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On the taxonomy of some Recent European marine species of the genus Cingula s.l. (Gastropoda: Prosobranchia)

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Van Aartsen & Verduin (1978, 1982) have already tried to unravel problems with regard to the true identity of *Cingula* (*Setia*) *fusca* Philippi, 1841, *C.* (*S.*) *turriculata* (Monterosato, 1884), *C.* (*S.*) *inflata* (Monterosato, 1884), *C.* (*S.*) *macilenta* (Monterosato, 1880), and *C.* (*S.*) *concinnata* (Jeffreys, 1883). It is the intention of this paper to treat problems regarding the identity of a number of additional European taxa of which the shells show a superficial resemblance to those of *C. pulcherrima* (Jeffreys, 1848), the type species of the subgenus *Setia* H. & A. Adams, 1852, of the genus *Cingula* Fleming, 1818, s.l. Though most of the relevant species have been discussed, no attempt has been made for completeness. Thus, the paper has the character of an interim report.

Because I do not have the skill nor the material for investigating soft parts and radulae, only shells have been examined. On the species-level I do not consider this an important drawback. On that level shells still are the main source of our taxonomical knowledge, not only because they usually carry important characters, but also because they may be easily examined in large numbers often from different localities, and, last but not least, because they usually were the sole object of the original diagnoses. From a phylogenetical and nomenclatorial point of view, however, the absence of information concerning soft parts and radulae is a serious drawback; without such information it does not seem possible to arrive at a well founded generic and subgeneric subdivision of *Cingula* s.l., nor does it seem possible to sharply delimit *Cingula* s.l. from *Alvania* Risso, 1826, s.l. Moreover, one cannot decide with reasonable certainty from shells alone whether a species belongs to *Cingula* s.l. or to the subgenus *Coriandria* Tomlin, 1917 (type species *Rissoa cossurae* Calcara, 1841), of the genus *Eatonina* Thiele, 1912, though both taxa are quite different anatomically (Ponder & Yoo, 1980: 2, 5).

Under these circumstances I have decided to use the generic name *Cingula* for almost all species discussed. It will be understood that the use of this name does not express any phylogenetical point of view of the author, but only a superficial resemblance of the shells to those of the type species involved (see also note 1 in Van Aartsen & Verduin, 1978: 28).

It has been suggested in the literature that some species do occur both in Europe and around Madeira and/or the Canaries. Most littoral species of *Cingula*, however, have the larger type of apex, which suggests that they do not have a pelagic larval phase (Verduin, 1977: 91). For such species the sea which separates Madeira from the continental shelf of Europe and Africa over a distance of more than 600 km with depths of over 1000 m must generally be a considerable barrier, which at best may be crossed occasionally. Geographical isolation effects may therefore be expected to occur between littoral species from Madeira and from Europe and/or Africa.

The Canaries are on the continental shelf of Africa and, therefore, not as geographically isolated from Europe and North Africa as is Madeira. Because of their southerly position, however, the Canaries may be expected to harbour a number of species which do not range as far as the Mediterranean and the European Atlantic coasts, and the reverse may also apply. For these reasons it is interesting to compare the malacofauna of the regions mentioned. Therefore, I have also discussed a few species from Madeira and the Canaries.

I am very much obliged to Dr. E. Gittenberger and Prof. Dr. L. B. Holthuis, both Leiden, who solved a number of complicated nomenclatorial problems for this paper. To Dr. J. J. van Aartsen, Dieren, I am as much obliged for the loan of important material, for critical discussion, and for reading the manuscript. Furthermore, I am grateful to all other persons and institutions who contributed by the loan of material or otherwise. Finally, I wish to thank the editors for their strong and competent guidance.

Shells from the following collections were examined: Muséum National d'Histoire Naturelle, Paris (MNHNP); U.S. National Museum, Washington, D.C. (USNM); British Museum (Natural History), London (BMNH); Ph. Dautzenberg, in the Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels (KBIN-D); Natur-Museum Senckenberg, Frankfurt/Main (SMF); Naturhistorisches Museum, Wien (NMW); Rijksmuseum van Geologie en Mineralogie, Leiden (RMGM); Rijksmuseum van Natuurlijke Historie, Leiden (RMNH); the private collections of Dr. J. J. van Aartsen, Dieren (Aar), Mr. M. C. Cadée, Leiden (Cad), Ir. H. P. M. G. Menkhorst, Krimpen a/d IJssel (Mnk), and myself (Vrd).

TAXONOMICAL PART

Fig. 1 serves as explanation for terminology, etc.

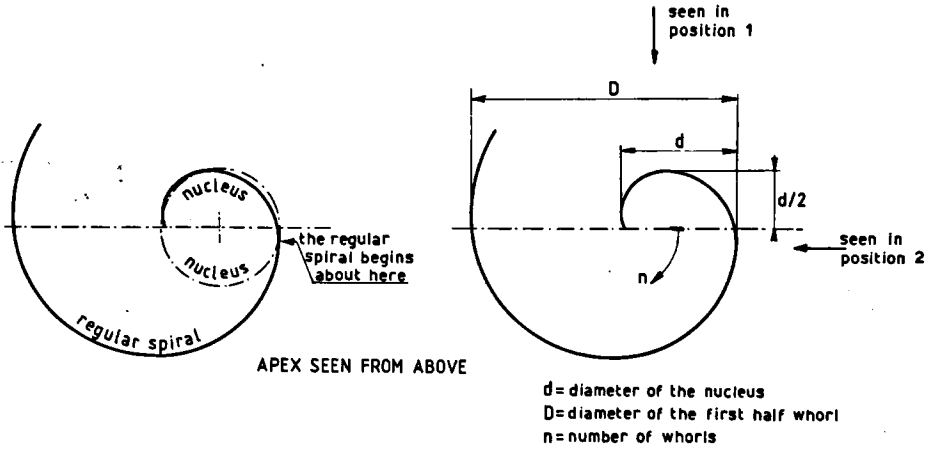

Fig. 1. Definitions.

Cingula pulcherrima (Jeffreys, 1848)
figs. 2, 5, 36, 55

Rissoa pulcherrima Jeffreys, 1848: 351.
Cingula pulcherrima – Fretter & Graham, 1978: 160.

Types. – Lectotype (fig. 5a): USNM no. 183152, designated by Warén (1980: 23), Sark[1]. Length 1.2 mm, 3.4 whorls. The dimensions of the apex are about d = 0.13 mm and D = 0.20 mm.

Description. – (1) The length of seemingly full-grown shells varies from 0.8 to 1.6 mm. – (2) Fresh shells without periostracum are transparent. At the base they are colourless or whitish, which colour often gradually changes into brownish on the apical whorls. The body whorl is decorated with regularly arranged darker spots. There are four spiral rows of these on the body whorl (fig. 36). Often, however, the spots of the upper two rows are confluent, as to form longitudinal streaks. In some of the shells the lower spiral rows of spots may be very weak or possibly even absent. I could see no such colour spots at all on the shells from the Channel Islands in USNM, though Jeffreys mentioned them in the original diagnosis. They may have bleached in the meantime, or Jeffreys may have observed them under other conditions, for instance in moistened shells. – (3) No ornamental sculpture can be seen on the lower whorls. – (4) The shells are rather fragile. There is no labial rib, nor does the aperture show any other peculiarities (fig. 55). – (5) Large specimens have about 4.0 whorls. – (6) The umbilicus is somewhat variable; usually it is narrow but deep. In some shells it may be somewhat wider and deeper, in others somewhat concealed behind the slightly reflected inner edge of the aperture. – (7) The dimensions of the apex vary: d = 0.10-0.13 mm; D = 0.17-0.20 mm. – (8) Seen from aside in position 1, the nucleus is very prominent and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a high segment of a sphere (fig. 55). – (9) At a magnification of 40X, about five extremely fine and distant spiral striae may quite often be seen on the protoconch of the shells washed ashore at Tarifa. No such ornamentation can be seen on the protoconch of the shells from the Channel Isles in USNM. This may be due, however, to the presence of a periostracum and/or the state of preservation of the shells.

Distribution. – Known from the Channel Islands and from S. Spain. The species has also been reported from other localities, but these cannot be relied upon because the species has often been misunderstood. In particular, I have never seen any specimens from the Mediterranean.

Material examined. – England: Channel Islands (USNM 183143-183147, 183149, 183152 and 183154/numerous); Guernsey (KBIN-D/3); Herm (KBIN-D/3). England, various localities (NMW-S.v.M. 26532-26534/11). S. Spain: Tarifa (Vrd 0090/numerous, now partly in NMW); Getarès, a few km S. of Algeciras (Aar 9853A/2, Aar 17562/1), Mnk/9 and Vrd 0118/1).

Discussion. – I measured a number of shells from the Channel Islands and from Tarifa (fig. 2). *C. pulcherrima* seems to be subject to little variation.

Cingula amabilis Locard, 1886
figs. 3, 6, 37, 56

Cingula amabilis Locard, 1886: 266.

Types. – Lectotype, design. nov. (fig. 6b): MNHNP, with four paralectotypes forming a sample labelled "Cingula amabilis Monterosato/Traponi/Coll. Locard, 1892. p. 178".

[1] Not Guernsey, as erroneously cited by Warén.

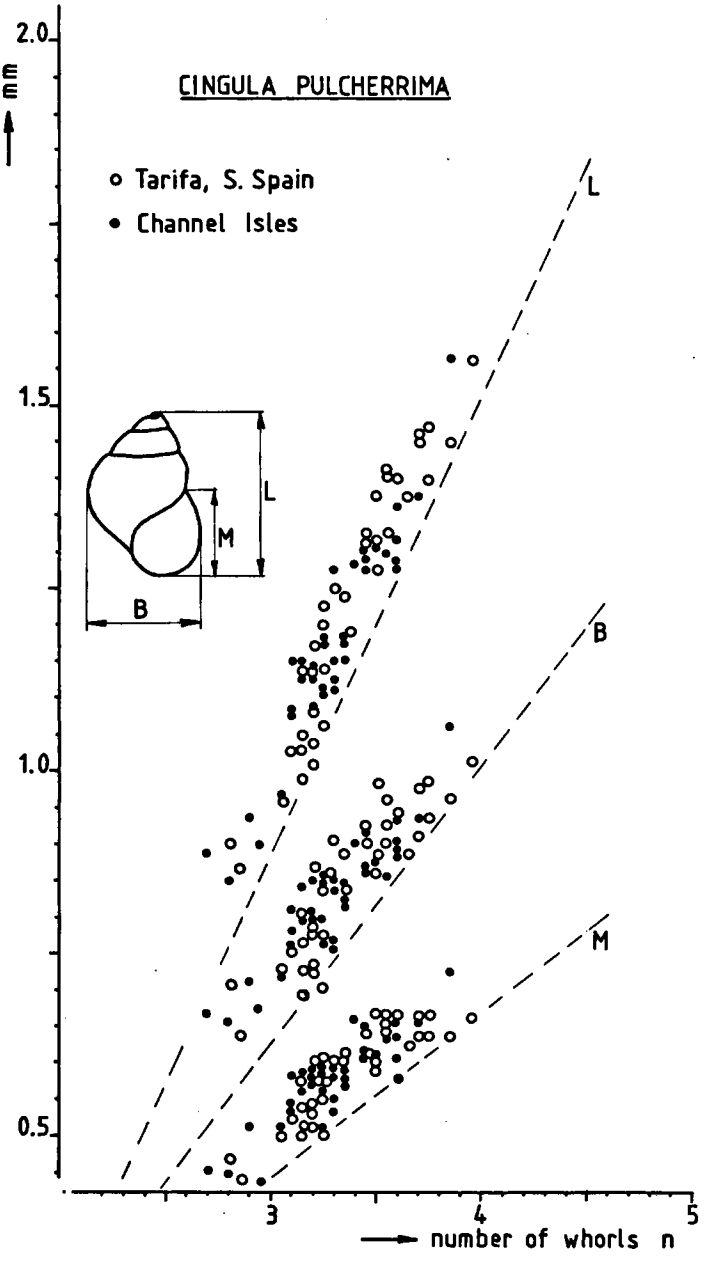

Fig. 2. Measurements. For comparison similar broken lines have been drawn in all figures.

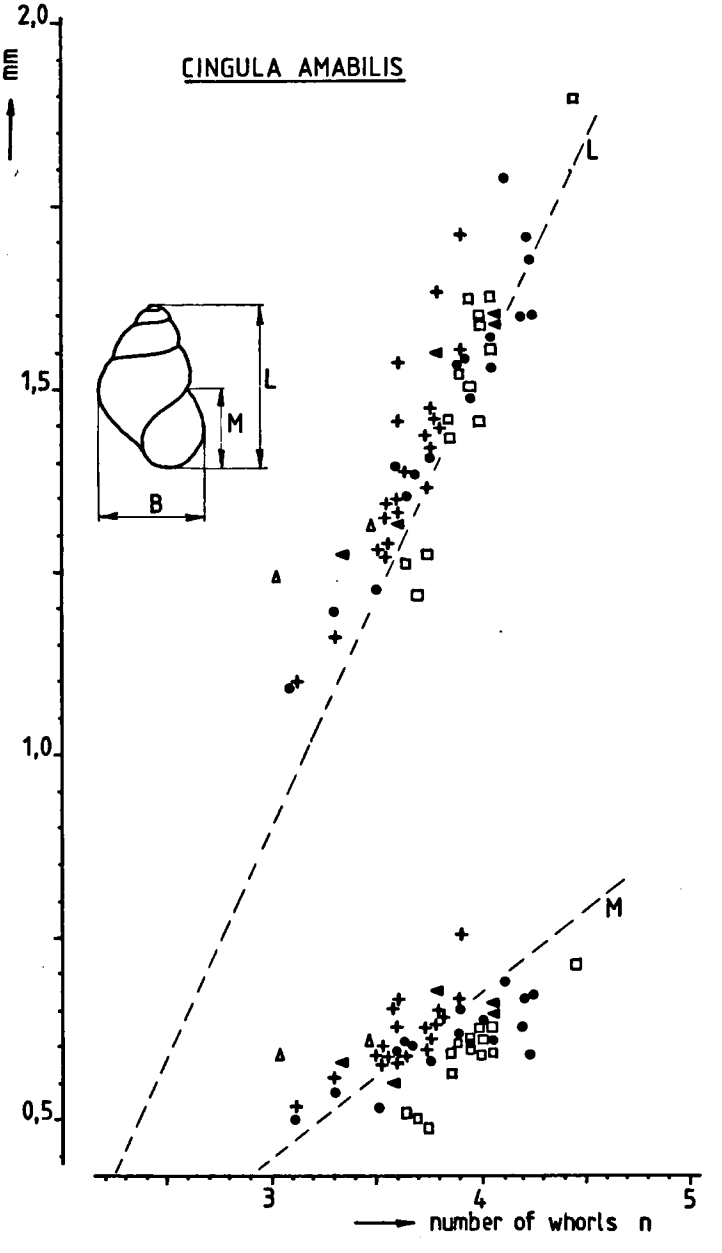

Fig. 3a. See fig. 2.

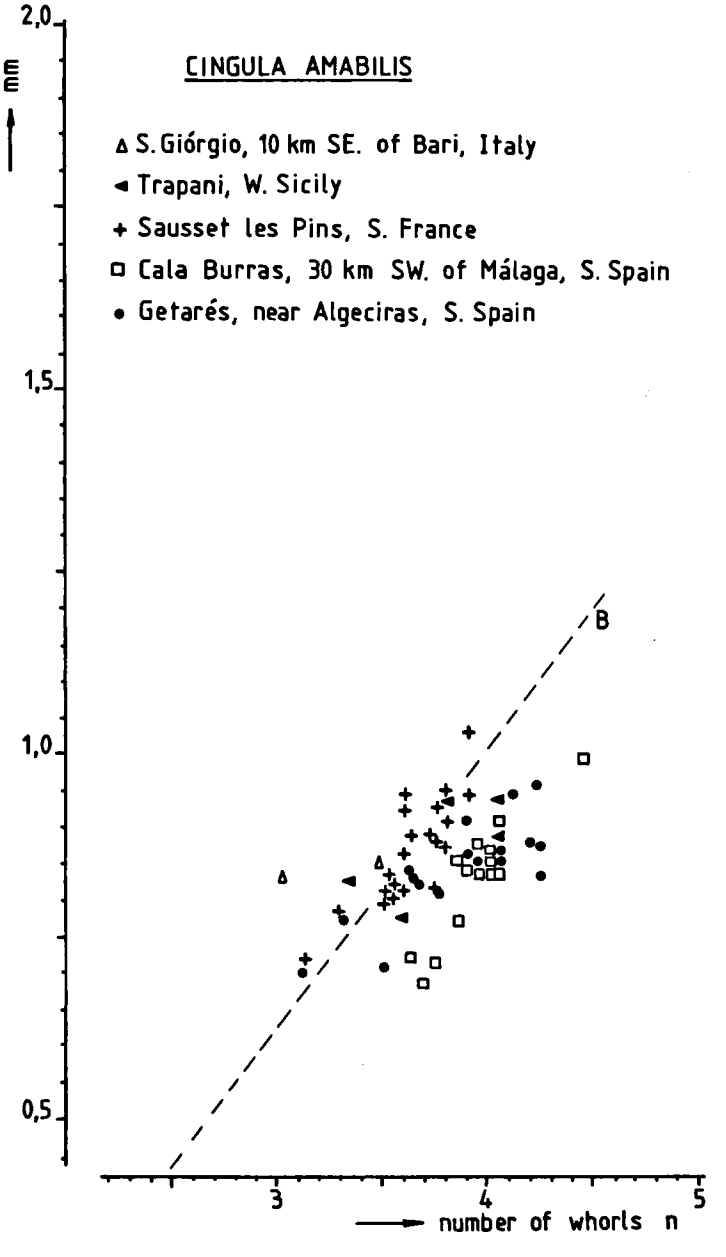

Fig. 3b. See fig. 2.

Lectotype length 1.5 mm, 4.1 whorls. The dimensions of the apex are about d = 0.11 mm and D = 0.21 mm. Three very weak (bleached?) spiral rows of darker spots can still be seen on the body whorl.

Description. – (1) The length of seemingly full-grown shells varies from 1.3 to 1.8 mm. – (2) Fresh shells are highly transparent and nearly colourless, with a light yellow hue. Usually, the top whorls are of the same transparency and colour as the lower ones. Sometimes they are slightly darker. There are three spiral rows of darker spots on the body whorl (fig. 37). The spots of the uppermost row are always distinctly higher than wide. Sometimes there is a brownish streak in the umbilicus. – (3) No ornamental sculpture can be seen on the lower whorls. – (4) The shells are not very solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 56). – (5) Large specimens have about 4.3 whorls. – (6) The umbilicus is narrow but distinct. Often, it is somewhat concealed behind the inner edge of the aperture. – (7) The dimensions of the apex vary: d = 0.11-0.13 mm; D = 0.18-0.21 mm. – (8) Seen from aside in position 1, the nucleus is very prominent and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a high segment of a sphere (fig. 56). – (9) At a magnification of 40X, no sculpture can be seen on the protoconch.

Distribution. – *C. amabilis* is washed ashore at many localities in the entire Mediterranean and in the Straits of Gibraltar. Though not very rare, it certainly is not a common species.

Material examined. – Numerous specimens from many localities in the western part of the Mediterranean, among which: Cala Burra/Fuengirola, S. Spain (Aar 10205); Formentera, Spain (Aar 4405); Sausset les Pins, S. France (Aar 11684); Antignano, 5 km S. of Livorno, Italy (Aar 15657, taken alive at a depth of 0.5 m); Mondello, NW. Sicily (Aar 4196); Trapani, NW. Sicily (lectotype plus paralectotypes, MNHNP/4); Nabeul, Tunisia (Aar 9434); El Djemila (= La Madrague), Algeria (Aar 10540). Numerous specimens from the Straits of Gibraltar: Tanger (Aar 12402); Tarifa (Vrd 0070); Getarès, a few km S. of Algeciras (Vrd 0055 now partly in NMW). Eastern part of the Mediterranean and Adria: Naxos, Greece (Cad/1); S. Giórgio, 10 km SE. of Bari, Italy (Vrd 0001/2).

Discussion. – The taxon was first introduced by Monterosato (1878: 87) with the words: "Setia amabilis, *Monts.* = *R. pulcherrima*, (non Jeffr.) *auct.* Med. e Adr." These words, however, cannot be considered a definition or indication as required by Art. 12 of the International Code of Zoological Nomenclature. Therefore, *Setia amabilis* Monterosato, 1878, is a nomen nudum. The same is true for *S. amabilis* Monterosato, 1884 (1884a: 279, and 1884b: 73). *Cingula amabilis* Locard, 1886, however, is an available name, because Locard (1886: 266) defined the species as "*Rissoa pulcherrima* (n. Jeffreys, pars auct. – Bucquoy, Dautzenberg et Dollfus, 1884. *Moll. Rouss.*, p. 307, pl. XXXVII, fig. 4-8)", and because Bucquoy, Dautzenberg & Dollfus gave a description of their *R. pulcherrima*. This definition of *C. amabilis* does not imply, however, that a lectotype should be taken from among the material upon which Bucquoy, Dautzenberg & Dollfus based their description and figures, because we are by no means certain that Locard ever examined that material. It is also possible that Locard knew *C. amabilis* from material given to him by Monterosato, and that he shared Monterosato's opinion (as I do myself) that *C. pulcherrima* is a strictly Atlantic species. I examined the shells figured by Bucquoy, Dautzenberg & Dollfus as *R. pulcherrima*, but their state of preservation is not sufficient for designating a lectotype. Therefore, I prefer to designate a lectotype from among samples labelled "*amabilis*" which Locard had received from Monterosato. The Locard

collection (MNHNP) contains a number of such samples. Unfortunately, however, the shells in these samples belong to a number of different species. Only the five shells in a sample labelled "Cingula amabilis Monterosato/Traponi/Coll. Locard, 1892. p. 178" (which according to an additional label came from Monterosato) agree with *R. pulcherrima* sensu Bucquoy, Dautzenberg & Dollfus. I have designated the lectotype from among that sample. The locality Traponi on the label is doubtless a misspelling of Trapani, W. Sicily.

As said above, I consider *C. amabilis* specifically distinct from *C. pulcherrima*. This opinion is based upon three observations: (1) the shell of *C. amabilis* is more slender; only with regard to occasional shells or shells from occasional localities there is a slight overlap with the measurements of those of *C. pulcherrima* (figs. 2, 3); (2) *C. amabilis* shows little variation as regards the darker colour spots; I have never observed four spiral rows of such spots on the body whorl, which is not rare in *C. pulcherrima*; (3) *C. amabilis* is very constant as regards the background colour, far more constant than the shells of *C. pulcherrima* from S. Spain.

Cingula maculata Monterosato, 1869
figs. 7, 38, 57

Cingula maculata Monterosato, 1869: 7, fig. 1 (Trapani & Palermo).

Types. - Two possible syntypes from Trapani in KBIN-D; topotypes from Trapani (Vrd 0012).

Description. - (1) The length of seemingly full-grown shells varies from 1.4 to 1.9 mm. - (2) Fresh shells without periostracum are highly transparent and glossy, with a yellowish hue except for the base, which is whitish. There are three spiral rows of darker spots on the body whorl (fig. 38). There is a dark brown spot on the apex. - (3) No sculpture can be seen on the lower whorls. - (4) The shells are somewhat solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 57). - (5) Large specimens have about 4.5 whorls. - (6) There is no umbilicus, nor an umbilical chink. - (7) The dimensions of the apex vary: d = 0.09-0.10 mm; D = 0.17-0.20 mm. (8) Seen from aside in position 1, the nucleus is medium prominent and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a medium high segment of a sphere (fig. 57). - (9) At a magnification of 40X, no sculpture can be seen on the protoconch.

Distribution. - *C. maculata* is washed ashore at many Mediterranean localities, often in small numbers. It seems to be rare or absent on the coast of North Africa.

Material examined. - Sicily: Trapani (KBIN-D/2; Vrd 0012/numerous, now partly in NMW); Ognina (USNM 183211/17, together with *C. pseudocingulata*). Western part of Mediterranean: Sausset les Pins, France (Vrd 0036/11); La Ciotat, France (Vrd 0055/1); Sestri Levante, Italy (Vrd 0055/3). Eastern part of Mediterranean and Adria: Naxos, Greece (Cad/1); Sciáthos, Greece /Vrd 0013/2); S. Giórgio, 10 km SE. of Bari, Italy (Vrd 0002/1).

Discussion. - The original diagnosis and figure define *C. maculata* beyond any reasonable doubt. Moreover, KBIN-D contains a sample of two shells, labelled "R. maculata Monts./ Trapani/Lemoro Monts." which agree very satisfactorily with the above.

Pyramis maculata Brown, 1827, does not preoccupy *Cingula maculata* because, so far, nobody has connected Brown's species with the genus *Cingula*. In my opinion, the true identity of *Pyramis maculata* has never been established in a satisfactory way. The type specimens seem to have been lost; anyway, Ms. K. Way (BMNH) wrote me that she was unable to find them. For all these reasons it seems best to consider *Pyramis maculata* Brown a nomen dubium.

I did not examine material in Aar, which is from Sicily, from the western part of the Mediterranean, and from Crete (Aar 19007/1).

Cingula aartseni[2] sp. n.
figs. 8, 39, 58

Types. – Holotype (fig. 8a): RMNH 55640 (ex Vrd 0077), Tarifa. Length slightly over 1.4 mm, 3.8 whorls. The dimensions of the apex are about d = 0.12 mm and D = 0.20 mm. Paratypes: all other "material examined".

Description. – (1) The length of seemingly full-grown shells varies from 1.4 to 1.6 mm. – (2) The shells are transparent, with a yellowish hue. The top whorls are of the same transparency and colour as the lower whorls. There are three spiral rows of darker spots on the body whorl (fig. 39). – (3) No ornamental sculpture on the lower whorls. – (4) The shells are somewhat solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 58). – (5) Large specimens have about 4.2 whorls. – (6) There usually is no umbilical chink, though there may be a slight one in some shells. – (7) The dimensions of the apex vary: d = 0.10-0.12 mm; D = 0.17-0.20 mm. – (8) Seen from aside in position 1, the nucleus is prominent and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a high segment of a sphere (fig. 58). – (9) At a magnification of 40X, about 10 equidistant, close-set spiral grooves can be seen on the protoconch.

Distribution. – *C. aartseni* is only known from the Strait of Gibraltar and S. Portugal.

Material examined. – Strait of Gibraltar: Tarifa (RMNH 55640/1, Vrd 0077/26 now partly in KBIN and NMW); Getarès, a few km S. of Algeciras (Aar 9847/15, Mnk/13, Vrd 0069/1); Tanger (Aar 12409/1). S. Portugal: Alvor (Aar 16137/2); Lagos (Aar 4801/2).

Discussion. – An additional sample, Aar 17560/4 from Algeciras, has not been examined by me.

Cingula kuiperi[3] sp. n.
figs. 9, 40, 59

Types. – Holotype (fig. 9): RMNH 55641 (ex Aar 10550), El Djemila (= La Madrague). Length slightly over 1.6 mm, 4.3 whorls. The dimensions of the apex are about d = 0.12 mm and D = 0.21 mm. Paratypes: all other "material examined".

[2] In honour of Dr. Ir. J. J. van Aartsen, whose vast knowledge of the European marine malacofauna and whose excellent collection has much contributed to this paper.

[3] In honour of Dr. J. G. J. Kuiper, doctor honoris causa of the University of Amsterdam, on behalf of his outstanding contributions to malacology.

Description. – (1) The length varies from 1.3 to 1.9 mm. – (2) The shells are transparent and of a light horny or yellowish colour, but at the base almost colourless or whitish. There are three spiral rows of darker spots on the body whorl (fig. 40). The spots of the uppermost row are high and narrow, and end in a darker spot at the aperture. In some shells, the spots of the lower two rows are confluent, forming narrow and somewhat irregular vertical lines. There is a characteristic dark spot at the suture of the nucleus of the apex. – (3) No sculpture can be seen on the lower whorls. – (4) The shells are not very solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 59). – (5) Large specimens have about 4.5 whorls. – (6) The umbilical chink is slight, almost absent. – (7) The dimensions of the apex vary: d = 0.11-0.12 mm; D = 0.19-0.22 mm. – (8) Seen from aside in position 1, the nucleus is little prominent, circumscribed by a rather shallow suture. Seen from aside in position 2, the nucleus and first ¼ whorl are medium prominent (fig. 59). – (9) At a magnification of 40X, no sculpture can be seen on the protoconch.

Distribution. – As yet only known from Algeria.

Material examined. – Algeria: El Djemila (RMNH 55641/1, Aar 10550/numerous, Aar 10555/9); Sidi Ferruch (Aar 10759A/1, Aar 10959/1, Aar 11085/2); Dellys (KBIN-D/1 coll. Ancey).

Discussion. – Though the ample material collected by Dr. J. J. van Aartsen demonstrates that the species is not particularly rare in Algeria, it seems never to have been mentioned in the literature.

Cingula gittenbergeri[4] sp. n.
figs. 10, 41, 60

Types. – Holotype (fig. 10a): RMNH 55642 (ex Vrd 0060), Tarifa. Length slightly over 1.4 mm, 4.3 whorls. The dimensions of the apex are about d = 0.11 mm and D = 0.19 mm. Paratypes: all other "material examined".

Description. – (1) The length of seemingly full-grown shells varies from 1.2 to 1.7 mm. – (2) Fresh shells are transparent with a slight horny hue, or whitish. The top whorls are of the same colour and transparency as the lower whorls. In many shells two spiral rows of darker spots can be seen on the body whorl (fig. 41). The spots of the upper row are much higher than wide. Often, the spots of the lower row are weak or absent, which occasionally may also be true for those of the upper row. – (3) Ornamental sculpture absent on the lower whorls. – (4) The shells are not very solid. There is no labial rib. Seen from aside, the edge of the aperture is strongly curved (fig. 60). – (5) Large specimens have about 4.8 whorls. – (6) The umbilical chink is weak or absent. – (7) The dimensions of the apex vary: d = 0.10-0.13 mm; D = 0.18-0.21 mm. – (8) Seen from aside in position 1, the nucleus is little prominent but still well visible, circumscribed by a rather deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a medium high, somewhat flattened segment of a sphere (fig. 60). – (9) At a magnification of 40X, no ornamental sculpture can be seen on the protoconch.

Distribution. – As yet only known from Tarifa, S. Spain, and from Madeira.

[4] In honour of Dr. E. Gittenberger, Leiden, whose merits to malacology are many and various.

Material examined. – Tarifa, S. Spain (RMNH 55642/1, Vrd 0060/numerous, now partly in KBIN, NMW and Aar). Madeira (USNM 183126/1, together with many shells of *C. picta*).

Discussion. – *C. gittenbergeri* is rather similar to *C. alleryana* (Aradas & Benoit, 1874), but differs in the colour of the apex and in the form of the aperture seen from aside.

Cingula sliki[5] sp. n.
figs. 11, 42, 61

Types. – Holotype (fig. 11a): RMNH 55643 (ex Vrd 0054), Getarès. Length nearly 2.3 mm, 5.2 whorls. The dimensions of the apex are about d = 0.12 mm and D = 0.20 mm. Paratypes: all other "material examined".

Description. – (1) The length of seemingly full-grown shells varies from 1.4 to 2.7 mm. – (2) Fresh shells washed ashore are transparent and colourless; older ones may be opaque and whitish. The top whorls are of the same transparency and colour as the lower whorls. The body whorl is decorated with three spiral rows of brownish spots (fig. 42). The spots of the upper row are much higher than wide. Those of the lower rows may be somewhat obscure. – (3) No sculpture can be seen on the lower whorls. – (4) The shells are not very solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 61). – (5) Large specimens have about 5.6 whorls. – (6) There is a very narrow umbilicus, almost an umbilical chink. – (7) The dimensions of the apex vary: d = 0.10-0.12 mm; D = 0.20-0.24 mm. – (8) Seen from aside in position 1, the nucleus is little prominent but well visible, circumscribed by a rather deep suture. Seen from aside in position 2, the nucleus and the first ¼ whorl form a very prominent, flattened and somewhat asymmetrical apex (fig. 61). – (9) At a magnification of 40X, about 15 extremely delicate, somewhat distant spiral grooves can be seen on the protoconch.

Distribution. – *C. sliki* is washed ashore from NW. Spain to the Strait of Gibraltar.

Material examined. – Strait of Gibraltar: Getarès, a few km S. of Algeciras (RMNH 55643/1, Mnk/numerous, Aar 9837/numerous, Aar 17561/2, Vrd 0054/numerous, now partly in KBIN and NMW); Tarifa (Vrd 0081/numerous). Portugal, Sezimbra, 30 km S. of Lisboa (Vrd 0119/10). NW. Spain, Ria de Arosa (RMNH/2).

Discussion. – This probably is the species which Rolan (1983: 134) reported from the Ria de Vigo s.n. *Cingula messanensis*. In my opinion, however, the original diagnosis of *C. messanensis* does not agree really satisfactorily with the shells of *C. sliki* examined by me. Moreover, *C. messanensis* has been described from Messina, Sicily, and seems never to have been reliably reported from any other locality. Because the type material seems to have been lost, we cannot be certain about the true identity of *C. messanensis*. Under these circumstances I prefer to consider it a nomen dubium, rather than to venture a speculative interpretation.

The additional sample Aar 4793/2 from Laredo, N. Spain, has not been examined by me.

[5] In honour of Mrs. and Mr. L. van der Slik, Rotterdam, in whose company I spent many pleasant malacological hours.

Cingula semistriata (Montagu, 1808)
figs. 12, 43, 62

Turbo semistriatus Montagu, 1808: 136 (Coast of South Devon).
Cingula semistriata - Fretter & Graham 1978: 159.

Types. - No information available.

Description. - (1) The length of seemingly full-grown specimens varies from 1.6 to 2.5 mm. - (2) Fresh shells without periostracum are transparent, with a yellowish hue. The top whorls are of the same transparency and colour as the lower whorls. There usually are two or three spiral rows of darker spots on the body whorl (fig. 43), but occasionally other colour patterns do occur. - (3) The whole body whorl, except for the region close to the columella, is covered with about 22 equidistant spiral grooves. These are not equally strong because those at the periphery are more obsolete, and may even be absent. Often, the surface is slightly reticulate by the presence of more or less irregularly arranged growth lines or close-set longitudinal ribs, which may even be about as strong as the spiral sculpture. - (4) The shells are somewhat solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 62). - (5) Large specimens have about 5.2 whorls. - (6) The umbilical chink varies; usually it is weak, but sometimes it is nearly absent, and occasionally it may form a narrow umbilicus. - (7) The dimensions of the apex are small: d = 0.07 mm and D = 0.13 mm. - (8) Seen from aside in position 1, the nucleus is little prominent but clearly visible and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and the first ¼ whorl form a medium high, flattened segment of a sphere (fig. 62). - (9) At a magnification of 40X, no ornamental sculpture can be seen on the protoconch. Fretter & Graham (1978: 159) mention delicate spiral lines and papillae on the protoconch; these must have been worn away in my specimens.

Distribution. - Atlantic coasts of Europe, Mediterranean.

Material examined. - Atlantic coast of Europe: Quiberon, Bretagne (Vrd 0015/numerous); Santander, N. Spain (Vrd 0134/numerous); Sezimbra, 30 km S. of Lisboa (Vrd 0116/numerous); Lagos, S. Portugal (Vrd 0115/numerous). Mediterranean: Sausset les Pins, S. France (Vrd 0045/numerous); Trapani, Sicily (Vrd 0046/numerous); Gandoli, 10 km S. of Tarento, Italy (Vrd 0068/22); Punta Mika, a few km NW. of Zadar, Jugoslavia (Vrd 0096/49); Sciáthos, Greece (Vrd 0006/7).

Discussion. - This is a common and well known species. With *C. intersecta* and *C. macilenta* it is the only species discussed in this paper with the smaller type of apex. It is noteworthy that all three species have a range which includes both the entire Mediterranean and large parts of the European Atlantic coasts. None of the other species discussed is that widely distributed.

Cingula beniamina Monterosato, 1884
figs. 13, 44, 63

Cingula concinna Monterosato, 1869: 8, fig. 2.
Cingula beniamina Monterosato, 1884a: 228 (nom. emend.)

Types. - Lectotype, design. nov.: USNM 182859, Palermo. Length nearly 1.7 mm, 4.4 whorls. The dimensions of the apex are about d = 0.11 mm and D = 0.17 mm. Three topotypes in KBIN-D, labelled "Cingula beniamina Monts./Palermo/Monterosato 15 85".

Description. – (1) The length of seemingly full-grown shells varies from 1.2 to 1.7 mm. – (2) Fresh shells without periostracum are transparent, with a yellowish hue. The top whorls are of the same transparency and colour as the lower ones, or slightly more whitish. There often are four spiral rows of darker spots on the body whorl (fig. 44). The lowermost row, however, may be absent in part of the shells. – (3) There always are about two close-set, narrow and weak spiral ridges on the body whorl as a continuation of the suture. Another ridge is often present at a short distance below the suture. Occasionally, the body whorl may be entirely or partly covered with numerous extremely weak spiral striae in addition to the sculpture just described. – (4) The shells are not very solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 63). – (5) Large specimens have about 4.4 whorls. – (6) The umbilical chink is weak or absent. – (7) The dimensions of the apex vary: d = 0.09-0.11 mm; D = 0.17-0.20 mm. – (8) Seen from aside in position 1, the nucleus is very prominent and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a high segment of a sphere (fig. 63). – (9) At a magnification of 40X, the surface of the top whorl is frosted, but without manifest sculpture. On the remainder of the protoconch, this frosted surface may merge into about 3-5 rather distant and somewhat irregular spiral lines which consist of numerous fine papillae. In many shells, however, this sculpture seems to be absent, probably worn away.

Distribution. – *C. beniamina* is washed ashore in small numbers at many localities in the Mediterranean.

Material examined. – Western Mediterranean: Sausset les Pins, S. France (Aar 11685/13); Plage de l'Estagnol, S. France (Aar 16201/numerous); St. Tropez, S. France (Aar 14304/3, Aar 15118/2); Cabasson, S. France (Aar 16725/1); Sorrento, Italy (Aar 18640/35); El Djemila = La Madrague, Algeria (Aar 10552/21); Sidi Ferruch, 10 km W. of El Djemila (Aar 10784/4, Aar 11048/6). Sicily, Palermo (USNM 182859/1, KBIN-D/3); Mondello (Vrd 0026/4); Taormina (Aar 18644/4, Aar 18647/1); Marzameni (Vrd 0019/13); Catania (Aar 16392/21, Aar 16394/9). Eastern Mediterranean: Paphos, Cyprus (Vrd 0023/numerous); Ródhos (Vrd 0214/1).

Discussion. – The lectotype is labelled "Rissoa concinna Allery/Palermo, Sicily/Monterosato/USNM 182859/Jeffreys Coll.", with at the reverse of the label "Cingula concinna Allery – Monterosato's label". I also examined three topotypes collected by Monterosato (KBIN-D). The lectotype as well as these three topotypes agree excellently with the original diagnosis and figure of *C. concinna* Monterosato, except for the fact that the shells have spiral sculpture instead of colour lines. Probably, Monterosato misinterpreted this spiral sculpture as colour lines.

According to Sherborn, *Cingula concinna* is preoccupied by *Cingula concinna* C.B. Adams, 1850.

C. beniamina is rather variable as regards habitus, sculpture and colour pattern. Some specimens even slightly remind one of *C. pseudocingulata*.

Cingula pseudocingulata (Nordsieck, 1972)
figs. 14, 45, 64

Setia (Crisillosetia) pseudocingulata Nordsieck, 1972: 163; pl. 4 fig. 20.

Types. - Lectotype, design. nov. (fig. 14b): RMNH 55644, Ibiza. Length 2.0 mm, 4.6 whorls. The dimensions of the apex are about d = 0.10 mm and D = 0.18 mm. Paralectotypes: two shells from the same sample in RMNH.

Description. - (1) The length of seemingly full-grown shells varies from 1.5 to 2.1 mm. - (2) Fresh shells without periostracum are transparent and whitish or with a yellowish hue. The top whorls are of the same transparency and colour as the lower ones. In part of the shells four more or less weak spiral rows of darker spots can be observed (fig. 45). - (3) There are about 14 almost equal and almost equidistant, but nevertheless somewhat irregular, spiral grooves on the body whorl. Often, these are weaker and more frequent at the periphery, and occasionally from the periphery upward the whole body whorl is covered with such weaker and more frequent spiral striae. Sometimes, spiral sculpture is almost absent at the periphery. - (4) The shells are somewhat solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 64). - (5) Large specimens have about 4.6 whorls. - (6) There is an umbilical chink,which may vary from rather well developed to nearly absent. - (7) The dimensions of the apex vary: d = 0.10-0.11 mm; D = 0.18-0.20 mm. - (8) Seen from aside in position 1, the nucleus is prominent, and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a high segment of a sphere (fig. 64). - (9) At a magnification of 40X, about 6 fine, rather distant and somewhat irregular spiral lines can be seen on the protoconch, which seem to consist of numerous, fine papillae.

Distribution. - Western part of the Mediterranean and Sicily, rather rare.

Material examined. - Western Mediterranean: Ibiza (RMNH 55644/3, RMNH ex Nordsieck/2); St. Raphaël (KBIN-D/2). Sicily: Palermo (USNM 182023/3); Ognina (USNM 183211/numerous). Adria?, isle Lagan[6] (NMW-Edlauer 17331/2).

Discussion. - When I visited Dr. F. Nordsieck a number of years ago, he gave me three syntypes of *C. pseudocingulata* from Ibiza. I have designated the lectotype from among these shells. Material in Aar (Taormina, -15 m: 18646/6; Acitrezza, -20 m: 18641/2; Ibiza: 4685/9, 4612/4 and 4546/7) has not been examined by me. See also sub *C. galvagni* in the chapter on nomina dubia.

Alvania simulans Locard, 1886
figs. 15, 46, 65

Alvania simulans Locard, 1886: 250.

Types. - Lectotype, design. nov. (fig. 15a): MNHNP, from among three shells, labelled "Alvania simulans Monterosato/Palerme/Coll. Locard/1892. p. 162" (Palermo, NW. Sicily). The lectotype is the left one (if the apices are uppermost) of the three shells which are glued to a piece of black paper. It measures nearly 1.6 mm. Paralectotypes: the other two shells in the sample.

6 I failed to find this locality.

Description. – (1) The length of seemingly full-grown shells varies from 1.3 to 1.7 mm. – (2) Fresh shells without periostracum are rather transparent and of a light yellowish brown colour, with a white zone near the aperture. There are brown spots just below the suture, about 8-10 per whorl. Below the periphery one or two additional spiral rows of small yellow spots can usually be seen on the body whorl (fig. 46). – (3) There are about seven to ten, usually rather weak, narrow and equidistant spiral ridges on the body whorl, nearly half of which are on the base of the shell. Often, these ridges are about equally strong, but in some shells the one at the periphery plus the one just above it are stronger than the remaining ones. Often, numerous fine, close-set, wavy spiral striae may be seen between these ribs. There may be traces of longitudinal ribs, but if so, these are so weak that they cannot be observed with certainty. – (4) The shells are not very solid. There is no labial rib. Seen from aside, the aperture is slightly curved (fig. 65). – (5) Large specimens have about 4.0 whorls. – (6) There usually is no umbilical chink. – (7) The dimensions of the apex vary: d = 0.11-0.13 mm; D = 0.18-0.21 mm. – (8) Seen from aside in position 1, the nucleus is prominent and circumscribed by a rather deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a high segment of a sphere (fig. 65). – (9) At a magnification of 40X, about 10 equidistant, close-set spiral grooves can be seen on the protoconch.

Distribution. – Only known from the western part of the Mediterranean and Sicily.

Material examined. – Western Mediterranean: Sausset les Pins, S. France (Vrd 0173/5); Prt. le Niel, 10 km S. of Hyères (Vrd 0175/1). Sicily: Palermo (MNHNP/3, ex-Locard); Mondello (USNM 183340/2, Vrd 0028/17); Trapani (Vrd 0225/1); Marzameni (Vrd 0024/numerous).

Discussion. – Because the shells of *A. simulans* are (almost) devoid of axial ribs, the species is very similar indeed to some species of *Cingula*. For this reason I have decided to discuss *A. simulans* here.

Originally, *A. simulans* has been mixed up with *A. watsoni* (Watson, 1873), to which species it is very closely related indeed. *A. watsoni* was first mentioned by Monterosato (1872: 36) with the words "*Rissoa Watsoni*, Jeffreys MS. Trapani e Magnisi (Brugnone)!, Palermo ed altre località! Madèra (Watson!), Canarie (M'Andrew)!". Jeffreys, however, never published a *Rissoa watsoni*. Thus, both *R. watsoni* Jeffreys and *A. watsoni* Monterosato, 1872, are nomina nuda. The next year, Watson (1873: 375) published *Rissoa watsoni* (Schwartz) from Madeira. The species, however, has never been published by Schwartz. Therefore, Watson himself is the author. With regard to the Mediterranean form Watson (l.c.) wrote "A Sicilian *Rissoa* kindly sent to me by the Marquis of Monterosato is quite certainly not this species." Monterosato (1875: 27) shared this opinion: "*R. Watsoni*, Schw. – ved Watson (...). Gli esemplari del Mediterraneo non hanno le strie spirali così rilevate come in quelli di Madera, ma le evoluzioni hanno la medesima progressione." A few years later Monterosato (1878: 85) introduced another name for the Mediterranean form with the words "R. simulans, *Monts.* = R. Watsoni, *Monts.* (non Schw.); e var. sublaevis. Coste di Sicilia, di Provenza, d'Algeria ecc." Because of the absence of a strict bibliographical reference, *R. simulans* Monterosato, 1878, however, must be considered a nomen nudum. *Alvania simulans* Locard, 1886, on the contrary, is an available name because it is accompanied by a bibliographical reference to Monterosato 1875: 27: 'Rissoa Watroni (n. Schw.), de Monterosato, 1875. Nuov. revista, p. 17." Though this bibliographical reference contains three small errors, probably misprints, in my opinion these do not affect its validity. Later on, Locard (1891: 162) produced a

short diagnosis of *A. simulans*, so that Bucquoy, Dautzenberg & Dollfus' (1898: 796) observation "*Rissoa simulans* Monts. – Côtes de France, espèce non décrite" is not correct.

MNHNP contains a number of samples labelled *Alvania simulans* which originate from the Locard collection. Unfortunately, these samples belong to a number of different species. I have designated the lectotype from among three shells labelled as above. The sample is also accompanied by a smaller label, possibly written by Locard, which reads "Rissoa simulans Mts. Palerme/col. Mts." There can be little doubt that all three shells are conspecific with the "Sicilian *Rissoa*" of Watson, the "esemplari del Mediterraneo" of Monterosato, and the *Alvania simulans* described by Locard, which were discussed above. To some extent this conclusion is corroborated by a sample labelled: "Rissoa watsoni Schw./Mondello, Sicily/Monterosato/USNM 183340/Monterosato's label: R. watsoni", which contains one shell of *C. maculata* plus two shells of *A. simulans*. The question whether *A. watsoni* and *A. simulans* really must be considered distinct species, however, has been considerably complicated by Monterosato's (1877: 35) observation that the typical form of *A. watsoni* does also occur in Algeria. He maintained this opinion in 1878 (p. 85). Therefore, I compared a sample of 39 shells (BMNH), labelled: "Rissoa watsoni Watson/Madeira/Norman colln. ex R.B. Watson colln./possible syntypes BM (NH) 23348-67" with more than 50 shells of *A. simulans* from a number of Sicilian localities and with a few shells from SE. France. The shells from Madeira are somewhat more slender, have about 0.3 more whorls, have a distinct, though broad and flat, labial rib, have stronger spiral ribs, and are devoid of the small, somewhat irregular, yellowish spots which can usually be seen on the lower part of the body whorl of the Mediterranean specimens. Moreover, part of the Madeiran shells show variable degrees of axial ribs, of which there seem to be about 35 per whorl. In the Mediterranean shells axial ribs are absent, or so weak that they cannot be observed with certainty. The spiral ribs in one of the shells which accompany the lectotype of *A. simulans*, however, are much stronger than in any of the other Mediterranean shells examined, and almost as strong as in the Madeiran specimens. Yet, the yellowish colour spots on this shell mark it as of Mediterranean origin, as, of course, does the label.

All considered, I have some doubt whether our present knowledge fully justifies the view that *A. watsoni* and *A. simulans* are distinct species instead of subspecies. For the sake of a stable nomenclature, however, I have followed Van Aartsen (1982: 4), who considers them distinct species.

Remarks. – The nearly verbatim identical descriptions of *Rissoa watsoni* by Kobelt (1887: 204) and Carus (1893: 339) slightly differ from that by Watson, and may well have been taken from Schwartz von Mohrenstern's manuscript on *Alvania*, which, however, has never been published and which I have never seen.

Rissoa Waltoni Jeffreys, reported by Aradas & Benoit (1874: 210) is an error for *R. watsoni*, as was mentioned in the errata (1876: 331). Carus (1893: 337) must have overlooked these errata when he wrote "?R. Waltoni Jeffr. (ubi?, test Arad. et Ben.)."

There is more material of *A. stimulans* in Aar (18645 from Taormina; 16393 from Acitrezza; 15108 from St. Tropez; 16212 from Plage de l'Estagnol). I have not examined this material.

Cingula turriculata (Monterosato, 1884)
figs. 16, 47, 66

Setia turriculata Monterosato, 1884a: 279 (Palermo all'Arenella & Trapani).
Cingula turriculata - Van Aartsen & Verduin, 1978: 27 sqq.

Types. - 30 (possible) syntypes from Palermo: USNM 332304; SMF 239469; KBIN-D; NMW 557. Three of these are shown in Van Aartsen & Verduin, 1978, fig. 6.

Description. - (1) The length of seemingly full-grown shells varies from 1.0 to 1.9 mm. - (2) Fresh shells without periostracum are transparent and vitreous or pale horny. Usually, the top whorls are darker and less transparent. Occasionally, colour patterns occur which may consist of darker spiral bands on the body whorl, or of up to three spiral rows of darker spots (fig. 47). - (3) Usually, ornamental sculpture is absent on the lower whorls. Occasionally, however, these whorls may be covered by dense and extremely fine spiral striae. - (4) The shells are not very solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 66). - (5) Large specimens have about 4.6 whorls. - (6) The umbilicus is well developed. - (7) The dimensions of the apex vary considerably: d = 0.08-0.15 mm; D = 0.15-0.25 mm. They are subject to both local and geographical variation. - (8) Seen from aside in position 1, the nucleus is little prominent and circumscribed by a somewhat shallow suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a medium high segment of a sphere (fig. 66). - (9) At a magnification of 40X, about 18 fine, equidistant spiral striae may be observed on the protoconch of many shells. Often, however, these spiral striae are more or less obsolete, or even absent, possibly worn away.

Distribution. - *Cingula turriculata* is washed ashore in great numbers in the entire Mediterranean area, though it seems to be less common in the eastern part. Furthermore, the species is known from the Canary Isles.

Material examined. - Western Mediterranean, Sicily and the Adria, many samples including the possible syntypes mentioned above, see Van Aartsen & Verduin, 1978. Eastern Mediterranean: Allinkum near Widim, SW. Turkey (Cad/numerous); Sciáthos, W. Aegean Sea (Vrd 0020/3). Canary Isles, Hierro (RMGM 221346/3).

Discussion. - A variable species as regards habitus, ornamentation and apex.

Cingula fusca (Philippi, 1841)
fig. 17

Truncatella ? fusca Philippi, 1841: 53; pl. 5 fig. 5 (Palermo).
Setia inflata Monterosato, 1884a: 279. Synonym according to Van Aartsen & Verduin, 1978.
Cingula fusca - Van Aartsen & Verduin, 1978: 27 sqq.

Types. - Juvenile syntypes of *C. fusca* in USNM 182941/1 and Zoologisches Museum Berlin 14031/1, both shown in Van Aartsen & Verduin, 1978, figs. 2-3. Syntypes of *S. inflata* (Van Aartsen & Verduin, 1978, fig. 5) in NMW 27758. Ponder & Yoo (1980: 29) report cotypes BMNH 1911.10.26.24362-24381; I did not examine these.

Description. - The differences between *C. fusca* and *C. turriculata* have been amply discussed by Van Aartsen & Verduin, 1978. The main difference is the brown colour of *C. fusca*. It may, however, not always be possible to identify individual shells with certainty.

Distribution. – *C. fusca* is quite rare in the western part of the Mediterranean, though it may locally occur in great numbers.

Material examined. – See Van Aartsen & Verduin, 1978.

Cingula alleryana (Aradas & Benoit, 1874)
figs. 18, 48, 67

Rissoa alleryana Aradas & Benoit, 1874: 211, pl. 4 fig. 11 (Palermo).

Types. – No information available.

Description. – (1) The length of full-grown shells varies from about 1.2 to 2.1 mm. – (2) Fresh shells are vitreous, when bleached whitish. The top whorls are of the same colour and transparency as the lower ones, but the nucleus of the apex is of a light brownish colour. Occasionally, two spiral rows of darker spots may be seen on the body whorl (fig. 48). There always is a brown spot below the suture, just before the outer edge of the aperture. – (3) Usually, ornamental sculpture is absent on the lower whorls. On the third whorl of one shell, however, I observed about 12 extremely fine, distant spiral scratches. – (4) The shells are not very solid. There may be a very weak labial rib. Otherwise the aperture does not show any peculiarities (fig. 67). – (5) Large specimens have about 5.0 whorls. - (6) There is a narrow umbilical chink. – (7) The dimensions of the apex vary: d = 0.09-0.13 mm; D = 0.18-0.21 mm. – (8) Seen from aside in position 1, the nucleus is little prominent but well visible, surrounded by a rather shallow suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a medium prominent segment of a sphere (fig. 67). – (9) At a magnification of 40X, no sculpture can be seen on the protoconch.

Distribution. – *C. alleryana* is washed ashore not uncommonly in the entire Mediterranean area.

Material examined. – Sicily: Mondello, 10 km NW. of Palermo (Vrd 0015/numerous); Trapani (KBIN-D/2, BMNH/1 and Vrd 0001/numerous); Balestrate, halfway between Trapani and Palermo (Vrd 0015/1). Western Mediterranean, Sausset les Pins, S. France (Vrd 0174/11). Eastern Mediterranean: Lindos, Ródhos, Greece (Vrd 0057/20); Naxos (Cad/1); Allinkum near Widim, SW. Turkey (Cad/1); Katákolon, W. of Pírgos, W. Greece (Vrd 0095/2).

Discussion. – According to Monterosato, *Rissoa ambigua* Brugnone, 1873, is synonymous with *C. alleryana*, see for instance 1875: 28. Brugnone (1876: 25) implicitly supported this opinion by claiming priority for *ambigua*. This claim is correct, because recent investigations (Bouchet, 1982: 180) have confirmed that *alleryana* was published in 1874, and not in 1870 as was generally assumed before. Replacing the name *alleryana* by *ambigua*, however, would be incompatible with one of the main objects of zoological nomenclature, viz, promoting a stable, generally used, nomenclature. Therefore, it seems best to consider *R. ambigua* a nomen oblitum in the sense of the I.C.Z.N.

I cannot recognize with reasonable certainty either species from the original diagnosis and figure. Therefore, I tried to locate the syntypes, but as yet without success. Aradas & Benoit (1874: 212), however, wrote that they had received the species for the first time from Monterosato, after whom they named it. Thus, we may assume that Montero-

sato knew the species well. The Dautzenberg collection contains two shells labelled: "Setia alleryana Aradas & Benoit/Trapani/Marie (ex Monterosato) 8-1-84", which agree very well with the original diagnosis and figure. I have no doubt that these specimens represent the species. Dr. Van Aartsen wrote to me that there are similar samples from Monterosato in USNM 332307 and BMNH 1911.10.26.24640-24641 (label in M.'s handwriting).

C. alleryana may be confused with *C. gittenbergeri* and smooth specimens of *Rissoa scurra*. From *C. gittenbergeri* it differs in the brownish colour of the nucleus of the apex, and in the outer lip of the aperture, which is not curved. As compared with smooth *R. scurra*, the whorls of *C. alleryana* are somewhat more strongly and more evenly curved. Moreover, a brown spot just below the suture is situated at the aperture in *R. scurra*, and at some distance before the aperture in *C. alleryana*.

Aar contains more samples of *C. alleryana*, among which from Tanger, Algeria and Tunisia, which I did not examine.

Cingula turgida (Jeffreys, 1870)
figs. 19, 68

Rissoa turgida Jeffreys, 1870: 445 (Dröbak & Vallö, 40-100 fathoms).
Cingula turgida - Fretter & Graham, 1978: 162.

Types. - Syntypes in BMNH 1911.10.26.24451-24453/3. Possible syntypes (fig. 19) in USNM 183638/numerous.

Description. - (1) The length of seemingly full-grown shells varies from about 1.5 to 2.0 mm. - (2) Fresh shells are transparent, with a very light horny colour. The top whorls may be of a somewhat darker horny colour. - (3) A weak single spiral ridge which springs from the suture encircles the base of the shell. In many shells this spiral ridge is so weak that it is almost absent. Furthermore the surface of the shell is finely reticulate by numerous microscopically fine longitudinal and spiral scratches. - (4) The shells are rather fragile. There is no labial rib, nor does the aperture show any other peculiarities (fig. 68). - (5) Large specimens have about 4.0 whorls. - (6) The umbilicus is deep, but very narrow. - (7) the dimensions of the apex are about d = 0.14-0.15 mm and D = 0.26-0.28 mm. - (8) Seen from aside in position 1, the nucleus is little prominent and strongly flattened, circumscribed by a rather shallow suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a medium prominent segment of a sphere (fig. 68). - (9) At a magnification of 40X no ornamental sculpture can be seen on the protoconch.

Distribution. - According to Fretter & Graham (1978: 162), the species occurs on the coasts of Scandinavia from the Arctic Sea to the Kattegat.

Material examined. - The material mentioned sub "types".

Discussion. - This is the only northern species discussed in this paper. More information about northern species is to be found in Bouchet & Warén (1979) and in Warén (1972, 1973, 1974).

Cingula bruggeni[7] sp. n.
figs. 20, 69

Types. - Holotype (fig. 20a): RMNH 55645 (ex Vrd 0068), Tarifa. Length nearly 1.2 mm, 3.8 whorls. The dimensions of the apex are about d = 0.10 mm and D = 0.18 mm. Paratypes: all other "material examined".

Description. - (1) The length of seemingly full-grown shells varies from about 1.0 to 1.3 mm. - (2) Fresh shells are transparent, whitish or of a light horny colour. The top whorls usually are of the same transparency and colour as the lower ones, less frequently they are somewhat darker and brownish. - (3) Ornamental sculpture absent on the lower whorls. - (4) The shells are not very solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 69). - (5) Large specimens have about 4.1 whorls. - (6) There is a wide and deep umbilicus. In some shells the end of the body whorl may even be detached from the previous one. - (7) The dimensions of the apex vary: d = 0.10-0.12 mm; D = 0.17-0.19 mm. - (8) Seen from aside in position 1, the nucleus is just visible, and circumscribed by a medium deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl are high, and very asymmetrical (fig. 69). - (9) At a magnification of 40X, about 15 fine and close-set spiral striae may be seen on the protoconch of some specimens.

Distribution. - So far only known from Getarès, a few km S. of Algeciras, and from Tarifa, both in S. Spain.

Material examined. - Strait of Gibraltar, Tarifa (RMNH 55645/1, Vrd 0068/19, now partly in KBIN and NMW); Getarès, a few km S. of Algeciras (Aar 9853/47, Vrd 0053/17).

Discussion. - *C. bruggeni* is very similar to *C. turriculata*, but mainly differs in the fine conical form of the shell, and in the asymmetrical form of the apex. The slenderness is somewhat variable.

Cingula lacourti[8] sp. n.
figs. 21, 70

Types. - Holotype (fig. 21b): RMNH 55646 (ex Vrd 0067), Tarifa. Length 1.1 mm, 3.3 whorls. The dimensions of the apex are about d = 0.11 mm and D = 0.18 mm. Paratypes: all other "material examined".

Description. - (1) The length of seemingly full-grown shells varies from 0.9 to 1.1 mm. - (2) Fresh shells are rather transparent and of a more or less light brown colour. Usually, the upper whorls are darker than the lower ones. - (3) No ornamental sculpture can be seen on the lower whorls. - (4) The shells are somewhat fragile. There is no labial rib, nor does the aperture show any other peculiarities (fig. 70). - (5) Large shells have about 3.3 whorls. - (6) There is a wide and deep umbilicus. The end of the body whorl may be almost detached from the previous whorl. - (7) The dimensions of the apex vary: d = 0.10-0.12 mm; D = 0.17-0.19 mm. - (8) Seen from aside in position 1, the nucleus

7 In honour of Dr. A. C. van Bruggen, Leiden, to whom I am very much obliged.
8 In honour of my dear colleague Mr. A. W. Lacourt, Leiden.

is just visible, circumscribed by a shallow suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a rather low, flattened segment of a sphere. An important character is the unusually flat nucleus of the apex (fig. 70). – (9) At a magnification of 40X, I saw about 15 extremely weak, fine, close-set spiral striae on the protoconch of one of the shells.

Distribution. – So far only known from Tarifa and Getarès, a few km S. of Algeciras, both in S. Spain.

Material examined. – Tarifa (RMNH 55646/1, Vrd 0067/numerous, now partly in KBIN and NMW); Getarès (Vrd 0056/numerous).

Cingula macilenta (Monterosato, 1880)
figs. 22, 71

Setia macilenta Monterosato, 1880: 69 (Palermo and/or Ustica, abyssal).
Rissoa concinnata Jeffreys, 1883: 396, pl. 16 fig. 2 (off Crete, 70-120 fms).
Cingula (*Setia*) *macilenta* – Van Aartsen & Verduin, 1982: 127.

Types. – Possible syntypes BMNH 1911.10.26.24556-24563/8 and BMNH 1911.10. 26.24564-24570 (with label in Monterosato's handwritting). Syntypes of *R. concinnata* USNM 182860 and USNM 202239.

Description. - (1) The length of seemingly full-grown shells varies from about 0.8 to 1.1 mm. – (2) Fresh shells are transparent and nearly colourless. – (3) The lower whorls usually show no ornamental sculpture. In some shells, however, fine, close-set and equidistant spiral striae may be seen on the body whorl. – (4) The shells are fragile. There is no labial rib, nor does the aperture show any other peculiarities. – (5) Large specimens have about 4.3 whorls. – (6) The umbilicus is narrow but distinct. It may be somewhat concealed behind the slightly reflected inner edge of the aperture (fig. 71). – (7) The dimensions of the apex are small: d = 0.07-0.08 mm; D = 0.13-14 mm. – (8) Seen from aside in position 1, the nucleus is little prominent, but just visible and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a little prominent, flattened segment of a sphere (fig. 71). – (9) At a magnification of 40X, no ornamental sculpture can be seen on the protoconch.

Distribution. – Atlantic coasts of SW. France and NW. Spain, Mediterranean. Rarely washed ashore, because it is not a littoral species.

Material examined. – See Van Aartsen & Verduin (1982: 128). Furthermore three samples from Arcachon (KBIN-D), and a sample from Palermo (BMNH 1911.10.26.24556-24563/8).

Discussion. – The main difference between *C. macilenta* and *C. intersecta* is the habitus of the shells. *C. macilenta* is more slender and somewhat more conical. Moreover, *C. macilenta* is somewhat smaller, and usually devoid of sculpture.

The name *Setia macilenta* was first mentioned by Monterosato (1878: 87) as a nomen nudum.

Cingula intersecta (Wood, 1856)[9]
figs. 4, 23, 72

Rissoa soluta Philippi, 1844, sensu Jeffreys, 1847: 16.
Rissoa soluta - Forbes & Hanley, 1850: 131, pl. 75 fig. 3.
Rissoa intersecta Wood, 1856[9]: 318 (nomen novum for *R. soluta* Forbes & Hanley, 1850, not Philippi, 1844).
Rissoa obtusa Cantraine, 1842; Monterosato, 1872: 37. Not Anton, 1839, nor Brown, 1841.
Cingula alderi (Jeffreys, 1858), sensu Fretter & Graham, 1978: 156.

Types. - No information available.

Description. - (1) The length of seemingly full-grown shells may vary considerably; from about 0.9 to 1.6 mm. Specimens over 1.3 mm, however, are rare (fig. 4). - (2) Fresh shells without periostracum are transparent, and of a horny colour. Older shells may be opaque and whitish. The top whorls are of the same transparency and colour as the lower whorls. - (3) Numerous fine, equal and close-set spiral striae cover the whole

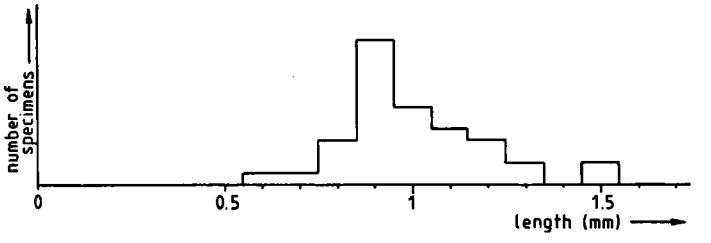

Fig. 4. Histogram of the length of 39 specimens in a sample of *C. intersecta*.

body whorl and one or two of the previous whorls. In some shells this sculpture may be very weak, or even absent. - (4) The shells are not very solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 72). - (5) Large specimens have about 4.7 whorls. - (6) The umbilicus is narrow but distinct and deep. It may be somewhat concealed behind the slightly reflected inner edge of the aperture. - (7) The dimensions of the apex are small, about d = 0.08 mm and D = 0.13 mm. - (8) Seen from aside in position 1, the nucleus is little prominent, but just visible and circumscribed by a rather deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a rather low, slightly flattened segment of a sphere (fig. 72). - (9) At a magnification of 40X, no ornamental sculpture can be seen on the protoconch.

Distribution. - Atlantic coasts of Europe and Morocco, Mediterranean, Madeira.

Material examined. - Great Britain (USNM 183597/8, ex Jeffreys); Shetland (183604/1). Western France: Belle Ile, Bretagne (KBIN-D/numerous); Archachon (three samples, KBIN-D/numerous. Mediterranean: Paulilles, S. France, near Spanish border (Vrd 0088/1); Sausset les Pins, S. France (Vrd 0172/1); Mondello, Sicily (Vrd 0025/1; Marzameni, Sicily (Vrd 0062/6); Ile Zante, Bay Vatika (KBIN-D/13); Punta Mika, a few km NW. of Zadar, Jugoslavia (Vrd 0094/5); Grado, N. Adria (Vrd 0280/1); Paphos, Cyprus (Vrd

9 I could not establish the year with certainty.

0019/6). Western Morocco (RMNH, Cancap 1, sta. 132 and 147; depth 100-150 m, 5 spec.). Madeira (USNM 183126/1, together with many shells of *C. picta*).

Discussion. – Forbes & Hanley (1850: 131) already doubted the correctness of Jeffreys' identification of the present species with *Rissoa soluta* Philippi, 1844. I fully agree with their view and arguments. In my opinion, *R. soluta* Philippi may best be considered a nomen dubium. Unfortunately, Forbes & Hanley provisionally retained the name *soluta* " . . since in the event of the original *soluta* not proving a valid species (...) the present shell may assume the vacated epithet." From a nomenclatorial point of view, *R. soluta* Forbes & Hanley, 1850, therefore is to be considered a junior homonym of *R. soluta* Philippi, 1844.

Later on, Wood proposed the name *intersecta* for *R. soluta* Forbes & Hanley. So far, however, this name has only been used a few times in literature. Instead, the specific epithet *alderi* Jeffreys, 1858, has been generally used for material from the European Atlantic coasts. Mediterranean specimens are usually indicated as *obtusa* Cantraine, 1842, and are sometimes considered to be specifically different from Atlantic material. According to Sherborn, however, *Rissoa obtusa* Cantraine, 1842, is preoccupied by *Rissoa* (*Bonellia*) *obtusa* H.E. Anton, 1839, and *Rissoa obtusa* Brown, 1841. As regards *R. alderi* Jeffreys, 1858, one may doubt whether it is really conspecific with *R. soluta* Forbes & Hanley. Jeffreys introduced *R. alderi* on the basis of three shells dredged at Skye, with a length of slightly over 2 mm (1/12"). According to Jeffreys (1858: 127) "*R. alderi* differs from *R. soluta* of the British Mollusca (with which it was found) in being more than twice the size, in the conical form of the spire, and in the peristome not being continuous." Later (1867b: 45), he considered *R. alderi* a variety of *R. soluta*. Unfortunately, the three syntypes of *R. alderi* seem to have been lost, otherwise Warén (1980: 22) would not have designated a neotype. I examined a sample of eight shells labelled "R. soluta Jeffrs/USNM, Jeffreys coll. 183597/Fig'd Type, Britt. Conch. Vol. V, pl. LXVIII, fig. 7", which all measure over 1 mm, the largest one measuring 1.3 mm. Obviously, the size gap between *R. alderi* and *R. soluta* Forbes & Hanley is less than claimed by Jeffreys when introducing the former name. Furthermore, I have examined three other large shells, which doubtless are conspecific with *R. soluta* Forbes & Hanley. One of these is the neotype of *R. alderi* designated by Warén (fig. 23a). It measures nearly 1.6 mm. The two other shells belong to a sample in KBIN-D labelled "C. alderi/drg. Arcachon/de Boury". I measured all shells in the sample (fig. 4). The results confirm that occasionally extra large specimens occur among *R. soluta* Forbes & Hanley. A similar phenomenon has been described for *Rissoa inconspicua* (see Verduin, 1976: 31). Moreover, large shells of *R. soluta* Forbes & Hanley tend to be more slender and more conical than smaller ones, which is a consequence of the ovoid form of the shells. As usual in *Cingula*, the peristome is continuous, but in *R. soluta* Forbes & Hanley it is so thin at the base of the body whorl that it is almost discontinuous. Thus, the possibility that *C. alderi* and *R. soluta* Forbes & Hanley might be different species, is mainly supported by the extremely large dimensions of *C. alderi* mentioned by Jeffreys. As to this it is difficult to accept the neotype designated by Warén as long as it cannot be demonstrated in a satisfactory way that its dimensions are consistent with what we know about those of *C. alderi* [as required by Art. 75C (4) of the I.C.Z.N.]. After much hesitation, and after having asked the advice of Dr. Gittenberger, Leiden, I therefore decided simply to use the oldest name for the species in question, viz. *R. intersecta*. I consider *R. alderi* a nomen dubium.

I have seen no type material of *C. intersecta*. The diagnoses of *R. soluta* by Forbes & Hanley (1850: 131) and Jeffreys (1867b: 45) agree very well with the sample "R. soluta Jeffrs/USNM, Jeffreys coll. 183597" which I examined. Therefore, I have no doubt as regards the true identity of *C. intersecta*.

Cingula substriata (Philippi, 1844)
figs. 24, 73

Rissoa substriata Philippi, 1844: 132, pl. 23 fig. 20 (fossil from Palermo).

Types. – No information available.

Description. – (1) The length varies from 1.3 to 1.9 mm. – (2) Fresh shells are vitreous; older shells are whitish. The upper whorls are of the same transparency and colour as the lower ones. – (3) There are about 9 equal, equidistant and close-set spiral grooves below the periphery of the body whorl. Usually, this sculpture is much weaker above the periphery, though otherwise it is more or less the same. In some shells, the sculpture is about equally strong on the whole body whorl. Such shells cannot be distinguished from those of *C. cristallinula* from the Canary Isles. There also is a weak close-set and somewhat irregular, longitudinal sculpture below the suture. In combination with the spiral sculpture this may result in a regularly pitted appearance of the upper part of the body whorl. – (4) The shells are somewhat solid. There may be a weak labial rib. Otherwise, the aperture does not show any peculiarities (fig. 73). – (5) Large shells have 4.3 whorls. – (6) There is a narrow umbilical chink, which, however, may be nearly absent. – (7) The dimensions of the apex vary: d = 0.12-0.13 mm and D = 0.18-0.21 mm. – (8) Seen from aside in position 1, the nucleus is medium prominent and circumscribed by a medium deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a medium prominent, slightly flattened segment of a sphere (fig. 73). – (9) At a magnification of 40X, about 10 extremely fine, rather distant spiral scratches can be seen on the protoconch of some shells.

Distribution. – Mediterranean. As yet only known from S. France, Italy and W. Greece; probably not a littoral species.

Material examined. – S. France: St. Tropez (Aar 14300/14, 15114/2); Les Lesques (Aar 12094/1). Corsica: Palombaggia (Aar 13471/numerous); Pinarello (Aar 13633/7); Porto Pollo (Aar 13810/6); Bonifacio (Aar 13462/2). Halfway between Corsica and Capraia in deep water (Aar 12646/2). Between Corsica and Italy (Aar 14125A/1). Sardinia K1/0, depth about 375 m (Aar 15862/5). Livorno, W. Italy, depth 20 m (Aar 17114/1). Kastos, W. Greece, depth 45 m (Aar 14497/20).

Discussion. – It is with some hesitation that I use the specific epitheton *substriata* for this species. Philippi based his species on a single specimen, which moreover was a fossil. I have not seen this specimen, so that my identification of the Recent material examined is only based on Philippi's diagnosis and figure. The agreement with the Recent material, however, is such, that I do not consider it justified to ignore Philippi's name, the more so because many fossil species from Sicily do still live in the Mediterranean. It is probable that *R. marioni* Monterosato, 1878, also refers to the present species. Not-

withstanding the note at the bottom of p. 86 of Monterosato 1878, it, however, is a nomen nudum.

There can be little doubt that *C. substriata* is very closely related indeed to *C. cristallinula* from the Canary Isles.

Cingula gianninii (Nordsieck, 1974)
figs. 25, 74

Setia (*Crisillosetia*) *gianninii* Nordsieck, 1974: 11, fig. 4 (continental shelf between Corsica and Sardinia, Bocche di Bonifacio, station K1).

Types. – Holotype in Giannini colln., fide Nordsieck (1974: 11); not examined.

Description. – (1) The length of seemingly full-grown shells varies from about 2.0 to 2.8 mm. – (2) The shells are transparent and colourless when fresh, and opaque and whitish when older. The top whorls are of the same transparency and colour as the lower ones. – (3) The sculpture consists of up to about 30 equal and equidistant, close-set spiral grooves which cover the whole body whorl. A similar sculpture occurs on the higher whorls. – (4) The shells are somewhat fragile. There is no labial rib, nor does the aperture show any other peculiarities (fig. 74). – (5) Large shells have 4.7 whorls. – (6) The umbilicus is deep and narrow. – (7) The dimensions of the apex seem to be rather constant: d = 0.15 mm and D = 0.25 mm. – (8) Seen from aside in position 1, the nucleus is prominent, and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a high segment of a sphere (fig. 74). – (9) At a magnification of 40X, about 7 spiral scratches can be seen on the protoconch.

Distribution. – Deep water between Italy, Corsica and Sardinia.

Material examined. – Sardinia, depth 250 m (Aar 12129/3); Sardinia K2, depth 250 m (Aar 12153/19); Sardinia K1 (Aar 15861/2); Sardinia K1/0, depth 350 m (Aar 16016/12). Secca delle Vedove (Arch. Toscano, Italy), depth 80 m (Aar 18048/5). Between Corsica and Italy, depth 400 m (Aar 14154/5). Off Gaeta, Italy, depth 150 m (Aar 14496/3).

Discussion. – The sample Aar 12129 has been obtained from Mr. F. Carrozza, who obtained it from Gianninii.

Cingula ochroleuca (Brusina, 1869)
figs. 26, 75

Setia ochroleuca Brusina, 1869: 247 (Melada, Ulbo, Lacroma).

Types. – No information available.

Description. – (1) The length of seemingly full-grown shells varies from 0.9 to 1.1 mm. – (2) The shells are opaque and of an almost orange colour, variously painted with white. – (3) No ornamental sculpture on the lower whorls. – (4) The shells are solid. There is no labial rib. Seen from aside, the outer lip of the aperture is remarkably oblique and curved (fig. 75). – (5) Large shells have about 3.6 whorls. – (6) The umbilical chink is well developed, almost a narrow and shallow umbilicus. – (7) The dimensions of the apex vary: d = 0.10-0.12 mm; D = 0.17-0.21 mm. – (8) Seen from aside in position 1,

the nucleus is well visible and circumscribed by a rather deep suture. Seen from aside in position 2, the nucleus and the first ¼ whorl form a medium high, somewhat flattened segment of a sphere (fig. 75). - (9) At a magnification of 40X, no ornamental sculpture is to be seen on the protoconch.

Distribution. - Mediterranean, probably not littoral.

Material examined. - Adria: Punta Mika, a few km NW. of Zadar (Vrd 0114/6); Biograd, 25 km SE. of Zadar (Vrd 0206/7). S. France, Port le Niel, 10 km S. of Hyères (Vrd 0168/2). Eastern Mediterranean, Naxos (Cad/1).

Discussion. - Though Brusina did not depict the species, his diagnosis defines the taxon very satisfactorily. Some authors consider it to belong to the subgenus *Coriandria* Tomlin, 1917, of the genus *Eatonina*. I have no opinion whether they are right.

I did not examine the following samples in Aar: Solenzara, Corsica, depth 150 m (12281/numerous); Isola di Giannutri, Italy, depth 30 m (18733/numerous); Harbour of Messina, depth 30 m (17239/numerous); Cabasson (16722/1); Antiparos, Greece (17685/1); Poreç, Jugoslavia (1375/13); St Tropez (15117 and 14296). Dr. J. J. van Aartsen also drew my attention to a sample "Rissoa ochroleuca/Adriatic - Brusina/ USNM 183098", which I gladly report here, but which I did not examine.

Cingula albugo (Watson, 1873)
figs. 27, 49, 76

Rissoa albugo Watson, 1873: 379, pl. 35 fig. 17 (Madeira Islands, Teneriffe).

Types. - Syntypes BMNH 198314/12 and BMNH 1875.5.27.19/8, all from Madeira. One shown in fig. 27.

Description. - (1) The length of seemingly full-grown shells varies from about 1.5 to 2.4 mm. - (2) Fresh shells are rather transparent and of a pale yellowish brown colour. The top whorls are of the same transparency and colour as the lower ones, but the nucleus of the apex may be more opaque and whitish. There are up to about 14 spiral rows of darker spots on the body whorl. The spots of part of these rows may be confluent, so as to form vertical lines (fig. 49). Similar spots can be seen on the previous two whorls. There often is a spiral row of large white spots at the periphery. - (3) The lower whorls are devoid of ornamental sculpture, except for a weak spiral groove just above the suture. - (4) The shells are medium solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 76). - (5) Large specimens have about 5.0 whorls. - (6) The umbilical chink is about non-existent. - (7) The dimensions of the apex vary: d = 0.13-0.15 mm; D = 0.20-0.23 mm. - (8) Seen from aside in position 1, the nucleus is little prominent and circumscribed by a rather shallow suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a rather high, somewhat flattened and often somewhat asymmetrical segment of a sphere (fig. 76). - (9) At a magnification of 40X, about 6 extremely weak, distant spiral scratches can be seen on the protoconch.

Distribution. - Madeira and Canary Isles.

Material examined. - The syntypes mentioned above. Possible syntypes BMNH 1911.10.23500-23516/27, Madeira. (RMNH/3 Cancap 1, sta. 48 and 80). Canary Isles: Hierro (RRMGM 227.086/numerous); Gran Canaria (RMNH/2).

Cingula jansseni[10] sp. n.
figs. 28, 50, 77

Types. – Holotype (fig. 28b): RMNH 55653, Selvagem Grande, Enseada da Fonte das Galinhas. Length 1.0 mm, 3.2 whorls. The dimensions of the apex are about d = 0.13 mm and D = 0.20 mm. Paratypes: all other "material examined".

Description. – (1) The length of seemingly full-grown shells varies from 0.9 to 1.1 mm. – (2) Fresh shells are transparent, colourless or light brownish. Often, the top whorls are somewhat darker than the lower ones. If so, the nucleus of the apex is opaque and white. There usually are four spiral rows of darker spots on the body whorl (fig. 50). Those of the upper two rows may be confluent, so as to form narrow, vertical, irregular colour lines. The lower two rows may be weak or absent, and in vitreous shells it may be difficult to observe any spots at all. In some shells the inner lip of the aperture is brown. – (3) No ornamental sculpture can be seen on the lower whorls. – (4) The shells are very fragile. There is no labial rib, nor does the aperture show any other peculiarities (fig. 77). – (5) Large specimens have about 3.3 whorls. – (6) The umbilical chink is well developed. – (7) The dimensions of the apex vary: d = 0.11-0.13 mm; D = 0.16-0.20 mm. – (8) Seen from aside in position 1, the nucleus is little prominent, and circumscribed by a medium deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a somewhat low, slightly flattened segment of a sphere (fig. 77). – (9) At a magnification of 40X, about 5 fine and distant spiral striae may be seen on the protoconch of some shells.

Distribution. – Selvagens and Canary Isles.

Material examined. – Selvagem Grande (RMNH 55653/1, RMNH/16). Las Canteras, Gran Canaria (Aar 4926/4).

Discussion. - *C. jansseni* mainly differs form *C. pulcherrima* and *C. amabilis* in the smaller dimensions, the habitus, the absence of an umbilicus, and the whitish spot on the apex.

Cingula picta (Jeffreys, 1867)
figs. 29, 51, 78

Rissoa picta Jeffreys, 1867a: 435.

Types. – Lectotype, design. nov. (fig. 29): USNM 183126, Madeira. Length 1.9 mm, 4.6 whorls. The dimensions of the apex are about d = 0.13 mm and D = 0.20 mm.

Description. – (1) The length of seemingly full-grown shells varies from about 1.6 to 2.3 mm. – (2) Fresh shells without periostracum are transparent and of a horny colour. The top whorls are of the same transparency and colour as the lower whorls. The area around the lower end of the columella is whitish. There are three spiral rows of darker spots on the body whorl (fig. 51). Occasionally, the spots of a spiral row may be confluent, and form a spiral band. – (3) About 17 equal, more or less obsolete, close-set spiral grooves are present on the body whorl. About half of these are at the base of the shell, the other half is above the suture. The other whorls seem to be devoid of this sculpture. –

10 In honour of Mr. A. W. Janssen, whom I greatly admire, among others for the grand style in which he organized collecting fossil shells.

(4) The shells are somewhat solid. There is no labial rib, nor does the aperture show any other peculiarities (fig. 78). – (5) Large specimens have about 5 whorls. – (6) The umbilical chink is weak or absent. – (7) The dimensions of the apex vary: d = 0.10-0.13 mm; D = 0.19-0.22 mm. - (8) Seen from aside in position 1, the nucleus is little prominent but well visible, and circumscribed by a medium deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a rather prominent, flattened and somewhat asymmetrical segment of a sphere (fig. 78). – (9) At a magnification of 40X, no ornamental sculpture can be seen on the protoconch.

Distribution. – Madeira and Canary Isles.

Material examined. - Madeira (USNM 183126/numerous). Canary Isles, Hierro (RMGM 227.098/1).

Discussion. – According to Warén (1980: 23) the shells in the sample "Rissoa picta Jeffr. 18 (n. sp.)/Madeira/Watson/USNM, Jeffreys colln. 183126" are syntypes. Unfortunately, however, I found them to belong to different species. Therefore, I have designated a lectotype from among them which agrees well with the original diagnosis of *R. picta*. I do not agree with Warén (1980: 23), who considers *C. picta* synonymous with *C. semistriata*. Neither can I see any reason to consider *C. picta* (Jeffreys, 1867) different from *R. picta* Watson, 1873, as advocated by Nordsieck (1972: 164 and 171). The shells on which Jeffreys based this species were sent to him by Watson with the request to describe it (Jeffreys 1867a: 435)! The information which Watson himself (1873: 381, pl. 35 fig. 18) gave about *C. picta* agrees excellently with the lectotype designated above.

Cingula callosa (Manzoni, 1868)
figs. 30, 52, 79

Rissoa callosa Manzoni, 1868a: 166, pl. 10 fig. 3.
Rissoa callosa; Manzoni, 1868b: 241.

Types. – Lectotypes, design. nov. (fig. 30a): BMNH 1868.10.20.6, Teneriffe. Length almost 1.8 mm, 4.3 whorls. The dimensions of the apex are about d = 0.09 mm and and D = 0.18 mm.

Description. – (1) The length of seemingly full-grown shells varies from about 1.4 to 1.8 mm. – (2) Fresh shells are transparent, with a yellowish hue. The top whorls are white, as is the lowermost part of the shell, i.e. the area around the lower end of the columella. Usually, there are four spiral rows of darker spots on the body whorl, of which the lowermost row may occasionally be weak or absent. Three such rows can still be vaguely seen in the lectotype, which is old and bleached. In fresh specimens the spots of the two middle rows may each consist of a number of smaller spots, which are only visible at the spiral ridges of the ornamental sculpture (fig. 52). – (3) The ornamental sculpture consists of about 18 equal and equidistant, rather strong spiral ridges on the body whorl, about half of which are above the suture. They cover the whole of the body whorl. A similar sculpture is to be seen on all previous whorls. – (4) The shells are somewhat solid. There usually is no labial rib. Seen from aside, the outer lip of the aperture is somewhat oblique (fig. 79). – (5) Large specimens have about 4.3 whorls. – (6) The umbilical chink is about absent. – (7) The dimensions of the apex vary: d = 0.09-0.12 mm; D = 0.17-0.20 mm. – (8) Seen from aside in position 1, the nucleus is rather

prominent, circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a rather prominent segment of a sphere (fig. 79). – (9) At a magnification of 40X a type of sculpture on the protoconch can be seen which has the same character as that on the lower whorls.

Distribution. – As yet I saw only shells from the Canary Isles.

Material examined. – Teneriffe (BMNH 1868.10.20.6/22 bleached shells); Madeira (??, see "discussion") (MNHNP/3 bleached shells); Hierro (RMGM 227.099/18).

Discussion. – The lectotype has been designated from among 24 shells, labelled "Rissoa callosa Manzoni/Teneriffe, Canary Is./Syntypes, R. McAndrew Colln./B.M.(N.H.) reg. no.; 1868.10.20.6". Because two of these shells belong to another species, *C. cristallinula*, I have selected the lectotype from among the remaining shells in order to define the species with certainty.

I have also examined three other shells (in MNHNP), labelled "Rissoa callosa Manzoni/ Coll. types J. de Conch. XVI, 1868, p. 166 et 241. Pl. X, fig. 3", which are mentioned by Fischer-Piette (1950: 70) in his list of types of species described in the Journal de Conchyliologie. From this it may be inferred that they were syntypes, notwithstanding that they are accompanied by another, older label which mentions Madère as the locality [the original description by Manzoni mentions the Canary Isles only]. Because the glass tube with the shells contains a third label, reading "callosa" in still another handwriting, I suppose that only the last mentioned label has been provided by Manzoni himself, and that someone else incorrectly added the locality "Madère".

C. callosa is slightly similar to *C. picta*. The sculpture of the former, however, is much stronger and covers the entire shell, inclusive of the protoconch. Moreover, it has a swelling at the left of the lower end of the columella. Also, the uppermost row of darker spots is at some distance below the suture, and the nucleus of the apex is more prominent. In addition, *C. picta* seems to lack a fourth spiral row of darker spots at the base of the shell.

I did not examine a sample from Las Canteras, Gran Canaria (Aar 4919/numerous).

Cingula depicta (Manzoni, 1868)
figs. 31, 53, 80

Rissoa depicta Manzoni, 1868a: 166, pl. 10 fig. 4.
Rissoa depicta; Manzoni, 1868b: 241.

Types. – Lectotype, design. nov. (fig. 31a); BMNH 1868.10.20.5, Teneriffe. Length slightly over 2.0 mm, 4.7 whorls. The dimensions of the apex are about d = 0.10 mm and D = 0.18 mm.

Description. – (1) The length varies from about 1.3 mm to 2.0 mm. – (2) Fresh shells are somewhat transparent and of a pale yellowish colour. The lowermost part of the base, however, is colourless or whitish. There always is a dark spot at the apex. There are three spiral rows of darker spots on the body whorl (fig. 53). – (3) The sculpture consists of about 9 equal and equidistant spiral grooves below the periphery of the body whorl, the uppermost of which is somewhat more distinct than the other ones. In some shells this sculpture may be weak or absent, except for a few striae just below the periphery of the body whorl, which are always present. – (4) The shells are rather solid, with a labial

rib at the outer lip of the aperture. Otherwise, the aperture shows no peculiarities (fig. 80). - (5) Large shells have about 4.7 whorls. - (6) The umbilical chink is about absent. - (7) The dimensions of the apex vary: d = 0.09-0.10 mm; D = 0.16-0.18 mm. - (8) Seen from aside in position 1, the nucleus is rather prominent and circumscribed by a rather deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a very prominent, somewhat flattened segment of a sphere (fig. 80). - (9) At a magnification of 40X about 12 equal, close-set spiral striae can be seen on the protoconch.

Distribution. - Canary Isles and Madeira.

Material examined. - Canary Isles, Teneriffe (BMNH 1868.10.20.5/6); Hierro (RMGM 227.100/numerous). Madeira (RMNH/10 Cancap 1 sta. 14, 16 and 80, USNM 183126/2 together with many shells of *C. picta*).

Discussion. - The lectotype has been designated from among a sample of six shells, labelled "Rissoa depicta Manzoni/Teneriffe, Canary Is./Syntypes/R. McAndrew Colln/ BM(NH) reg. no. 1868.10.20.5". All shells in the sample are white and bleached; most of them are poorly preserved. Thus, it is difficult to decide whether they all belong to the same species. I have designated as lectotype a specimen which is rather well preserved, and which, moreover, agrees excellently with the original diagnosis and figure. The dark spot at the apex is still faintly visible, as are traces of the spiral rows of darker spots on the lower whorls.

I have carefully compared fresh shells from Madeira with similar shells from Hierro, Canary Isles, and completely convinced myself that they belong to the same species. I did not examine samples in Aar from the Canary Isles (4911/6 from Las Canteras, and 9693/3).

Alvania watsoni (Watson, 1873)
fig. 32

Rissoa watsoni Schwartz, Watson, 1873: 375, pl. 35 fig. 11 (Madeira Isles).

Types. - No information available.

Description. - This species is very similar indeed to *A. simulans*; it is somewhat more slender, has 0.3 more whorls, has often about 35 more or less weak longitudinal ribs on the body whorl, and lacks the yellowish spots on the lower part of the body whorl. Also, the spiral ribs are somewhat stronger than in most specimens of *A. simulans*, and the dimensions of the apex may be somewhat larger, up to about d = 0.15 mm and D = 0.25 mm. There usually is a strong labial rib.

Distribution. - Madeira Isles.

Material examined. - A sample labelled "Rissoa watsoni Watson/Madeira/Norman colln. ex R.B. Watson colln./possible syntypes" (BMNH 1911.10.26.23348-23367/39); a sample labelled "Rissoa Watsoni Schw./Madeira/Preston. Nd. 19.6.11/V.W. Macandrew coll. (BMNH 1563/2).

Alvania moniziana (Watson, 1873)
figs. 33, 81

Rissoa moniziana Watson, 1873: 373, pl. 34 fig. 10 (Madeira Islands).

Types. – Four syntypes BMNH 198313; 4 syntypes BMNH 1875.5.27.12. One shown in fig. 33.

Description. – (1) The length varies from 1.2 to 1.9 mm. – (2) The shells are little transparent and of an uniform light yellowish brown colour. The top whorls are of the same transparency and colour. – (3) The sculpture consists of 7-9 strong equidistant spiral ribs on the body whorl, of which 3-4 above the suture. These can also be seen on the higher whorls. Between these spiral ribs numerous fine wavy spiral striae can be seen. In some shells short, more or less weak longitudinal ribs may be seen just below the suture of the body whorl. – (4) The shells are rather solid, with a strong labial rib. The aperture, seen from aside, is distinctly curved (fig. 81). – (5) Large specimens have about 3.7 whorls. – (6) A slight umbilical chink may be seen between two successive spiral ribs. – (7) The dimensions of the apex vary: d = 0.12-0.14 mm; D = 0.18-0.25 mm. – (8) Seen from aside in position 1, the nucleus is very prominent and somewhat asymmetrical, circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl are very prominent and asymmetrical. The tip of the shell is turned in (fig. 81). – (9) At a magnification of 40X, about 7 distant, equidistant, equal, delicate spiral ribs can be seen on the protoconch.

Distribution. – Madeira Isles.

Material examined. – Syntypes (BMNH 198313/4, BMNH 1875.5.27 12./4). Possible syntypes (BMNH 1966204/3, BMNH 1911.10.26.23377-23390/16).

Discussion. – This species has been discussed here because of its resemblance to *A. simulans* and *A. watsoni*. The latter species is more slender, has a more delicate sculpture, and does not have the tip of the shell turned in.

Cingula cristallinula (Manzoni, 1868)
figs. 34, 82

Rissoa cristallinula Manzoni, 1868a: 165, pl. 10 fig. 2 (Canary Isles); Manzoni, 1868b: 239.

Types. – Three syntypes in MNHNP, wrongly labelled "Madère", see "Discussion". Syntype shown in fig. 34.

Description. – (1) The length varies from about 1.2 mm to 1.5 mm. – (2) The shells examined are slightly transparent and whitish. In some specimens the top whorls are somewhat more opaque. – (3) The ornamental sculpture consists of about 18 equal and close-set spiral grooves on the body whorl, about half of which are above the suture. No such sculpture is present on the previous whorls. The sculpture is weaker, or absent, just below the suture of the body whorl and in the lowermost area of the base. – (4) The shells are somewhat fragile. There is a slight labial rib at the outer lip of the aperture. Seen from aside, the aperture is somewhat curved (fig. 82). – (5) Large specimens have about 4.2 whorls. – (6) The umbilical chink is absent. – (7) The dimensions of the apex

vary: d = 0.12-0.13 mm; D = 0.20-0.22 mm. - (8) Seen from aside in position 1, the nucleus is little prominent but well visible, circumscribed by a rather deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a rather high segment of a sphere (fig. 82). - (9) At a magnification of 40X, about five very fine, distant striae may be seen on the protoconch.

Distribution. - Canary Isles.

Material examined. - Syntypes (MNHNP/3 wrongly labelled "Madère", see "Discussion"); Teneriffe (BMNH 1868.10.20.6/2, separated from *C. callosa*).

Discussion. - The syntypes are labelled "Rissoa cristallinula Manzoni/Madère/Coll. types J. de Conch. XVI, 1868, p. 165 et 239. Pl. X, fig. 2". They are mentioned by Fischer-Piette (1950: 70) in his list of types of taxa described in the Journal de Conchyliologie. The glass tube with the shells contains a handwritten label, only reading "cristallinula". As explained sub *C. callosa*, I suppose that this label was the only information which originally accompanied the shells, and that someone else incorrectly added the locality "Madère", which has never been published by Manzoni himself.

C. cristallinula is very similar indeed to *C. substriata*. Though both taxa might well be considered subspecies, I maintain different specific names because I prefer not to change the nomenclature as long as so little is known about both taxa.

Cingula perminima (Manzoni, 1868)
figs. 35, 54, 83

Rissoa (*Setia*) *perminima* Manzoni, 1868a: 167, pl. 10 fig. 8 (Canary Isles); Manzoni, 1868b: 224.

Types. - No information available.

Description. - Length about 1.2 mm. - (2) Fresh shells are chestnut-brown and almost opaque, with two whitish spiral zones on the body whorl (fig. 54). The top whorls are also brown. - (3) The lower whorls are devoid of sculpture, except for an extremely fine spiral ridge which springs from the suture and encircles part of the body whorl. - (4) The shells are rather fragile. There is no labial rib, nor does the aperture show any other peculiarities (fig. 83). - (5) About 3.2 whorls. - (6) There is no umbilical chink. - (7) The dimensions of the apex are about d = 0.09 mm and D = 0.15 mm. - (8) Seen from aside in position 1, the nucleus is medium prominent, and circumscribed by a deep suture. Seen from aside in position 2, the nucleus and first ¼ whorl form a high segment of a sphere (fig. 83). - (9) At a magnification of 40X, about 8 fine, equal, equidistant and rather close-set spirals can be seen on the protoconch.

Distribution. - Canary Isles, Selvagem Isles.

Material examined. - One adult plus two juvenile shells in RMNH, labelled: "Cancap IV, Sta. 4. K25: Selvagem Grande, Enseada da Fonte das Galinhas, rocky shore in bay, 0-6 m".

Discussion. - I tried to find syntypes of the species, but have not succeeded as yet. Nevertheless, the possibility that my interpretation of the species is incorrect, seems to be limited indeed because of its highly characteristic habitus and colour, and because Selvagem is not very far from the Canary Isles, and on the same continental shelf.

	page	spiral rows of darker spots		ornamental sculpture on lower whorls			umbilicus	ornamental sculpture on protoconch		dark spot at apex
		yes (+), no (-)	occasional (o)	yes (+), no (-)	usual (u)	occasional (o)	yes (+), no (-)		weak or occasional (o)	yes (+), no (-)
EUROPE										
C. pulcherrima	38	+		-			+		o	-
C. amabilis	39	+		-			+	-		-
C. maculata	44	+		-			-	-		+
C. aartseni	45	+		-			-	+		-
C. kuiperi	45	+		-			-	-		+
C. gittenbergeri	46	+		-			-	-		-
C. sliki	47	+		-			+	+		-
C. semistriata	48	+		+			-	-		-
C. beniamina	48	+		+			-		o	-
C. pseudocingulata	50	+		+			-		o	-
A. simulans	50	+		+			-	+		-
C. turriculata	53		o			o	+		o	-
C. fusca	53		o	-			+		o	-
C. alleryana	54		o	-			-	-		+
C. turgida	55	-			u		+	-		-
C. bruggeni	56	-		-			+		o	-
C. lacourti	56	-		-			+		o	-
C. macilenta	57	-				o	+	-		-
C. intersecta	58	-			u		+	-		-
C. substriata	60	-		+			-		o	-
C. gianninii	61	-		+			+		o	-
C. ochroleuca	61	-		-			-	-		-
MADEIRA & CANARY ISLES										
C. albugo	62	+			u		-		o	-
C. jansseni	63	+		-			-	+		-
C. picta	63	+		+			-	-		-
C. callosa	64	+		+			-	+		-
C. depicta	65	+		+			-	+		+
A. watsoni	66	+		+			-	+		-
A. moniziana	67	-		+			-	+		-
C. cristallinula	67	-		+			-		o	-
C. perminima	68	-			u		-	+		-

Survey of the species discussed.

NOMINA DUBIA

In the course of time many names have been introduced for small European marine molluscs which cannot with reasonable certainty be applied to any known species. If, moreover, the type specimens are inaccessible, or even lost, we cannot but guess at the true identity of such nominal taxa. This is a potential source of nomenclatorial instability because each author may do his own guesswork, and because we have no objective means to discriminate between different opinions. There are only two ways to cope with this situation: (1) the designation of a neotype if the requirements of Art. 75 of the I.C.Z.N. are met, or (2) the use of the nomen dubium concept, as defined in the I.C.Z.N.: a name not certainly applicable to any known taxon. Such names might be proposed for inclusion in the Official Index of Rejected Names. Now, I will present a number of nominal taxa which may well be considered nomina dubia.

Rissoa alderi Jeffreys, 1858: 127, pl. 5 figs. 5a-c. See sub *C. intersecta* for discussion why I consider *R. alderi* Jeffreys a nomen dubium.

Rissoa ficaratiensis Brugnone, 1876: 21. Brugnone described this species as fossil from Ficarazzi, near Palermo, Sicily. According to Carus (1893: 341) and Priolo (1953: 134), Monterosato has reported the species as Recent from Palermo, Carini. As yet, I did not find out where Monterosato has done so. In his 1884 papers on Mediterranean shells he mentioned the species without any locality but the type locality. According to Tomlin (1930: 38) the Brugnone collection has been obtained by Monterosato. Probably, it is in Rome. Because at the moment no material can be borrowed from the Monterosato collection, *R. ficaratiensis* may best be considered a nomen dubium, until more data become available.

Rissoa galvagni Aradas & Maggiore, 1843: 136. This is a very small species, "pocco meno lunga di una metà di linea" according to the original diagnosis. I would not know of any Mediterranean species of this size which also meets the original diagnosis as regards the colour of the shell. Dr. M. Michelangeli, Milano, wrote to me that there are no types of any *Cingula* species in the Aradas-Priolo collection. USNM, however, contains two samples. One sample is labelled "Rissoa galvagni Ar. = semistriata Mtg/Palermo, Sicily/ Monterosato/Jeffreys coll. no. 182032", with on the reverse of the label "R. galvagni Ar. - Monterosato's label". The sample contains three shells of *C. pseudocingulata*, which do not meet the original diagnosis of *R. galvagni*. The second sample is labelled "Rissoa galvagni Aradas = semistriata Mtg. var./Ognina/Aradas/Jeffreys coll./no. 183211", with on the reverse of the label "Cingula (Rissoa) galvagni Ar. var. - Aradas label". The sample contains numerous shells of *C. pseudocingulata* plus 17 shells of *C. maculata* plus two shells of *C. turriculata*. I do not feel that these samples are of much help for the identification of *C. galvagni*. There proved to be no material of this species in MNHNP, SMF or KBIN-D. Under these circumstances the nominal taxon might best be considered a nomen dubium.

Rissoa granulum Philippi, 1844: 130. Though the original diagnosis reminds me of *A. simulans*, it is too vague to recognize the species with reasonable certainty. There proved to be no material of *R. granulum* in BMNH, USNM, MNHNP, SMF, ZMHU[11], KBIN-D, or Priolo colln. Thus, *R. granulum* Philippi may best be considered a nomen dubium.

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Setia limpida Monterosato, 1884a: 279. Though the original diagnosis reminds one of *C. alleryana*, I do not think that it is possible to recognize the species with reasonable certainty. There proved to be no material in USNM, NMHNP, SMF, KBIN-D or Priolo colln. Thus, *S. limpida* Monterosato may best be considered a nomen dubium.

Pyramis maculata Brown, 1827: pl. 50 fig. 5-6. See sub *C. maculata* why *Pyramis maculata* Brown might best be considered a nomen dubium.

Rissoa messanensis Aradas & Benoit, 1876: 314. This cannot be *C. sliki* because that species is larger than "due millimetri" (original diagnosis), and has an umbilicus instead of an "indizio di fessura ombilicale". Neither can I identify *R. messanensis* with any other Mediterranean species known to me without the help of type specimens or topotypes. There proved to be no such material in USNM, MNHNP, SMF, KBIN-D or Priolo colln. Therefore, I consider *R. messanensis* Aradas & Benoit a nomen dubium as long as no more data are available.

Rissoa scillae Aradas & Benoit, 1876: 315, pl. 5 fig. 4. It is impossible to recognize this small species ("giunge appena alla lunghezza di un millimetro", original diagnosis) with reasonable certainty in any known Mediterranean species. There proved to be no material in BMNH, USNM, SMF, KBIN-D or Priolo colln. Dr. J.J. van Aartsen, however, drew my attention to the fact that (1) Monterosato (1884a: 280) considered *R. scillae* identical with *R. brutia* Tib. ms., a fossil from Pezzo in Calabria, and that (2) USNM contains a sample of six shells labelled: "Rissoa brutea Tiberi MS/Pezzo, Italy/Tiberi/USNM 182805", with on the reverse of the label "R. brutea Tib. MS/Bruti is the ancient name of the Calabrians – Tiberi's label". I examined the sample and found that part of the shells belong to a species which I do not know from Recent material, and which might be conspecific with *R. scillae*. Because the original diagnosis of *R. scillae* is not very discriminating, and because the sample USNM 182805 is not in an excellent state of preservation, I, however, cannot identify them with certainty. Under these circumstances I prefer to consider *R. scillae* Aradas & Benoit a nomen dubium until more data become available.

Rissoa sciutiana Aradas & Benoit, 1874: 211. It is impossible to recognize this nominal species in any known Mediterranean species. There proved to be no material in RMNH, USNM, SMF, KBIN-D or Priolo colln. I consider it a nomen dubium for the time being.

Rissoa soluta Philippi, 1844: 130. It is impossible to recognize *R. soluta* with reasonable certainty in any known Mediterranean species. The type material has probably been lost; anyway it is not in ZMHU[11]. Thus, there seems to be sufficient reason to consider *R. soluta* Philippi a nomen dubium. Wood (1856: 318) reports a single specimen of *R. soluta* from the Coralline Crag, Sutton, but I doubt whether this is sufficient for identifying the species.

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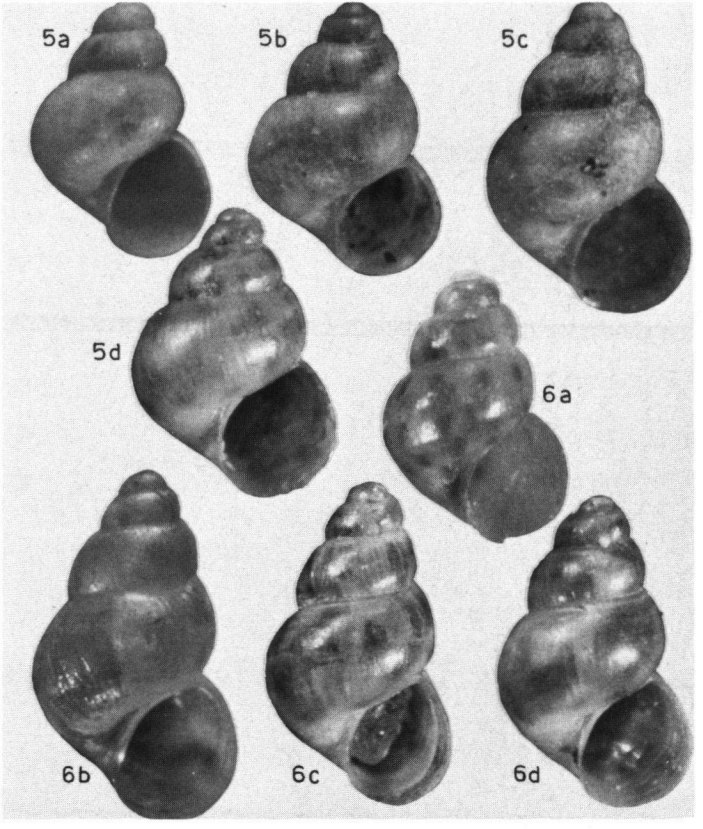


Fig. 5. *C. pulcherrima*; 5a lectotype; 5a-c Channel Isles; 5d Tarifa, S. Spain.
Fig. 6. *C. amabilis*; 6a S. Giórgio, SE. Italy; 6b lectotype, Trapani, Sicily; 6c Nabeul, Tunisia; 6d Tarifa, S. Spain. Magnification 28X.

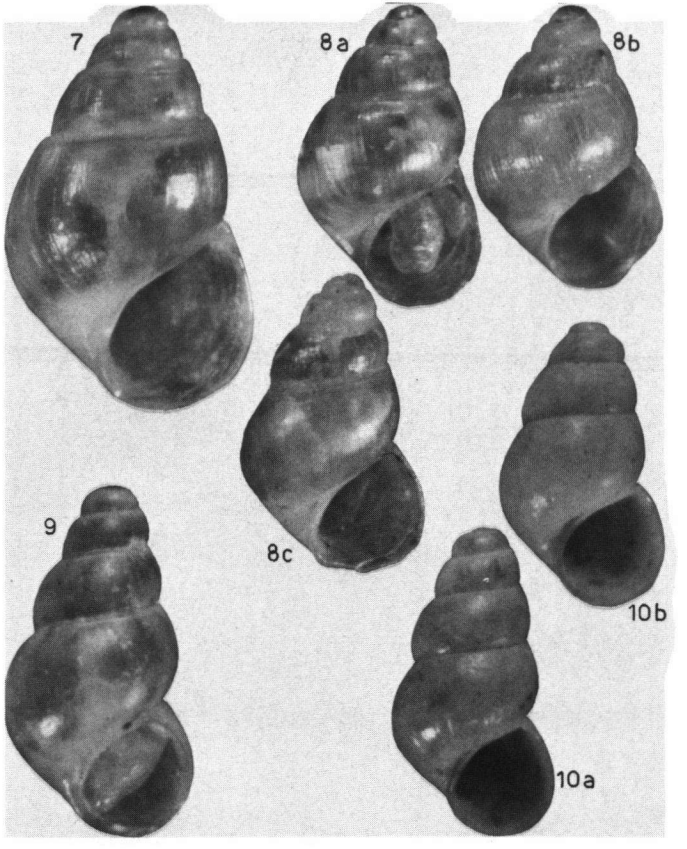


Fig. 7. *C. maculata*, Trapani, Sicily. Fig. 8. *C. aartseni*, Tarifa, S. Spain; 8a holotype. Fig. 9. *C. kuiperi*, Algeria, holotype. Fig. 10. *C. gittenbergeri*, Tarifa, S. Spain; 10a holotype. Magnification 28X.

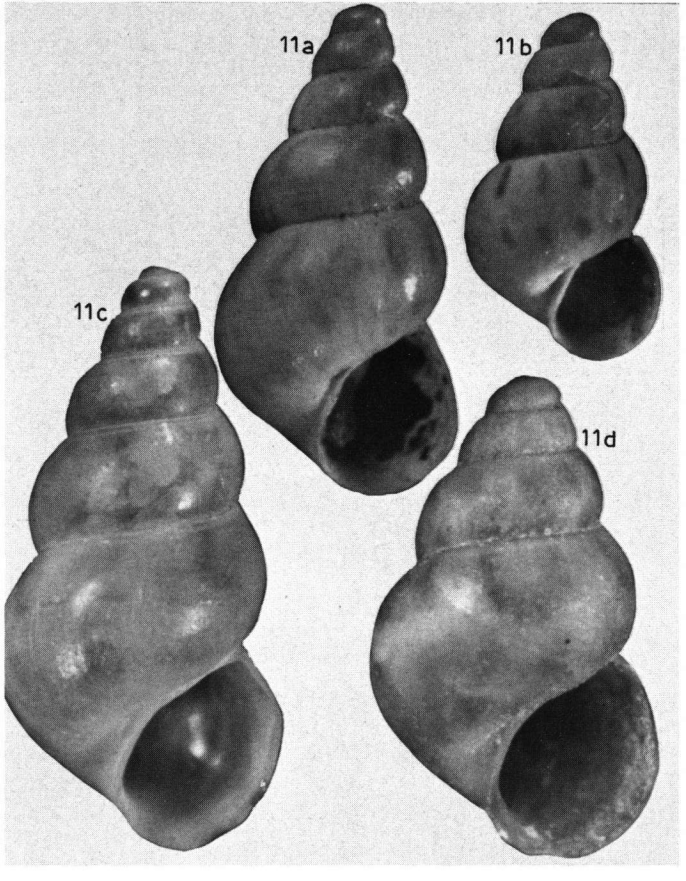


Fig. 11. *C. sliki*; 11a holotype; 11a-b Getarès, S. Spain; 11c Sezimbra, Portugal; 11d Ria de Arosa, NW. Spain. Magnification 28X.

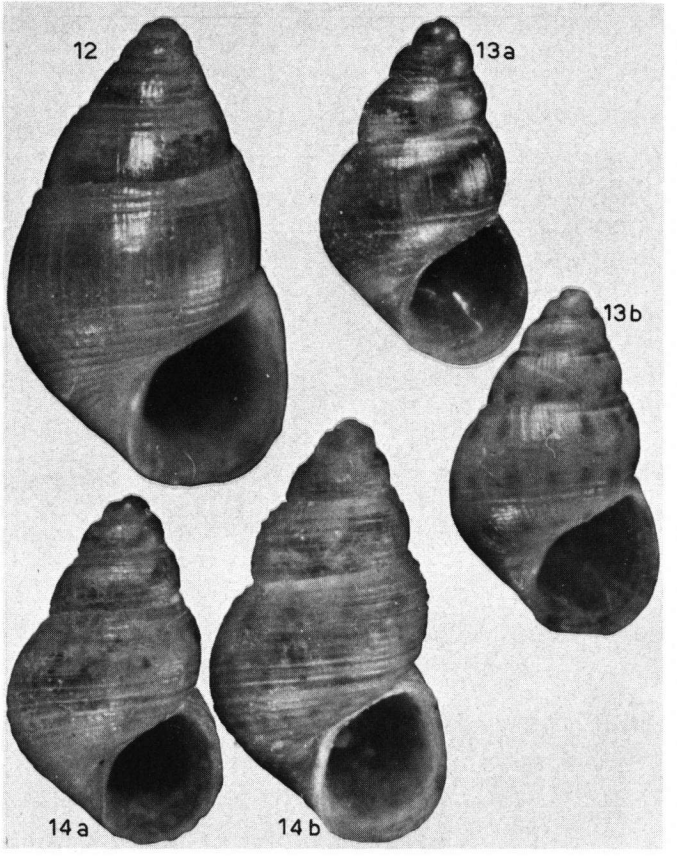


Fig. 12. *C. semistriata*, Sezimbra, Portugal. Fig. 13. *C. beniamina*; 13a Palermo, Sicily; 13b Paphos, Cyprus. Fig. 14. *C. pseudocingulata*; 14a Ognina, Sicily; 14b lectotype, Ibiza. Magnification 28X.

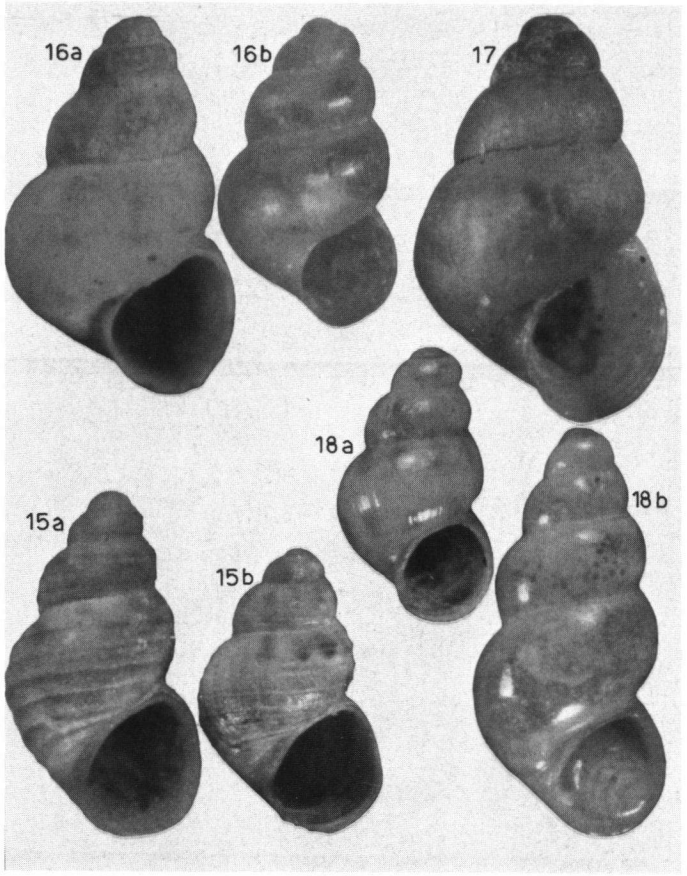


Fig. 15. *A. simulans*; 15a Palermo, Sicily; 15b Mondello, Sicily. Fig. 16. *C. turriculata*; 16a Sidi Daoud, NE. Tunisia; 16b Palermo, Sicily. Fig. 17 *C. fusca*, Palermo, Sicily. Fig. 18. *C. alleryana*, Mondello, Sicily. Magnification 28X.

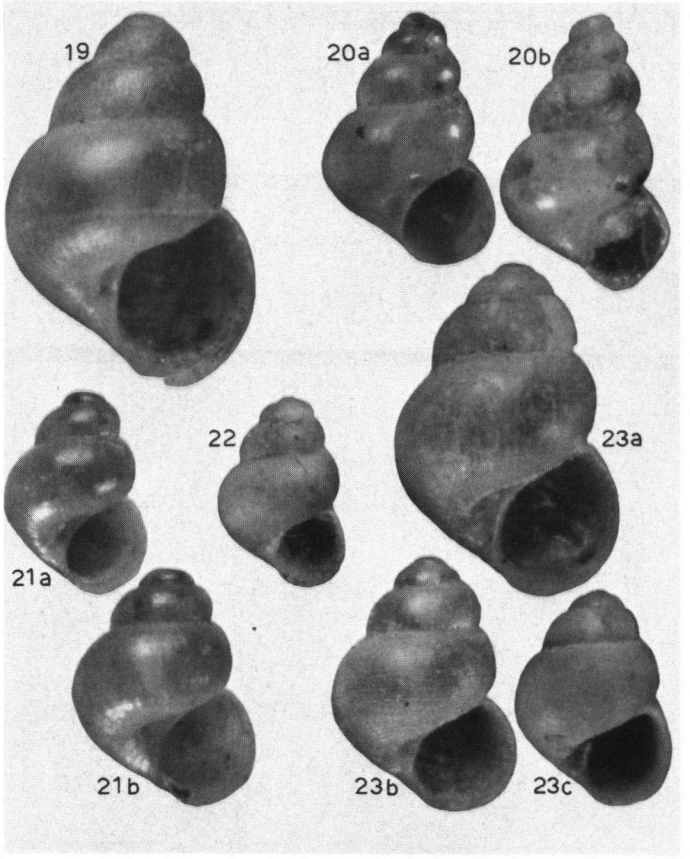


Fig. 19. *C. turgida*, Dröbak, Norway. Fig. 20. *C. bruggeni*, Tarifa, S. Spain; 20a holotype. Fig. 21. *C. lacourti*, Tarifa, S. Spain; 21b holotype. Fig. 22. *C. macilenta*, off Crete, 70-120 fms. Fig. 23. *C. intersecta*; 23a Shetland; 23b-c off Arcachon, W. France. Magnification 28X.

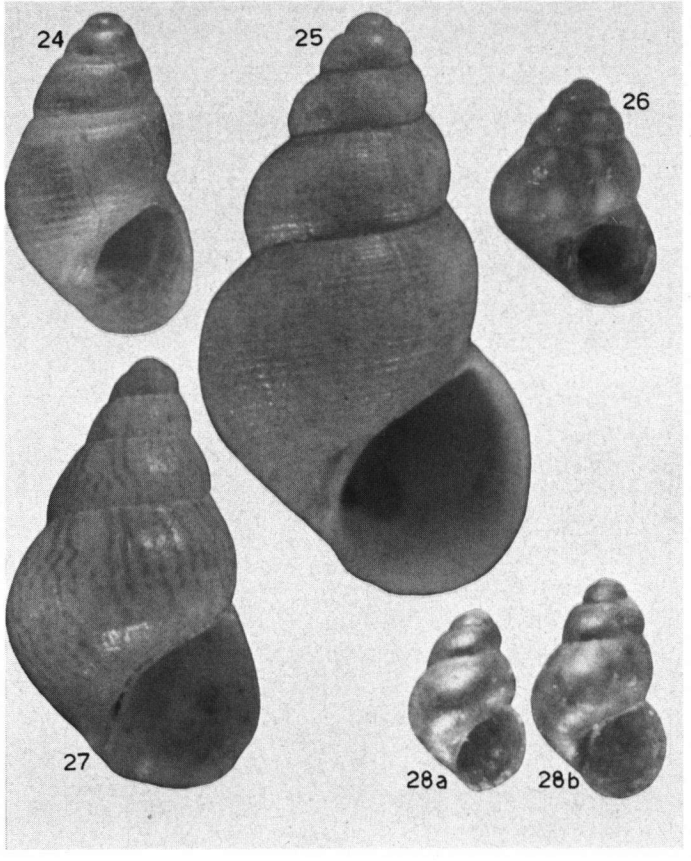


Fig. 24. *C. substriata*, Livorno, 20 m. Fig. 25. *C. gianninii*, Sardinia K1/10, 350 m. Fig. 26 *C. ochroleuca*, Punte Mika, Jugoslavia. Fig. 27. *C. albugo*, Madeira. Fig. 28. *C. jansseni*, Selvagem Grande; 28b holotype. Magnification 28X.

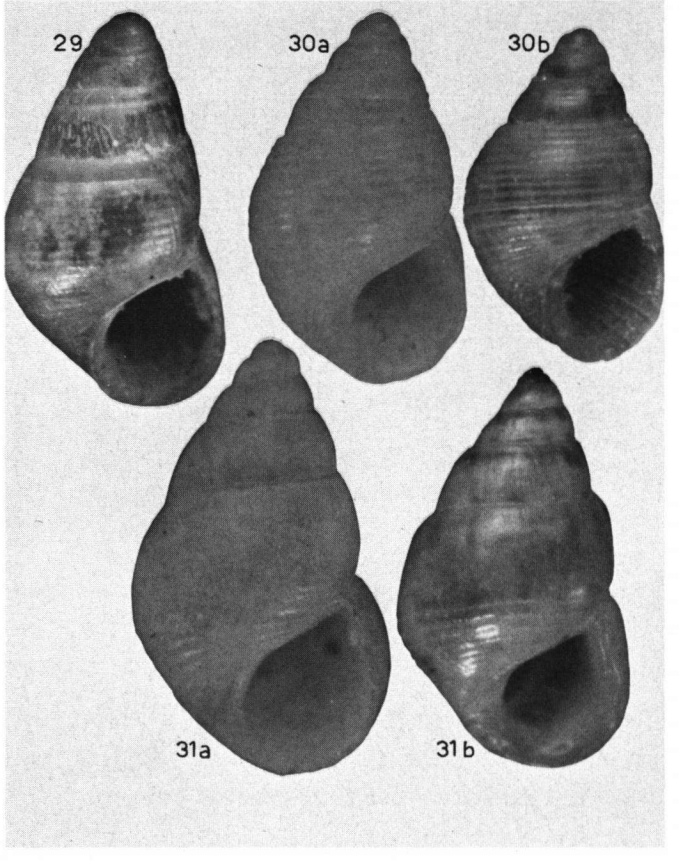


Fig. 29. *C. picta*, Madeira, lectotype. Fig. 30. *C. callosa*; 30a lectotype, Teneriffe, Canary Isles; 30b Hierro, Canary Isles. Fig. 31. *C. depicta*; 31a lectotype, Teneriffe, Canary Isles; 31b Hierro, Canary Isles. Magnification 28X.

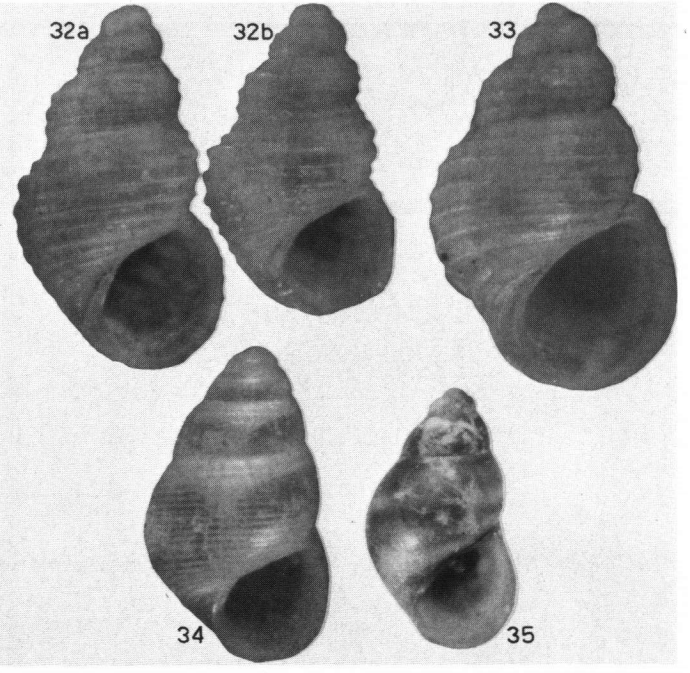
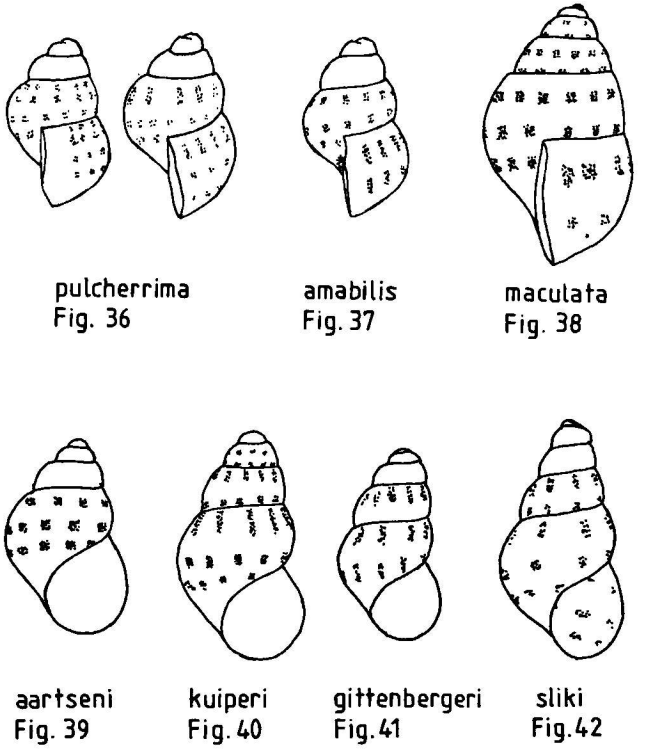
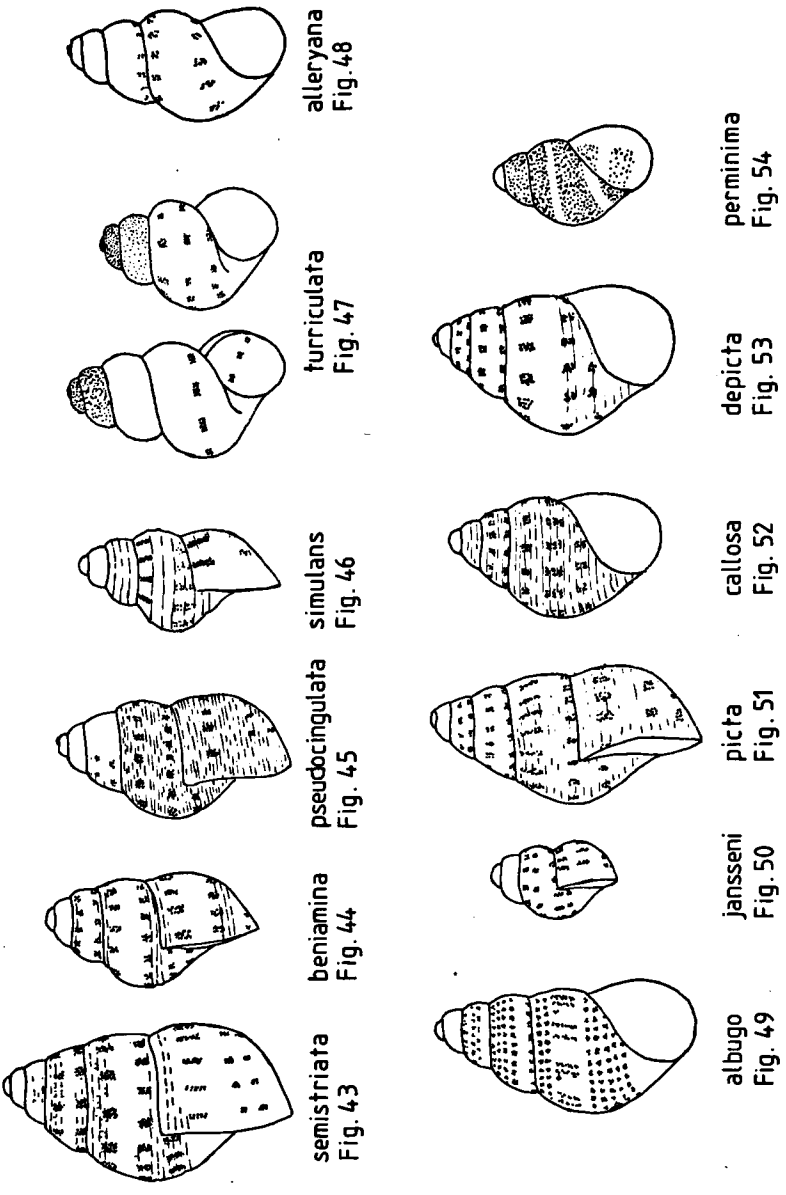


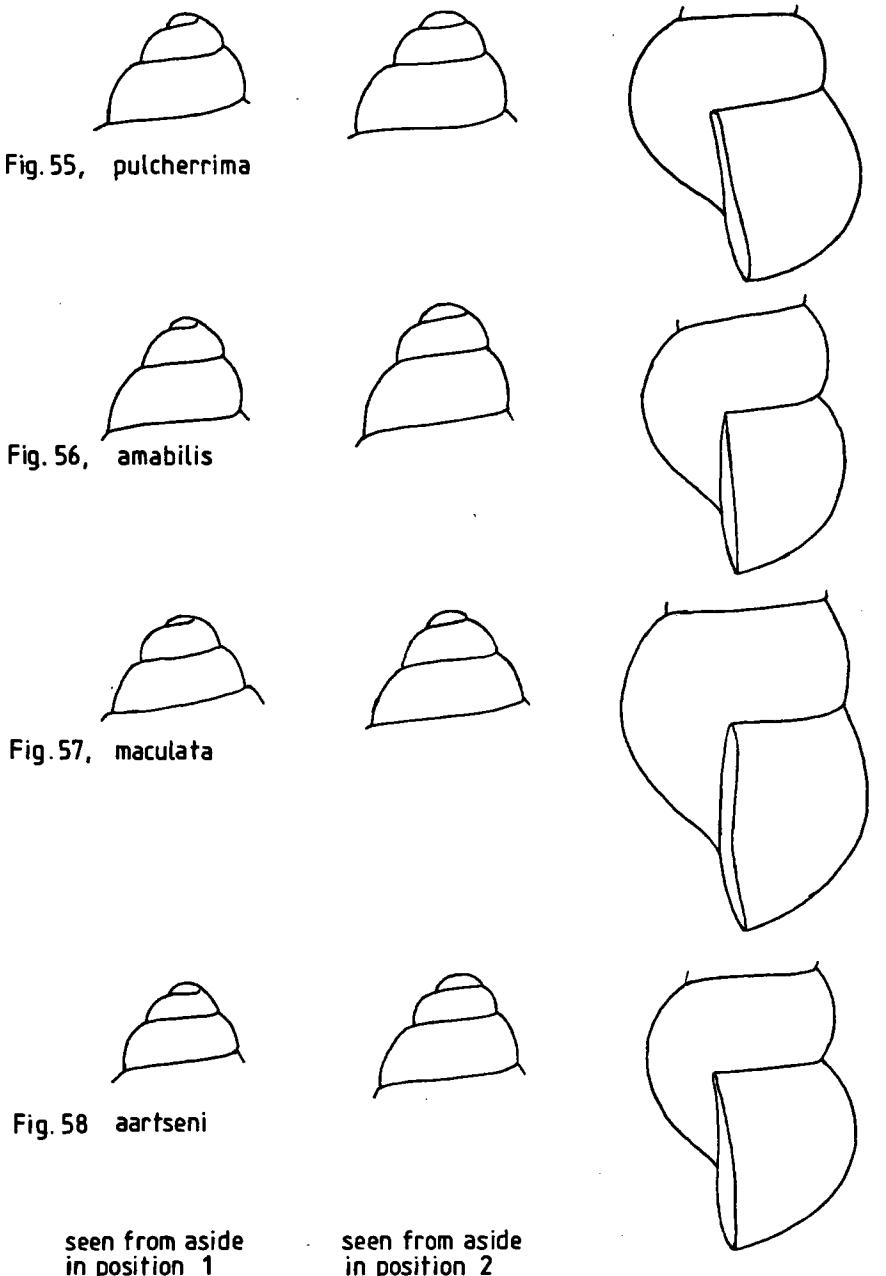
Fig. 32. *A. watsoni*, Madeira. Fig. 33. *A. moniziana*, Madeira. Fig. 34. *C. cristallinula*, Canary Isles. Fig. 35. *C. perminima*, Selvagem Grande. Magnification 28 X.



Figs. 36-42. Colour patterns. Magnification 17.5 X.



Figs. 43-54. Colour patterns. Magnification 17.5X.



Figs. 55-83. Details of apices and apertures. Magnification 35 X. For "seen in position 1" and "seen in position 2", see fig. 1.

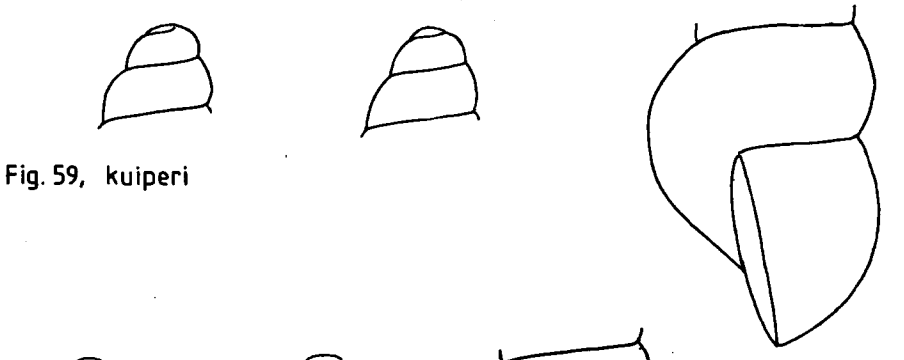


Fig. 59, kuiperi

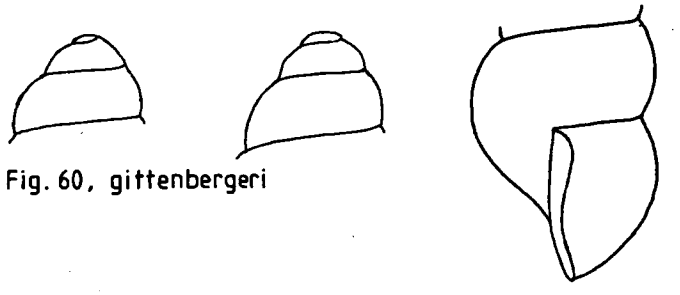


Fig. 60, gittenbergeri

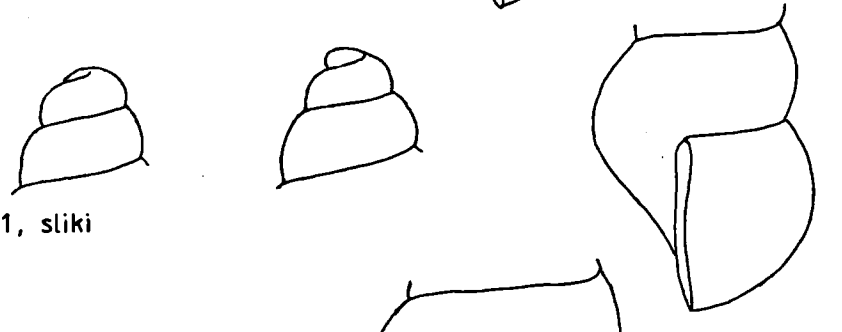


Fig. 61, sliki

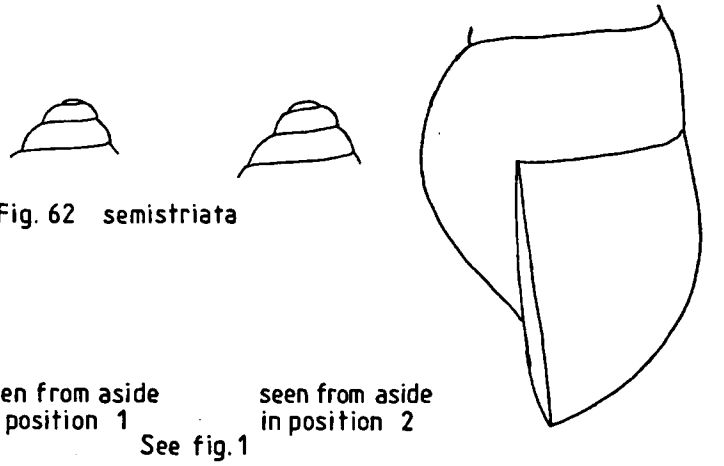


Fig. 62 semistriata

seen from aside in position 1

seen from aside in position 2

See fig. 1

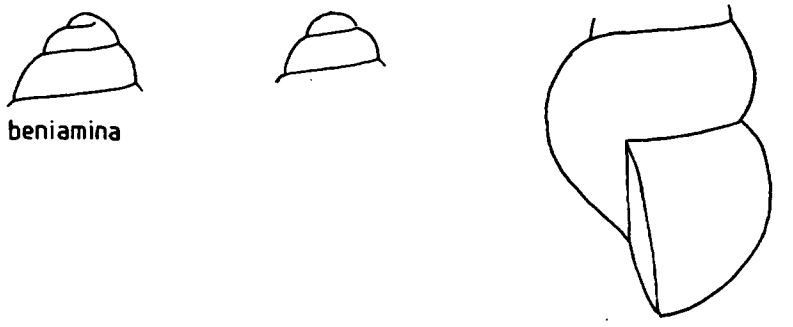


Fig. 63, beniamina

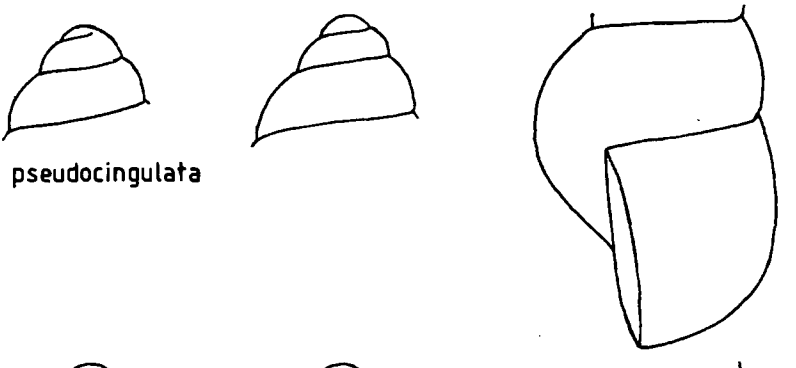


Fig. 64 pseudocingulata

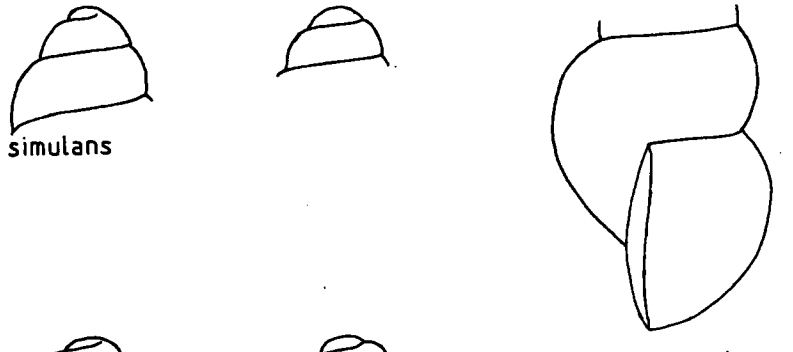


Fig. 65, simulans

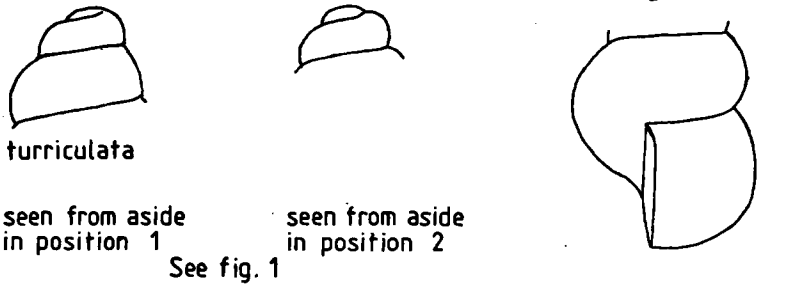


Fig. 66, turriculata

seen from aside in position 1 — seen from aside in position 2

See fig. 1

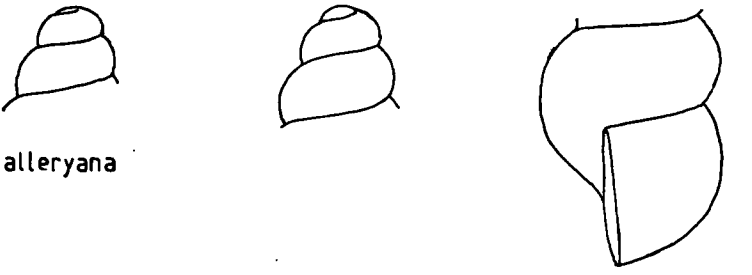


Fig. 67, alleryana

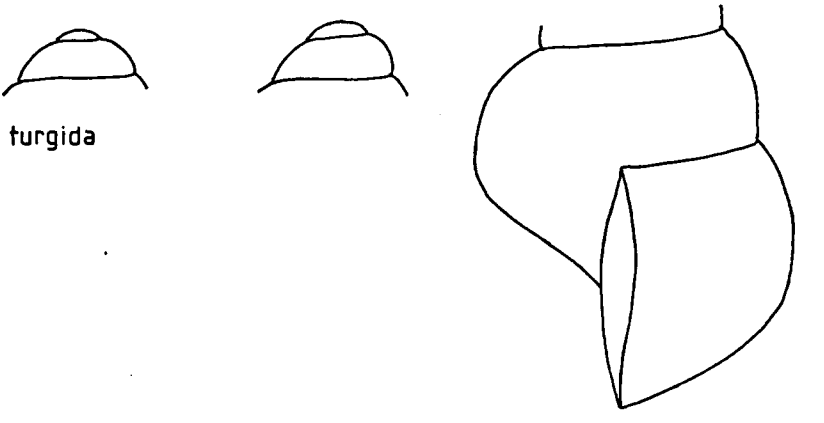


Fig. 68, turgida

Fig. 69, bruggeni

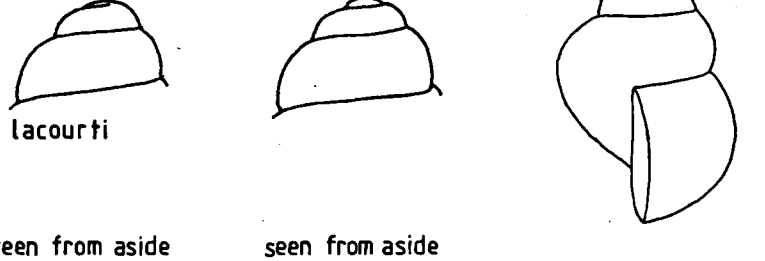


Fig. 70 lacourti

seen from aside in position 1

seen from aside in position 2

See fig. 1

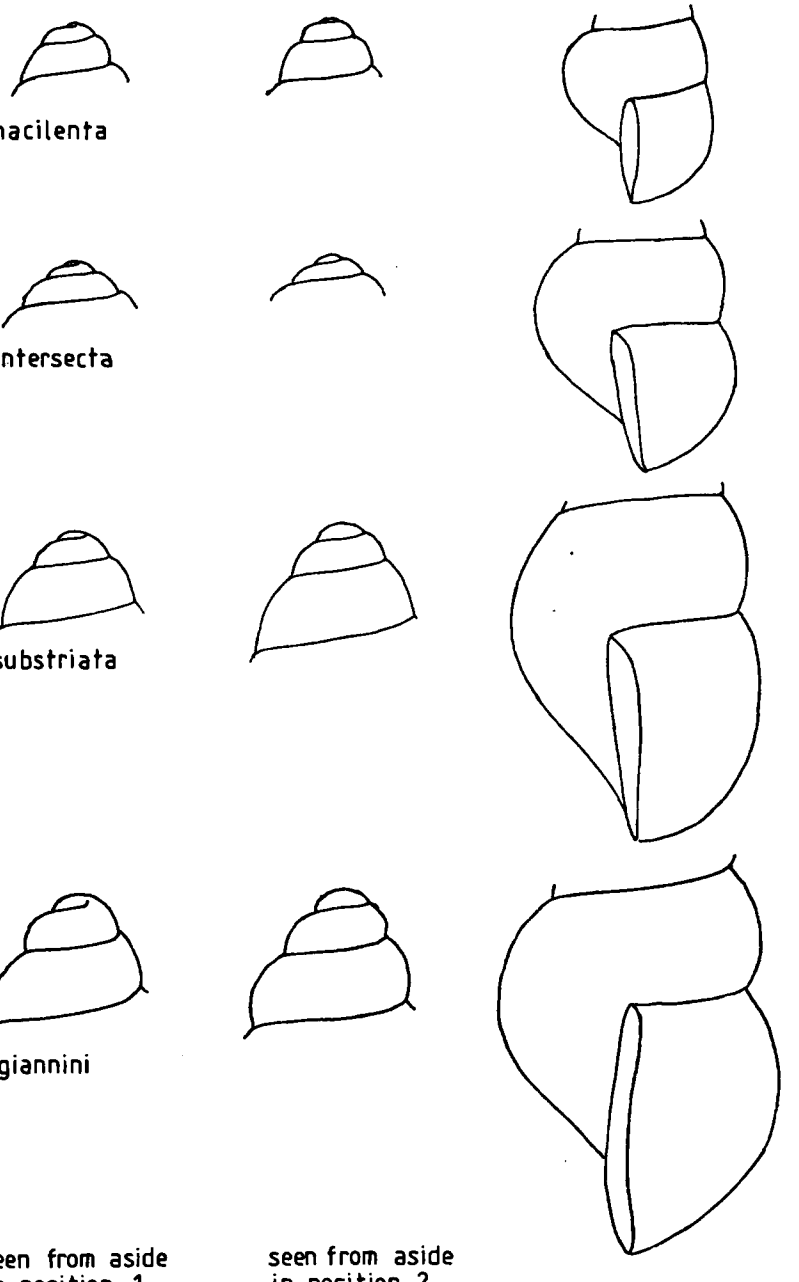


Fig. 71, macilenta

Fig. 72, intersecta

Fig. 73, substriata

Fig. 74, giannini

seen from aside in position 1

seen from aside in position 2

See fig. 1

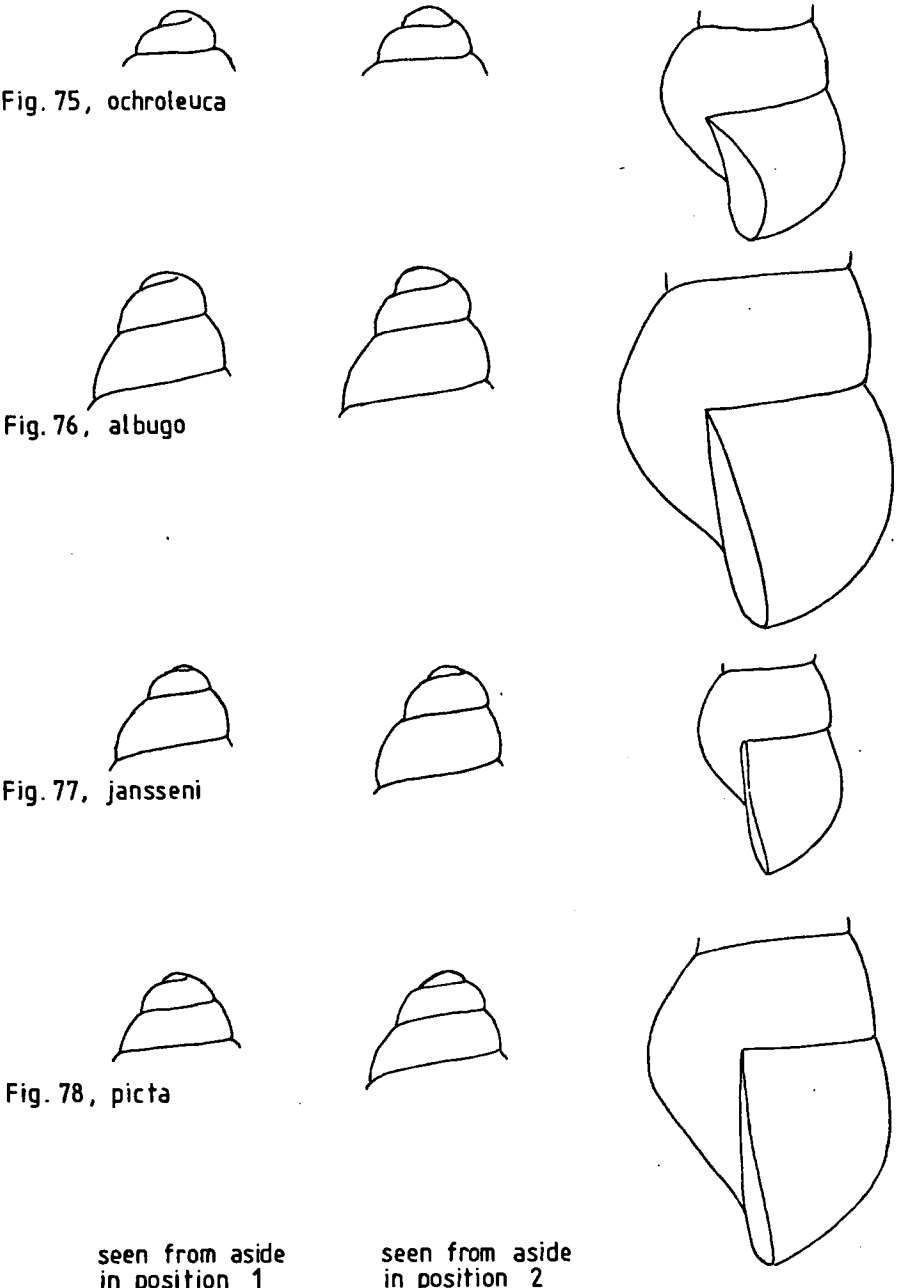


Fig. 75, ochroleuca

Fig. 76, albugo

Fig. 77, jansseni

Fig. 78, picta

seen from aside in position 1

seen from aside in position 2

See fig. 1

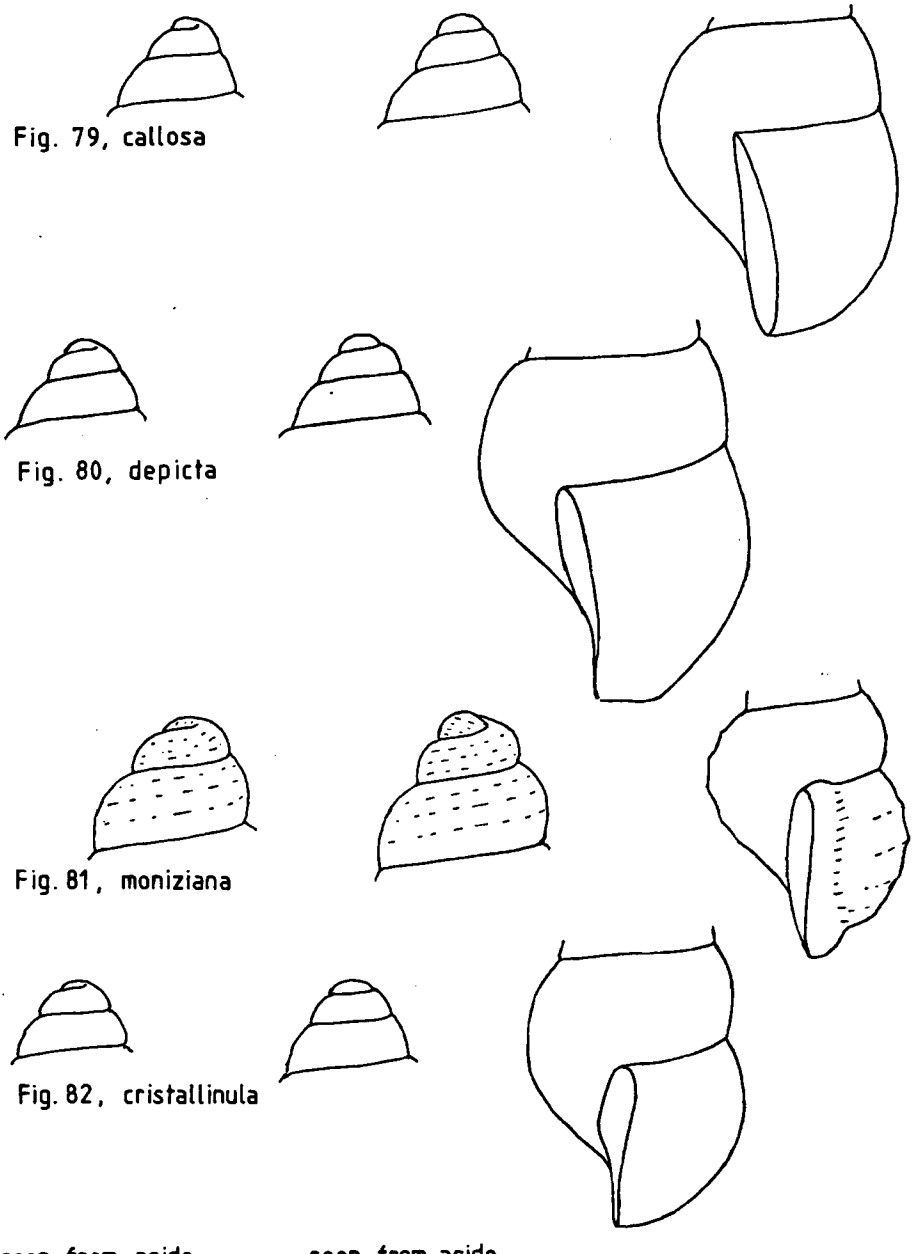


Fig. 79, callosa

Fig. 80, depicta

Fig. 81, moniziana

Fig. 82, cristallinula

seen from aside in position 1

seen from aside in position 2

See fig. 1

Fig. 83, perminima

seen from aside in position 1

seen from aside in position 2

See fig.1