

**On the taxonomy and variability of Recent European
and North African species of the subgenera *Apicularia* and *Goniostoma*
of the genus *Rissoa* (Gastropoda, Prosobranchia)**

A. VERDUIN

Rijksmuseum van Natuurlijke Historie, Leiden, The Netherlands

INTRODUCTION

Because current taxonomy of the subgenus *Apicularia* Monterosato, 1884, of the genus *Rissoa* Desmarest, 1814, has proved to be unsatisfactory for ordering my material, I decided to see for myself what species could really be distinguished among the subgenus. In doing so, the thesis that the dimensions of the apex are an important character on the species level in the genus *Rissoa*, developed in previous papers (Verduin, 1976 and 1982), again proved to be of great assistance. I strongly doubt the possibility to obtain a satisfactory taxonomy of the species studied without this thesis. The results of this investigation are presented below.

There is no communis opinio as regards the definition of the subgenera *Apicularia* and *Goniostoma* Villa, 1884, discussed in this paper. I myself attach much weight to the chess-board colour pattern (figs. 19b, 23f-g, 25a), which occasionally may change into a zigzag colour pattern, and which very characteristically connects a number of species which also agree in the presence of a sculpture of punctate spiral striae, i.e. *R. aartseni* (nom. nov. for *R. monterosatoi* Pallary, 1906, non Fischer, 1877), *R. auriscalpium* (Linné, 1758), *R. decorata* Philippi, 1846, *R. guerinii* Récluz, 1843, and *R. lia* (Monterosato, 1884). Though this chess-board colour pattern may only be seen in a small part of the shells of the species involved, and even is really rare in some of these species, it seems to represent a border-line of taxonomic interest within the genus *Rissoa*. Consequently, I included all species in which the chess-board colour pattern does occur, in *Goniostoma* (with the type species *R. auriscalpium*). However, a second colour pattern consisting of straight, rather wide, darker colour lines between the ribs (figs. 19a and 23b), is more frequent among this subgenus. Therefore, I also included a few species (*R. italiensis* n. sp. and *R. panhormensis* n. sp.) among which I found no shells with the chess-board colour pattern, but which show this second colour pattern in combination with a great similarity to other species of *Goniostoma* as regards shape and sculpture. Finally, I have added *R. rodhensis* n. sp. to the subgenus on the basis of its similarity to *R. auriscalpium*.

R. similis Scacchi, 1836, is the type species of *Apicularia*. I find it difficult to decide whether or not *Apicularia* should be considered synonymous with *Goniostoma*. As regards shape and sculpture there is a striking resemblance between *R. similis* and e.g. *R. guerinii* and *R. lia*. On the other hand, the chess-board colour pattern seems to be completely absent in *R. similis* and *R. scurra*. Also, longitudinal colour lines, as far as present in these species, are not as wide, dark, straight and regular as in *Goniostoma*. Under these circumstances I prefer not so synonymize both subgenera.

MATERIAL EXAMINED AND ACKNOWLEDGEMENTS

This revision is based on shells only. Material from the following collections was examined: Ph. Dautzenberg, in the Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels (KBIN-D); P. Pallary, in the Muséum National d'Histoire Naturelle, Paris (MHNP-P); Natur-Museum Senckenberg, Frankfurt/Main (SMF); Rijksmuseum van Natuurlijke Historie, Leiden (RMNH); the private collections of Dr. J.J. van Aartsen, Dieren (Aar), Mr. M.C. Cadée, Leiden (Cad), Mr. H.P. Wagner, Leiden (HPW), and myself (Vrd).

I am much indebted to all those who made their material available for this investigation; I am also much obliged to Dr. J.J. van Aartsen for his advice.

RESULTS

Rissoa (Goniostoma) aartseni nom. nov.
figs. 31-33

Rissoa monterosatoi Pallary, 1906: 98, Pl. IV figs. 12-13 (Sfax). Lectotype design. nov., MHNP-P (fig. 31).

Description. — *R. aartseni* is so similar to *R. lia torquilla* that it is not very well possible to draw a sharp border-line between both species. *R. aartseni* differs in the following characters: (1) the greater slenderness; (2) the more expanded aperture; (3) the somewhat higher number of ribbed whorls, over $4\frac{1}{4}$ in most shells, see also fig. 6; (4) the low number of terminal ribs per whorl, rarely more than 9; (5) the colour, longitudinal zigzag colour lines seem to be absent among *R. aartseni*; instead, straight

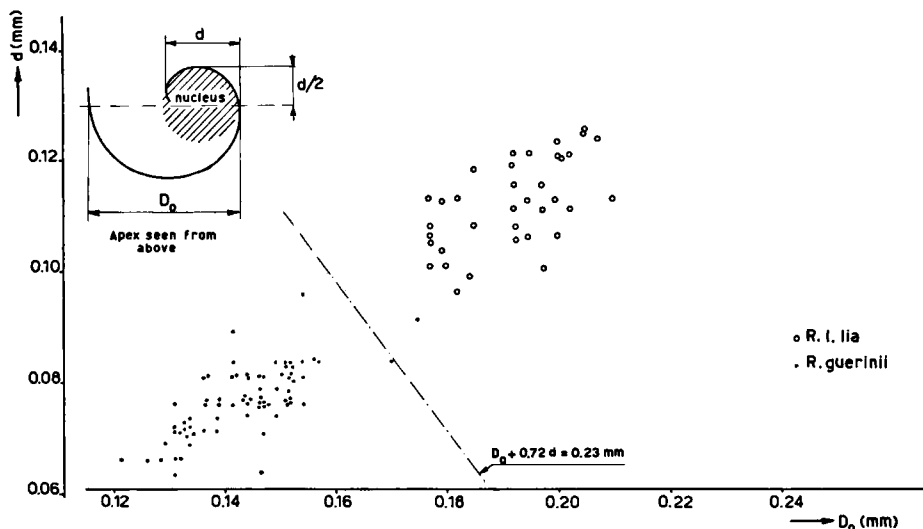


Fig. 1. Dimensions of the apex of shells of *R. guerinii* and *R. l. lia* from Getarès, S. Spain. The shells of both species were previously separated with the help of other characters. See also figs. 2-8 and 28, and table 1, samples 3 and 4.

colour lines can be seen between the ribs of some specimens; (6) the presence of punctate spiral striae on the lowermost part of some shells.

Distribution. — *R. aartseni* seems to be restricted to the Golfe de Gabès, Tunisia.

Discussion. — Dr. J.J. van Aartsen drew my attention to the fact that the name *Rissoa monterosatoi* Pallary, 1906, is preoccupied by *Rissoa (Alvania) monterosatoi* P. Fischer, 1877. Therefore, I now propose the replacement name *R. aartseni*, after my good friend, whose vast knowledge of, and whose contributions to, the European marine malacology I greatly appreciate.

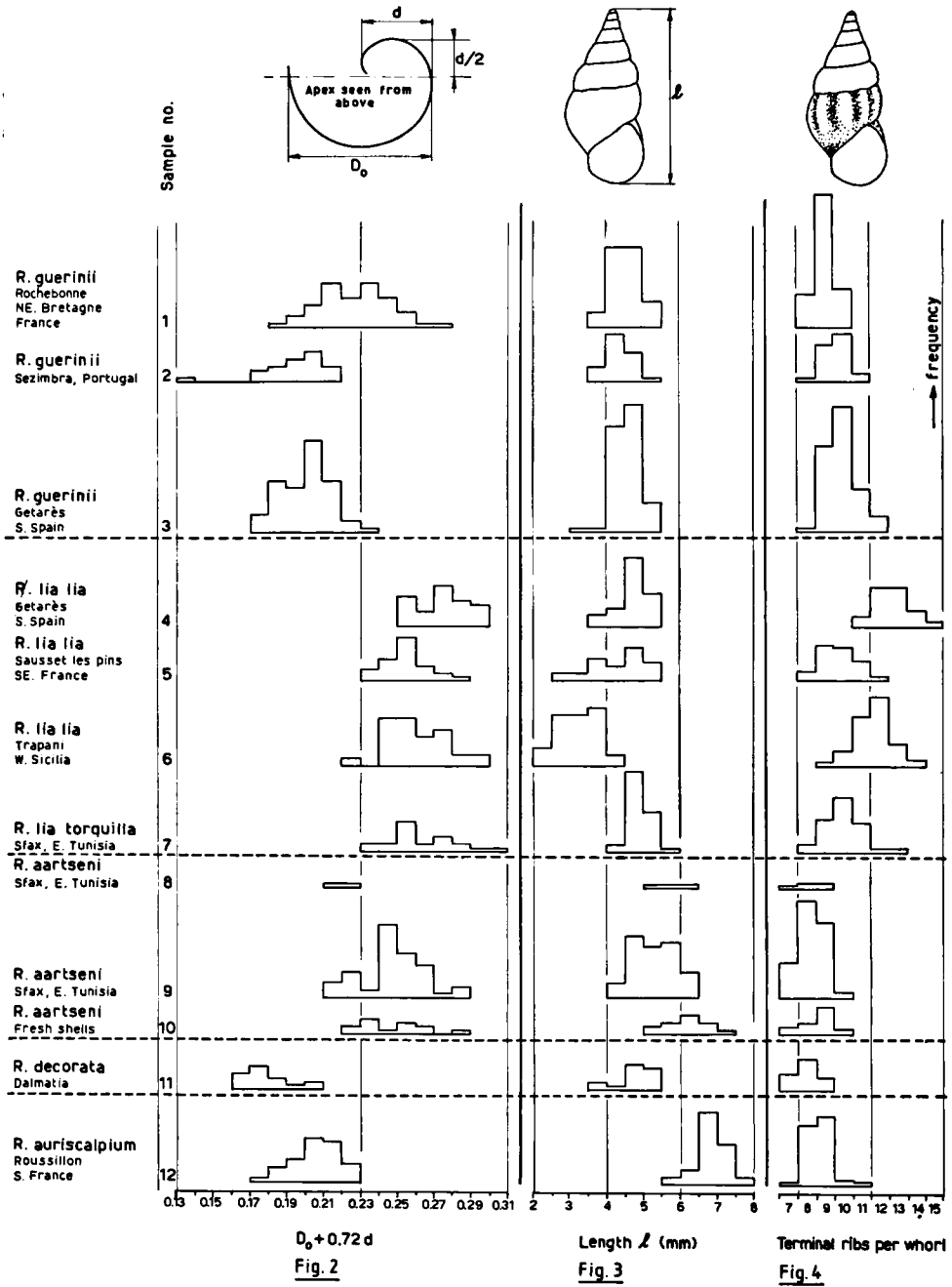
I have designated a lectotype of *R. monterosatoi* from among a sample of four shells, labelled: "Rissoa monterosatoi Pallary/Syntypes/Sfax/J. Conchyl., 1906, 54: 98, pl. 4, fig. 12-13" (MHNP-P). It measures 6.0 mm, the dimensions of the apex are $d = 0.09$ mm and $D_0 = 0.17$ mm (fig. 1), there are $4\frac{3}{4}$ ribbed whorls, $8\frac{1}{2}$ terminal ribs per whorl and 8.95 whorls, counted as shown in fig. 2. Terminal ribs are counted counter-clockwise from the last well developed rib, not the labial one. The apices of two other shells in the sample are damaged.

The description given above is based on the sample just mentioned and a large sample of similar shells from Sfax (Aar 9178). Most shells in both samples are bleached and white, and all are possibly not of Recent age. In addition, I also examined a number of fresh shells, which originally were part of a sample in KBIN-D labelled: "Rissoa auriscalpium L., var *paradoxa* Monts./Eponges/coll. Bouvier". First of all it should be remarked that no locality is mentioned on the label. Part of the sample, however, consisted of fresh *R. paradoxa*, one of which was figured in a previous paper (Verduin, 1982, fig. 50). Because, in my experience, the distribution of *R. paradoxa* is still limited to Tunisia, where the slender form even seems to be restricted to the Golfe de Gabès, I believe the sample to have been collected in the latter area. The remainder of the sample consists of shells which are very similar indeed to the bleached shells of *R. aartseni* described above (fig. 33). There are, however, a few small differences. The ribs of the fresh shells are somewhat flatter and less prominent. Moreover, punctate spiral striae are present in a majority of the fresh shells, and may even cover the whole body whorl. One of the fresh shells has the chess-board colour pattern. All others show straight brownish colour lines between the ribs. For the time being I consider them conspecific with *R. aartseni*. As in *R. decorata*, the colour of the uppermost whorls of the fresh shells scarcely differs from that of the remainder of the shell, though in part of the shells it tends to be a light pink. In combination with the colour patterns of the lower whorls and the low number of terminal ribs per whorl, i.e. 7-9, rarely 10, this suggests a close relationship between both species. They, however, clearly differ in the slenderness of the shells and the aperture, which is expanded in *R. aartseni*.

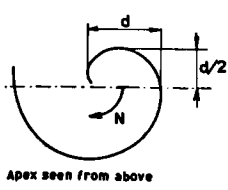
Rissoa (Goniostoma) auriscalpium (Linnaeus, 1758)
figs. 36-37

Turbo auriscalpium Linnaeus, 1758: 767, no. 569. Neotype design. nov., KBIN-D (fig. 36); type locality Roussillon, S. France.

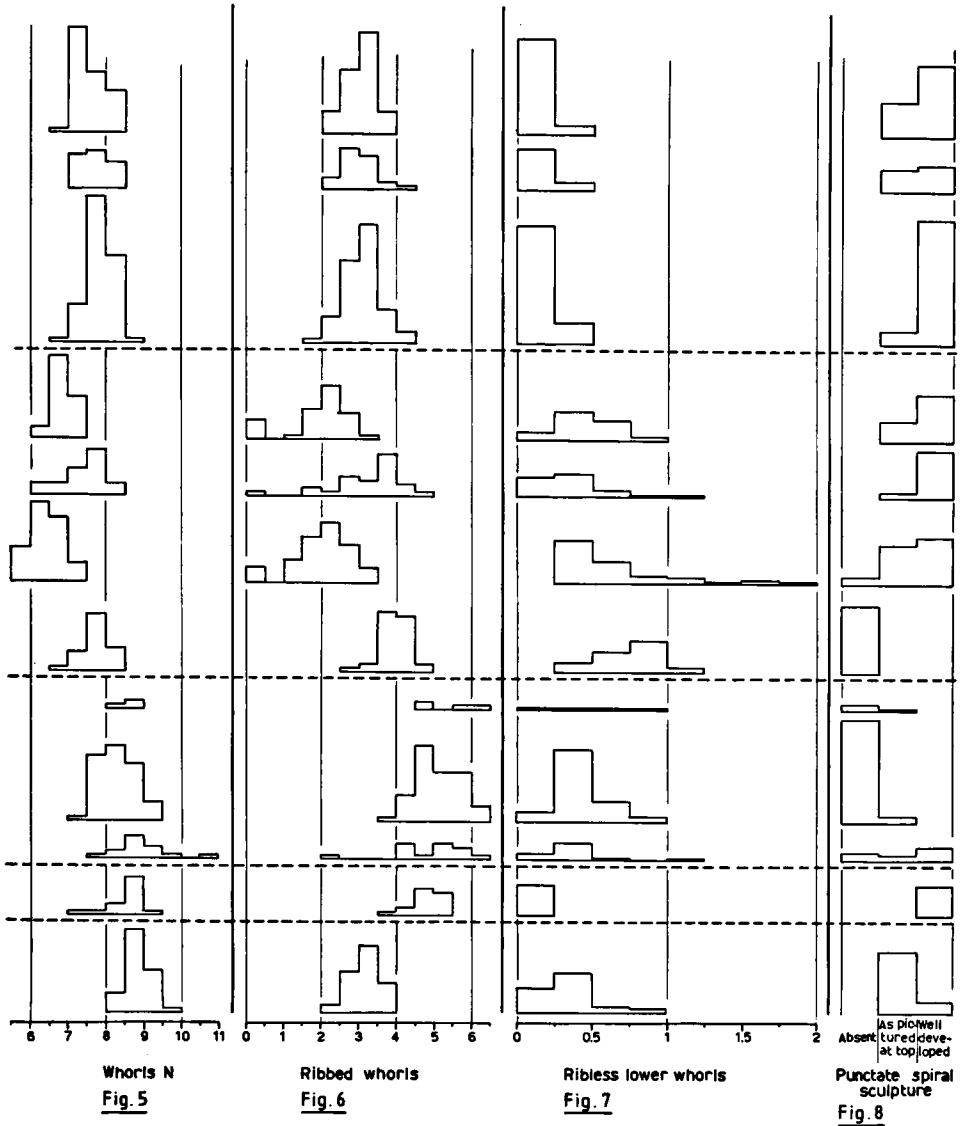
Description. — *R. auriscalpium* has the smaller type of apex, i.e. $D_0 + 0.72d < 0.23$ mm. The length of the shells varies: 3.3-8.0 mm. The shells are semitransparent and, except for occasional specimens, almost homogeneously coloured, whitish, horny or very pale brownish. In occasional shells faint, straight darker colour lines can be



Figs. 2-8. Histograms. See also table 1, samples 1-12. Terminal ribs are counted counter-clockwise from the last well developed rib, not the labial one.



Apex seen from above



seen between the ribs on the body whorl, e.g. in a sample labelled: "Rissoa (Zippora) auriscalpium (L.)/eil. Vivara bij Ischia/G. Stiasny (D.) reg 128/no. 33f", RMNH. Moreover, I separated a specimen of *R. auriscalpium* which shows a weak chess-board colour pattern on its base from among a sample labelled: "Rissoa (Zippora) paradoxa Monterosato/Tünesien: Sfax/no. 204744/8", SMF. I examined this shell thoroughly, and have no doubt that it belongs to *R. auriscalpium* indeed. A similar colour pattern can be faintly seen in the shell which Bucquoy, Dautzenberg & Dollfus (1884, pl. 34, fig. 11) figured as the colour variety *fusca* (now in MHNP-P).

Punctate spiral striae are present in all full grown shells. These may cover the whole of the body whorl and more, or may be almost absent in small ribless shells, even at the base of the back. The lower 2-4 whorls are usually covered by rather flat and inobtrusive ribs, but shells in which these ribs are weak or absent are not rare. Usually, there are 8-9 terminal ribs per whorl, occasionally 7, 10 or 11. There is a well-developed labial rib. The aperture is expanded.

The slenderness of the shells is quite variable, teste a sample of about 100 specimens, labelled: "Rissoa auriscalpium (L.)/Marzameni 12-9-1969", Vrd 0033, which was washed ashore in a small and remote bay about 8 km N. of Pachino, SE. Sicily. On the whole, the slenderness of the shells in the sample is about intermediate between that shown in figs. 36 and 37. The shell of fig. 37 represents the only sample from the eastern Mediterranean which I have seen. It is labelled: "Rissoa auriscalpium (L.)/N. Afrika, Cyrenaica, Bengasi, rotsstrand met zandige plekken/Coll. C. Beets, Nov. 1951/Reg. No. 1381", RMNH. Two of the eleven shells and fragments have undamaged apices, which clearly are of the smaller type. The sample is very similar to that from Marzameni, mentioned above, but the shells are somewhat more slender, and completely devoid of longitudinal ribs, except for the labial one.

Distribution. — *R. auriscalpium* is not rarely washed ashore in the western Mediterranean; it also occurs in the Adriatic Sea. Except for the sample from Bengasi, mentioned above, I did not see specimens from the eastern part of the Mediterranean.

Discussion. — According to Dodge (1959: 245) there is only one, beach-rolled specimen of *R. auriscalpium* in the Linnaeus collection, which cannot be accepted as holotype because it was not properly labelled. Though there has been little or no confusion with regard to the identity of *R. auriscalpium*, its similarity to *R. aartseni*, *R. italiensis* and *R. rodhensis* made it advisable to designate a neotype. It has been selected from among a sample labelled: "R. auriscalpium L./Roussillon/Coll. Bucquoy", MHNP-P. It measures 7.0 mm, has 9.0 whorls counted as shown in fig. 5, 9 terminal ribs per whorl and 3½ ribbed whorls, and is of a light horny colour with the upper four whorls faintly pink. The dimensions of the apex are $d = 0.07$ mm and $D_0 = 0.13$ mm. Punctate spiral sculpture can be seen on the lower 2½ whorls.

Rissoa (Goniostoma) decorata Philippi, 1846
fig. 19

Rissoa decorata Philippi, 1846: 97, no. 1 (insula Lesina Dalmatiae). No syntypes studied.

Rissoa frauenfeldiana Brusina, 1866: 22, no. 17 (Punta Mica, Dalmatia). No syntypes studied; topotypes Vrd 0081.

Description. — *R. decorata* is very similar to *R. guerinii*, and mainly differs in:

- the low number of terminal ribs per whorl, rarely more than 9,
- the high number of ribbed whorls, rarely less than 4,
- the brilliant colours of the shells,
- the brownish colour of the uppermost whorls of the normal colour variety.

The dimensions of the apex do not exceed $d = 0.09$ mm and $D_o = 0.15$ mm ($D_o + 0.72 d \leq 0.22$ mm).

Distribution. — *R. decorata* is washed ashore rather numerous in the Adriatic Sea.

Discussion. — As far as is known at the moment, the ranges of *R. decorata* and *R. guerinii* do not overlap. Because each species is quite constant in its entire area, because they are quite sharply delimited from each other as regards a number of characters, and because both probably have a pelagic larval phase and cannot be considered geographically isolated, I feel that they may best be considered distinct species rather than subspecies or even varieties.

Some shells of *R. decorata* (e.g. two shells from Punta Mica, Vrd. 0081) agree rather satisfactorily with the original diagnosis and figures of *R. frauenfeldiana* Brusina, 1866. Therefore, I believe the latter to be a variety of *R. decorata*¹.

I have seen no type material of *R. decorata*, but the original diagnosis and the type locality seem to be conclusive.

Rissoa (Goniostoma) guerinii Récluz, 1843
figs. 23-24

Rissoa guerinii Récluz, 1843: 7 (Boulogne-sur-Mer, Cherbourg, Saint-Malo, Noirmontiers). No syntypes studied; topotypes from Rochebonne, near Saint Malo, KBIN-D.

Rissoa costulata Alder, 1844: 324, Pl. VIII figs. 8-9 (small sea-weeds at Torbay, England). No syntypes studied.

Rissoa subcostulata Schwartz von Mohrenstern, 1863: 41, no. 32. Nom. nov. for *R. costulata* Alder.

Description. — This species has the smaller type of apex, at least in the greater part of its area. In S. Europe and in the Mediterranean the apical dimensions rarely exceed $d = 0.09$ mm and $D_o = 0.17$ mm ($D_o + 0.72d \leq 0.235$ mm). Quite surprisingly, however, the range of variation of the dimensions of the apex is much wider among *R. guerinii* from NE. Bretagne, France (fig. 1-2).

The length of the shells varies, 3.3-5.4 mm. The colour of *R. guerinii* is most remarkable, because there seem to be five different sympatric colour patterns with few or no intermediates. As regards these colour patterns, Dautzenberg & Durouchoux (1914: 27) wrote: "On rencontre avec la coloration typique: blanche avec les intervalles des côtes longitudinales bruns, les trois variétés suivantes:

Var. ex colore *albina* Dautz. et Dur. (Faunule Saint Malo, 1900, p. 9). Entièrement blanche.

¹ With regard to a previous paper of Brusina (1865), the following comment was given by E. von Martens (1866: 236): "One hundred and eleven species are mentioned, forty-five of which are considered to be entirely new (....). As the author establishes some species from differences of colour only, and himself confesses to have a short time ago regarded as new species the young specimens of the well-known *Trochus fermonii* (Payr.), no great reliance is to be placed on his opinion as regards the real distinctness of some of his new species." It is possible that Brusina was not yet acquainted with these words when he introduced *R. frauenfeldiana*!

Var. ex colore *bipartita* Dautz. et Dur. (Faunule Saint Malo, 1900, p. 9). Quatre ou cinq premiers tours d'un violet foncé, les derniers entièrement blancs.

Var. ex colore *conspersa* Dautz. et Dur. (Faunule Saint Malo, 1900, p. 9). Fond brun, parsemé de taches très petites, disposées en damier."

This quotation refers to the malacofauna in the Bay of St. Malo, NE. Bretagne, France. On the basis of my own observations I would like to add the following:

— The colour varieties *albina* (fig. 24a) and *bipartita* (fig. 24b) seem to be restricted to NE. Bretagne (and possibly S. England?), where they account for only a small percentage of the population. The normal colour pattern (figs. 23a-e) and the variety *conspersa* (figs. 23f-g) occur over the entire range of *R. guerinii*. Everywhere, the variety *conspersa* accounts for only a small percentage of the population, roughly guessed about 6%.

— The chess-board colour pattern may quite often also be seen more or less clearly in shells with the normal colour pattern (figs. 23b-c). Therefore, the main difference between the normal colour pattern and the variety *conspersa* is the colour of the ribs: whitish in the normal colour pattern, brown in *conspersa*, though often with a white spot on the middle of the rib.

— Two distinct colour patterns may be distinguished among the normal colour pattern. In the great majority of the shells, the uppermost whorls, if undamaged, are of a remarkable grey-violet colour, and of a dark violet colour where damaged. This suggests the presence of dark violet material, coated with a thin whitish layer. In occasional samples, however, shells occur in which the uppermost whorls clearly are not coloured in a particular way (e.g. a sample from Quiberon, S. Bretagne, France, colln. Vrd 0070).

— In the variety *conspersa* the colour of the uppermost whorls is always similar to that of the lower ones, i.e. brown.

— In the variety *conspersa* the chess-board colour pattern may change into narrow, close-set longitudinal brown zigzag lines.

— The variety *albina* is the only one which might be mistaken for *R. similis*. They, however, do not occur together, and moreover, *R. guerinii* usually has less ribs per whorl than *R. similis*.

— In my opinion, the uppermost whorls of the variety *bipartita* are dark brown, rather than dark violet. This colour clearly differs from the grey-violet in the normal colour pattern.

Punctate spiral striae are always present in shells of *R. guerinii*. They may, however, be restricted to the lowermost part of the shell, most clearly visible at the back, as shown at the top of fig. 8. All shells of *R. guerinii* are ribbed. Usually, there are 8-11½, rarely 12 terminal ribs per whorl. Among a sample from S. Sicily, however, which contains 16 specimens, there are 7-9½ terminal ribs per whorl, averaging 8½ (Aar 13572). The labial rib is white and strong. There usually are 2-4 ribbed whorls. The area between the last well-developed longitudinal rib and the labial rib rarely exceeds 0.3 whorls.

Distribution. — *R. guerinii* is washed ashore more or less numerously along the Atlantic coasts of Europe and in the western part of the Mediterranean. I saw one specimen from Agadir, S. Morocco (Vrd 0063). As yet, I have seen no specimens from the eastern Mediterranean, or from the Adriatic Sea. In the British Isles it has only been reported from the south-western coasts of England and Ireland (Fretter & Graham, 1978: 204).

Discussion. — Some authors, as lately Nordsieck (1982: 124) and Piani (1980: 130), consider *R. subcostulata* (nom. nov. for *R. costata* Alder, 1844) and *R. guerinii* distinct species. Nordsieck even changed the original diagnosis of *R. costulata* by mentioning 12 ribs instead of 10. Apart from the different colour patterns, I do not know of any good arguments supporting the view of these authors, not in the original diagnoses, nor elsewhere in the literature. Neither could I find any evidence myself that two distinct species might be involved, not as regards the characters shown in figs. 2-8, nor as regards the shape of the shells. On the contrary, all material examined gives me the strong impression to belong to only one species. Therefore, I consider *R. subcostulata* synonymous with *R. guerinii*. Probably, Alder did not yet know that Récluz had published the species in the previous year.

Yet, two subspecies might possibly be distinguished among *R. guerinii*, one in NE. Bretagne (and England?), characterized by the presence of the colour varieties *albina* and *bipartita* and by the larger range of variation of the dimensions of the apex, and the other in the more southern parts of the range of the species. As to this, however, I feel that conclusions should be based on more material than examined by me.

I have seen no type material of *R. guerinii*, but the original diagnosis and the type locality mentioned define the species very satisfactory; so do Schwartz von Mohrenstern's (1863: 43) description and figures, which are based on material from Récluz.

***Rissoa (Goniostoma) italiensis* nov. spec.**

fig. 34

Holotype in RMNH, no. 55626, ex Aar 13580 (fig. 34); paratypes in RMNH (2 shells, ex Aar 13580), in Aar, nos. 13580 (15), 14149a (3) and 15399 (3), and in HPW, no. 1147 (6, of which one is now in the possession of H.P.M.G. Menkhorst, Krimpen a/d IJssel). Type locality: about the centre of the south coast of Sicily, depth 50-60 m.

Description. — This is a rather constant species. It has the larger type of apex (D_0 $0.72d \geq 0.25$ mm). The length varies from 5.3 to 7.5 mm. The shells are rather opaque, and of a dirty pale beige colour. The upper part may be of a weak lilac colour, and occasional shells may be entirely lilac. In some shells darker colour-lines can be seen between the ribs. Punctate spiral striae are present in all shells. They may cover the whole body whorl, or only be visible at the back of the shell. The number of whorls varies from 7.3 to 8.5, and there are $2\frac{3}{4}$ to $4\frac{1}{4}$ ribbed whorls. There are 8-10 terminal ribs per whorl, which continue up to the well developed labial rib.

The species mainly differs from *R. lia* in the more slender habitus and in the more expanded aperture, which makes it similar to *R. auriscalpium*. It mainly differs from *R. aartseni* in the ribs, which are flatter and not tapered, which continue up to the labial rib, and which rarely cover over four whorls.

Distribution. — As yet, *R. italiensis* is only known from four samples. One was dredged at about the centre of the south coast of Sicily, depth 50-60 m; one at Isola della Correnti, SE. Sicily, depth 25 m; one halfway between Bonifacio, Corsica, and Toscane, Italy, depth 250-400 m. The fourth sample is from Prócida, near Pozzuoli, Italy, depth 2 m.

Discussion. — *R. italiensis* seems to be very true to form in its entire range. As yet, I cannot connect it in a satisfactory way with any other species.

The holotype measures 6.3 mm, has 8.0 whorls, 9 terminal ribs per whorl and $3\frac{1}{4}$ ribbed whorls. The dimensions of the apex are about $d = 0.11$ mm and $D_0 = 0.20$ mm.

Rissoa (Goniostoma) lia, lia (Monterosato, 1884)
figs. 25-29

Apicularia lia Monterosato, 1884: 139, no. 84 (Messina, Carini, Ognina, Palermo, Roussillon, Porto-Venere, Livorno, Castiglione, Sardegna nella corallina, Algeria). Topotypes (possibly syntypes) from Messina, KBIN-D; topotypes from El Djemila (La Madrague), Algeria (Aar 10544), and from the Roussillon (KBIN-D).

Apicularia similis var. *apicina* Monterosato, 1884, no. 81 (Trapani, Palermo). Topotypes (possibly syntypes) from Palermo and Trapani, both KBIN-D.

Apicularia similis var. *decurtata* Monterosato, 1884, no. 81 (Ognina, Palermo, Trapani). Topotypes (possibly syntypes) from Ognina, Palermo, Trapani, KBIN-D.

Apicularia melanostoma var. *amphorula* Monterosato, 1884, no. 83 (Carina, Ognina, Trapani). Topotypes (possibly syntypes) from Trapani, KBIN-D.

Description. — This is a very variable species, both locally and geographically, which mainly differs from *R. guerinii* and *R. similis* in the larger dimensions of the apex, in the colour of part of the shells, and in the distribution.

The lower limit of the apical dimensions of *R. lia* is about $d = 0.09$ mm and $D_0 = 0.17$ mm ($D_0 + 0.72d \geq 0.235$ mm). Slightly smaller apices do occur, but are quite rare. The upper limits of the apical dimensions are about $d = 0.13$ mm and $D_0 = 0.21$ mm ($D_0 + 0.72d \leq 0.305$ mm). In addition to the dimensions of the apex, *R. lia* is characterized by the protruding and inflated nucleus of the apex. For the definition of the nucleus, see fig. 1.

The length of the shells varies, 2.0-5.4 mm. As regards the colour, *R. lia* is very variable indeed. In a sample from Trapani, Sicily (fig. 25) many colours and colour patterns can be discerned, among which the colour pattern *conspersa*, known in *R. guerinii* and *R. decorata*. Shells from S. France (fig. 26) may be more or less similar to the normal colour variety of *R. guerinii*, though the colour lines between the ribs tend to be shorter. I also examined a sample, from Biograd, 25 km SE. of Zadar, Jugoslavia (Vrd), which contains shells which are very similar to *R. similis* or *R. scurra*, except for the form and dimensions of the apex. Among material from Getarès, S. Spain, however, shells of *R. similis*, *R. guerinii* and *R. l. lia* (fig. 28) could be separated in a very satisfactory way with the help of the colour and other characters, even before the dimensions of the apices of the last two species were measured following fig. 1. As can be seen in fig. 28, shells of *R. l. lia* from that locality are somewhat different, in particular as regards the presence of broken brownish colour lines which encircle the shells. A sample from El Djemila (La Madrague), about 10 km W. of Alger, Algeria (fig. 27) is intermediate between the sample from Getarès and samples from other Mediterranean localities as represented by figs. 25-26.

Punctate spiral striae are usually present in shells of *R. l. lia*. In some specimens, however, they may be absent. In others, they may appear only at the lowermost part of the shell, as shown at the top of fig. 8.

Most shells of *R. l. lia* are ribbed. Generally, there are 8-14, rarely 15 terminal ribs per whorl. Some shells, however, may be ribless. A labial rib is usually present, though

it may be weak or absent in some shells or samples. As in *R. guerinii*, the labial rib is white. There usually are 1-4 ribbed whorls. The area between the last well-developed longitudinal rib and the labial rib may vary from about nil to as much as one whorl, occasionally even more.

Distribution. — *R. l. lia* is washed ashore quite numerously at many localities in the western Mediterranean and in the Adriatic Sea. In my experience, it is somewhat more rare in the eastern Mediterranean, but I have seen fine specimens from Ródhos town (Vrd 0235) and Naxos (Cad). The Rijksmuseum van Geologie en Mineralogie, Leiden, contains a sample of fresh shells from the Canary Islands (fig. 29).

Discussion. — Notwithstanding the enormous variability among the shells which I consider to belong to *R. l. lia*, I can see no natural border-lines among these shells along which they might be satisfactorily divided into more than one species. The geographical variation may be easily explained by the presence of a geographical isolation mechanism caused by the absence of a pelagic larval phase. Monterosato's diagnosis of *R. lia* applies perfectly to part of the shells examined. Moreover, I examined a sample of 25 shells, labelled: "Rissoa (*Apicularia*) *lia* Benoit/typique/Messine/Monterosato 2-III-17", KBIN-D, which supports my interpretation of the species.

It stands to reason that the great variability of *R. l. lia*, and its similarity to *R. guerinii* and *R. similis* has resulted in some confusion and a number of synonyms. The following samples in collection KBIN-D helped me to bring some order in this chaos:

Two samples, labelled: "Rissoa *apicina* Monts./Palerm (zône profonde)/Monterosato ded. 19.7.98" and "Apicularia *similis* Sc. var. *apicina* Monts./Trapani/Monterosato" respectively. Each of these samples contains four shells. Those in the first sample are ribless and rather damaged; I cannot identify them with reasonable certainty. The top of one of the shells in the other sample is damaged. Of the three remaining shells, two belong to *R. l. lia*, and one seems to belong to *R. similis*.

Three samples, labelled: "Rissoa *similis* Sc. var. *decurtata* Monts./Palerm/Lemoro Monts.", "Apicularia *similis* Sc. var. *decurtata* Monts./Palerm/coll. Monterosato", and "Apicularia *similis* Sc. var. *decurtata* Monts./Ognina/coll. Monterosato" respectively. Together, these samples contain seven shells. Two of these have the apex damaged. The five other shells belong to *R. l. lia*.

Two samples, labelled: "Apicularia *melanostoma* Req. var. *amphorula* Brugnone/Trapani/Coll. Monterosato" and "Apicularia *melanostoma* Req. var. *amphorula* Brugn./Trapani/Lemoro Monts." together contain seven shells, three of which have the apex damaged. The other shells belong to *R. l. lia*.

Rissoa (*Goniostoma*) *lia torquilla* Pallary, 1912
fig. 30

Rissoa (*Apicularia*) *torquilla* Monterosato; Pallary, 1912: 9, figs. 19, 25-27 (Sfax, Tunisia). Lectotype design. nov., KBIN-D (fig. 30a).

Description. — This description is based on a rather large sample, labelled: "Rissoa *torquilla* Monter. in Pallary/Syntypes/Sfax/Bull. Soc. Hist. Nat. Afrique Nord, 4 (9): 9, fig. 19, 25, 26, 27; 1912", KBIN-D. All shells are whitish and bleached, and possibly not of Recent age. Punctate spiral striae are completely absent. In about a third of the shells yellowish brown longitudinal zigzag colour-lines and/or chess-board

colour patterns can still be seen more or less clearly. Straight longitudinal colour lines between the ribs (the normal colour pattern in *R. guerinii*) seem to be completely absent. The labial rib is weak or absent. Otherwise, the shells are similar to *R. l. lia*, see figs. 2-8.

Distribution. — Golfe de Gabès, Tunisia, and “ancienne lagune de Tunis” (subfossil). As yet, I have seen no shells which with certainty are fresh.

Discussion. — As yet, I have no information whatever that *R. l. lia* and *R. l. torquilla* do, or ever did, occur together. In my opinion, the differences are insufficient to consider them distinct species. All considered, it seems best to interpret them as subspecies.

I have designated a lectotype from among the sample mentioned above (KBIN-D). Its length is 4.5 mm, its apex measures $d = 0.10$ mm and $D_o = 0.19$ mm, it has 7.5 whorls, 4 ribbed whorls and 9 terminal ribs per whorl, and it has narrow longitudinal zigzag colour lines (fig. 30a). There are numerous paralectotypes in the sample.

Rissoa (*Goniostoma*) panhormensis nov. spec.
fig. 35

Holotype and 6 paratypes in KBIN-D (fig. 35). Type locality: Palermo, Sicily.

Description. — The shells of *R. panhormensis* strongly recall the normal colour variety of *R. guerinii*, but have the larger type of apex, i.e. $0.265 \leq D_o + 0.72d \leq 0.290$ mm, and have only 5-6½ terminal ribs per whorl. The shells measure from 4.8 to 6.0 mm. All have punctate spiral striae on the lower part of the body whorl. For the remainder, the shells are covered with fine, dense spiral striae, which merge into the punctate spiral striae. There are 7.6-8.2 whorls and 3½-4¼ ribbed whorls. The ribs continue up to the labial rib. The labial rib is well developed, and of a whitish colour, as are the other ribs. As in the normal colour variety of *R. guerinii*, the uppermost whorls are of a remarkable greyish colour. The edge of the aperture is purplish.

Distribution. — As yet only known from Palermo, Sicily. Sample probably dredged.

Discussion — Because of the extremely low number of ribs per whorl I cannot connect *R. panhormensis* in a satisfactory way with any of the other species discussed in this paper. Very probably there is more material in the Monterosato collection in Roma, which might contain more information about *R. panhormensis*. Unfortunately, this material is almost inaccessible for study.

The sample on which this species is based, was originally labelled: “Rissoa guerini Recl./Palermo, Lemoro Monts.”

The holotype is shown in fig. 35. It measures 5.5 mm; the dimensions of the apex are $d = 0.12$ mm and $D_o = 0.18$ mm. The nucleus of the apex is very prominent and inflated. There are 8.1 whorls, counted as shown in fig. 5, and 4½ ribbed whorls. There are 5 terminal ribs per whorl.

Rissoa (*Goniostoma*) rodhensis nov. spec.
fig. 38

Holotype in RMNH, no. 55625 (fig. 38b). Paratypes: 3 almost undamaged shells and 10 fragments with undamaged apex from Ródhos in RMNH; 1 shell in RMNH, labelled “Mersa Matrúh, loc. 2/C. Beets,

Aug. 1951²; 1 fragment with undamaged apex from Katákolon (Vrd 0011); 4 fragments with undamaged apex from Gandoli (Vrd 0086). Type locality: harbour of Ròdhos town.²

Description. — Shells belonging to this species are very similar indeed to those of *R. auriscalpium* from Marzameni, SE. Sicily, discussed before. However, the new species differs in the larger dimensions of the apex, i.e. $D_o + 0.72d > 0.230$ mm. Moreover, it differs in the longitudinal ribs, which are somewhat less developed and even seem to be completely absent in about one third of the shells. The shells are usually colourless or whitish, and transparent. I saw one specimen which is brownish and transparent, with longitudinal colour lines of a darker brown.

R. rodhensis differs from both *R. aartseni* and *R. italiensis* in the weak or absent longitudinal ribs, and in the small number of ribbed whorls, which does not exceed three among the specimens examined. It also differs in the greater transparency (as compared with *R. italiensis*) and in the uniform whitish colour of almost all shells. Fresh shells of *R. aartseni* always have a colour pattern.

Distribution. — *R. rodhensis* seems to replace *R. auriscalpium* in a large part of the eastern Mediterranean. So far, it is only known from Gandoli, 10 km S. of Táranto, S. Italy; Katákolon, 10 km W. of Pírgos, W. Greece; the harbour of Ròdhos town, Greece; and Mersa Matrùh, 250 km W. of Alexandria, Egypt.

Discussion. — On the basis of the knowledge available at this moment, I cannot unite *R. rodhensis* with one of the other species discussed in this paper. It might be conspecific with *R. angustior* (Monterosato, 1917), which was described from Tripolitania, W. Libya. But Monterosato did not mention details of the apex of his species, which therefore must be considered a nomen dubium until the type specimens, probably in the Monterosato collection in Roma, become available for examination.

Many of the shells of *R. rodhensis* examined are beach-rolled and in more or less poor condition. For this reason I had to designate the holotype from among the smaller shells. It measures 4.65 mm, has 7.2 whorls and 2 weakly ribbed whorls with $9\frac{1}{2}$ ribs per whorl. The dimensions of the apex are about $d = 0.12$ mm and $D_o = 0.21$ mm. It looks fresh, and is rather well preserved, though slightly damaged.

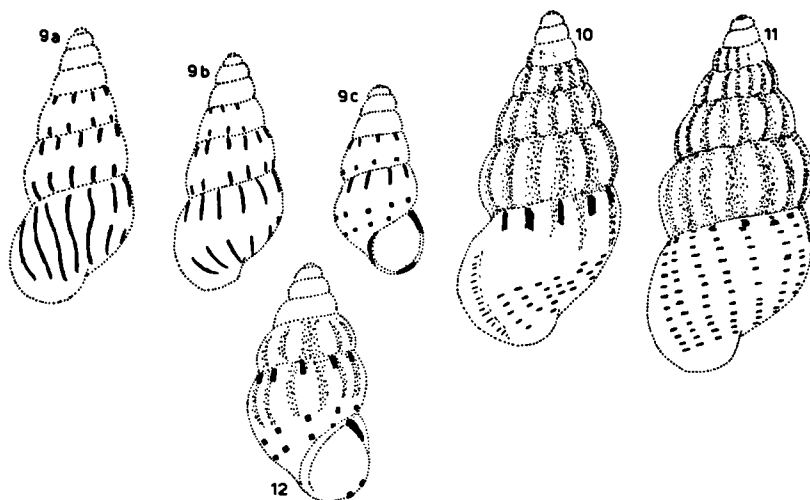
Rissoa (Apicularia) similis Scacchi, 1836
figs. 17-18

Rissoa similis Scacchi, 1836: 14, no. 28 (Sinus Tarentinus, Italy). No syntypes studied.

Apicularia nitens Monterosato, 1884: 140, no. 85 (Trapani, Palermo, Ognina, Magnisi, Piombino, Marsiglia). Some syntypes studied; topotypes from Trapani (Vrd 0156).

Description. — The dimensions of the apex are $d \leq 0.09$ mm and $D_o \leq 0.15$ mm ($D_o + 0.72d \leq 0.22$ mm, see figs. 1 and 2). The length of the shells varies, 2.3-4.7 mm. The colour of the great majority of the shells is white or somewhat yellowish. In such shells, the upper whorls have the same colour as the lower part of the shell, except for the first half whorl which may be tinged with lilac or purple. Between the ribs, narrow yellowish brown longitudinal colour lines can often be seen, which may be broken into two or, rarely, three parts as shown in fig. 9, and which continue on the base of the

² When this paper was in the press, I could examine 4 fine specimens of *R. rodhensis* from Saronikós Kólpos, S. of Athens, Greece (Aar 19581), which I also consider paratypes.



Figs. 9-11. Colour patterns in *R. similis*. Magnification $12.5 \times$. 9, Balestrate, N. Sicily. 10, Srebreno, S. Jugoslavia. 11, Biograd, mid-Jugoslavia. See also table 1.

Fig. 12. Colour pattern in *R. scurra*. Magnification $12.5 \times$. Ródhos harbour. See also table 1.

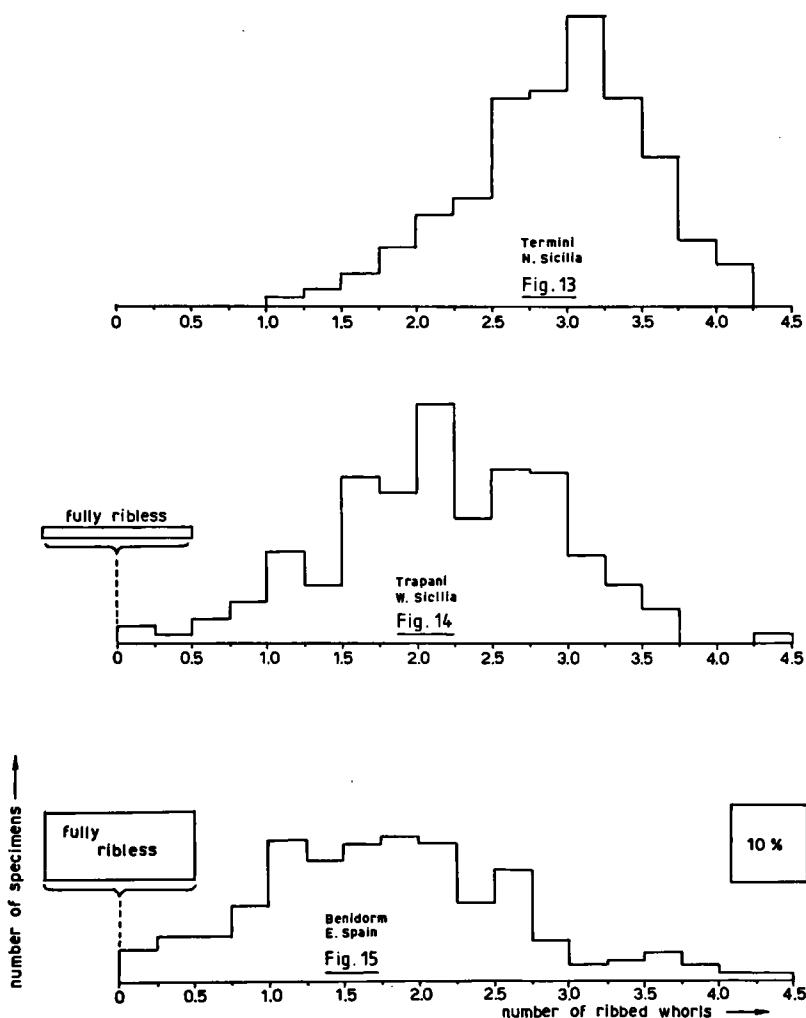
shell. Shells from the east coast of the Adriatic Sea, however, rarely show this type of pattern. Instead, they may be covered by interrupted brownish spiral lines (fig. 11). I saw similar shells from Naxos, Greece (Cad). There may be two or three brown or purplish spots at the edge of the aperture of shells of *R. similis*, situated as shown in fig. 9c. The entire aperture is not infrequently tinged with purple. As in *R. dolium* Nyst, 1843, brown specimens do occur occasionally. Shells with one or two brown colour bands, or with part of the whorls coloured brown (figs. 17e-h) are also known.

The lower two or three whorls of the great majority of the shells are uniformly covered with punctate spiral striae, which also cover the base of the shell. In ribless shells this sculpture may be weak or absent. Such shells may be easily mistaken for *R. parva* forma *interrupta* (Adams, 1798). Occasionally, one finds ribbed shells without spiral sculpture (Sicacca, S. Sicily, Vrd 0009).

The great majority of the shells is ribbed. Usually, there are 11.5-14 terminal ribs per whorl.

Distribution. — *R. similis* is washed ashore in great quantities from Lagos, S. Portugal, to Israel. In my limited experience the species is somewhat more scarce in the eastern part of the Mediterranean than in the western.

Discussion. — Bucquoy, Dautzenberg & Dollfus (1884: 265) wrote: "Le *R. similis* est fort difficile à délimiter d'une manière satisfaisante. Certains individus se rapprochent en effet du *R. subcostulata* Schw., d'autres des *R. melanostoma* Réq. et *R. Lia* Benoit." For two reasons, my experience is quite different. In the first place, I had the opportunity to examine much more material, and from a more extensive area than the above authors probably did. In particular this refers to samples from Portugal, S. Spain, Sicily, the Adriatic Sea and the Aegean Sea, which played an important part in this investigation. Secondly, I paid much attention to the dimensions of the apex. In



Figs. 13-15. Histograms of the number of ribbed whorls among three samples of *R. similis*. 13, Termini, N Sicily. 14, Trapani, W. Sicily. 15, Benidorm, E. Spain. See also table 1.

my experience, *R. similis* is a rather constant species, sharply delimited from the other species by a combination of characters as regards sculpture, apical dimensions and colour. The examination of many hundreds of specimens from the whole Mediterranean and from Portugal has convinced me that *R. similis* always has the smaller type of apex.

In figs. 13-15 the distribution of the number of ribbed whorls is shown for three different samples. I find it very difficult to believe that the obvious bimodality in the lowermost histogram is due to the presence of two species in the sample, one without or

with only very few ribbed whorls, and the other with more than about 0.5 ribbed whorls. Anyway, I do not know of any other indications in that direction.

Collection KBIN-D contains a sample of four shells, labelled: "Apicularia nitens Monts./Trapani/coll. Monterosato". The apical dimensions are similar to those of *R. similis*. In some of the shells traces of punctate spiral striae can be seen. The length of the shells, which are colourless and ribless, is about 2.3 mm. I can see no differences between these shells and the ribless shells from the same locality (fig. 14) discussed above. Thus, I consider *R. nitens* a variety of *R. similis*.

As far as I know, the identity of *R. similis* has never been subject to serious confusion. My interpretation of the species is identical to that in collection KBIN-D.

Rissoa (Apicularia) scurra (Monterosato, 1917)
figs. 20-22

Apicularia scurra Monterosato, 1917: 12, figs. 27-28 (Puntebianche, Dalmazia). Lectotype design. nov., KBIN-D (fig. 22b).

Description. — The dimensions of the apex are $d = 0.10-0.13$ mm and $D_0 = 0.18-0.23$ mm ($D_0 + 0.72 d = 0.25-0.32$ mm, compare figs. 1-2). The largest shell examined measures nearly 3.5 mm (fig. 20a). Small but seemingly full-grown shells may measure only 1.6 mm. The great majority of the shells is colourless and vitreous, or white. In such shells, the upper whorls have the same colour as the lower part of the shell, except for the nucleus of the apex, which may be tinged with brown. Often, three brown spots can be seen at the aperture (fig. 12). Moreover, a characteristic pattern of more or less weak yellowish colour lines and spots can be seen on the body whorl of part of the shells (fig. 12). Occasionally, part of the shell may be brown, or brown spiral bands may be present.

Punctate spiral striae are well developed in some shells and weak to absent in others. The lower whorls of part of the shells are ribbed; such shells have a conspicuously inflated habitus. The number of ribbed whorls usually is about 1 to $2\frac{1}{2}$, but completely ribless shells are locally far from rare. There usually are 12-16 terminal ribs per whorl. A labial rib is absent.

Distribution. — *R. scurra* is washed ashore quite numerously at many localities in the eastern Mediterranean. I also saw specimens from the Adriatic Sea, from Gandoli, 10 km S. of Taranto, S. Italy (Vrd 0108), and from Djerba, E. Tunisia (Aar 11361).

Discussion. — *R. scurra* differs from *R. similis* in the larger dimensions of the apex, in the absence of shells which measure over 3.5 mm, in the absence of a labial rib, in the absence of purplish colours, in the colour pattern, and in the distribution. In particular the differences in the dimensions of the apex are very consistent among the large numbers of shells of both species examined.

Shells of *R. scurra* with the characteristic colour pattern (fig. 12) do occur at a number of different localities in the eastern parts of the Mediterranean. Though this colour pattern seems to be absent in *R. lia*, this is not sufficient proof for their distinct specific identity. Moreover, I did not find it always easy to distinguish in a satisfactory way specimens of *R. scurra* who lacked this colour pattern from certain forms of *R. lia*. Dr. J.J. van Aartsen, however, drew my attention to differences in the form of the first whorl. The nucleus of *R. scurra* is not as inflated and prominent as it is in well preserved apices of *R. lia*. Also, the dimensions of the apex on the average proved to be

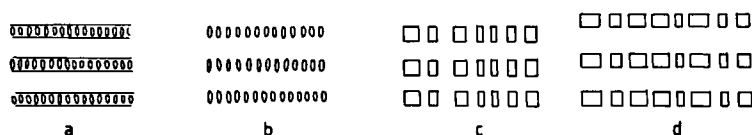


Fig. 16. Stylized details of the punctate spiral striae, not to be used for identification purposes. Magnification $50 \times$. a, shallow impressed spiral bands with small, deeper, elliptic punctations in *R. similis*, *R. guerinii*, *R. decorata* and *R. lia*. b, series of small elliptic impressions in *R. scurra* and *R. panhormensis*. c, impressions about rectangular and generally higher than wide in *R. rodhensis* and in fresh *R. aartseni*. d, impressions about rectangular and often wider than high in *R. auriscalpium*.

slightly larger in *R. scurra*. With the help of these characters, in combination with the colour of the upper whorls and apex, which tends to be different in *R. lia*, I no longer had difficulties in separating shells of both species in a satisfactory way.

If free from ribs and punctate spiral striae, shells of *R. scurra* are very similar indeed to those of *Cingula alleryana* (Aradas & Benoit, 1874), which, however, are somewhat differently coloured and have the whorls somewhat more strongly and evenly curved.

I have designated a lectotype from among a sample labelled: "Rissoa (*Apicularia*) *scurra* Monts. mss./Puntebianche (Dalmatie)/Monterosato 2-III-17" (KBIN-D). It is shown in fig. 22b; length 2.4 mm. The dimensions of the apex are $d = 0.12$ mm and $D_0 = 0.21$ mm. There are 5.1 whorls, $14\frac{1}{2}$ terminal ribs per whorl and slightly over $2\frac{1}{2}$ ribbed whorls. Punctate spiral striae can be seen on the whole body whorl. In addition, there are three paralectotypes in the sample.

PUZZLING SAMPLES

The great majority of the material examined fits well into the taxonomy developed above. Only one sample of five shells in KBIN-D did really puzzle me. It is labelled: "Apicularia *torquilla* Monts./Arenella, Palermo/Monterosato 6.6.03". These shells are very similar indeed as regards size, habitus, sculpture and colour. Because of the presence of well developed punctate spiral striae, they certainly do not belong to *R. lia torquilla*. The shells are yellowish, transparent, rather slender, and measure about 3.3 mm. There are ribbed whorls, but the last $\frac{3}{4}$ whorl is devoid of ribs. The nuclei of the first whorl are rather inflated and prominent in all five shells. I might have considered them to belong to *R. lia lia*, except for the dimensions of the apices of two of the shells which are far too small. In a third shell, the dimensions of the apex ($D_0 + 0.72d = 0.225$ mm) are on the very limits of the range of variation in *R. l. lia*. Because the shells may have been selected from a larger sample, they may give incomplete information. For this reason, I do not consider it justified to draw any taxonomical conclusions from this small sample.

NOMINA DUBIA AND NUDA

The original diagnosis of *R. melanostoma* Requier, 1848, is not sufficiently precise to recognize this nominal taxon with reasonable certainty. It may well be synonymous with *R. lia*, but the words: "fulvo longitudinaliter lineata" may refer to *R. similis* or *R.*

guerinii as well. Dr. Ph. Bouchet, Muséum National d'Histoire Naturelle, Paris, wrote me that the types of Requien have to be considered lost. They may have been sent by Requien to Moquin-Tandon, but nothing is known with certainty about the whereabouts. I therefore prefer to consider *R. melanostoma* a nomen dubium.

The original diagnosis and figure of *R. obscura* Philippi, 1844, agree well with the normal colour variety of *R. guerinii*. Dr. R. Kilius wrote me that no type material of *R. obscura* exists in the Zoologisches Museum der Humboldt-Universität, Berlin. We therefore may assume that it has been lost. Because the species has been interpreted in different ways, it seems best to consider *R. obscura* a nomen dubium, the more so, because no type locality is known.

The original diagnosis and figure of *R. angustior* (Monterosato, 1917), described from Tripolitania, W. Libya, agrees in many respects with *R. rodhensis*, but may as well refer to a form of *R. auriscalpium*, or to an unknown species. Monterosato did not give details of the apex. Probably there are syntypes in the Monterosato collection in Roma, but I do not know whether these are available for examination now. For the time being I consider *R. angustior* a nomen dubium.

Nordsieck (1972: 206-207) mentioned *Apicularia similis distantestriata* Nordsieck, 1972, *A. nina* Nordsieck, 1968, and *A. sfaxiana* Nordsieck, 1972. The diagnoses and figures are not sufficient to recognize these taxa with reasonable certainty. Therefore, I wrote to the Senckenberg-Museum, Frankfurt/Main, asking (1) whether they had any type material of these taxa, and (2) whether they knew the whereabouts of the Nordsieck collection. The answer to both questions was in the negative.³

Thus, for the time being, I consider these names nomina dubia.

Because I did not examine any material of *Rissoa acerosa* Seguenza, 1903, I have no opinion with regard to its identity. Seguenza himself considered the species different from *Apicularia*.

Rissoa apiculata Sandri & Danilo, 1856, is a nomen nudum, and *Rissoa rubrocincta* (Danilo & Sandri, 1856), recorded by Nordsieck (1982: 118) and Piani (1980: 130) was not published by Danilo & Sandri, but by Brusina (1866: 21, see e.g. Mienis, 1984), Brusina considered it a variety of *R. similis*, as did Bucquoy, Dautzenberg & Dollfus (1884: 265). It might be mentioned that Schwartz von Mohrenstern (1863: 39) reports to have examined specimens of *R. apiculata* from Danilo & Sandri, and considered them conspecific with *R. similis*. This opinion has also been expressed by Brusina (1866: 21) and Bucquoy et al. (1884: 265). As far as I know, *R. apiculata* still is a nomen nudum. Because nothing is known about the dimensions of the apex, I consider *R. rubrocincta* Brusina, 1866, a nomen dubium.

OTHER OPINIONS

The European marine malacofauna has now been studied for over two hundred years. One would expect that this might have resulted in a considerable consensus with regard to the species involved. Though this may be more or less true for a number of genera, it certainly is not true with regard to the subgenera discussed in this paper. In

³ This was the situation when this paper was written. Recently, the Nordsieck collection came into the possession of the Senckenberg-Museum. Possibly it contains syntypes of the nominal species discussed here, so that their true identity might yet be established.

his latest book, F. Nordsieck (1982) does not only recognize all seven species, except the new ones, mentioned by me, but also considers as good species seven of the synonyms, nomina dubia and even nomina nuda. Moreover, the delimitation of his species is quite different, because the dimensions of the apex, which in my view are essential, are completely irrelevant in his. Also, Piani's (1980) list of Mediterranean species is far more closely related to Nordsieck's views than to mine.

For the sake of a sound and stable nomenclature it would, of course, be of much importance to investigate the origin of different views. In order to do so, however, it would be necessary to examine the material, factual evidence and arguments on which these views are based. Unfortunately, both Nordsieck and Piani have given little or no information on all this. Such taxonomical opinions, which are not sufficiently supported by published factual evidence, material and/or arguments might be referred to as "opiniones nudaе". Of course, an "opinio nuda" is not necessarily incorrect. The problem lies in the difficulty to decide whether or not it is incorrect, because essentially the burden of proof has been shifted. Instead of supporting his opinion by providing all additional information available (or referring to it), the author of an "opinio nuda" leaves the verification entirely to the reader. This, of course, will often be next to impossible; therefore in these cases, "opiniones nudaе" may be considered of little scientific relevance.

ABSTRACT

The following species are recognized on the basis of the dimensions of the apex and additional characters: *R. aartseni* (nom. nov. for *R. monterosatoi* Pallary, 1906, non Fischer, 1877; *R. auriscalpium* (Linné, 1758); *R. decorata* Philippi, 1846; *R. guerinii* Récluz, 1843; *R. italiensis* n. sp.; *R. lia* (Monterosato, 1884) with the subspecies *torquilla* Pallary, 1912; *R. panhormensis* n. sp.; *R. rodhensis* n. sp.; *R. similis* Scacchi, 1836; and *R. scurra* (Monterosato, 1917).

Lectotypes of *R. lia torquilla*, *R. scurra* and *R. aartseni* and a neotype of *R. auriscalpium* are designated. Evidence is produced for the close relationship between *R. auriscalpium*, type species of *Goniostoma* Villa, 1841, and part of the species which so far had been considered to belong to *Apicularia* Monterosato, 1884.

REFERENCES

- ALDER, J., 1844. Descriptions of some new British species of *Rissoa* and *Odostomia*. — *Ann. Mag. nat. Hist.* (1) 13: 323-328.
- BRUSINA, S., 1865. Conchiglie dalmate inedite. — *Verh. zool. bot. Gesell. Wien*: 3-42.
- , 1866. Fauna dei molluschi Dalmati: I-II. 1-134. Vienna.
- BUCQUOY, E., PH. DAUTZENBERG & G. DOLLFUS, 1882-1886. Les mollusques marins du Roussillon. 1, Gastropodes: 1-570. Paris.
- COAN, E., 1964. A proposed revision of the Rissoacean families Rissoidae, Rissoinidae and Cingulopsidae. — *Veliger* 6: 164-171.
- DAUTZENBERG, PH., & P. DUROUCHOUX, 1914. Les mollusques de la Baie de Saint-Malo. — *Feuill. jeun. Nat.* 44, supplement: 25-64.
- DODGE, H., 1959. A historical review of the mollusks of Linnaeus. Part. 7: Certain species of the genus *Turbo* of the class *Gastropoda*. — *Bull. Am. Mus. nat. Hist.* 118, Art. 5: 207-258.
- FRETTER, V., & A. GRAHAM, 1978. The prosobranch molluscs of Britain and Denmark 4: Marine Rissoacea. — *J. moll. Stud.*, supplement 6: 153-241.
- FISCHER, P., 1877. Diagnoses molluscorum in stratis fossiliferis insulae Rhodi jacentium. — *J. Conchyl. Paris* 25: 78-81.

- HUBENDICK, B., & A. WARÉN, 1970. Småsnäckor vid Svenska västkusten: Rissoa & Onoba. — Göteborg. naturhis. Mus. Årstryck: 87-95.
- LINNAEUS, C., 1758. Systema naturae 1, 10th ed.: 1-824. Stockholm.
- MARTENS, E. VON, 1866. Mollusca. — Zool. Rec. 2 [1865]: 211-304.
- MIENIS, H.K., 1984. Iets betreffende het auteurschap van *Apicularia rubrocincta*. — Corr. Blad Ned. Malac. Veren. 219: 1540-1543.
- MONTEROSATO, T.A. DI, 1883-1884. Conchiglie littorali Mediterranee. — Naturalista sicil. 3(3): 87-91 (1883); 3(4): 102-111; 3(5): 137-140; 3(6): 159-162; 3(8): 227-231; 3(10): 227-281 (all 1884).
- , 1917. Molluschi viventi e quaternari raccolto lungo le coste della Tripolitana. — Boll. Soc. zool. Ital. 3(4): 3-28.
- NORDSIECK, F., 1972. Die europäischen Meeresschnecken (Opisthobranchia mit Pyramidellidae; Rissoacea). Vom Eismeer bis Kapverden, Mittelmeer und Schwarzes Meer: I-XII, 1-327. Stuttgart.
- , 1982. Die europäischen Meeres-Gehäuseschnecken (Prosobranchia): I-XII, 1-539. Stuttgart, New York.
- PALLARY, P., 1906. Addition à la faune malacologique du Golfe de Gabès. — J. Conchyl. Paris 54: 77-124.
- , 1912. Sur la faune de l'ancienne lagune de Tunis. — Bull. Soc. Hist. nat. Afrique Nord 9: 1-14.
- PHILIPPI, R.A., 1844. Enumeratio molluscorum Siciliae 2: I-IV, 1-303. Halle.
- , 1846. Diagnoses testaceorum quorundam novorum. — Zeitschr. Malakozool.: 97-106.
- PIANI, P., 1980. Catalogo dei molluschi conchiferi viventi nel Mediterraneo. — Boll. malac. 16: 113-220.
- RÉCLUZ, C.A., 1843. Catalogue descriptif de plusieurs nouvelles espèces de coquilles de France. — Rev. zool. Soc. Cuv. 6: 5-12.
- RÉQUIEN, E., 1848. Catalogue des coquilles de l'île de Corse: I-XII, 13-110. Avignon.
- SANDRI, G.B. & F. DANILLO, 1856. Elenco nominale dei gasteropodi testacei marini raccolti nei dintorni di Zara, e determinati dal Sig. Giovanni Battista Sandri e dal Prof. Dr. Francesco Danilo. [Non vidi; see MIENIS, H.K., 1984].
- SCACCHI, A., 1836. Catalogus conchyliorum regni Neapolitani: 1-18. Naples.
- SCHWARTZ VON MOHRENSTERN, G., 1863. Ueber die Familie der Rissoiden. — Denkschr. Akad. Wiss. Wien: 1-56.
- VERDUIN, A., 1976. On the systematics of Recent *Rissoa* of the subgenus *Turboella* Gray, 1847, from the Mediterranean and European Atlantic coasts. — Basteria 40: 21-73.
- , 1982. On the taxonomy and variability of Recent European and North African marine species of the subgenus *Rissostomia* Sars, 1878, of the genus *Rissoa* Desmarest, 1814 (Mollusca, Gastropoda, Prosobranchia). — Basteria 45: 143-166.

SAMENVATTING

Over de taxonomie en de variabiliteit van recente Europese en Noordafrikaanse soorten van de subgenera *Apicularia* en *Goniosoma* van het geslacht *Rissoa*

Bij het ordenen van het aan deze revisie ten grondslag liggende materiaal bleken de afmetingen van de topwinding weer van veel belang. Voorts werd aangetoond dat *R. auriscalpium*, typesoort van het subgenus *Goniosoma* Villa, 1841, zeer nauw verwant is met soorten als *R. guerinii*, *R. decorata* en andere.

Soorten met kleine afmetingen van de topwinding ($D_0 + 72d < 0,235 \text{ mm}$, zie fig. 2) zijn:

— *R. auriscalpium* (L., 1758), herkenbaar aan de slanke, onopvallend gekleurde schelp met verwijde mond; zeer variabel wat betreft lengte, slankheid en beribbing. Spoelt min of meer algemeen aan in het westelijk bekken van de Middellandse Zee, de Adriatische Zee, en de Noordafrikaanse kust tot Benghazi.

— *R. guerinii* Récluz, 1843, met 8-11, zelden 12 ribben per winding, vaak min of meer opvallend gekleurd en met de bovenste winding zelden kleurloos of wit. In Bretagne komen geheel witte exemplaren voor, en kunnen de afmetingen van de topwinding wat groter zijn, zie fig. 2. Spoelt in grote aantallen aan van Zuid-Engeland tot Sicilië.

— *R. similis* Scacchi, 1836, met 11, 5-14 langsribben per winding (soms echter glad of met zeer slecht ontwikkelde ribben), en met de topwindingen gewoonlijk geheel kleurloos of wit, behoudens iets van bruin of violet op de eerste halve winding. Spoelt in grote getale aan van Zuid-Portugal tot Israël.

— *R. decorata* Philippi, 1846, een sterk op *R. guerinii* gelijkende, maar slankere en intenser gekleurde soort, die beperkt lijkt tot de Adriatische Zee.

Soorten met grote afmetingen van de topwinding ($D_0 + 0,72d > 0,225$ mm) zijn:

— *R. lia* (Monterosato, 1884) met de ondersoort *torquilla* Pallary, 1912. *R. l. lia* is een zeer variabele ondersoort waarvan sommige schelpen op *R. guerinii* lijken, andere op *R. similis* of *R. scurra*. Weer andere vertonen een geheel eigen karakter. *R. l. lia* spoelt in grote getale aan in vrijwel de gehele Middellandse Zee en de Adriatische Zee; ook bekend van de Canarische eilanden. *R. l. torquilla* bezit geen gepuncteerde spiraalstriae, en lijkt beperkt tot Tunesië. Echt verse exemplaren van deze ondersoort heb ik niet gezien.

— *R. scurra* (Monterosato, 1917) is een kleine (hoogstens 3,5 mm lange), enigszins op *R. similis* gelijkende, soort uit het oostelijk bekken van de Middellandse Zee en de Adriatische Zee. Verschilt van *R. lia* door de duidelijk minder gezwollen nucleus (fig. 1) van de topwinding, die vaak ook groter is ($D_0 + 0,72d > 0,25$ mm). Spoelt min of meer talrijk aan.

— *R. aartseni* nom. nov. voor *R. monterosatoi* Pallary, 1906, non Fischer, 1877, is een soort die beperkt lijkt tot Tunesië. Gebleekte exemplaren van onduidelijke ouderdom hebben vaak wat kleinere afmetingen van de topwinding (fig. 2), en missen veelal de gepuncteerde spiraalstriae. Van *R. lia torquilla* zijn deze gebleekte exemplaren het best te onderscheiden aan de *auriscalpium*-achtige mond en de vaak wat grotere slankheid. De verschillen zijn soms echter minimaal.

— *R. italiensis* sp. n. De soort lijkt veel op *R. auriscalpium*, doch is in het geheel niet transparant. Verschilt van *R. aartseni* door de vlakke ribben, die zelden meer dan vier windingen bedekken en die doorlopen tot dicht bij de labiale rib.

— *R. panhormensis* sp. n. Een op *R. guerinii* gelijkende soort met slechts 5-6½ ribben per winding. Alleen bekend van één monster van Palermo, Sicilië.

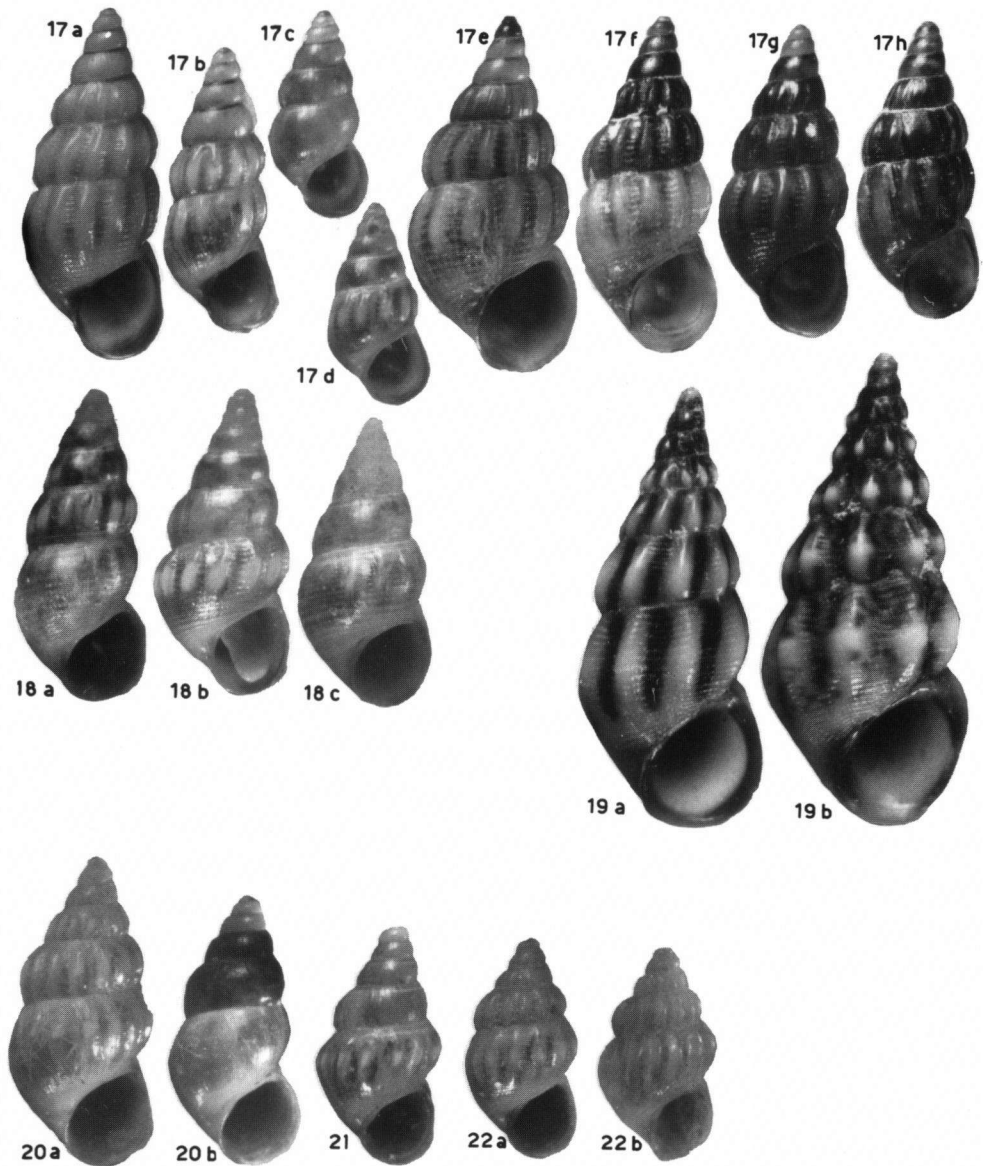
— *R. rodhensis* sp. n. Een dubbelganger van *R. auriscalpium*. Verschilt van *R. italiensis* door de doorzichtigheid, de grotere variatie van de lengte, en de ribben die slecht ontwikkeld zijn, vaak slechts enkele windingen bedekken of zelfs geheel ontbreken. Bekend uit aanspoelsel van enkele plaatsen in het oostelijk bekken van de Middellandse Zee en de zuidelijke Adriatische Zee.

Sample no.	Label	Colln.	Precise locality	Number of shells measured
1	Rissoa Guerini Recl./Rochebonne/dd. 16-IX.05, with additional labels: Algues des mares/VII-IX.12 and: Corallines/28-VIII.12	KBIN-D	Suburb E. of St. Malo, NE. Bretagne, France	19
	Rissoa Guerini Recl. var. <i>conspersa</i> Dautz. & Durouchoux/Rochebonne/dd. 16-IX.05, with additional labels as mentioned above plus a label: dd. 30.8.01	KBIN-D	"	18
	Rissoa Guerini Recl. var. <i>bipartita</i> Dz. & Dur./Rochebonne/dd. 16.IX.05, with additional labels: Algues des mares/VII-IX.12 and: Corallines/28.VIII.12	KBIN-D	"	9
	Rissoa Guerini Recl. var. <i>albina</i> Dautz./Rochebonne/dd. 16.IX.05, with additional labels as mentioned above	KBIN-D	"	10
2	Rissoa guerinii Récluz/Sezimbra 20-7-1977/ no. 215	Vrd	30 km S. of Lisboa, Portugal	26
3	Rissoa guerinii Récluz/Getarès 3-7-1972/ no. 0063	Vrd	A few km S. of Algeciras, S. Spain	74

4	Rissoa lia (Monterosato)/Getarès 3-7-1972/ no. 0066	Vrd	"	36
5	Rissoa lia (Monterosato)/Sausset les Pins 5-6-1961/no. 0018	Vrd	35 km W. of Marseille	28
6	Rissoa lia (Monterosato)/Trapani 9-9-1969/ no. 0163	Vrd	W. Sicily	52
7	Rissoa torquilla Monter. in Pallary/Syntypes/ Sfax/Bull. Soc. Hist. Nat. Afrique Nord, 4(9): 9, fig. 19, 25, 26, 27; 1912	MHNP-P	E. Tunisia	36
8	Rissoa monterosatoi Pallary/Syntypes/Sfax/ J. Conchyl., 1906, 54: 98, pl. 4, fig. 12-13	MHNP-P	"	4
9	Rissoa monterosatoi Pallary/Sfax/no. 9178	Aar	"	58
10	Rissoa monterosatoi/Eponges	KBIN-D	?	14
11	Rissoa decorata Philippi/Punta Mika 8-6-1962 no. 0132	Vrd	A few km NW. of Zadar, Yugoslavia	16
12	Rissoa auriscalpium L./Roussillon/Coll. Bucquoy	KBIN-D	S. France	39
Fig. no.				
9	Rissoa similis Scacchi/Balestrate 9-6-1969/ no. 0005	Vrd	40 km W. of Palermo, Sicily	
10	Rissoa similis Scacchi/Srebreno 12-6-1962/ no. 0011	Vrd	10 km S. of Dubrovnik, Yugoslavia	
11	Rissoa similis Scacchi/Biograd 8-6-1962/ no. 0058	Vrd	25 km SE. of Zadar, Yugoslavia	
12	Rissoa scurra (Monterosato)/Ródhos haven 20-7-1974/no. 0227	Vrd	Harbour of Ródhos town, Greece	
13	Rissoa similis Scacchi/Termini 7-9-1969/ no. 0001	Vrd	40 km E. of Palermo, Sicily	180
14	Rissoa similis Scacchi/Trapani 9-9-1969/ no. 0156	Vrd	W. Sicily	180
15	Rissoa similis Scacchi/Benidorm 5-1966/ no. 0064	Vrd	42 km NE. of Alicante, E. Spain	180
17	Rissoa similis Scacchi/Agrópolo 4-9-1969 no. 0001	Vrd	40 km SE. of Salerno, Italy	
18	Rissoa similis Scacchi/Lagos 22-7-1977/ no. 0111	Vrd	S. Portugal	
19	See sample no. 11			
20	Rissoa scurra (Monts.)/Gandoli 16-9-1969/ no. 0108	Vrd	10 km S. of Táranto, S. Italy	
21	Rissoa scurra (Monts.)/Naxos juli-aug. 1972	Cad	Greece	
22	Rissoa (Apicularia) scurra Monts. mss./ Puntebianche (Dalmatie)/Monterosato 2-III-17	KBIN-D	NW. end of Dugi Otok, Yugoslavia	
23	See sample no. 2			
24	See sample no. 1			
25	See sample no. 6			
26	See sample no. 5			
27	Rissoa lia (Monts.)/El Djemila (La Madrague)/ no. 10544	Aar	10 km W. of Alger, Algeria	
28	See sample no. 4			
29	Rissoa lia (Monts.)/Hierro, playa de Arenas Blancas, Can. Eil./4-1970	RGM	Canary Islands	

30	See sample no. 7		
31	See sample no. 8		
32	See sample no. 9		
33	See sample no. 10		
34	<i>Rissoa italiensis</i> Verduin/midden zuidkust van Sicilië, 50-60 m/no. 13580	Aar	Dredged at a depth of 50-60 m at the centre of the south coast of Sicily
35	<i>Rissoa guerini</i> Recl./Palerme/Lemoro Monts.	KBIN-D	Sicily
36	See sample no. 12		
37	<i>Rissoa auriscalpium</i> (L.)/N. Afrika, Cyrenaica, Bengasi, rotsstrand met zandige plekken/Coll. C. Beets, Nov. 1951/Reg. no. 1381	RMHN	N. Libya
38	<i>Rissoa rodhensis</i> Verduin/Ródhos haven ZO, 24-7-1974/no. 0142	Vrd	Harbour of Ródhos town, Greece

Table 1. Registration of the samples measured and the shells figured. RGM = Rijksmuseum van Geologie en Mineralogie, Leiden.

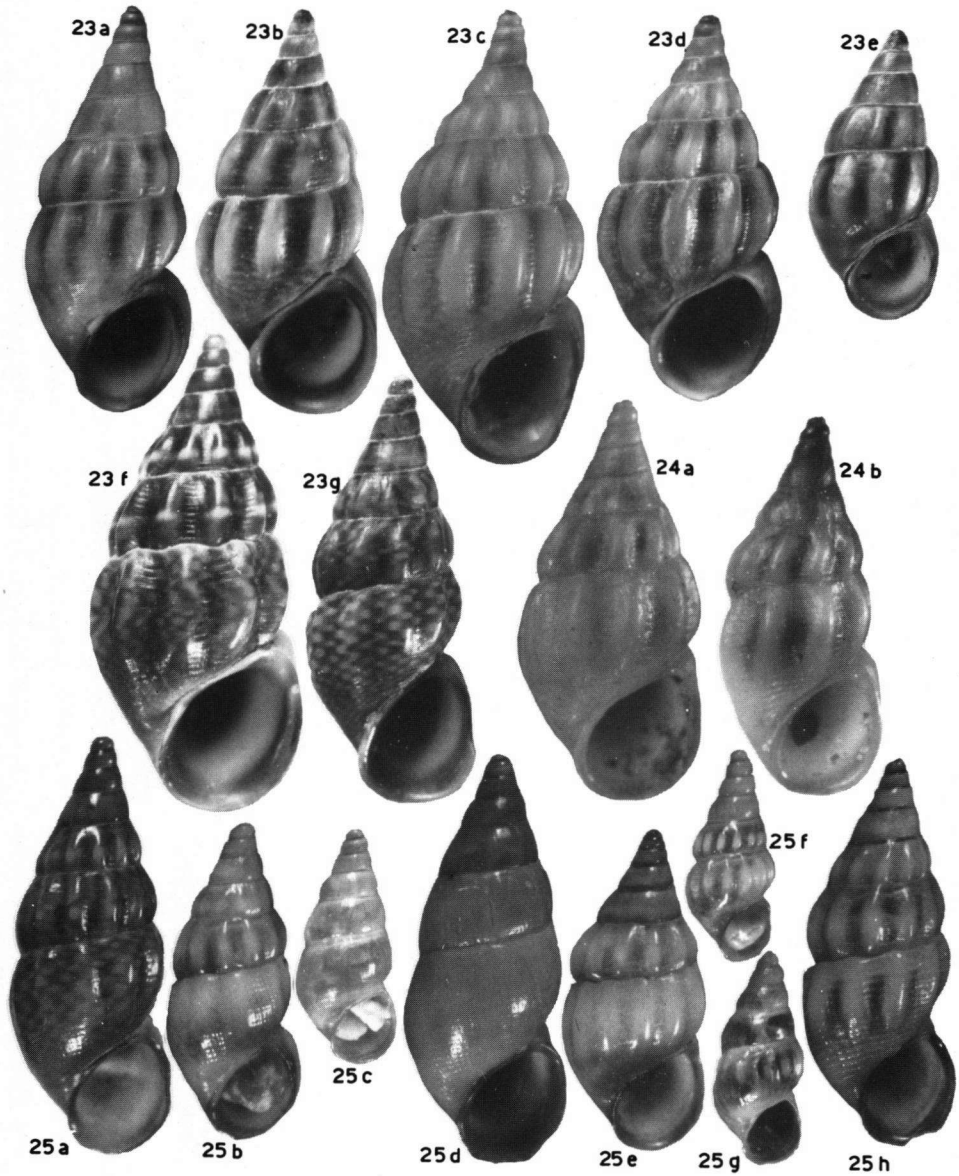


Figs. 17-18. *R. similis*. 17, Agrópoli, Italy (e-h: with brown whorls). 18, Lagos, S. Portugal.

Fig. 19. *R. decorata* from Punta Mika, Jugoslavia.

Figs. 20-22. *R. scurra*. 20, Gandoli, SE. Italy. 21, Naxos, Greece. 22, Puntebianche, Dalmatia (b: lectotype).

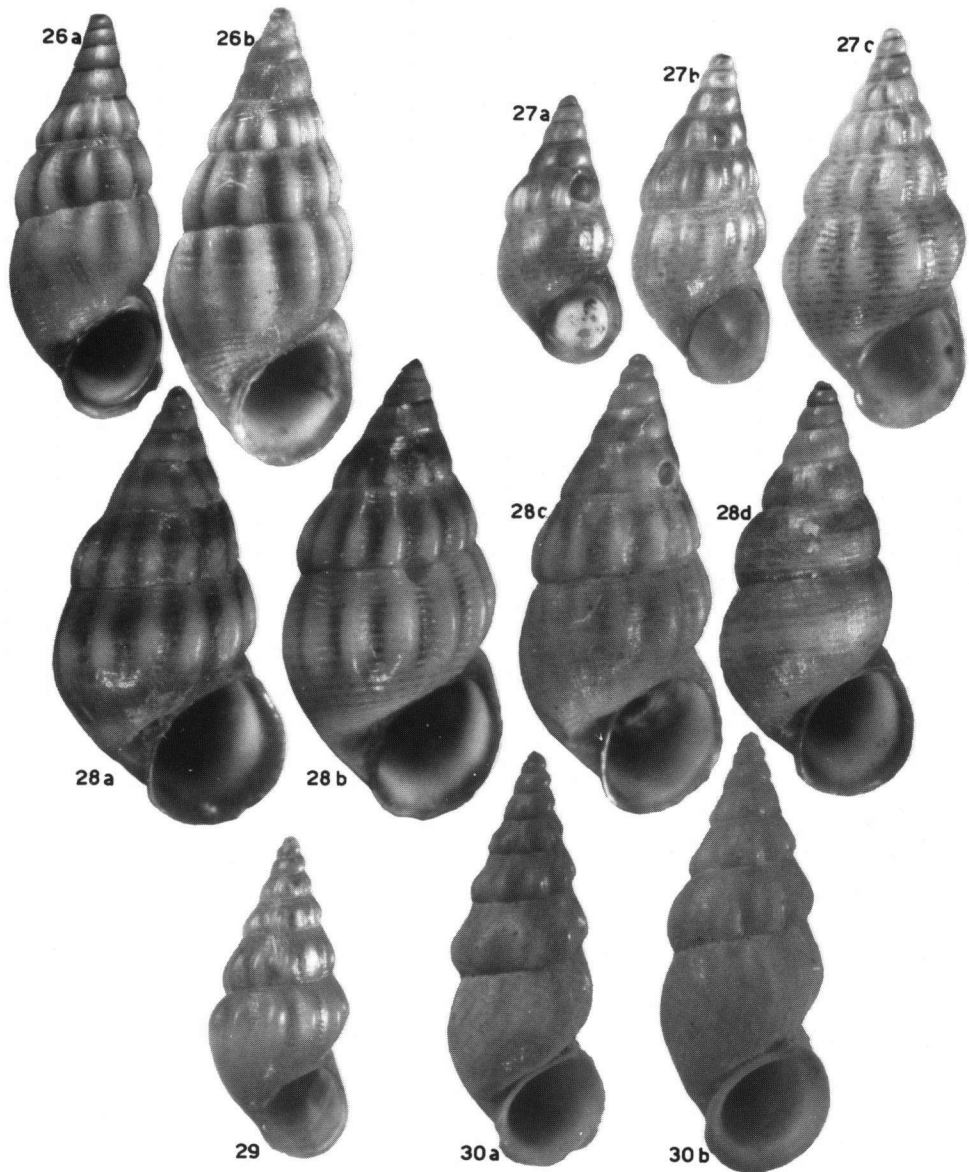
Magnification of all shells 12 ×. See also table 1.



Figs. 23-24. *R. guerinii*. 23, Sezimbra, SW. Portugal (a-e: normal colour var., f-g: colour var. *conspersa*). 24, Rochebonne, NE. Bretagne, France (a: colour var. *albina*, b: colour var. *bipartita*).

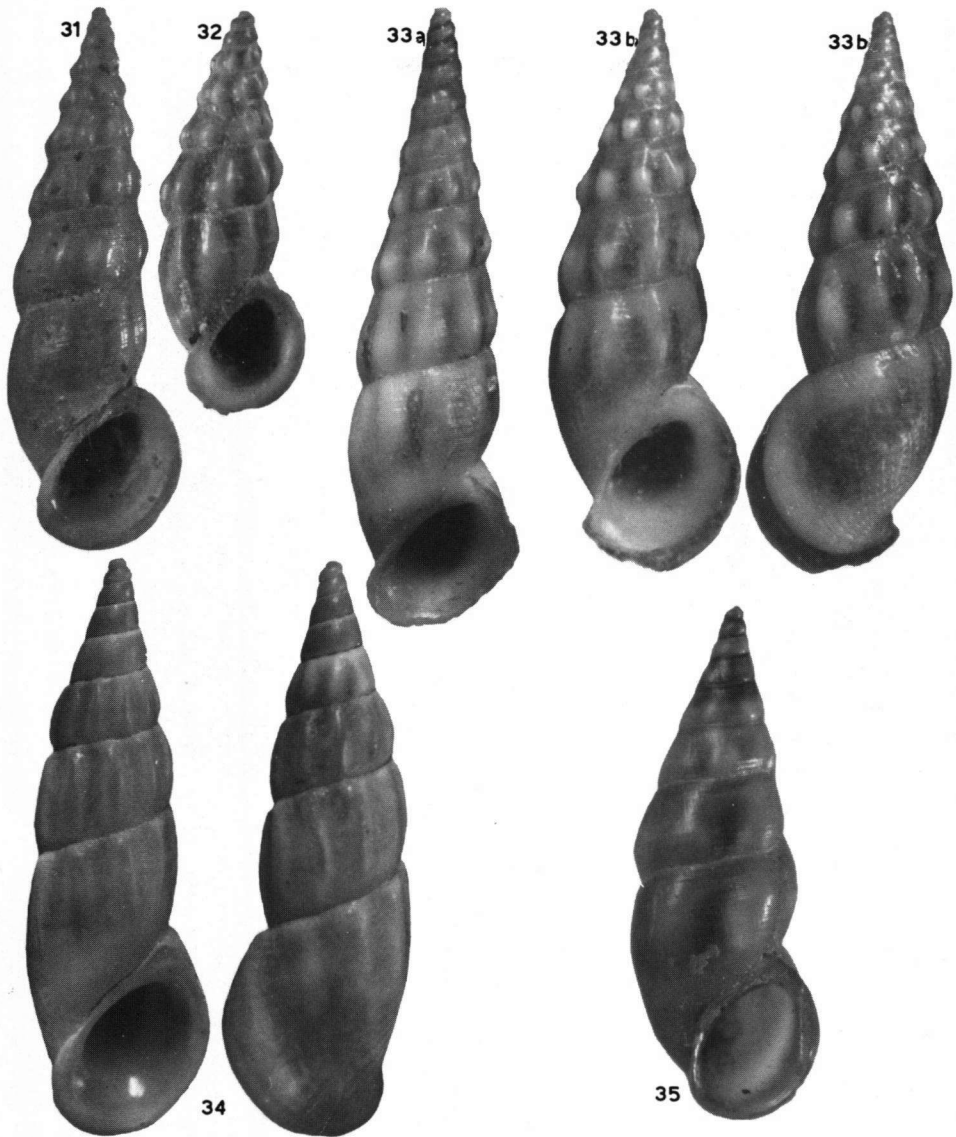
Fig. 25. *R. lia lia* from Trapani, W. Sicily.

Magnification of all shells 12 ×. See also table 1.



Figs. 26-29. *R. lia lia*. 26, Sausset les Pins, SE. France. 27, El Djemila (La Madrague), Algeria. 28, Getarès, S. Spain. 29, Hierro, Canary Islands.

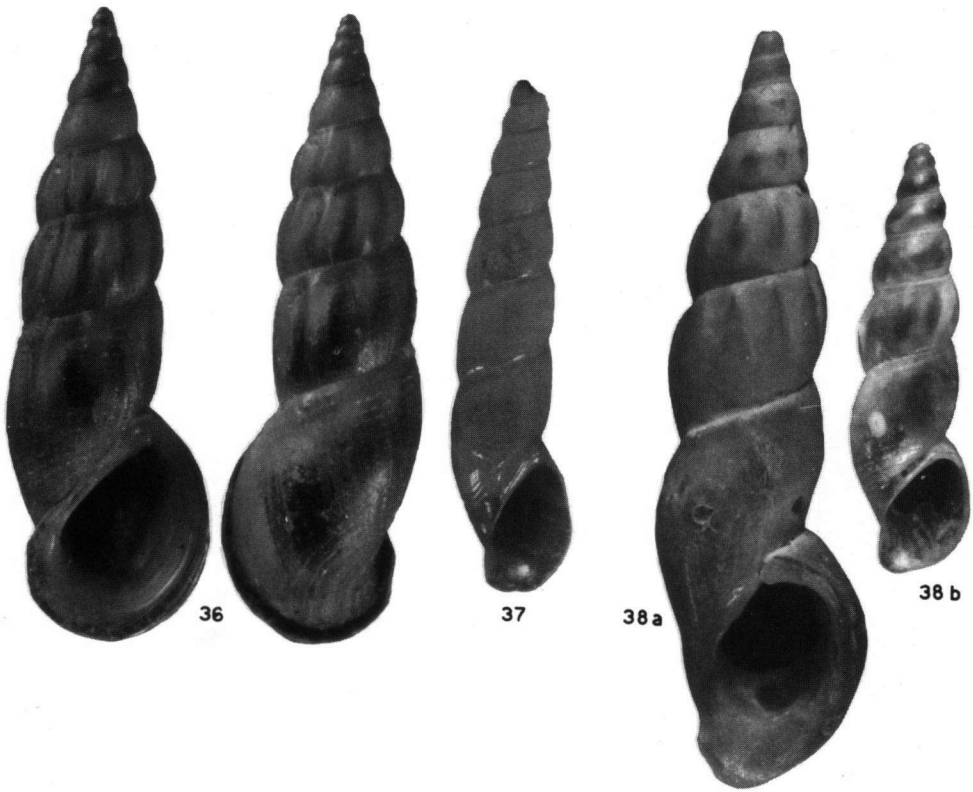
Fig. 30. *R. lia torquilla* from Sfax, Tunisia (a: lectotype).
Magnification of all shells 12 ×. See also table 1.



Figs. 31-33. *R. aartseni*. 31, lectotype from Sfax, Tunisia. 32, Sfax, Tunisia. 33, fresh shells, probably from the Golfe de Gabès, Tunisia.

Fig. 34. *R. italiensis* from S. Sicily, holotype.

Fig. 35. *R. panhormensis* from Palermo, N. Sicily, holotype.
Magnification of all shells 12 ×. See also table 1.



Figs. 36-37. *R. auriscalpium*. 36, neotype from the Roussillon, S. France. 37, Benghazi, N. Libya
Fig. 38. *R. rodhensis* from Ródhos, Greece (b: holotype).
Magnification of all shells 12 ×. See also table 1.