, B1/9.

Nomenclature.— Having studied the lectotypes (designated by Peñas & Rolán, 1999a: 136) of *Turbonilla candida*, *Odostomia etiennei* and *O. lamothei*, all in MNHN, we are convinced that these three specific names denote only a single, variable species.

Turbonilla candida (A. Adams, 1855) was described as a *Chemnitzia* species and thus the name *Turbonilla candida* de Folin, 1870, is a secondary and, contrary to what has recently been suggested (Peñas & Rolán, 1999a: 136), not a primary homonym. It “has not been replaced” because of “secondary homonymy” and “the relevant taxa



Figs 20-22. *Anisocyclus* and *Syrnola* species. 20, *Anisocyclus* cf. *carinata* (de Folin), 1.4 mm, sta. 6.059, Cape Verde Islands, SE of Boa Vista, 15°57'N 22°44'W, depth 50 m, 12.vi.1982; 21, *Syrnola candida* (de Folin), 5.3 mm, sta. M.078, Mauritania, off Banc d'Arguin, 20°00'N 17°21'W, depth 41 m, 14.vi.1988; 22, *S. candida*, 4.7 mm, sta. M.085, Mauritania, off Banc d'Arguin, 19°35'N 16°51'W, depth 35 m, 15.vi.1988.

are no longer considered congeneric"; therefore, the name can be used for this species (ICZN Art. 59.2).

Our largest specimen is 4.0 × 1.2 mm (fig. 21). Figure 22 represents a shell which is very similar to the form described as *Odostomia etiennei*. The specimen figured by Schander (1994: 64, fig. 5e) as *Odostomia etienni* (sic!) seems to belong to an *Odostomia* species indeed.

Distribution.— *Syrnola candida* has been reported by de Folin (1870) as well as by Dautzenberg (1912) from along the West African coast.

Depth range.— 19-114 m.

Genus *Chrysallida* Carpenter, 1856

Type species: *Chemnitzia communis* C.B. Adams, 1852, by original designation.

The species of the genus *Chrysallida* are characterised by rissoid shells with intorted protoconch whorls, with or without a tooth on the columella, and with axial and spiral ribs of about equal strength. It should be noted that we follow Palmer (1958: 244) with respect to the type species. Peñas & Rolán (1998: 4) date this genus from 1857 and cite Carpenter as its author. They cite only one article by Carpenter (1857a) in which the genus *Chrysallida* is not mentioned, however. Several authors in the past have also assigned this genus, erroneously, to Carpenter (1857b). The correct reference (Carpenter, 1856) is given here.

None of the many species from European Atlantic and Mediterranean waters currently included in *Chrysallida* conforms exactly to the description of the genus *sensu stricto*. Apparently, only a group of species from the Cape Verde Islands, which we describe here, as well as *Chrysallida canariensis* Nordsieck & Talavera, 1979, belong to it. Several of the species mentioned in this report are the type species of alleged genus group taxa that are at least closely related to *Chrysallida*. The status of those nominal taxa is impossible to decide at present. We provisionally use the names in question as subgeneric, viz. *Parthenina* Bucquoy, Dollfus & Dautzenberg, 1883 (= *Besla* Dall & Bartsch, 1904), *Pyrgulina* A. Adams, 1863, *Partulida* Schaufuss, 1869 (= *Spiralina* Chaster, 1898, = *Spiralinella* Chaster, 1901), *Tragula* Monterosato, 1884, *Trabecula* Monterosato, 1884, and *Strioturbonilla* Sacco, 1892. See also Schander et al. (1999). We refrain from indicating subgeneric names for all *Chrysallida* species.

Chrysallida (Chrysallida) canariensis Nordsieck & Talavera, 1979
(figs 23, 55)

Chrysallida canariensis Nordsieck & Talavera, 1979: 185, pl. 45 fig. 9; Amati, 1987: 5 fig. 10; Oliverio & Vega-Luz, 1997:13-18, figs 2-4; Peñas & Rolán, 1998: 10, 11, figs 14-21.

Material.— Canary Islands: 4.K01/1, El Hierro, various localities/>50, Fuertaventura (S. of Puerto del Rosario)/1, Tenerife, various localities/>100, Isla de la Palma/1, Lanzarote, various localities/14 [in ZMA]. Mauritania: M.030/2, M.031/1, B1/9.

Note.— This is one of the very few *Chrysallida* species in which the shells have decorated instead of smooth embryonic whorls. In this species the sculpture consists of six or seven spiral riblets. Similar riblets have been reported for the Caribbean species *C. (C.) nioba* (Dall & Bartsch, 1911). Although described as decorated with “three strong spiral threads” (Dall & Bartsch, 1911: 286), we have counted five to six spirals on shells of *C. (C.) nioba* in ZMA, one of which figured by de Jong & Coomans (1988: 122, pl. 6 fig. 643). *C. (C.) canariensis* is very similar to *C. (C.) nioba*, but the shells are smaller, with more clearly prosocline axial ribs. For the time being we consider the two taxa separate species.

Several species from the west coast of North America have shells with a similar protoconch sculpture, e.g. *C. vicola* Dall & Bartsch, 1909, *C. pulcia* Dall & Bartsch, 1909, *C. promeces* Dall & Bartsch, 1909, all described and figured by Dall & Bartsch (1909). All these species have evenly rounded embryonic whorls, in contrast to the carinated ones in *C. (C.) minutissima* (Dautzenberg & Fischer, 1906) and related species here described from the Cape Verde Islands.

Oliverio & Vega-Luz (1997) published data on the hosts of *Chrysallida (C.) canariensis*. That kind of information is lacking completely for the overwhelming majority of the pyramidellid species.

Distribution.— *Chrysallida canariensis* has been reported before from Senegal and Mauritania (Peñas & Rolán, 1998), and the Canary Islands (Nordsieck & Talavera, 1979). The figured specimen originates from Tenerife [coll.AD18655].

Depth range.— 0-70 m.

Chrysallida (Chrysallida) minutissima (Dautzenberg & H. Fischer, 1906)
(figs 24, 25)

Actaeopyramis minutissima Dautzenberg & H. Fischer, 1906: 55, pl. 3 figs 11, 12.

Chrysallida minutissima; Peñas & Rolán, 1998: 5.

Chrysallida manonegra Peñas & Rolán, 1998: 10, 13, figs 22-30.

Material.— Cape Verde Islands: 6.085/5, 6.093/3, 6.095/3, 6.103/19, 6.105/22, 6.132/4, 6.134/>25, 6.138/12, 6.147/10, 6.149/19, 6.164/16, 7.028/2, 7.030/10, 7.038/3, 7.115/14, 7.116/2, 7.119/>25, 7.120/2, 7.121/>25, 7.122/3, 7.128/7, 7.129/25, 7.145/1, 7.161/9.

Distribution.— Described after only a single shell from off the Cape Verde Islands, this species, together with two others, viz. *Chrysallida (C.) mcmillanae* spec. nov. and *C. (C.) carpinei* spec. nov., is among the most common *Chrysallida* species of the Cape Verde Islands.

Nomenclature.— The holotype (fig. 24) is not well-preserved, but can nevertheless be recognised. It is in the collection of the Monaco Oceanographic Museum, together with all other material from the dredgings of the “Hirondelle” and the “Princesse Alice” during the “Campagnes Scientifique..par Albert I ...”. Therefore, we cannot agree with Peñas & Rolán (1998: 5) who designated a neotype for this species. Moreover, we consider this neotype (Peñas & Rolán, 1998: 7, fig. 1) representative of the new species *Chrysallida (C.) mcmillanae* spec. nov., instead of belonging to *C. (C.) minutissima*. The latter species is described as *C. manonegra* by Peñas & Rolán, 1998.

Differentiation.— A specimen from our collection is figured here (fig. 25). The spiral sculpture is diagnostic. It starts with three spirals on the initial teleoconch whorls. The most adapical spiral broadens during growth and splits into two spirals on the later whorls, so that there are four (exceptionally five) spirals above the suture of the last whorl. There are sixteen to twenty rather prosocline axial ribs per whorl on the four and a half to five, somewhat convex, teleoconch whorls. Our largest specimen measures 2.5 × 1.0 mm.

Two other species which are described here are differentiated from *C. (C.) minutissima* mainly on the basis of the different development of the spiral sculpture. See *C. (C.) mcmillanae* spec. nov. and *C. (C.) carpinei* spec. nov. All three species mentioned, as well as *C. (C.) horii* spec. nov., *C. (C.) menkhorsti* spec. nov. and *C. (C.) hoenselaari* spec. nov., have the same type of protoconch. This is also the case in the species *C. verdensis* and *C. sixtoi*, both recently described and figured by Peñas & Rolán (1998), and not encountered in our material. The embryonic whorls do not have prominent spiral ribs, as in *C. (C.) canariensis*, but are strongly carinated at the upper side. Within the sharp carina nearer to the axis of the shell, there is a spiral depression or even a groove, which is decorated with numerous axial riblets, maybe growthlines (fig. 59). Sometimes a few vague spirals are present too, as e.g. figured by Peñas & Rolán (1998: figs 26-30), but these are not always easily discernible. In this respect these species are quite different from the Caribbean *Chrysallida (C.)* species which they resemble conchologically, apart from the generally smooth and evenly rounded embryonic whorls.

We studied typical specimens of some of these Caribbean species. *Chrysallida (C.) gemmulosa* (C.B. Adams, 1850) has a spiral sculpture which starts with only two spi-

rals, a third one develops adapically from these two. The axial ribs are orthocone. In *C. (C.) cancellata* (d'Orbigny, 1842) the spiral sculpture starts with three spirals; a fourth one develops just adapically from the most abapical one. In *C. (C.) nioba* (Dall & Bartsch, 1911) the sculpture starts with four spirals and there are no additional ones. The embryonic whorls of this species have a sculpture of four to six spiral riblets. According to its description and figure (Henderson & Bartsch, 1914: 417, pl. 13 fig. 2), *C. (C.) toyatani* (Henderson & Bartsch, 1914) has nine spirals on the shell base, which is more than any of our Cape Verdian species, and four spiral riblets on the teleoconch whorls between the sutures. The axials are slightly prosocline.

We have not been able to study well-preserved specimens of *C. (C.) jadis* (Olsson & McGinty, 1958) which has four to five spiral ribs on the teleoconch whorls and the same number of additional spirals on the base of the shell. The axials are slightly prosocline, as is usually the case in *Chrysallida* species. The Atlantic North American species *C. (C.) seminuda* (C.B. Adams, 1839) is larger and more conical and, therefore, less similar to the species of the Cape Verde Islands.

Depth range.— 67-930 m.

Chrysallida (Chrysallida) mcmillanae spec. nov.
(figs 26, 56)

Chrysallida minutissima; Peñas & Rolán, 1998: 7, figs 1-3.

Material.— Holotype (RMNH 59198): 6.015, Cape Verde Islands; S of São Tiago; 14°53'N 23°30'W; depth 150 m, coarse sand and shell gravel; van Veen grab; 5.vi.1982.

Paratypes (RMNH 59199-59223 & ZMA 3.99.011). Cape Verde Islands: 6.001/3, 6.004/6, 6.005/9, 6.006/>25, 6.007/3, 6.008/>25, 6.009/5, 6.010/>25, 6.015/>25, 6.016/2, 6.017/4, 6.027/7, 6.031/1, 6.054/2, 6.077/4, 6.105/3, 7.004/5, 7.005/4, 7.008/15, 7.038/4, 7.068/3, 7.100/6, 7.101/4, 7.102/12, 7.129/3.

Description.— Shell white, elongated conical with a blunt apex. Embryonic whorls intorted and strongly carinated. Teleoconch consisting of five to five and a half rather flat whorls, which are somewhat shouldered at the upper suture. Sculpture formed by twelve to sixteen, slightly prosocline, axial ribs per whorl. Spiral sculpture starting with only three spiral ribs which are relatively far apart. The number of spirals remains three although sometimes the suture is somewhat lower than usual and in such cases there seem to be four spirals. Shell base with four to five additional spiral ribs. No umbilicus. With a small but conspicuous columellar tooth.

Dimensions: H. 2.4-2.6 mm, W. 0.9-1.0 mm; holotype 2.4 × 1.0 mm.

Differentiation.— In *Chrysallida (C.) mcmillanae* spec. nov. the spiral sculpture starts with three spirals on the first teleoconch whorl and so it differs from *C. (C.) carpinei* where four spirals are present throughout. In *C. (C.) minutissima* the spiral sculpture also starts with three spirals but the most adapical one splits into two, so that the later whorls have four spirals, in contrast with *C. (C.) mcmillanae* spec. nov., in which there are three. The specimens figured by Peñas & Rolán (1998: 7, figs 1-3) as *C. (C.) minutissima* most probably belong to this new species.

Depth range.— 15-970 m.

Etymology.— This species is named after Mrs N. McMillan, curator of the Mollusca collection at the Liverpool Museum, U.K.

Chrysallida (C.) *carpinei* spec. nov.
(figs 27, 57)

Chrysallida minutissima; Peñas & Rolán, 1998: 7, fig. 4.

Material.— Holotype (RMNH 59224): Station 7.121: Cape Verde Islands; S of Razo; 16°36'N 24°37'W; depth 200-230 m, muddy calcareous sand; van Veen grab; 1.ix.1986.

Paratypes (RMNH 59225-59252 & ZMA 3.99.012). Cape Verde Islands: 6.006/1, 6.008/1, 6.009/1, 6.010/7, 6.015/@, 6.019/1, 6.024/3, 6.027/1, 6.040/20, 6.044/1, 6.093/2, 6.105/1, 6.149/1, 7.005/1, 7.007/8, 7.008/2, 7.015/3, 7.028/13, 7.030/2, 7.038/2, 7.050/3, 7.061/1, 7.080/>25, 7.100/2, 7.101/1, 7.119/>25, 7.120/1, 7.121/>25.

Description.— Shell white, forming a slender cone with a blunt apex. Embryonic whorls intorted and strongly carinated. Teleoconch consisting of about four rather flat whorls. Suture deeply channelled. Teleoconch with twenty to twenty five, strongly prosocline, axial ribs per whorl. Spiral sculpture starting with four narrowly spaced ribs. No additional spirals on the later teleoconch whorls. Shell base with six or seven spiral ribs, the lower ones smaller and much closer than the upper ones. Umbilicus absent. With a small but conspicuous columellar tooth.

Dimensions: H. 1.9-2.5 mm, W. 0.8-1.0 mm; holotype 2.0 × 0.9 mm.

Differentiation.— For differences between *Chrysallida* (C.) *carpinei* spec. nov., *C.* (*C.*) *minutissima* and *C.* (*C.*) *mcmillanae* spec. nov., see under those species. Differences with morphologically similar Caribbean species are mentioned under *C.* (*C.*) *minutissima*.

Depth range.— 38-970 m.

Etymology.— This species is named after Mr C. Carpine, curator of Mollusca in the Musée Océanographique de Monaco.

Chrysallida (C.) *horii* spec. nov.
(figs 28, 58)

Material.— Holotype (RMNH 59253): 7.080: Cape Verde Islands; W of Boa Vista, W of Ilhéu de Sal Rei; 16°10'N 23°01'W; depth 74 m, muddy yellow calcareous sand; van Veen grab; 28.viii.1986.

Paratypes (RMNH 59254-59280 & ZMA 3.99.013). Cape Verde Islands: 6.005/1, 6.006/3, 6.008/6, 6.010/1, 6.015/5, 6.040/1, 6.041/1, 6.066/2, 6.093/1, 6.124/1, 6.149/1, 7.004/1, 7.015/1, 7.028/4, 7.030/5, 7.031/5, 7.038/2, 7.048/1, 7.050/1, 7.080/6, 7.105/1, 7.110/1, 7.119/>25, 7.120/1, 7.121/28, 7.129/2, 7.143/1.

Description.— Shell white, small and slender, subcylindrical. Embryonic whorls intorted and carinated, without spiral decoration. Teleoconch consisting of four and a half to five rather convex whorls. Suture incised but not deep, formed by the meeting curves of the whorls and seemingly excavated by the presence of the lowest spiral rib. Growthlines straight and prosocline. Sculpture formed by fifteen to twenty straight, prosocline, axial ribs per teleoconch whorl, which are much narrower than the interstices. Usually with four (exceptionally five) spiral ribs on each whorl. On the base of the shell the axials fade away and four or five additional smooth spiral ribs can be detected. Umbilicus absent. Columella with a vague fold only.

Dimensions: H. 2.0-2.5 mm, W. 0.6-0.7 mm; holotype 2.0 × 0.7 mm.

Differentiation.— Compared to the other species of *Chrysallida* s.s., e.g. *C. (C.) minutissima*, *C. (C.) mcmillanae* spec. nov. and *C. (C.) carpinei* spec. nov., shells of *C. (C.) horii* spec. nov. are more slender. Because of the spiral sculpture, which starts already with four spirals at the beginning of the teleoconch, without any additional ones on lower whorls, this species is most similar to *C. (C.) carpinei* spec. nov. In that species, however, there is a conspicuous tooth on the columella and the whorls are nearly flat. Only in *C. horii* spec. nov. the most adapical spiral frequently fades away on the later whorls.

Depth range.— 60-600 m.

Etymology.— This species is named after Dr S. Hori, Tokyo, Japan, friend of the first author and well-known for his study of the Japanese and Indo-Pacific Pyramidellidae.

Chrysallida (C.) hoenselaari spec. nov.
(fig. 29)

Material.— Holotype (RMNH 59281): 7.007, Cape Verde Islands, SW of São Tiago; 14°54'N 23°38'W; depth 420 m, muddy sand; van Veen grab; 20.viii.1986.

Paratypes (RMNH 59282-59289 & ZMA 3.99.014). Cape Verde Islands: 6.004/1, 6.010/1, 6.015/2, 6.040/3, 6.149/1, 7.007/2, 7.119/2, 7.121/3.

Description.— Shell white, small and conical with slightly convex sides. Embryonic whorls intorted and carinated, without spiral riblets, less tilted than in the other species of this group. Teleoconch formed by three and a half to four nearly flat whorls. Suture channelled by the pronounced lowest spiral rib on each whorl. Growthlines about straight and strongly prosocline. Sculpture consisting of about thirty straight, prosocline, axial ribs per whorl, about as broad as their interstices. Whorls additionally with six to seven spiral ribs of equal strength as the axials between the sutures and six to seven spirals on the shell base. No umbilicus. With a small but conspicuous columellar tooth.

Dimensions: H. 1.7-2.0 mm, W. 0.9-1.0 mm; holotype 1.7 × 0.9 mm.

Differentiation.— Although similar to *Chrysallida (C.) menkhorsti* spec. nov., this species can be distinguished by the much more numerous axial and spiral ribs. Because of the relatively high number of axial and spiral ribs, this species also differs from *C. (C.) minutissima*, *C. (C.) mcmillanae* spec. nov., *C. (C.) carpinei* spec. nov. and the very slender *C. (C.) horii* spec. nov.

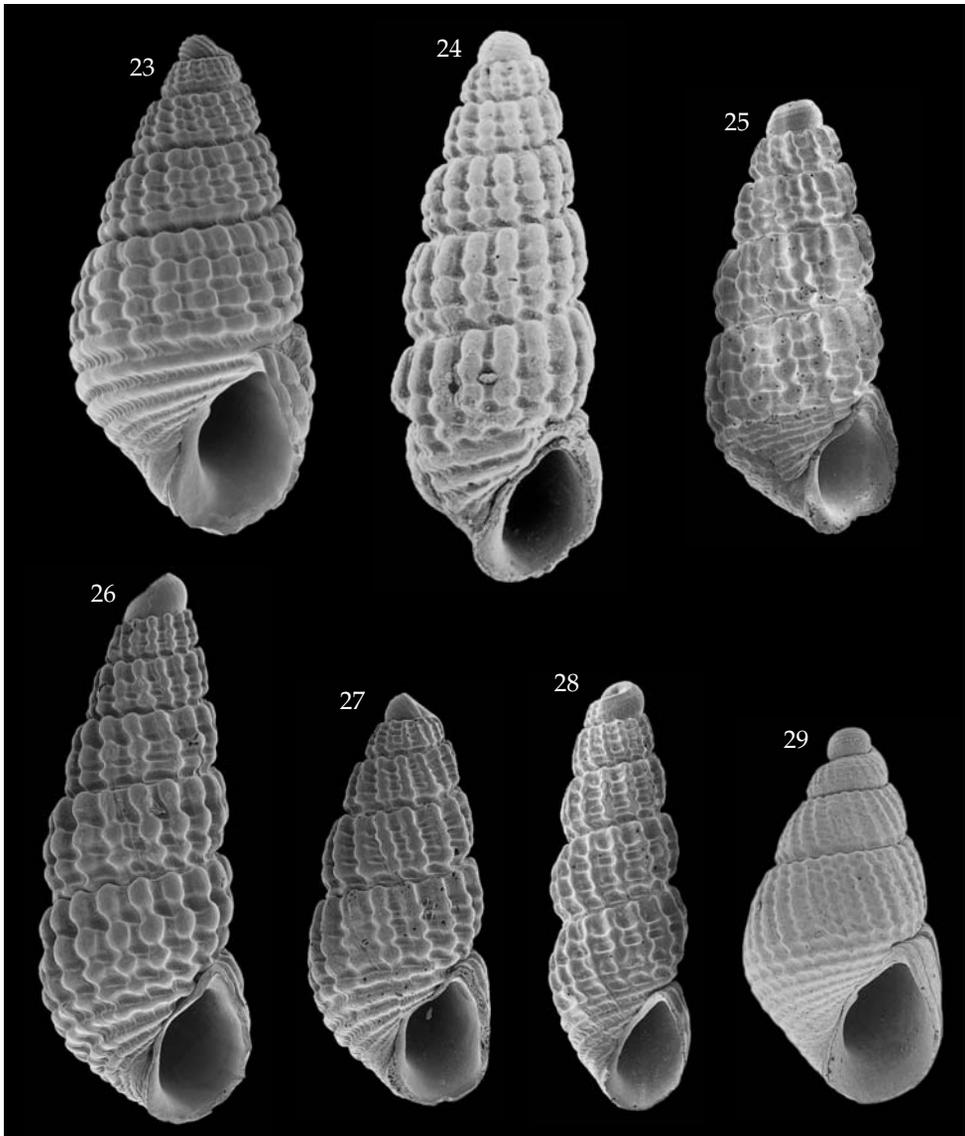
Depth range.— 38-420 m.

Etymology.— This species is named after Mr H.J. Hoenselaar, Heiloo, The Netherlands, malacologist and friend of the authors.

Chrysallida (C.) menkhorsti spec. nov.
(figs 30, 59)

Material.— Holotype (RMNH 59290): 7.080, Cape Verde Islands, W of Boa Vista, W of Ilhéu de Sal Rei; 16°10'N 23°01'W; depth 74 m, muddy calcareous sand; van Veen grab; 28.viii.1986.

Paratypes (RMNH 59291-59293 & ZMA 3.99.015). Cape Verde Islands: 6.005/1, 7.080/3, 7.100/1.



Figs 23-29. *Chrysalidella* species. 23, *C. (C.) canariensis* Nordsieck & Talavera, 2.3 mm, Tenerife, Playa de los Americas, coll. van Aartsen (AD18655); 24, *C. (C.) minutissima* (Dautzenberg & Fischer), 2.5 mm, holotype, 'Campagne de 1901' (Stn. sans no., Cap-Vert); 25, *C. (C.) minutissima*, 2.0 mm, sta. 7.128, Cape Verde Islands S of São Nicolau, S.Jorge Bay, 16°33'N 24°17'W, depth 400 m, 2.ix.1986; 26, *C. (C.) mcmillanae* spec. nov., 2.4 mm, holotype, (RMNH 59198), sta. 6.015, Cape Verde Islands, S of São Tiago, 14°53'N 23°30'W, depth 150 m, 5.vi.1986; 27, *C. (C.) carpinei* spec. nov., 2.0 mm, holotype, (RMNH 59224), sta. 7.121, Cape Verde Islands, S of Razo, 16°36'N 24°37'W, depth 200-230 m, 1.ix.1986; 28, *C. (C.) horii* spec. nov., 2.0 mm, holotype, (RMNH 59253), sta. 7.080, Cape Verde Islands, W of Boa Vista, W of Ilhéu de Sal Rei, 16°10'N 23°01'W, depth 74 m, 28.viii.1986; 29, *C. (C.) hoenselaari* spec. nov., 1.7 mm, holotype, (RMNH 59281), sta. 7.007, Cape Verde Islands, SW of São Tiago, 14°54'N 23°38'W, depth 420 m, 20.viii.1986.

Description.— Shell white, very small, short-conical with slightly convex sides. Embryonic whorls intorted, strongly carinated but without spirals. Teleoconch formed by about three whorls. Suture strongly channelled. Growthlines prosocline, coinciding with the axial ribs. Sculpture consisting of ten to fourteen strongly prosocline and nearly straight axial ribs, crossed by three equally strong spiral ribs. There are prominent knobs at the crossings of both types of ribs. Four additional spirals are discernible on the base of the last whorl: the three most abapical of these are smooth. An umbilicus is lacking. No tooth or fold on the columella.

Dimensions: H. 1.1-1.2 mm, W. 0.5-0.6 mm; holotype: 1.1 × 0.6 mm.

Differentiation.— The spiral sculpture of this species starts with three equally strong spirals and as such *Chrysallida* (C.) *menkhorsti* spec. nov. can be compared with *C. (C.) mcmillanae* spec. nov., which is a larger and more slender species, however. The embryonic whorls are of the same type, but those of *C. (C.) menkhorsti* spec. nov. are c. 20% smaller.

Depth range.— 68-354 m.

Etymology.— This species is named after Jr H.P.M.G. Menkhorst, Krimpen aan de IJssel, The Netherlands, malacologist, and friend of the authors.

Chrysallida epitonoides spec. nov.
(figs 31, 60)

Material.— Holotype (RMNH 59294): 7.129, Cape Verde Islands, S of São Nicolau, S. Jorge Bay; 16°33'N 24°16'W; depth 405 m, muddy bottom; rectangular dredge; 2.ix.1986.

Paratypes (RMNH 59295-59296). Cape Verde Islands: 6.149/1, 7.122/1.

Description.— Shell white, slender conical. Embryonic whorls smooth, intorted and slightly carinated. Teleoconch consisting of four to four and a half strongly convex whorls. Suture only slightly incised. Growthlines rather prosocline. There are about twelve prosocline ribs per whorl, and three spiral ones of nearly equal strength, evenly distributed over the total height of each whorl. Shell base with two or three spirals. Umbilicus absent. With a small columellar tooth, situated deeply inside the aperture.

Dimensions: H. 1.8-2.3 mm, W. 0.8-1.0 mm; holotype 1.8 × 0.8 mm.

Differentiation.— At first sight this species reminds one of a species of the genus *Papuliscala* Boury, 1911 (Epitoniidae), but its intorted protoconch and the (small) columellar tooth point to the Pyramidellidae. We know of no other species of the East Atlantic and Mediterranean region with which this species could be confused. There is a vague resemblance to *Chrysallida ornatissima* (Haas, 1943) from California, but that species has four to five, closer spiral ribs, and more than five additional ones on the base. It is also larger than *C. (C.) epitonoides* spec. nov.

Depth range.— 100-405 m.

Etymology.— The epithet *epitonoides* refers to the similarity with species of the Epitoniidae.

Chrysallida spec.
(fig. 32)

Material.— Two specimens from the Cape Verde Islands (7.030), but both got lost during handling.

Description.— Shell small and slender conical with a blunt apex; whorls convex. Embryonic whorls intorted, with vague indications of a fine spiral sculpture. Teleoconch consisting of three to three and a half convex whorls, separated by a well-marked suture. Whorls with four to five narrow spiral ribs, crossed by sixteen to twenty straight, prosocline, axial ones per whorl, which stop at the periphery. Shell base with four to five smooth spirals. Mouth egg-shaped. No umbilicus. Columella smooth.

Dimensions: H. 1.5 mm, W. 0.8 mm.

Depth.— 165 m.

Note.— Unfortunately, the only two specimens got lost during handling. Therefore, we do not propose a name for this undoubtedly new species.

Chrysallida (*Parthenina*) *obtusa* (Brown, 1827)
(fig. 33)

Turbo interstinctus; Montagu, 1803: 324, pl. 12 fig. 10. Not *Turbo interstinctus* J. Adams, 1797.

Jaminia obtusa Brown, 1827: pl. 50 fig. 38. Neotype (**design. nov.**): Royal Albert Memorial Museum, Exeter, no. 4241 (Warén, 1991: fig. 39C).

Chrysallida obtusa; van Aartsen, 1977: 57, pl. 3 fig. 22.

Chrysallida interstincta (J. Adams, 1797); Warén, 1991: 95, 96, figs 29A,B, 39C; Peñas et al., 1996: 22, 25, figs 43-46 (not fig. 47), 51; Peñas & Rolán, 1998: 42, 44, figs 118-126.

Material.— Mauritania: M.014/2, M.032/1, M.043/3, M.046/3, M.077/2, M.084/1, M.097/1, M.122/1, I/>25, II/>25, III/>25, V/9, VII/>25. Canary Islands: 2.033/3, 2.035/4, 2.064/1, 4.013/1, 4.014/16, 4.018/3, 4.020/1, 4.024/8, 4.036/2, 4.038/23, 4.041/4, 4.088/>25, 4.090/>25, 4.139/4, Tenerife (El Socorro)/17. Madeira: 3.059/1, 3.087/1, Bay of Funchal/>25. Cape Verde Islands: 6.015/3, 6.059/2, 6.103/2, 6.130/>25, 6.134/1, 7.066/2, 7.075/2, 7.080/20, 7.115/1, 7.116/4, 7.129/1, 7.142/2, 7.160/3.

Nomenclature.— *Turbo interstinctus* [Montagu, 1803] sensu Jeffreys, 1867, is the type species of the subgenus *Parthenina* Bucquoy, Dautzenberg & Dollfus, 1883, by original designation.

Our material belongs to the species called *Turbo interstinctus* by Montagu (1803: 324, pl. 12 fig. 10). However, we do not agree with Warén (1991: 95) in considering *Turbo interstinctus* sensu J. Adams (1797: 66, pl. 13 figs 23, 24) identical with *Turbo interstinctus* sensu Montagu. The original description of Adams reads: "T. testa laevi quinque anfractibus costa tenui interstinctus. Obs. Color albus, apertura subrotunda". Montagu refers to J. Adams, but Adams' description is not applicable to Montagu's shells, as has already been remarked by Jeffreys (1867: 153), who wrote "Our shell [= *Turbo interstinctus* sensu Montagu] is not smooth, nor are the whorls divided by a slight rib; and the mouth is not roundish. That description may have been taken from a worn specimen of *Rissoa semistriata*". The figures published by Adams (1797: pl. 13 figs 23, 24) are unrecognisable, only showing that there are vague spirals and no trace of axial ribs.

We conclude that Montagu misidentified his species as that described by Adams. Therefore, we cannot accept as valid the selection of a neotype of *Turbo interstinctus* J. Adams, 1797, from among the shells in the collection of Montagu, labelled *Turbo interstinctus*, by Warén (1991: 95, 113, fig. 39C).

For the reasons mentioned above and because almost all modern authors agree that the name *Jaminia obtusa* Brown, 1827, is applicable to Montagu's species, we prefer to use that name for it. Unfortunately, we could not trace any syntypes of Brown's species. To promote stability, the specimen selected as lectotype of *Turbo interstinctus* by Warén (1991: 95), is here selected as the neotype of *Jaminia obtusa* Brown, 1827.

Distribution.— *Chrysallida (Parthenina) obtusa* has been reported before from the Canary Islands and Madeira by Jeffreys (1884: 354), Watson (1897: 297) and others. Bellon-Humbert (1974: 42) reported this species from the Atlantic coast of Morocco. Peñas & Rolán (1998) identified material from the Cape Verde Islands as this species; we tentatively agree with this view (see Variation).

Variation.— Some of the specimens from the Cape Verde Islands are rather similar to the species dealt with next, i.e. *C. (P.) multicosmata*, in their more broadly conical form. However, these shells are smaller and the number of ribs falls within the range of *C. (P.) obtusa*. We provisionally consider them to belong to that species. A specimen from Station 7.080 [1.8 × 0.9 mm] is figured (fig. 33) to enable a comparison with the neotype of *C. (P.) multicosmata* (fig. 34).

Depth range.— 0-405 m.

Chrysallida (Parthenina) multicosmata (Jeffreys, 1884)
(fig. 34)

Odostomia interstincta var. *multicosmata* Jeffreys, 1884: 353. Neotype (design. nov.): Spain, Ria de Arosa; RMNH 59380 (fig. 34).

Material.— Mauritania: M.002/3, M.014/1, M.029/1, M.030/14, M.032/2, M.043/9, M.046/1, M/064/1, M.065/5, M.078/5, M.079/1, M.084/1, M.085/4, M.097/4, M.099/1, M.121/1, 3.109/7, B1/6, B3/1, B7/5, B8/11.

Differentiation and nomenclature.— *Chrysallida (Parthenina) obtusa* [= *interstinctus* auct.], treated above, is one of the commonest and most variable species of the Pyramidellidae in the East Atlantic-Mediterranean region. Many names have been proposed for so-called varieties, which seem to be connected by intermediate forms, however, and are not dealt with here. Still there is a series of specimens from off Mauritania, very uniform in morphology, and deviating from the forms of *C. (P.) obtusa* in the same area and elsewhere, by their large, more broadly conical form and a (much) higher number of ribs. Full-grown specimens measure 3.0 mm in height and 1.4-1.5 mm in width. The number of ribs varies between 30 and 40. Shells of *Chrysallida (Parthenina) obtusa* are usually more slender conical and smaller, measuring 2.5 × 0.8-1.0 mm, and have about 20, in some varieties up to 25 ribs.

Our relatively large, conical and rather densely ribbed specimens from off Mauritania are identified here as *Chrysallida (Parthenina) multicosmata* (Jeffreys, 1884). Its original description, viz. "The variety *multicosmata* may be distinguished from the typical form and any of the recorded varieties and so-called species by having the shape

of a short cone and much more numerous and straight ribs" (Jeffreys, 1884: 353), is perfectly well in accordance with this material although several specimens have S-shaped ribs instead of straight ones. This identification cannot be verified by a comparison with type material, however, because according to Warén (1980: 38) there is not a single syntype of this species in the Jeffreys collection. Obviously, the same species is found along the Spanish Atlantic coast in the Ria de Arosa [AD3482]. Because that locality is closest to the original type locality, Cabo de Sagres, off the Portuguese coast, we here designate a shell from the Ria de Arosa, dredged between 3 and 85 m, as neotype to stabilise the interpretation of the nominal taxon. This implies that from now on the Ria de Arosa has to be considered the type locality. The neotype is figured here (fig. 34: 2.6 × 1.3 mm).

Variation.— See above, under *Chrysallida (Parthenina) obtusa*.

Depth range.— 8-113 m.

Chrysallida (Parthenina) flexuosa (Monterosato, 1874)

Odostomia flexuosa Monterosato, 1874: 267; Jeffreys, 1884: 355, pl. 26 fig. 10.

Chrysallida flexuosa; van Aartsen, 1977: 55, not pl. 4 fig. 25; Warén, 1991: 100, 101, figs 32E,F; Micali et al., 1993: 147, 149, fig.1; Peñas et al., 1996: 18, 21, figs 30, 31.

Material.— Canary Islands: 4.060/2, 4.080/2. Azores: 5.021/18, 5.057/>25, 5.120/1, 5.121/2, 5.122/11, 5.132/8, 5.135/13. Cape Verde Islands: 6.010/>25, 6.011/13, 6.015/4, 6.017/2, 6.024/2, 6.044/2, 6.073/1, 6.077/2, 6.105/6, 6.149/1, 7.004/7, 7.005/2, 7.007/9, 7.008/9, 7.030/17, 7.038/1, 7.048/>25, 7.049/7, 7.050/25, 7.100/7, 7.101/6, 7.102/3, 7.121/4, 7.128/>25, 7.129/>25, 7.177/2.

Note.— This species is apparently lives in deeper water. It has only been reported before from off the Azores by Dautzenberg (1889: 59). Micali et al. (1993: 147, fig. 1) selected and figured a lectotype for this species, deposited in the Monterosato collection of the Malacological Section of the Museo Civico di Zoologia del Comune di Roma, Italy.

Depth range.— 90-600 m.

Chrysallida (Parthenina) mauritanica Peñas & Rolán, 1998
(fig. 35)

Chrysallida mauritanica Peñas & Rolán, 1998: 50, 52 figs 142-145.

Material.— Mauritania: M.002/6, M.043/6, M.044/1, M.045/1, M.106/1, 3.109/>25, 3.189/1, 3.194/1, I/16, II/17, III/17, V/9, VII/24.

Differentiation.— Because of the presence of a single spiral rib, *Chrysallida (Parthenina) mauritanica* may be compared with the common *C. (P.) obtusa* (Brown, 1827), which, however, has more axial ribs and always a clear tooth on the columella. The spiral rib in *C. (P.) obtusa* is more abapical too. Our largest specimen measured 3.5 × 1.2 mm.

Depth range.— 0-78 m.

Chrysallida (Parthenina) anselmoi Peñas & Rolán, 1998
(figs 36, 61)

Chrysallida anselmoi Peñas & Rolán, 1998: 38, 41, figs 107-111.

Material.— Mauritania: M.031/1, M.077/2, M.078/2, M. 079/2, M.085/2, M.097/2, M.099/1, M.113/2, M.135/1, 3.113/1, B7/3, B8/2..

Differentiation.— *Chrysallida (Parthenina) anselmoi* gives the impression of a *Folinella* species by its spiral sculpture of two spiral ribs, one of which on the adapical the other on the abapical side of the whorl. An adapical spiral is only vaguely indicated by the thickening of the axial ribs. This is the main difference with *Folinella excavata* (Philippi, 1836). Compared to *C. (P.) obtusa*, which has only one spiral rib, we note that that species has no spirals on the base of the shell, whereas the axial ribs are usually somewhat flexuous and the whorls not canaliculated.

Depth range.— 26-70 m.

Chrysallida (Parthenina) josae spec. nov.
(figs 37, 62)

Material.— Holotype (RMNH 59297): 6.085, Cape Verde Islands, S of São Nicolau; 16°34'N 24°22'W; depth 100 m, coarse yellow foraminifera sand; van Veen grab; 14.vi.1982.

Description.— Shell white, very slender, somewhat pupoid. Embryonic whorls smooth and intorted. Teleoconch formed by three and a half rather flat and relatively high whorls, the last occupying three-fifths of the total height. Suture well-incised, apparently excavated. Growthlines coinciding with the strongly prosocline, relatively broad, axial ribs; c. eleven axial ribs per whorl. On the older whorls there are two spiral ribs at the abapical part of the whorls. Four to five additional spirals can be seen at the base of the shell. Umbilicus absent. Columella smooth.

Dimensions: H. 1.9 mm, W. 0.6 mm.

Differentiation.— Although only a single specimen was found, we do not hesitate to describe this new species. *Chrysallida clathrata* (see fig. 40) is somewhat similar, but that species has more convex whorls, more axial ribs, and only three instead of six or seven spirals on the last whorl.

Depth.— 100 m.

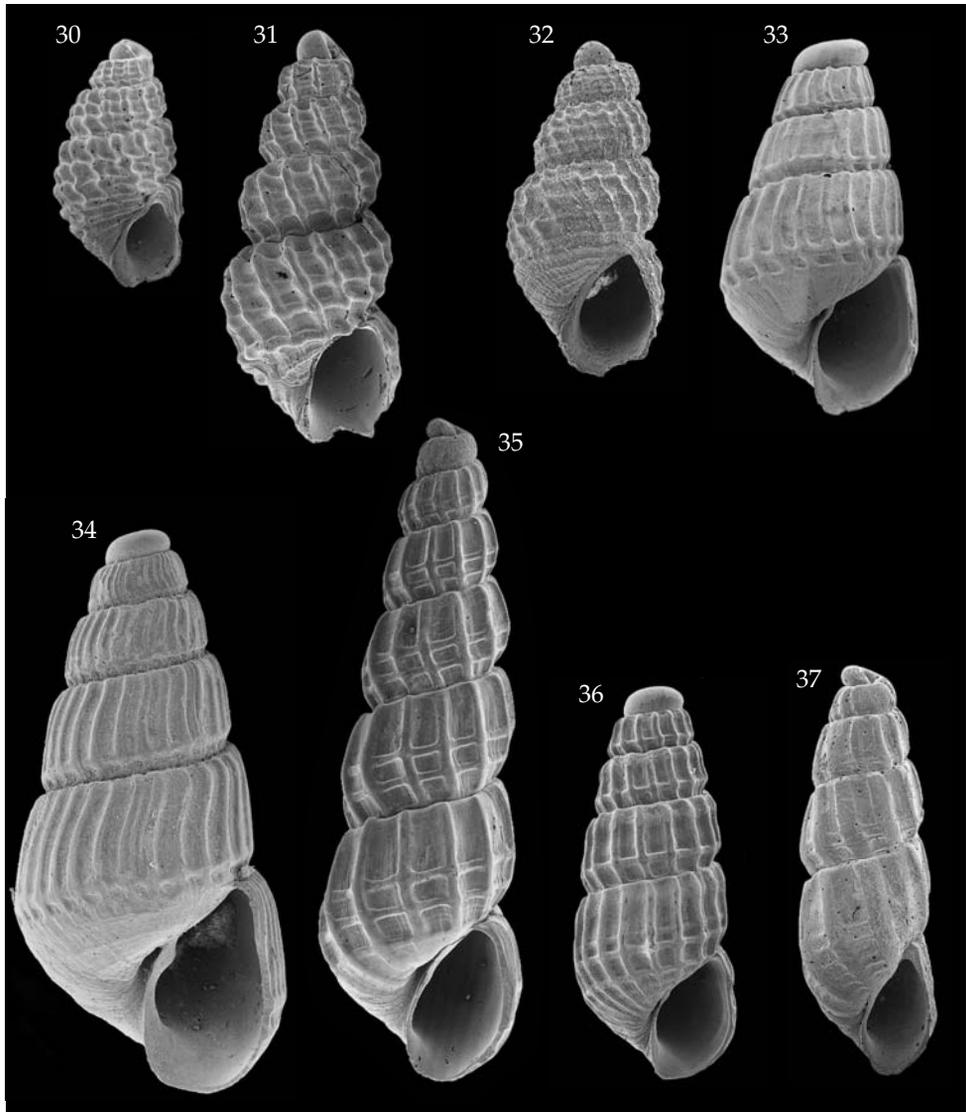
Etymology.— This species is named after Mrs J. Hoenselaar, Heiloo, The Netherlands, to memorize her invaluable help in sorting out the CANCAP samples.

Chrysallida (Parthenina) faberi spec. nov.
(fig. 38)

Material.— Holotype (RMNH 59298): 7.028, Cape Verde Islands, SE of Cima; 14°57'N 24°39'W; depth 225 m, yellow sand with shell gravel; van Veen grab; 23.viii.1986.

Paratypes (RMNH 59299-59301 & ZMA 3.99.016). Cape Verde Islands: 7.028/7, 7.120/1, 7.121/2.

Description.— Shell whitish, rather thin and transparent, slender conical with a



Figs 30-37. *Chrysallida* species. 30, *C. (C.) menkhorsti* spec. nov., 1.1 mm, holotype (RMNH 59290), sta. 7.080, Cape Verde Islands, W of Boa Vista, W of Ilhéu de Sal Rei, 16°10'N 23°01'W, depth 74 m, 28.viii.1986; 31, *C. epitonoides* spec. nov., 1.8 mm, holotype, (RMNH 59294), sta. 7.129, Cape Verde Islands, S of São Nicolau, S. Jorge Bay, 16°33'N 24°16'W, depth 405 m, 2.ix.1986; 32, *Chrysallida* spec., 1.5 mm, sta. 7.030, Cape Verde Islands, SE of Cima, 14°57'N 24°39'W, depth 165 m, 23.viii.1986; 33, *C. (Parthenina)* cf. *multicostata* (Jeffreys), 1.8 mm, sta. 7.080, Cape Verde Islands, W of Boa Vista, W of Ilhéu de Sal Rei, 16°10'N 23°01'W, depth 74 m, 28.viii.1986; 34, *C. (P.) multicostata* (Jeffreys), neotype, 2.7 mm, Spain, Ria de Arosa; 35, *C. (P.) mauritanica* Peñas & Rolán, 2.7 mm, sta. 3.109, Mauritania, Baie du Lévrier, 20°49'N 17°01'W, depth 14 m, 27.x.1978; 36, *C. (P.) anselmoi* Peñas & Rolán, 1.8 mm, sta. M.097, Mauritania, off Banc d'Arguin, 19°24'N 16°48'W, depth 26 m, 16.vi.1988; 37, *C. (P.) josae* spec. nov., 1.9 mm, holotype (RMNH 59297), sta. 6.085, Cape Verde Islands, S of São Nicolau, 16°34'N 24°22'W, depth 100 m, 14.vi.1982.

somewhat flattened top. Embryonic whorls smooth and intorted, clearly separated from the first teleoconch whorl. Teleoconch consisting of three and a half to four rather convex whorls. Suture incised but not very deep. Growthlines inverted-S-shaped, coinciding with the axial ribs. Teleoconch sculpture formed by fifteen to twenty very sinuous axial ribs per whorl, which are not very prominent. These ribs are narrower than the interstices. Very low on the abapical side of the whorl one spiral rib is present. On the last whorl a second spiral below the first one marks the end of the axial ribs. Below this second spiral the base of the shell is smooth. Without an umbilicus, only a faint chink can sometimes be seen. Columellar tooth hardly perceptible.

Dimensions: H. 1.8 mm, W. 0.8-0.9 mm; holotype 1.8 × 0.9 mm.

Differentiation.— *Chrysallida (Parthenina) faberi* spec. nov. is similar to the very common *C. (P.) obtusa* (Brown, 1827) from which it differs in its sinuous, much less prominent axial ribs and the near absence of a tooth on the columella. Shells of *C. (P.) faberi* spec. nov. are also less slender than those of *C. (P.) obtusa*.

Depth range.— 208-230 m.

Etymology.— This species is named after Mr W. Faber, Den Haag, The Netherlands, fellow-malacologist.

Chrysallida (Parthenina) gabmulderi spec. nov.
(fig. 39)

Material.— Holotype (RMNH 59302): 6.103, Cape Verde Islands, SW of Santa Luzia; 16°43'N 24°46'W; depth 102 m, fine sand, shell gravel and calcareous algae; van Veen grab; 16.vi.1982.

Paratypes (RMNH 59903-59310 & ZMA 3.99.017). Cape Verde Islands: 6.085/1, 6.132/1, 6.143/1, 6.149/1, 6.156(1), 7.080/2, 7.116/1, 7.142/1.

Description.— Shell white, slender, somewhat pupoid, with an obtuse top. Embryonic whorls intorted, smooth. Teleoconch consisting of three and a half to four whorls, which are nearly flat and relatively high. The last whorl occupies just over half the total height, the mouth slightly less than one third. Suture somewhat excavated and clearly incised. Growthlines straight and orthocline. Shell with about fifteen slightly inverted-S-shaped, axial ribs per teleoconch whorl; axials smaller than their interstices and nearly orthocline. Two or three spiral ribs are present on the initial teleoconch whorls. The last whorl has six to seven spirals. Umbilicus absent. Columella smooth.

Dimensions: H. 1.9-2.0 mm, W. 0.7-0.8 mm; holotype 1.9 × 0.7 mm.

Differentiation.— *Chrysallida (Parthenina) gabmulderi* spec. nov. is similar to *C. (P.) clathrata* (Jeffreys, 1848) which is more slender and has only three spiral ribs on the last whorl (see fig. 40). The axial ribs fade away on the base of the shell in *C. (P.) clathrata* whereas they continue up to the umbilical region in our species.

Depth range.— 25-293 m.

Etymology.— This species is named after Mr Gabriel Mulder, Zoetermeer, The Netherlands, fellow-malacologist.

Chrysallida (Parthenina) clathrata (Jeffreys, 1848)
(fig. 40)

Odostomia clathrata Jeffreys, 1848: 345.

Chrysallida clathrata; van Aartsen, 1977: 51, pl. 1 fig. 6, Warén, 1980: 37, pl. 6 fig. 28; Peñas et al., 1996: 15, 17 fig. 11; Peñas & Rolán, 1998: 49.

Material.— Canary Islands: 2.073/1, 4.002/1, 4.005/1, 4.013/1, 4.088/5, 4.089/1.

Distribution.— This species has been reported before from the Canary Islands and Madeira by Jeffreys (1884: 355) and Watson (1897: 297). The shell figured under this name by Peñas & Rolán (1998: 50, fig. 140) is clearly less slender than our specimens and the syntype figured by Warén (1980: 37, pl. 6 fig. 28) and might belong to another species.

Depth range.— 20-96 m.

Chrysallida (Parthenina) connexa (Dautzenberg, 1912)

Pyrgulina connexa Dautzenberg, 1912: 72, pl. figs 31, 32.

Chrysallida connexa; Peñas & Rolán, 1998: 48, 49, figs 133-136.

Material.— Mauritania: B7/1, B8/>25.

Distribution.— This species was originally described from Mauritania by Dautzenberg (1912: 72) and subsequently mentioned from Senegal by Peñas & Rolán (1998: 48).

Depth range.— 33-62 m.

Chrysallida (Parthenina) dekkeri spec. nov.
(fig. 41)

Material.— Holotype (RMNH 59311): 3.172, Mauritania, off coast; 20°21'N 17°17'W; depth 34 m, sand with shell gravel; triangular dredge; 1.xi.1978.

Paratypes (RMNH 59312-59315 & ZMA 3.99.018). Mauritania: M.106/1, M.111/3, M.121/2, 3.172/5.

Description.— Shell whitish, very small, very slender conical with slightly convex sides and a blunt top. Embryonic whorls smooth and intorted, merging gradually in the first teleoconch whorl. Teleoconch formed by three to three and a half slightly convex whorls. Suture well-incised, marked by the adapical ends of the axial ribs. Teleoconch sculpture of twelve to sixteen axial ribs per whorl; axials inverted-S-shaped, thickened and prosocline near the adapical suture. Growthlines also inverted-S-shaped, coinciding with the ribs. Three spiral ribs are present on the abapical part of the whorls. Shell base smooth. Umbilicus absent. Columellar tooth fairly small but clearly marked.

Dimensions: H. 1.4-1.6 mm, W. 0.6-0.7 mm; holotype 1.4 × 0.6 mm.

Differentiation.— *Chrysallida (Parthenina) dekkeri* spec. nov. differs from *C. (P.) clathrata* (Jeffreys, 1848) by having three spiral ribs instead of two. In *C. (P.) clathrata*

the axial ribs also cover the base of the shell whereas the base is smooth in *C. (P.) dekkeri* spec. nov.

C. (P.) dekkeri spec. nov. is also somewhat similar to *C. intumescens* Schander, 1994. The latter species, however, has much more convex whorls, no spiral sculpture on the first teleoconch whorl and no tooth on the columella. One sample [3.189/4] is included here with some doubt, because all shells are bigger, without even a trace of a columellar tooth.

Depth range.— 15-34 m.

Etymology.— This species is named after Mr H. Dekker, Winkel, The Netherlands, fellow-malacologist.

Chrysallida (Parthenina) willeminae spec. nov.

(fig. 42)

Material.— Holotype (RMNH 59316): M.014, Mauritania, off coast; 18°50'N 16°21'W; depth 21 m, brownish yellow, somewhat muddy sand; van Veen grab; 8.vi.1988.

Paratypes (RMNH 59317-59329; ZMA 3.99.028-031). Mauritania: M.014/1, M.043/1, M.046/1, M.065/5, M.077/1, M.078/2, M.097/3, M.106/1, M.109/1, M.121/4, 3.109/7, 3.133/1, 3.172/3; II/1, III/1, B7/2, B8/5.

Description.— Shell whitish, slender conical. Embryonic whorls intorted and smooth. Teleoconch consisting of three to three and a half, relatively high, slightly convex whorls. The last whorl forms c. 60% of the total height, whereas the mouth occupies just over one third. Suture marked by a slight ramp at the adapical suture. Growthlines more or less coinciding with the orthocone, inverted-S-shaped, axial ribs. There are twenty to twenty four of these ribs per teleoconch whorl. At the abapical side of the teleoconch whorls there are several spiral ribs, viz. two on the first one and three on the adjoining ones. Shell base smooth. Outer lip rather straight, smooth inside. Umbilicus absent. Columella smooth.

Dimensions: H. 2.6 - 3.0 mm, W. 1.1 - 1.2 mm; holotype 2.6 × 1.1 mm.

Differentiation.— *Chrysallida (Parthenina) decussata* (Montagu, 1803) (fig. 43) is similar, but in that species the shell has four to five spiral ribs on the later whorls and several spirals on the base. Moreover the last whorl of *C. decussata* occupies two-thirds of the total shell height and the mouth c. 40%. So far *C. decussata* has not been reported from our area.

Depth range.— 0-75 m.

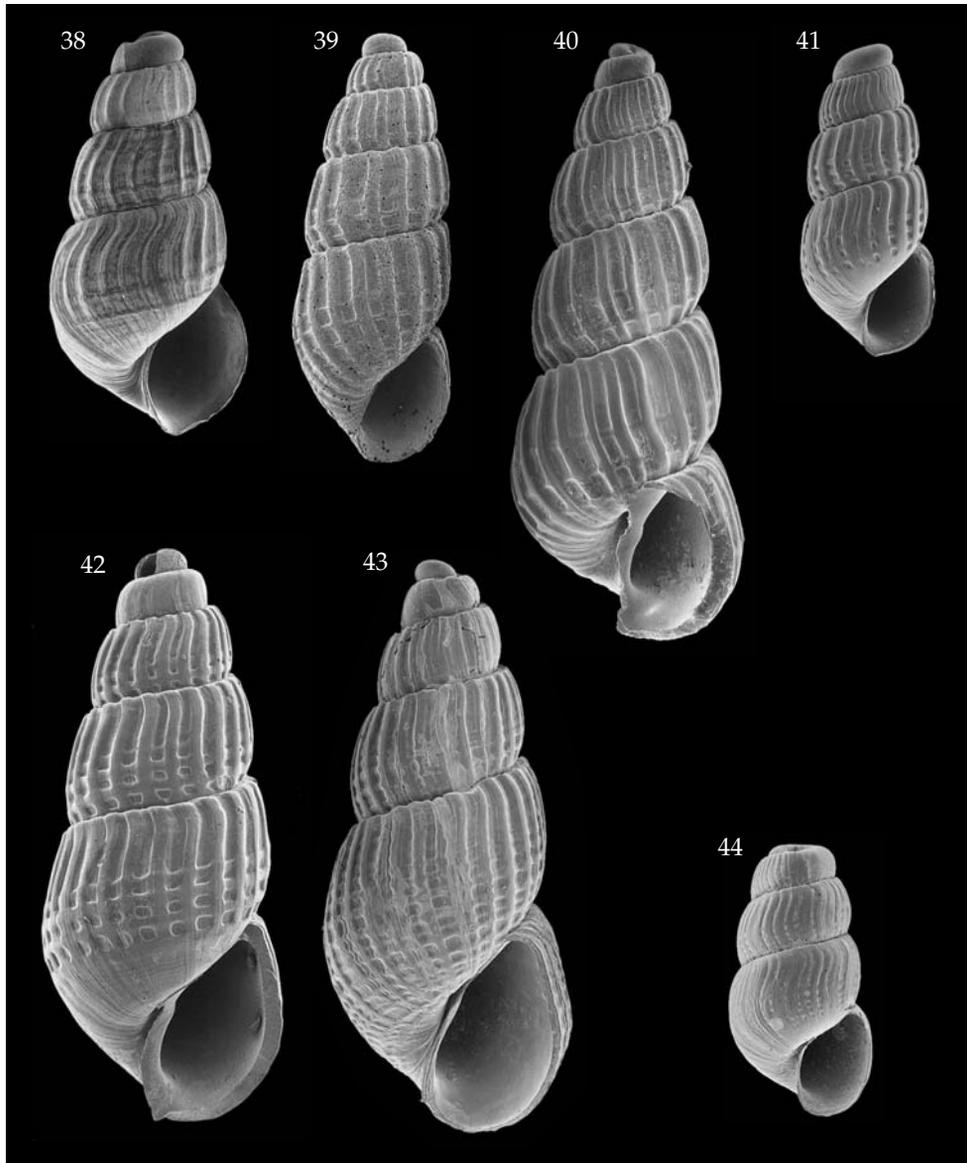
Etymology.— This species is named after Mrs Willemina E. Bakema, assistant in the malacology department of the Nationaal Natuurhistorisch Museum, Leiden, The Netherlands.

Chrysallida (Parthenina) feldi spec. nov.

(fig. 44)

Material.— Holotype (RMNH 59331): 7.042, Cape Verde Islands, SW of Maio, Ponta Inglez/Ponta Preta; 15°07'N 23°14'W; depth 76 m, yellow calcareous sand, shell gravel; van Veen grab; 25.viii.1986.

Paratypes (RMNH 59332-59336 & ZMA 3.99.020). Cape Verde Islands: 7.042/3, 7.065/2, 7.067/2, 7.068/2, 7.079/16, 7.160/2.



Figs 38-44. *Chrysalidina* (*Parthenina*) species. 38, *C. (P.) faberi* spec. nov., 1.8 mm, holotype (RMNH 59298), sta. 7.028, Cape Verde Islands, SE of Cima, 14°57'N 24°39'W, depth 225 m, 23.viii.1986; 39, *C. (P.) gabmulderi* spec. nov., 1.9 mm, holotype (RMNH 59302), sta. 6.103, Cape Verde Islands, SW of Santa Luzia, 16°43'N 24°46'W, depth 102 m, 16.vi.1982; 40, *C. (P.) clathrata* (Jeffreys), 2.9 mm, coll. van Aartsen (AD23177), off Malta, depth 50 m; 41, *C. (P.) dekkeri* spec. nov., 1.4 mm, holotype (RMNH 59311), sta. 3.172, off Mauritania, 20°21'N 17°17'W, depth 34 m, 1.xi.1978; 42, *C. (P.) willeminae* spec. nov., 2.6 mm, holotype (RMNH 59316), sta. M.014, off Mauritania, 18°50'N 16°21'W, depth 21 m, 8.vi.1988; 43, *C. (P.) decussata* (Montagu), 2.8 mm, coll. van Aartsen (AD3403), Spain, Ria de Arosa; 44, *C. (P.) feldi* spec. nov., 1.3 mm, holotype (RMNH 59331), sta. 7.042, Cape Verde Islands, SW of Maio, Ponta Inglez/Ponta Preta, 15°07'N 23°14'W, depth 76 m, 25.viii.1986.

Description.— Shell whitish, subcylindrical with a very blunt top. Embryonic whorls intorted and smooth, clearly separate from the teleoconch, which consists of three to three and a half rather convex whorls. Suture not additionally incised. Growthlines markedly sinuous and coinciding with the axial ribs. With twenty five to thirty low, inverted-S-shaped, axial ribs per teleoconch whorl, and about four spiral ones on the abapical side of each teleoconch whorl. Shell base with vague axial streaks, without any spirals. Outer lip evenly curved, smooth inside. Umbilicus absent, but a small chink can usually be seen. Columella smooth.

Dimensions: H. 1.3 - 1.5 mm, W. 0.6 - 0.7 mm; holotype 1.3 × 0.6 mm.

Differentiation.— Compared with *Chrysalida (Parthenina) indistincta* (Montagu, 1808), this species is much broader at the same length and the ribs in *C. (P.) indistincta* are more pronounced and less sinuous. *Chrysalida (P.) feldi* spec. nov. may also be compared with *C. (P.) juliae* (de Folin, 1872) and *C. (P.) sarsi* (Nordsieck, 1972), both of which have much less convex whorls are more conical and more slender. See Warén (1991: 96, 97, figs 29, 30) for good figures of the species mentioned. We assume that the specimen figured as *C. juliae* by Peñas & Rolán (1998: fig. 151) also belongs to this species. One specimen seems to be totally smooth but still clearly belongs to this species because of its characteristic form. Most probably the shell figured and described by Peñas & Rolán (1999a: 112, figs 297-299) as *Odostomia* sp. 1, represents this species too.

Depth range.— 39-76 m.

Etymology.— This species is named after D.R. Feld, Grantham, U.K., fellow-malacologist.

Chrysalida (Parthenina) indistincta (Montagu, 1808)

Turbo indistinctus Montagu, 1808: 129.

Chrysalida indistincta; van Aartsen, 1977: 55, pl. 2 fig.14; Warén, 1991: 96, 98, figs 29D, E, F; Peñas et al., 1996: 19, 20, figs 22, 23; Peñas & Rolán, 1998: 53.

Material.— Canary Islands: 4.038/1, 4.137/1.

Distribution.— This well-known species has been reported from the Canary Islands and Madeira by Jeffreys (1884: 354) and Watson (1897: 297).

Depth range.— 50-82 m.

Chrysalida (Pyrgulina) kempermani spec. nov.
(fig. 45)

Material.— Holotype (RMNH 59337): M.106, Mauritania, off Banc d'Arguin; 20°31'N 17°02'W; depth 15 m, shell gravel; van Veen grab; 18.vi.1988.

Paratypes (RMNH 59338-59341). Mauritania: M.030/3, M.032/1, M. 113/1, 3.172/1.

Description.— Shell whitish, forming a very small cylinder with a truncated top. Embryonic whorls intorted. Teleoconch consisting of about three, somewhat convex whorls, separated by a well-incised suture. Growthlines imperceptible. Sculpture consisting of fifteen to twenty strongly prosocline axial ribs per teleoconch whorl, and seven or eight somewhat weaker spiral ribs, covering the total height of the whorl.

Mouth oval, the columella with a small but prominent tooth, situated rather deep. With an umbilical chink.

Dimensions: H. 1.3 - 1.4 mm, W. 0.4 - 0.5 mm; holotype 1.4 × 0.5 mm.

Differentiation.— This species is similar to *Chrysallida dimidiata* Schander (1994: 18, 60, fig. 1d), which has fewer axial ribs and only two to three spirals, and also a smaller protoconch.

Depth range.— 15-113 m.

Etymology.— This species is named after Dr T.C.M. Kemperman, Amsterdam, The Netherlands, fellow-malacologist.

Chrysallida (Pyrgulina) stefanisi (Jeffreys, 1869)

Acteon pygmaea Grateloup, 1838: 282, pl. 6 figs 77, 78. Not *Acteon pygmaea* Lea, 1833.

Rissoa stefanisi Jeffreys, 1869: 208.

Chrysallida pygmaea; van Aartsen, 1977: 54, pl. 2 fig. 11; Micali et al., 1993: 151, 152; Peñas et al., 1996: 19 fig. 21.

Chrysallida stefanisi; Warén, 1991: 100, 101 fig. 32D; Peñas & Rolán, 1998: 28.

Material.— Mauritania: M.030/1, M.031/3, M.034/1, 3.133/1, B2/1, B5/1. Canary Islands: 2.065/1, 2.135/1, 4.064/2, 4.069/2, 4.156/1, 4.157/1. Azores: 5.036/1, 5.037/2, 5.051/2, 5.135/1.

Distribution.— This species occurs in deeper water and has not been reported before from our research area. It is mentioned by Peñas & Rolán (1998: 28, 30) but it is not clear whether these authors actually examined material from the Canary Islands and Mauritania.

Nomenclature.— We follow Micali et al. (1993) in using the oldest available name which is based on recent material. For a discussion on possibly fossil specimens, we refer to the same authors.

Depth range.— 36-1370 m.

Chrysallida (Pyrgulina) obesa (Dautzenberg, 1912)

Pyrgulina obesa Dautzenberg, 1912: 73, pl. 3 figs 27, 28.

Chrysallida obesa; Peñas & Rolán, 1998: 32, 35, figs 91-97.

Material.— Mauritania: B1/1.

Depth.— 53-64 m.

Chrysallida herosae Peñas & Rolán, 1998

Chrysallida herosae Peñas & Rolán, 1998: 32, 37, figs 98-101.

Material.— Mauritania: V/1.

Note.— We found only a single specimen of this very characteristic species. It has about the same dimensions as the holotype.

Depth.— 0 m.

Chrysallida (Pyrgulina) pyrgulina Peñas & Rolán, 1998
(figs 46, 63)

Chrysallida pyrgulina Peñas & Rolán, 1998: 30, 33, figs 87-90.

Material.—Cape Verde Islands: 6.005/3, 6.006/3, 6.007/3, 6.009/3, 6.010/2, 6.015/1, 6.024/2, 6.056/2, 6.059/9, 6.061/12, 6.077/2, 6.082/1, 6.085/1, 6.101/1, 6.103/3, 6.105/9, 6.107/4, 6.130/1, 6.132/1, 6.134/5, 6.138/1, 6.141/1, 6.143/1, 6.149/1, 6.158/1, 6.160/3, 6.162/2, 7.008/1, 7.031/2, 7.038/3, 7.042/2, 7.043/1, 7.079/15, 7.080/6, 7.091/4, 7.093/4, 7.094/1, 7.100/2, 7.101/2, 7.102/3, 7.106/6, 7.119/2, 7.128/2, 7.129/1, 7.160/1.

Differentiation.— *Chrysallida (Pyrgulina) pyrgulina* shares most characters with *C. (P.) decussata* (Montagu, 1803) and *C. (P.) stefanisi* (Jeffreys, 1869), but these two species have a totally different form in which the last whorl is by far the largest and the mouth is larger too. Our largest specimen measures 2.1 × 0.8 mm and is here figured.

Depth range.— 20-460 m.

Chrysallida (Pyrgulina) vanderlindeni spec. nov.
(figs 47, 64)

Material. Holotype (RMNH 59342): 7.129, Cape Verde Islands, S of São Nicolau, S. Jorge Bay; 16°33'N 24°16'W; depth 405 m, muddy bottom; rectangular dredge; 2.ix.1986.

Paratypes (RMNH 59343-59360 & ZMA 3.99.021). Cape Verde Islands: 6.010/2, 6.011/4, 6.012/1, 6.015/1, 6.017/1, 6.019/2, 6.024/1, 6.026/1, 6.044/3, 7.004/1, 7.007/3, 7.008/1, 7.049/1, 7.050/8, 7.100/1, 7.101/1, 7.128/2, 7.129/4.

Description.— Shell white, very slender conical with a flat top. Embryonic whorls intorted and clearly separated from the first teleoconch whorl. Teleoconch with four to four and a half convex whorls, separated by a well-defined suture. Growthlines coinciding with the twenty to twenty-five narrow, orthocline, inverted-S-shaped, axial ribs per whorl. About ten spiral ribs, somewhat less prominent than the axial ones. The adapical six to seven spirals are placed much closer than the other ones. Shell base with a few additional spirals. Outer lip gently curved, smooth inside. Umbilicus small but conspicuous. Columella smooth.

Dimensions: H. 2.3-2.8 mm, W. 0.9-1.1 mm; holotype 2.8 × 1.1 mm.

Differentiation.— This species is similar to the North European *Chrysallida eximia* (Jeffreys, 1849), which also has convex whorls and a prominent umbilicus (Warén, 1991: 99, figs 31 E,F). However, *C. eximia* has only two spiral ribs on the teleoconch whorls.

Depth range.— 150-820 m.

Etymology.— This species is named after Mr J. van der Linden, Den Haag, The Netherlands, fellow-malacologist.

Chrysallida (Partulida) pellucida (Dillwyn, 1817)

Turbo spiralis Montagu, 1803: 323. Not *Turbo spiralis* Poirlet, 1801.

Voluta pellucida Dillwyn, 1817: 528.

Chrysallida spiralis; van Aartsen, 1977: 53, pl. 1 fig. 8; Warén, 1991: 95, 96, fig. 29C.

Chrysallida pellucida; Peñas et al., 1996: 17, 28, fig. 12; Peñas & Rolán, 1998: 34.

Material.— Canary Islands: 4.041/1.

Note.— Among the CANCAP material only a single specimen was found.

Nomenclature.— As demonstrated by van Aartsen & Giannuzzi-Savelli (1991: 6), the well-known name for this species, viz. *Chrysallida spiralis* (Montagu, 1803), is pre-occupied and should be replaced by the name proposed by Dillwyn.

Turbo spiralis Montagu, 1803, was designated as type species of *Partulida* Schaufuss, 1869, by Iredale (1917: 325).

Distribution.— This species, common on the European Atlantic coasts, has been reported before from Mauritania by Dautzenberg (1910: 97) and Nicklès (1950: 68).

Depth.— 120 m.

Chrysallida (Partulida) incerta (Milaschewitch, 1916)

Odostomia turbonilloides Brusina, 1869: 240. Not *Odostomia turbonilloides* Deshayes, 1861.

Parthenina incerta Milaschewitch, 1916: 98, figure.

Parthenina brusinai Cossmann, 1921: 258.

Chrysallida lacourti Nordsieck, 1972: 99.

Chrysallida turbonilloides; van Aartsen, 1977: 53, pl. 1 fig. 7.

Chrysallida brusinai; Peñas et al., 1996: 15, 17 figs 13, 14; Peñas & Rolán, 1998: 36, 38, figs 102, 103.

Chrysallida incerta; Wilke & van Aartsen, 1998: 10, 22, figs 18a-c.

Material.— Mauritania: M.030/5, M.031/7, M.043/4, M.045/1, M.064/2, M.065/5, M.077/8, M.078/1, M.085/2, M.097/4, M.099/1, M.111/2, 3.123/1, 3.133/2, 3.194/5, B5/2, B7/3, B8/7, I/2, II/4, III/2, V/6, VII/8, IX/2. Cape Verde Islands: 6.005/8, 6.006/6, 6.008/2, 6.014/1, 6.015/20, 6.019/1, 6.040/2, 6.044/1, 6.054/2, 6.056/14, 6.059/6, 6.085/3, 6.103/>25, 6.105>25, 6.107/15, 6.110/1, 6.122/1, 6.130/6, 6.162/2, 7.031/1, 7.042/2, 7.043/5, 7.064/1, 7.065/4, 7.066/6, 7.080/>25, 7.093/1, 7.115/4, 7.116/19, 7.120/1, 7.128/12, 7.129/3, 7.142/5, 7.143/2, 7.160/3.

Note.— In general the material listed above contains specimens that are somewhat larger than those usually found in the Mediterranean. Nevertheless they belong without doubt to the same species.

Nomenclature.— As discussed by van Aartsen & Menkhorst (1996: 51) and confirmed by Wilke & van Aartsen (1998: 10) the oldest valid name for this species is the one given by Milaschewitch.

Distribution — *Chrysallida (Partulida) incerta* has been mentioned before from West Africa (Conakry, Libreville, iles de Los) by Dautzenberg (1912: 67) and from West Africa and the Cape Verde Islands by Peñas & Rolán (1998).

Depth range.— 0-405 m.

Chrysallida (Tragula) fenestrata (Jeffreys, 1848)

Odostomia fenestrata Jeffreys, 1848: 345; Warén, 1980: 38, pl. 6 fig. 17.

Chrysallida fenestrata; van Aartsen, 1981: 63, 65, pl. 1 fig. 1; Warén, 1991: 103, 113, fig. 39A; Peñas et al., 1996: 18, 27, fig. 54; Peñas & Rolán, 1998: 14, 17, figs 38-42.

Material.— Mauritania: M.031/1, M.099/1. Canary Islands: Gran Canaria/1.

Note.— According to van Aartsen (1981: 63) this species should be placed in *Chrysallida* and not in *Turbonilla* because of its intorted top-whorls. It is the type species by monotypy of the (sub)genus *Tragula* Monterosato, 1884.

Depth range.— 0-70 m.

Chrysallida (Trabecula) jeffreysiana (Monterosato, 1884)

Trabecula jeffreysiana Monterosato, 1884: 86.

Odostomia (Turbonilla) undata Watson, 1897: 262, pl. 20 fig. 31.

Odostomia seguenzai Pallary, 1912: 196, pl. 16 (= 2) fig. 24.

Chrysallida jeffreysiana; van Aartsen, 1977: 50, pl. 1 fig. 2.

Odostomella jeffreysiana; Peñas et al., 1996: 17, 31, fig. 10.

Material.— Mauritania: I/15, II/5, III/4, V/3, VII/4. Canary Islands: 2.012/1, 2.D01/1, Gran Canaria (18/84)/3, El Hierro/1, Lanzarote/5, Fuertaventura/46, Tenerife/17 [in ZMA].

Note.— This is a relatively rare species in European waters. Our biggest specimen from Mauritania measures 3.0×1.1 mm.

Nomenclature.— *Trabecula jeffreysiana* is the type species, by monotypy, of *Trabecula* Monterosato, 1884. *Odostomia (Turbonilla) undata* Watson, 1897, is a synonym (Nordsieck, 1972: 97) and *O. seguenzai* Pallary, 1912, is a superfluous replacement name for this species. We do not place *T. jeffreysiana* in the genus *Odostomella* Bucquoy, Dautzenberg & Dollfus, 1883 (Schander et al., 1999a).

Distribution.— This species has been reported from Madeira by Watson (1897: 262) and from the Canary Islands by Nordsieck & Talavera (1979: 183).

Depth range.— 0-170 m.

Chrysallida (Trabecula) kronenbergi spec. nov.
(fig. 48)

Material.— Holotype (RMNH 59361): 5.051, Azores, S of Santa Maria; $36^{\circ}55'N$ $25^{\circ}07'W$; depth 620 m, clayey sand with shell gravel; Hamon grab; 30.v.1981.

Paratypes (RMNH 59362). Azores: 5.051/7.

Description.— Shell transparent whitish, small, conical and somewhat turreted. Embryonic whorls intorted, smooth and somewhat carinated at the top. Teleoconch consisting of about three moderately convex whorls, which are more or less turreted. Suture clearly marked but not very deep. Growthlines prosocline. Teleoconch with ten to twelve prosocline axial ribs per whorl; axials nearly as broad as their interstices. There is an abapical, prominent spiral rib. Shell base with some vague spirals. Umbilicus absent. Columella smooth.

Dimensions: H. 1.5-1.6 mm, W. 0.7-0.8 mm; holotype 1.6×0.8 mm.

Differentiation.— *Chrysallida (Trabecula) kronenbergi* spec. nov. does not have any

spiral sculpture. As such it is similar to *C. (T.) jeffreysiana* (Monterosato, 1884), which is larger, however, and sculptured with many more axial ribs. Apart from that, the embryonic whorls of *C. (T.) jeffreysiana* are evenly rounded, instead of carinated as in *C. (T.) kronenbergi* spec. nov. The arctic species *C. bjoernsoni* Warén (1991: 99, 100, fig. 31B) is somewhat similar to our species too, but clearly has two spiral ribs on the teleoconch whorls. The rare, arctic *C. sublustris* (Friele, 1886) differs by being larger, viz. 2.0 mm instead of 1.6 mm high at three teleoconch whorls, by the more numerous and more prosocline axial ribs and by its small but conspicuous umbilicus (see Micali et al., 1993: 149, fig. 8).

Depth.— 620 m.

Etymology.— This species is named after Mr G.C. Kronenberg, Eindhoven, The Netherlands, fellow-malacologist.

Chrysallida (Strioturbonilla) sigmoidea (Monterosato, 1880)

Odostomia sigmoidea Monterosato, 1880: 71 (ex Jeffreys ms.); Jeffreys, 1884: 354, pl. 26 fig. 9.

Chrysallida sigmoidea; van Aartsen, 1977: 54, pl. 1 fig. 9; Schander, 1994: 24, 61, fig. 2f (not fig. 2e as indicated in the text); Peñas et al., 1996: 19, 28, figs 17, 18; Peñas & Rolán, 1998: 55, figs 152-154.

Material.— Mauritania: M.030/5, M.031/2, M.032/4, M.043/1, M.044/1, M.045/1, M.046/4, M.064/2, M.065/1, M.077/2, M.079/1, M.084/1, M.085/4, M.097/2, M.099/2, M.111/1, M.115/1, 3.109/4, 3.194/3, B4/2, B5/1, B7/7, B8/16, III/3, VII/1.

Distribution.— Dautzenberg (1912: 67) reported this species from West Africa south to Port de Banana and Iles de Los, and Peñas & Rolán (1998) from the Cape Verde Islands.

Nomenclature.— We follow Amati (1986: 64-66) in ascribing this species to Monterosato as its author, instead of Jeffreys as is usually done.

Chrysallida sigmoidea is the type species of the (sub)genus *Strioturbonilla* Sacco, 1892, by original designation.

Depth range.— 0-85 m.

Chrysallida turbonillaeformis spec. nov.
(figs 49, 65)

Material.— Holotype (RMNH 59363): 6.084: Cape Verde Islands, S of São Nicolau; 16°34'N 24°22'W; depth 72 m, calcareous sand with Foraminifera; van Veen grab; 14.vi.1982.

Paratypes (RMNH 59364-59376 & ZMA 3.99.022). Cape Verde Islands: 6.082/7, 6.084/4, 6.085/1, 6.107/4, 6.109/1, 6.128/1, 6.149/1, 7.028/1, 7.061/1, 7.102/1, 7.105/2, 7.160/1, 7.161/1.

Description.— Shell whitish, forming a lengthened cone with straight sides and a blunt top. Embryonic whorls smooth and intorted. Teleoconch with six to over seven rather flat whorls. Suture incised but not deep. Growthlines sigmoidal, coinciding with the axial ribs. Shell with somewhat inverted-S-shaped, opisthocline, axial ribs, slightly narrower than the interstices; there are twelve to sixteen of these ribs per teleoconch whorl. No spiral sculpture can be detected. Umbilicus absent. Columella straight and vertical, smooth.

Dimensions: H. 3.2-3.7 mm, W. 1.1-1.2 mm; holotype 3.2 × 1.1 mm.

Differentiation.— In shape and sculpture this species looks very much like a *Turbonilla* species. The intorted embryonic whorls exclude it from that genus, however, and point to *Chrysallida*. This species does not fit well into any *Chrysallida* subgenus and, therefore, we classify it as *Chrysallida* s.l.

Chrysallida turbonillaeformis spec. nov. is somewhat similar to *C. sigmoidea* (Monterosato, 1880), but shells of that species are smaller and more slender, and have many conspicuous spiral riblets or striae, which are lacking in *C. turbonillaeformis*.

Depth range.— 30-605 m.

Etymology.— The name refers to the superficial resemblance of this species to representatives of the genus *Turbonilla* Risso, 1826.

Chrysallida gitzelsi spec. nov.
(fig. 50)

Material.— Holotype (RMNH 59377): 6.164: Cape Verde Islands, NW of São Vicente; 16°55'N 25°02'W; depth 67 m, foraminifera sand and calcareous algae; van Veen grab; 21.vi.1982.

Paratypes (RMNH 59378-59379). Cape Verde Islands: 6.164/1, 7.066/2.

Description.— Shell small, whitish transparent, very slender conical with an obtuse apex. Embryonic whorls intorted. Shell with three moderately convex teleoconch whorls, the suture clearly marked. Teleoconch with 13-16, markedly orthocone, somewhat inverted-S-shaped, axial ribs per whorl. No spiral sculpture. Umbilicus absent. Columella smooth.

Dimensions: H. 1.4-1.8 mm, W. 0.5-0.7 mm; holotype 1.8 × 0.7 mm.

Differentiation.— *Chrysallida gitzelsi* spec. nov. is somewhat similar to *C. parasigmoidea* Schander, 1994, but in our species the ribs are much less curved and less in number. The embryonic whorls are as broad as the first teleoconch whorl, which makes the apex even more blunt than that in *C. parasigmoidea*. This species does not fit well into any *Chrysallida* subgenus and, therefore, we classify it as *Chrysallida* s.l..

Depth range.— 46-67 m.

Etymology.— This species is named after Mr W.T.C. Gitzels, Rijnsaterwoude, The Netherlands, fellow-malacologist.

"Chrysallida" gruveli (Dautzenberg, 1910)

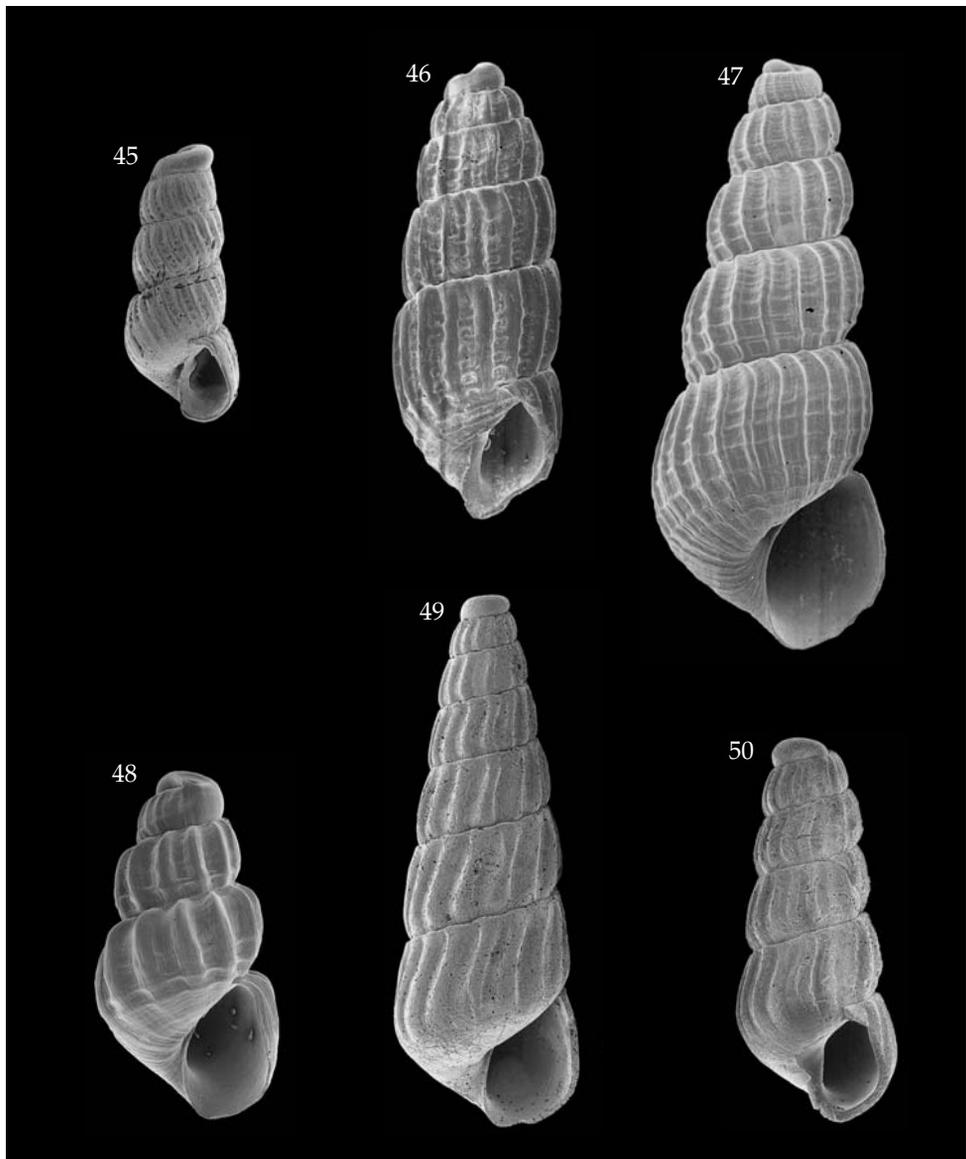
Actaeopyramis gruveli Dautzenberg, 1910: 93, pl. 3 figs 6,7.

Chrysallida gruveli; Peñas & Rolán, 1998: 22, 25, figs 61-65.

Material.— Mauritania: M.014/2, M.044/1, M.085/2, M.099/2, 3.109/6, VI/2.

Nomenclature.— It is not at all clear whether this species should be included in the genus *Chrysallida*. However, it is also not evident in which of the other threehundred genera of the Pyramidellidae this species should be placed otherwise. Therefore, we provisionally follow the generic assignment by Peñas & Rolán (1998).

Depth range.— 0-42 m.



Figs 45-50. *Chrysalida* species. 45, *C. (Pyrgulina) kempermani* spec. nov., 1.4 mm, holotype (RMNH 59337), sta. M.106, Mauritania, off Banc d'Arguin, 20°31'N 17°02'W, depth 15 m, 18.vi.1988; 46, *C. (Pyrgulina) pyrgulina* Peñas & Rolán, 2.1 mm, sta. 7.080, Cape Verde Islands, W of Boa Vista, W of Ilhéu de Sal Rei, 16°10'N 23°01'W, depth 74 m, 28.viii.1986; 47, *C. (Pyrgulina) vanderlindeni* spec. nov., 2.8 mm, holotype (RMNH 59342), sta. 7.129, Cape Verde Islands, S of São Nicolau, S. Jorge Bay, 16°33'N 24°16'W, depth 405 m, 2.ix.1986; 48, *C. (Trabecula) kronenbergi* spec. nov., 1.6 mm, holotype (RMNH 59361), sta. 5.051, Azores, S of Santa Maria, 36°55'N 25°07'W, depth 620 m, 30.v.1981; 49, *C. turbonillaeformis* spec. nov., 3.2 mm, holotype (RMNH 59363), sta. 6.084, Cape Verde Islands, S of São Nicolau, 16°34'N 24°22'W, depth 72 m, 14.vi.1982; 50, *C. gitzelsi* spec. nov., 1.8 mm, holotype (RMNH 59377), sta. 6.164, Cape Verde Islands, NW of São Vicente, 16°55'N 25°02'W, depth 67 m, 21.vi.1982.

Genus *Odostomella* Bucquoy, Dautzenberg & Dollfus, 1883

Type species: *Rissoa doliolum* Philippi, 1844, by original designation.

We follow Schander et al. (in press) in considering *Odostomella* a full genus and not a subgenus of *Chrysallida*.

Odostomella doliolum (Philippi, 1844)

Rissoa doliolum Philippi, 1844: 132, pl. 23 fig. 19.

Odostomia tricincta Jeffreys, 1856: 185, pl. 2 figs 12, 13; Warén, 1980: 39.

Odostomia doliolum var. *cylindrica* Bucquoy, Dautzenberg & Dollfus, 1883: 68, pl. 19 fig. 21.

Parthenina bucuoyi Locard, 1886: 227, 572.

Chrysallida doliolum; van Aartsen, 1977: 50, pl. 1 fig. 1; Terreni, 1981: 44, pl. 7 fig. 8.

Odostomella africana Schander, 1994: 46, 66, fig. 7a.

Odostomella doliolum; Peñas, 1996: 17, 30, fig. 8 (not 9).

Material.— Mauritania: B1/2, B2/1. Canary Islands: 2.032/2, 2.033/1, 2.043/1, 2.064/2, 4.002/1, 4.013/1, 4.014/1, 4.020/1, 4.024/2, 4.029/4, 4.036/1, 4.069/3, 4.070/1, 4.088/1, 4.110/10, 4.115/4, 4.116/1, 4.122/1, 4.134/1; Tenerife, different localities/36, Lanzarote, different localities/18, El Hierro, different localities/21, Gomera/1, Fuerteventura/2, La Palma/2 [in ZMA]. Selvagens: 3.061/1. Madeira: 4.K27/3; Bay of Funchal/23 [in ZMA]. Azores: 5.006/4, 5.009/25, 5.036/20, 5.037/4, 5.038/1, 5.039/8, 5.040/21, 5.047/1, 5.050/3, 5.055/1, 5.071/1, 5.078/4, 5.093/65.098/1, 5.100/1, 5.111/6, 5.112/6, 5.131/4, 5.133/8, 5.136/1, 5.140/17, 5.143/1, 5.158/5, 5.164/3, 5.D01/1, 5.K01/1, 5.K10/1. Cape Verde Islands: 6.001/1, 6.004/3, 6.005/7, 6.006/17, 6.007/4, 6.008/4, 6.009/4, 6.010/7, 6.015/>25, 6.040/10, 6.041/3, 6.047/1, 6.054/1, 6.056/4, 6.059/13, 6.066/1, 6.068/3, 6.082/1, 6.085/1, 6.103/1, 6.105/5, 6.132/4, 6.134/6, 6.138/6, 6.147/1, 7.004/4, 7.005/1, 7.007/3, 7.008/1, 7.030/4, 7.031/2, 7.042/1, 7.043/1, 7.064/1, 7.065/2, 7.067/1, 7.068/4, 7.075/5, 7.080/>25, 7.096/1, 7.102/8, 7.105/3, 7.106/3, 7.110/10, 7.115/4, 7.116/4, 7.119/7, 7.120/2, 7.121/5, 7.128/2, 7.141/3.

Nomenclature.— The epithet *doliolum* is used here mainly because of the traditionally assumed conspecificity of the fossil species *Rissoa doliolum* Philippi, 1844, and the recent *Odostomia tricincta* Jeffreys, 1856. Both have shells that are c. 2 mm long and (usually) show three reddish-brown spiral colour bands on the bodywhorl. On the older whorls there are two of these bands, viz. one just below the upper suture and another one just above the lower suture. One of these bands may be missing.

We consider the variety *cylindrica* Bucquoy, Dautzenberg & Dollfus, 1883, which was renamed *Parthenina bucuoyi* Locard, 1886, nothing more than a variety as the length/breadth ratio of this species is rather variable.

Schander (1994) described *Odostomella doliolum* under the name *O. africana*.

Distribution.— This species has been reported before from the Canary Islands and Madeira by Jeffreys (1884: 351) and Watson (1897: 298), and from the Azores by Dautzenberg (1889: 59).

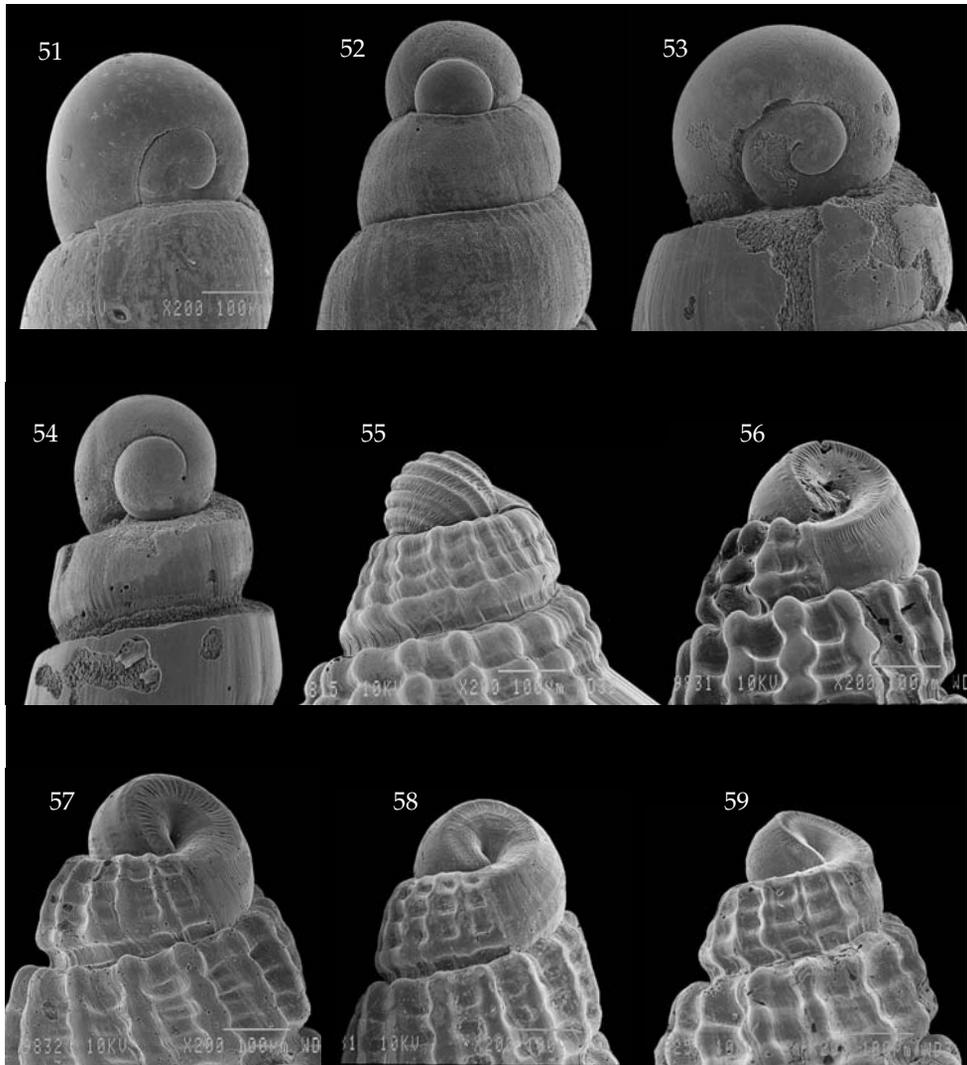
Depth range.— 0–930 m.

Odostomella bicincta (Tiberi, 1868)

Odostomia trincincta var. *bicincta* Tiberi, 1868: 62, 63.

Mumiola doliolum var. *elongata* Monterosato, 1884: 93.

Chrysallida doliolum; d'Angelo & Gargiullo, 1978: 154.

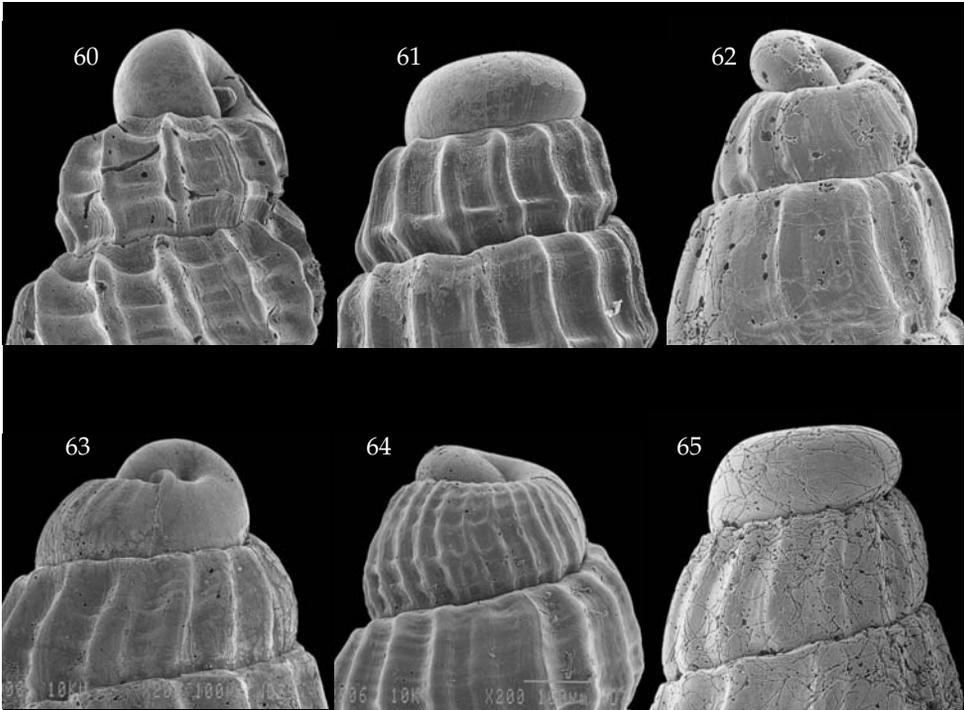


Figs 51-59. Protoconchs. 51, *Eulimella ignorabilis* Peñas & Rolán, sta. 3.172; 52, *Eulimella zornikulla* Schander, sta. M.030; 53, *Eulimella buijsi* spec. nov., paratype, sta. 6.013; 54, *Eulimella endolamellata* Schander, sta. 3.133; 55, *Chrysallida* (C.) *canariensis* Nordsieck & Talavera, Tenerife, coll. van Aartsen; 56, *Chrysallida* (C.) *mcmillanae* spec. nov., holotype, sta. 6.015; 57, *Chrysallida* (C.) *carpinei* spec. nov., holotype, sta. 7.121; 58, *Chrysallida* (C.) *horii* spec. nov., holotype, sta. 7.080; 59, *Chrysallida* (C.) *menkhorsti* spec. nov., holotype, sta. 7.080.

Odostomella doliolum; Peñas et al., 1996: 17 fig. 9.

Material.— Canary Islands: 2.075/1, 4.044/1, 4.080/2. Cape Verde Islands: 6.040/1, 6.116/1, 6.138/1.

Notes.— Monterosato (1884: 93) described this species as “Forme allungata, quasi il doppio. Non littorale” and “con due linee invece di tre. Coralligena.”.



Figs 60-65. Protoconchs. 60, *Chrysallida epitonoides* spec. nov., holotype, sta. 7.129; 61, *Chrysallida (Parthenina) anselmoi* Peñas & Rolán, sta. M.097; 62, *Chrysallida (Parthenina) josae* spec. nov., holotype, sta. 6.085; 63, *Chrysallida (Pyrgulina) pyrgulina* Peñas & Rolán, sta. 7.080; 64, *Chrysallida (Pyrgulina) vanderlindeni* spec. nov., holotype, sta. 7.129; 65, *Chrysallida turbonillaeformis* spec. nov., holotype, sta. 6.084.

In contrast to *Odostomella doliolum*, *O. bicincta* does not occur in shallow waters. Its shells are much larger, reaching about four mm in height in the Mediterranean. There are two colour bands on the last whorl and only one, in the middle of the whorl, on the previous whorls.

In our view, *O. bicincta* is a valid species, not a variety of *O. doliolum*.

Whether the specimen figured by Schander (1994: 66, fig. 7b, as *O. doliolum*) belongs to this species, is doubtful as it measures only 2.8 mm in length and because colour bands cannot be seen on the SEM photo.

Depth range.— 38-550 m.

Acknowledgements

Once more we thank all colleagues who made this report possible by their support. In addition, we gratefully acknowledge the help of Dr C. Carpine from the Musée Océanographique de Monaco who allowed us to study type specimens of Pyramidellidae from the Azores, described by Dautzenberg (1889) and Dautzenberg & Fischer (1896), Ms S.E. Boyd from the Museum of Victoria, Australia, and Dr R. Robertson, ANSP.

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