BASTERIA, 62: 69-115, 1998

The Rissoidae of the CANCAP expeditions, I: the genus Alvania Risso, 1826 (Gastropoda Prosobranchia)

CANCAP-Project contribution No. 113

H. J. HOENSELAAR & J. GOUD

Nationaal Natuurhistorisch Museum, P.O. Box 9517, NL 2300 RA Leiden, The Netherlands

The *Alvania* collected during the CANCAP-expeditions are listed. The following 19 species are described as new: *A. internodula* spec. nov., *A. nonsculpta* spec. nov. and *A. zoderi* spec. nov. from the Azores; *A. microstriata* spec. nov. from Madeira; *A. dijkstrai* spec. nov. from the Selvagens Islands; *A. joseae* spec. nov., *A. slieringsi* spec. nov. and *A. renei* spec. nov. from the Canary Islands; *A. lavaleyei* spec. nov., *A. rykeli* spec. nov., *A. corneti* spec. nov., *A. multinodula* spec. nov., *A. jacquesi* spec. nov., *A. franseni* spec. nov., *A. denhartogi* spec. nov., *A. paatsi* spec. nov., *A. vanegmondi* spec. nov., *A. hoeksemai* spec. nov. and *A. tenhovei* spec. nov. from the Cape Verde Islands.

Key words: Mollusca, Mesogastropoda, Rissoidae, *Alvania*, taxonomy, East Atlantic.

INTRODUCTION

During the CANCAP-expeditions, carried out between 1976 and 1986, more than 1500 marine bottom samples were taken. For details concerning the research programme, the institutes involved, the methods used, equipment and the exact localities of the sampling stations, we refer to Van der Land (1987). The sampling methods used during the field work (mainly by Van Veen grab) were not very appropriate to collect live rissoid snails. Of over ten thousand rissoid specimens, collected from 400 sediment samples, not more than 10 were captured as living animals.

We have the impression that many species, originally described from the bathyal region (100-3000 m), also occur in the circalittoral zone (50-100 m). For example, *Alvania platycephala* Dautzenberg & Fischer, 1896, described from 1385 m, was recorded from between 65-620 m. Some so-called bathyal species were even collected in the infralittoral zone (0-50 m), where they might live as well. *Alvania tarsodes* (Watson, 1886), for example, reported from 480-1385 m (Bouchet & Warén , 1993: 643), was found between 35-620 m. The very rare *Alvania lamellata* Dautzenberg, 1889, hitherto known from only the type-material, collected at 1287 m, was encountered between 245-620 m. See also table 1 for the geographical distribution and depth range of the species.

We frequently refer to Bouchet & Warén (1993) for detailed information about type material, type localities and distribution, often illustrated by good SEM pictures. In those cases we only give additional information.

To count the number of protoconch whorls, we use a refinement of the methods of Warén (1974: 122) and Verduin (1984: 38), which is explained in the next paragraph. The protoconch diameters given with the newly described species are indications only (three or four randomly selected specimens of each species were measured). The diameters of conspecific specimens can differ considerably, however. The late Vera Fretter

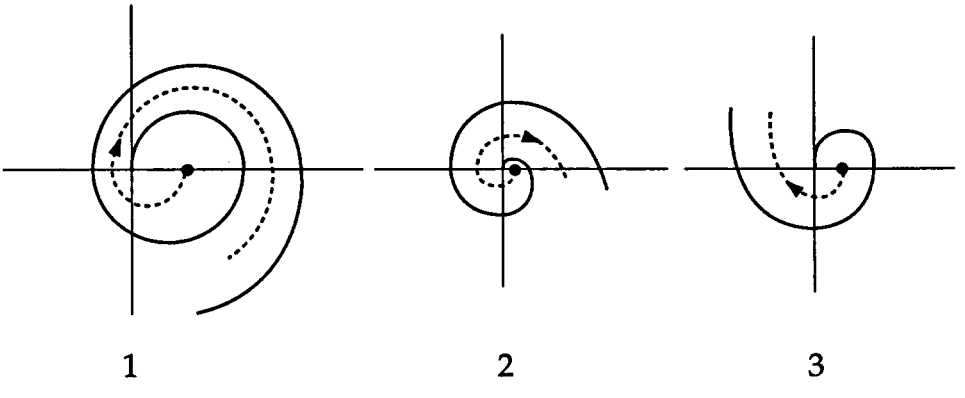
(in litt.) came to the same conclusion for *Caecum* species; she indicated the broad variation in dimensions of the eggs, which may be reflected in the dimensions of the protoconchs. Mr. D. Hoeksema obtained similar results while measuring more than 100 protoconchs of *Caecum* spec. (personal communication). We suppose that the same might hold for rissoid shells. Warén, in a recent study (1996), gives figures of diameters and the number of whorls in protoconchs of *Rissoa* and *Pusillina* species, which may vary considerably.

At the end of each listing of material, the depth range is summarized. The minimum depth is of course a much more important figure then the maximum value, because empty shells will in general have the tendency to roll down. The depth range does not show where the species in question is living, but indicates only that we encountered (empty) shells in CANCAP material within that zone. A depth indicated as '0 m' means that the specimens were collected on the shore.

Abbreviations used: NNM = Nationaal Natuurhistorisch Museum, Leiden (formerly RMNH, Leiden); HJH = Colln. H. J. Hoenselaar; Sta. = Station.

COUNTING THE PROTOCONCH WHORLS

Warén (1974) and Verduin (1984) based their method of counting the protoconch whorls on the mathematical idea of the topmost part of the cone, i.e. the beginning of the initial whorl, being bordered by a line curved as a half circle. In many cases such a line is visible indeed on the apex of the shell. In those cases the interpretation is unambiguous, e.g. in shells of *Alvania electa* Monterosato, 1874 (fig. 1). The difficulties start when the visible part of the initial whorl is not bordered by a mathematical half



Figs. 1-3. Protoconch whorl count. 1.Counting the protoconch whorls after the concept of Warén (1974) and Verduin (1984). The beginning of the initial whorl being bordered by a line curved as a half circle. This situation can be found for instance in *Alvania electa*; 2. Protoconch of *A. multinodula* spec. nov. The beginning of the initial whorl not being half a circle makes the starting point for counting unclear. For this situation we draw a tangent along the initial part of the suture, a perpendicular is erected on this tangent through the starting point of the suture. Counting starts from this perpendicular; 3. Protoconch of *A. dijkstrai* spec.nov. For the counting situation, see fig. 2.

circle, as is the matter with, for instance, *A. multinodula* spec. nov. (fig. 2) and *A. dijkstrai* spec. nov. (fig. 3). In those cases, where to start counting the protoconch whorls is not clear. To avoid this problem as much as possible, a tangent is drawn along the initial part of the suture (figs. 1-3), a perpendicular is erected on this tangent through the starting point of the suture. The whorls are then counted as indicated in figs. 1-3. In doing so, the use of an ocular with two perpendicular intersecting lines may be very helpful. Place the intersecting point on the starting point of the suture, place one of the lines tangentially along the first part of suture, and count the whorls as shown in figs. 1-3.

Our method of counting the protoconch whorls may also be problematic, due to the fact that protoconchs of different specimens of the same species may vary because of the grade of intorsion of the nucleus.

THE GENUS ALVANIA S.S.

Alvania abstersa Van der Linden & Van Aartsen, 1994

Alvania obsoleta Van der Linden, 1993: 79-82, figs. 1-3.
Alvania abstersa Van der Linden & Van Aartsen, 1994: 2.

Material. – AZORES: Sta. 5.033, 35 m/1; Sta. 5.K01, 0 m/2; Sta. 5.K10, 0 m/20 paratypes (NNM 56907); Sta. AZO.005, 0 m/26 paratypes (NNM 56905)+ 5 sp.; Sta. AZO.021, 0 m/holotype (NNM 56776) and 56 paratypes (NNM 56904); Sta. AZO.033, 0 m/ 3 paratypes (NNM 56906).
Depth range 0-35 m.

Alvania adiaphoros Bouchet & Warén, 1993

Alvania adiaphoros Bouchet & Warén, 1993: 652, figs. 1485-1487, 1529.

Material. – AZORES: Sta. 5.012, 480 m/3; Sta. 5.051, 620 m/> 10; Sta. 5.122, 400m/> 10; Sta. 5.126, 300 m/1; Sta. 5.148, 190 m/2; Sta. 5.176, 142 m/1.
Depth range 142-620 m.

Alvania adinogramma Bouchet & Warén, 1993

Alvania adinogramma Bouchet & Warén, 1993: 639, figs. 1430-1432, 1449.

Material. — AZORES: Sta. 5.051, 620 m/7; Sta. 5.126, 300 m/3.
Depth range 300-620 m.

Remarks. — Although the pattern of microstriae seems to be finer than that in the specimens figured by Bouchet & Warén (1993: figs. 1430-1432), we consider this material to belong to the same species. As is seen in other species, e.g. *A. tarsodes* (c.f. Bouchet & Warén, 1993: figs. 1450, 1452), the number of striae may vary greatly.

Alvania angioyi Van Aartsen, 1982

Alvania angioyi Van Aartsen, 1982: 4, pl. 21.
Alvania angioyi, Gofas, 1990: 112-114, figs. 7, 54-57.

Material. – AZORES: Sta. 5.006, 35 m/>10; Sta. 5.008, to 75 m/>10; Sta. 5.017, 88 m/>10; Sta. 5.026, 30 m, 5; Sta. 5.033, 35 m/4; Sta. 5.036, 1; Sta. 5.050, 55 m/>10; Sta. 5.051, 620 m/>10; Sta. 5.053, 50 m/3; Sta. 5.054, 110 m/>10; Sta. 5.064, 60-80 m/5; Sta. 5.068, 210 m/7; Sta. 5.079, 110 m/3; Sta. 5.080, 146 m/5; Sta. 5.082, 170 m/6; Sta. 5.083, 177 m/>10; Sta. 5.084, 188 m/>10; Sta. 5.092, 70 m/>10; Sta. 5.093, 92 m/>10; Sta. 5.094, 90 m/>10; Sta. 5.095, 70 m/>10; Sta. 5.096, 52 m/7; Sta. 5.100, 55 m/8; Sta. 5.102, 65 m/>10; Sta. 5.111, 140 m/4; Sta. 5.112, 85 m/>10; Sta. 5.113, 45 m/>10; Sta. 5.130, 80-90 m/>10; Sta. 5.132, 168 m/>10; Sta. 5.135, 180 m/.....; Sta. 5.136, 95 m/3; Sta. 5.138, 70 m/>10; Sta. 5. 139, 77 m/>10; Sta. 5.140, 88 m/>10; Sta. 5.144, 54 m/6; Sta. 5.146, 100 m/5; Sta. 5.150, 200 m/>10; Sta. 5.158, 46 m/9; Sta. 5.159, 52 m/>10; Sta. 5.160, 60 m/>10; Sta. 5.164, 60 m/6; Sta. 5.176, 142 m/9; Sta. 5.190, 72 m/>10; Sta. 5.K01, 0 m/>10; Sta. 5.K10, 0 m/2; AZO.016, 0 m., >10; Sta. AZO.020, 4 m/>10; Sta. AZO.021, 0 m/6; Sta. AZO.022, 0 m/>10; AZO.024a, 0 m., >10; Sta. AZO.37a, 0 m/9.
Depth range 0-620 m.

Alvania aurantiaca (Watson, 1873)

Rissoa aurantiaca Watson, 1873: 367, pl. 34 fig. 4. (fig. 3. in error, corrected by Watson, 1886: 598)
Alvania aurantiaca, Moolenbeek & Hoenselaar, 1989: 223, 224, figs. 13-14, 36-38.
Alvania gomezi Rolan, 1987: 9-10, fig. 1.

Material. — MADEIRA ARCHIPELAGO: Sta. 1.072, 80 m/4; Sta. 3.038, 86 m/1.
Depth range 80-86 m.

Remarks. — In the original description, Watson (1873: 367) erroneously referred to fig. 3 instead of fig. 4. This error has been copied many times by several authors. Watson (1886: 598) corrected this indirectly by writing "*Rissoa striata*, Watson, Madeiran Rissoae, Proc. Zool. Soc. Lond., 1873, p. 368, pl. XXXIV, fig. 3 (not 4)". This statement left fig. 4 as *Rissoa aurantiaca*. However, Watson (1898: 312) again referred to his publication of 1873, pl. XXXIV, fig. 3 as *Rissoa striata* (var. *lirata*), while in the same 1898 publication (p. 307) he already indicated fig. 3 as *Rissoa* (*Alvania*) *aurantiaca* and so completed the confusion.

Alvania canariensis (d'Orbigny, 1839)

Rissoa canariensis d'Orbigny, 1839: 78, pl. 6 figs. 5-7.
Alvania canariensis, Moolenbeek & Hoenselaar, 1989: 216-217. figs. 1-2, 15-17.

Material. — MADEIRA ARCHIPELAGO: Sta. 1.020, 144 m/2; Sta. 1.026, 101 m/1; Sta. 1031, 1085 m/1; Sta. 1.072, 80 m/1; Sta. 4.K27, 0 m/>10. SELVAGENS ARCHIPELAGO: Sta. 3.061, 84 m/>10; Sta. 3.062, 99 m/>10; Sta. 3.065, 100 m/>10; Sta. 3.068, 310 m/8; Sta. 3.070, 645 m/>10; Sta. 3.072, 830 m/>10; Sta. 3.080, 65 m/>10; Sta. 3.083, 192 m/2; Sta. 3.087, 322 m/>10; Sta. 4.103, 425 m/>10; Sta. 4K06, 0-5 m/5; Sta. 4.K17, 0-3 m/>10. CANARY ISLANDS: Sta. 2.003, 140-200 m/3; Sta. 2.012, 170 m/1; Sta. 2.013, 225 m/2; Sta. 2.024, 35-80 m/2; Sta. 2.030, 28 m/>10; Sta. 2.032, 4 m/>10; Sta. 2.035, 90 m/3; Sta.

2.043, 47 m/3; Sta. 2.064, 77 m/3; Sta. 2.073, 96 m/6; Sta. 2.075, 550 m/>10; Sta. 2.078, 790 m/1; Sta. 2.080, 980 m/>10; Sta. 2.085, 500-700 m/1; Sta. 2.103, 240 m/>10; Sta., 2.114, 340-480 m/>10; Sta., 2.120, 350-400 m/>10; Sta. 2.129, 900 m/1; Sta. 2.D01, 10-15 m/1; Sta. 2.K01, 0 m/>10; Sta. 2.K17, 0 m/1; Sta. 3.K08, 0 m/3; Sta. 4.016, 16 m/5; Sta. 4.020, 31-34 m/>10; Sta. 4.022, 37 m/>10; Sta. 4.024, 39 m/>10; Sta. 4.027, 27-30 m/>10; Sta. 4.029, 30-31 m/>10; Sta. 4.034, 33-34 m/1; Sta. 4.036, 33 m/>10; Sta. 4.038, 82 m/>10; Sta. 4.041, 120 m/>10; Sta. 4.044, 150 m/>10; Sta. 4.067, 47-50 m/5; Sta. 4.073, 48 m/>10; Sta. 4.082, 450-480 m/1; Sta. 4.088, 51 m/>10; Sta. 4.110, 110-180 m/>10; Sta. 4.112, 245-141 m/>10; Sta. 4.115, 300 m/>10; Sta. 4.117, 503 m/>10; Sta. 4.124, 800 m/2; Sta. 4.137, 50 m/2; Sta. 4.138, 75 m/>10; Sta. 4.158, 350-250 m/5; Sta. 4.K01, 0-5 m/>10; Sta. 4.K07, 0 m/5.

Depth range 0-1085 m.

Alvania cancapae Bouchet & Warén, 1993

Alvania cancapae Bouchet & Warén, 1993: 639, 640, figs. 1433-1435, 1451.

Material. — MADEIRA ARCHIPELAGO: Sta.1.085, 150 m/1. CANARY ISLANDS: Sta. 2.010, 100-300 m/3; Sta. 2.065, 670 m/1; Sta. 2.074, 530 m/12; Sta. 2.075, 550 m/4; Sta. 2.085, 500-700 m/6 (holo- & paratypes); Sta. 2.114, 340-480 m/2; Sta. 2.126, 330-430 m/1; Sta. 2.157, 650 m/1; Sta. 4.048, 215-325 m/1; Sta. 4.049, 313 m/4; Sta. 4.080, 200-220 m/>10; Sta. 4.082, 450-480 m/9; Sta. 4.116, 420 m/1; Sta. 4.117, 503 m/3; Sta. 4.156, 310 m/4.

Depth range 220-700 m.

Alvania cancellata (Da Costa, 1778)

Turbo cancellatus Da Costa, 1778: 104, pl. 8 figs. 6, 9.
Alvania cancellata, Gofas, 1990: 104-105, figs. 3, 34-38.

Material. — AZORES: Sta. 5.006, 35 m/>10; Sta. 5.008, to 75 m/>10; Sta. 5.020, 240-245 m/5; Sta. 5.035, 5 m/2; Sta. 5.037, 122 m/>10; Sta. 5.038, 38-43 m/2; Sta. 5.039, 43 m/5; Sta. 5.040, 41-47 m/3; Sta. 5.051, 620 m/>10; Sta. 5.058, 117 m/4; Sta. 5.059, 146 m/1; Sta. 5.064, 60-80 m/6; Sta. 5.068, 210 m/>10; Sta. 5.074, 225 m/>10; Sta. 5.077, 56-74 m/4; Sta. 5.078, 77 m/5; Sta. 5.079, 110 m/5; Sta. 5.080, 146 m/3; Sta. 5.081, 162 m/>10; Sta. 5.082, 170 m/>10; Sta. 5.084, 188 m/>10; Sta. 5.088, 50-60 m/1; Sta. 5.091, 33 m/4; Sta. 5.093, 92 m/>10; Sta. 5,098, 40 m/>10; Sta. 5.100, 55 m/5; Sta. 5.102, 65 m/>10; Sta. 5.106, 133 m/.8; Sta. 5.109, 100 m/1; Sta. 5.111, 140, 6; Sta. 5.112, 85 m/6; Sta. 5.113, 45 m/6; Sta. 5.116, 20 m/1; Sta. 5.117, 40-50 m/1; Sta. 5.120, 150 m/4; Sta. 5.128, 90 m/4; Sta. 5.129, 100 m/2; Sta. 5.130, 80-90 m/>10; Sta. 5.133, 75-95 m/>10; Sta. 5.136, 95 m/>10; Sta. 5.138, 70 m/>10; Sta. 5.140, 88 m/7; Sta. 5.144, 54 m/>10; Sta. 5.158, 46 m/>10; Sta. 5.164, 104 m/>10; Sta. 5.190, 104 m/1; Sta. 5.D06, 0-10 m/1; Sta. 5.K02, 0 m/1; Sta. AZO.005, 0 m/3; Sta. AZO.016, 0 m/>10; Sta. AZO.020, 4 m/6; Sta. AZO.022, 0 m/>10; Sta. AZO.033, 0 m/2; Sta. AZO.034, 0 m/6; Sta. AZO.24a, 0 m/2. MADEIRA ARCHIPELAGO: Sta. 1.020, 144 m/2; Sta. 1.021, 228-220 m/1; Sta. 1.026, 101 m/>10; Sta. 1.029, 340 m/9; Sta. 1.040, 56 m/>10; Sta. 1.057, 100-122 m/5; Sta. 1.059, 280-300 m/1; Sta. 1.067, 30 m/>10; Sta. 1.071, 120 m/4; Sta. 1.072, 80 m/>10; Sta. 1.081, 90-102 m/6; Sta. 1.084, 86 m/>10; Sta. 1.086, 360 m/2; Sta. 1.D101, 5-26 m/>10; Sta. 1.D117, to 20 m/>10; Sta. 1.K02, 0-20 m/2; Sta. 1.K08, 0 m/1; Sta. 1.K14, 0 m/2; Sta. 1.K16, 0 m/1, Sta. 3.016, 24 m/>10; Sta. 3.059, 108 m/1; Sta. 4.D16, 5-20 m/4; Sta. 4.K27, 0 m/8. SELVAGENS ARCHIPELAGO: Sta. 3.062, 99 m/1. CANARY ISLANDS: Sta. 2.003, 140-200 m/>10; Sta. 2.012, 170 m/3; Sta. 2.030, 28 m/2; Sta. 2.033, 60 m/1; Sta. 2.034, 90 m/>10; Sta. 2.035, 90 m/>10; Sta. 2.043, 47 m/3; Sta. 2.044, 49 m/2; Sta. 2.064, 77 m/2; Sta. 2.073, 96 m/10; Sta. 2.075, 550 m/>10; Sta. 2.080, 980 m/

1; Sta. 2.084, 370 m/1; Sta. 2.085, 500-700 m/5; Sta. 2.126, 330-430 m/4; Sta. 4.003, 21-24 m/2; Sta. 4.005, 20 m/6; Sta. 4.009, 28-31 m/2; Sta. 4.013, 34-40 m/6; Sta. 4.014, 46-64 m/3; Sta. 4.015, 35-70 m/1; Sta. 4.016, 36 m/3; Sta. 4.020, 31-34 m/2; Sta. 4.022, 37 m/>10; Sta. 4.024, 39 m/>10; Sta. 4.027, 27-30 m/3; Sta. 4.029, 30-31 m/3; Sta. 4.034, 33-34 m/1; Sta. 4.036, 33 m/1; Sta. 4.038, 82 m/>10; Sta. 4.041, 120 m/>10; Sta. 4.044, 150 m/>10; Sta. 4.048, 215-325 m/>10; Sta. 4.067, 47-50 m/4; Sta. 4.068, 74-95 m/1; Sta. 4.070, 41-50 m/7; Sta. 4.073, 48 m/2; Sta. 4.088, 51 m/>10; Sta. 4.089, 45 m/6; Sta. 4.090, 65 m/>10; Sta. 4.091, 55-82 m/6; Sta. 4.092, 92 m/8; Sta. 4.098, 50-70 m/1; Sta. 4.101, 308-330 m/2; Sta. 4.157, 250-200 m/1; Sta. 4.D01, 0 m/1; Sta. 4.D02, to 15 m/5; Sta. 4.K01, 0-5 m/2. WEST AFRICA: Sta. 1.121, 125 m/8; Sta. 1.145, 100 m/1; Sta. 1.146, 105 m/8; Sta. 1.147, 100 m/5; Sta. 3.113, 52 m/2; Sta. 3.159, 50 m/1; Sta. 3.192, 60 m/3; Sta. 3.194, 78 m/1. CAPE VERDE ISLANDS: Sta. 7.080, 74 m/>10.

Depth range 0-1085 m.

Alvania cimicoides (Forbes, 1844)

Rissoa cimicoides Forbes, 1844: 189.

Alvania cimicoides, Bouchet & Warén, 1993: 624, 626, figs. 1381-1385.

Material. — AZORES: Sta. 5.011, 220-290 m/>10; Sta. 5.020, 220-245 m/2; Sta. 5.051, 620 m/>10; Sta. 5.055, 125 m/1; Sta. 5.056, 180 m/1; Sta. 5.068, 210 m/4; Sta. 5.071, 220 m/>10; Sta. 5.073, 245 m/2; Sta. 5.074, 225 m/9; Sta. 5.122, 400 m/>10; Sta. 5.126, 300 m/>10; Sta.5.131, 120-135 m/1; Sta. 5.135, 180 m/4. MADEIRA ARCHIPELAGO: Sta. 1.021, 228-240 m/1. CANARY ISLANDS: Sta. 2.010, 100-300 m/1; Sta. 2.074, 530 m/1; Sta. 2.075, 550 m/3; Sta. 2.085, 500-700 m/1; Sta. 4.080, 200-220 m/1. WEST AFRICA: Sta. 1.121, 228-240 m/>10; Sta. 1.123, 89 m/3; Sta. 1.146, 105 m/7; Sta. 1.147, 100 m/3. CAPE VERDE ISLANDS: Sta. 6.015, about 150 m/3; Sta. 6.024, 540 m/1.

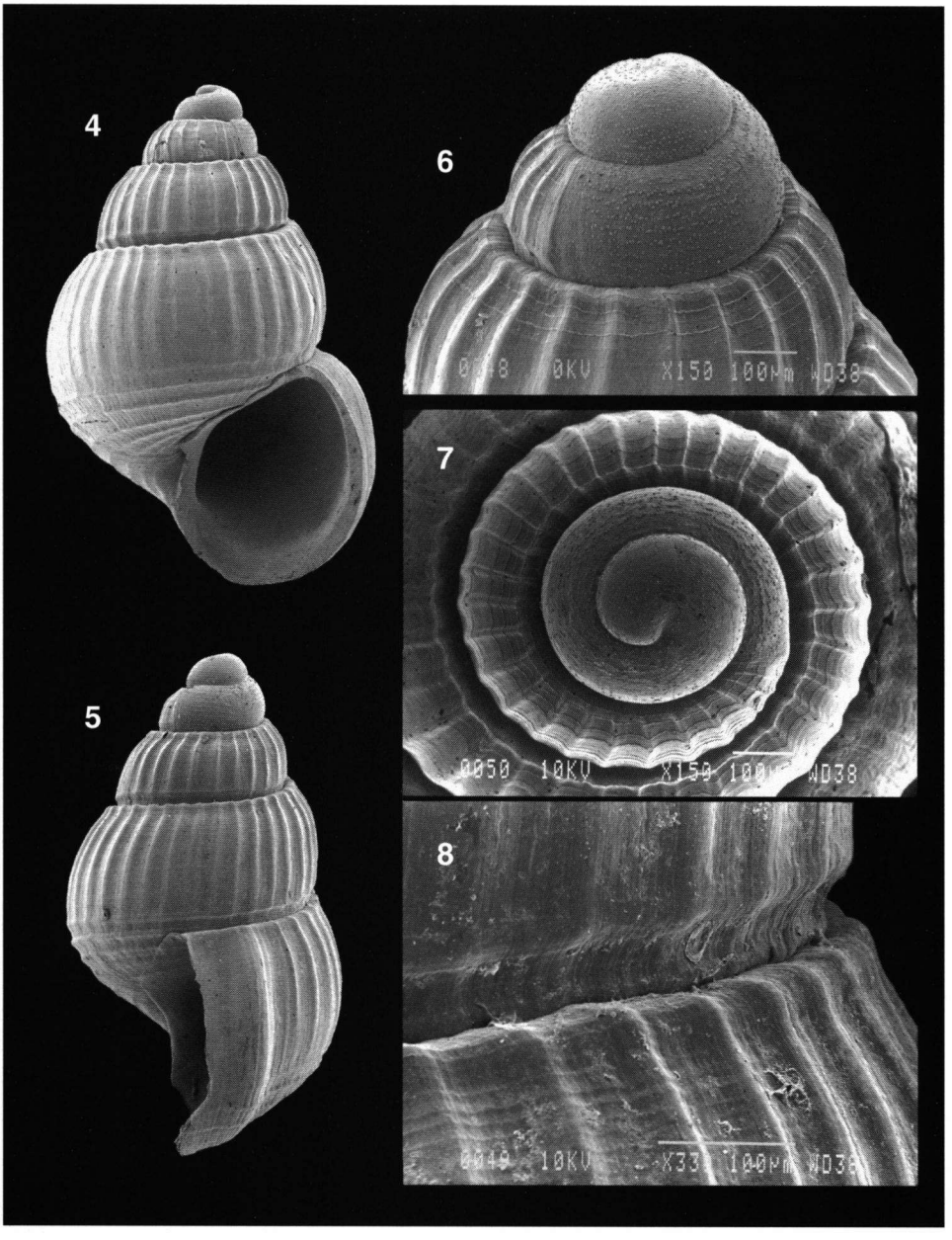
Depth range 89-620 m.

Alvania corneti spec. nov. (figs. 4-8)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57847), 62 paratypes (NNM 57848) and 61 paratypes (HJH) from type-locality: Sta. 6.010, 14° 53' N, 23° 30' W, 310 m. Paratypes (57849-57864): Sta. 6.011, 328 m/80; Sta. 6.025, 728 m/1; Sta. 6.077, 171-179 m/16; Sta. 7.004, 320 m/2; Sta. 7.007, 420 m/3; Sta. 7.008, 700 m/2; Sta. 7.030, 165 m/10; Sta. 7.038, 410-460 m/Sta. 7.048, 166 m/48; Sta. 7.049, 273 m/10; Sta. 7.050, 380 m/28; Sta. 7.061, 605 m/1; Sta. 7.096, 145-160 m/22; Sta. 7.100, 354 m/8; Sta. 7.129, 405 m/2.

Depth range 165-728 m.

Description. — Shell ovate with a somewhat blunt protoconch, rather fragile, with many thin axial ribs, opaque and glossy. Larval shell (figs. 6, 7) of 1.5 whorls, densely covered by numerous micro-papillae, scattered all over the protoconch. Average diameter of the protoconch 0.4 mm. Teleoconch with 2.8-3.0 semi-convex whorls, sculptured with 24-32 thin, low, orthocline, axial ribs, running from suture to suture on the whorls of the spire and from suture to only the suture level on the body whorl. The interstices are as broad as the axial ribs themselves. The spiral sculpture consists of 8-10 thin, sharp, spiral lines, two or three of which run on and above the sutural level, the others are restricted to the shell base. The spiral interspaces are clearly concave, resulting in a channel-like suture (fig. 8). Subsutural there is a vague furrow, resulting in an inconspicuous dent-like knob on the top of every axial rib. Aperture drop-shaped,



Figs. 4-8. *Alvania corneti* spec. nov., type locality, Cape Verde Islands, 310 m. 4, holotype (NNM 57847), 2.1 x 1.4 mm; 5, paratype 1; 6, protoconch of paratype 2; 7, protoconch of paratype 3; 8, paratype 1, detail of canaliculated suture between the body whorl and the penultimate one.

slightly angular at the columellar side. Parietal callus well developed. Inner lip somewhat reflected over a narrow umbilical crevice. Outer lip thin; body whorl with a slightly thickened axial rib, just before the outer lip. The length of full grown specimens is nearly constant (2.0 mm), but the number of axial ribs is very variable, from about 44 riblets looking like growth lines to 24 more prominent ones. Sometimes there are vague brown dots or bands at the sutural level, giving the suture a faint brown tinge.

Dimensions. — H 1.85-2.20 mm, W 1.15-1.40 mm (N = 24); holotype: H 2.10 mm, W 1.40 mm.

Differentiation. — *A. corneti* somewhat resembles *Alvania stenolopha* Bouchet & Warén, 1993, but the latter has a protoconch with fine spiral threads, a teleoconch completely covered by dense micro-striae, a larger aperture and a clear umbilicus.

Etymology. — The species is named after Mr. C. Cornet, for his participation in the CANCAP expeditions.

Alvania denhartogi spec. nov. (figs. 9-13)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57964), 3 paratypes (NNM 57965) and 3 paratypes (HJH) from type-locality: Sta. 6.024, 15° 00' N, 23° 44' W, 540 m. Paratypes (NNM 57966-57973): Sta. 6.005, 75-68 m/2; Sta. 6.007, 70-88 m/1; Sta. 6.015, 150 m/12; Sta. 6.017, 380 m/1; Sta. 6.054, 29-33 m/1; Sta. 7.007, 420 m/3; Sta. 7.008, 700 m/2; Sta. 7.015, 450-600 m/2.

Depth range 29-700 m.

Description. — Shell sharply conical, very solid, opaque. Larval shell (figs. 11, 12) with 1.5-1.75 convex whorls. The initial part is covered by five fine zigzag lines, abruptly changing into five coarse lines, partly consisting of close-set zigzag lines, partly as very rough lines, on which next to nothing of zigzags can be traced. On the subsutural part towards the first subsutural spiral line, some irregular spread micro-papillae can be detected. Average diameter of the protoconch 0.4 mm. Teleoconch consisting of 3-3.5 whorls of which the body whorl is clearly biconical. Axial sculpture of 14-16 prominent axial ribs, crossed by 8-9 thin spiral ribs, regularly spread over the entire body whorl. Micro-sculpture of 7-10 spiral threads covering the total height of the teleoconch, including the spiral ribs. Aperture ovate, with a thin parietal callus; inner lip somewhat reflected over the narrow umbilical crevice. Peristome simple and continuous; outer lip ending in a strong varix, overrun by the spiral ribs.

Dimensions. — H 1.50-1.85 mm, W 1.00-1.50 (N = 7); holotype: H 1.70 mm, W 1.20 mm.

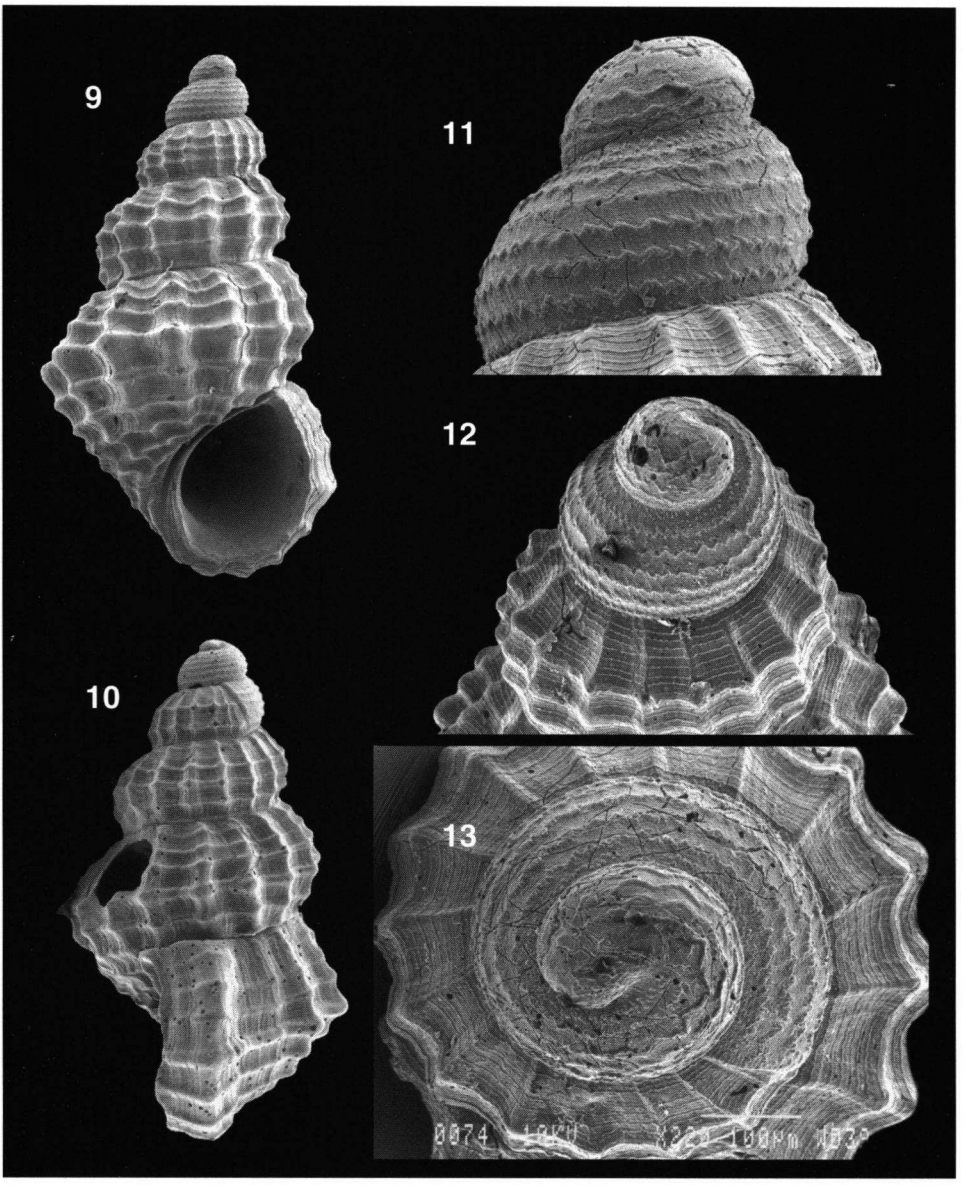
Differentiation. — *Alvania denhartogi* n. sp. resembles *A. pagodula* (B.D.D., 1884) but the latter has a protoconch with thin spiral threads, 6-7 spiral ribs, 12-14 axial ribs, a less strong varix and lacks the micro-sculptural lines on the teleoconch.

Etymology. — The species is named after Mr. J.C. den Hartog, for his participation in the CANCAP expeditions.

Alvania dipacoi Giusti & Nofroni, 1989

Alvania dipacoi Giusti & Nofroni, 1989: 54, figs. 1-5.

Alvania dipacoi, Bouchet & Warén, 1993: 632-633, figs. 1409, 1538-1539.



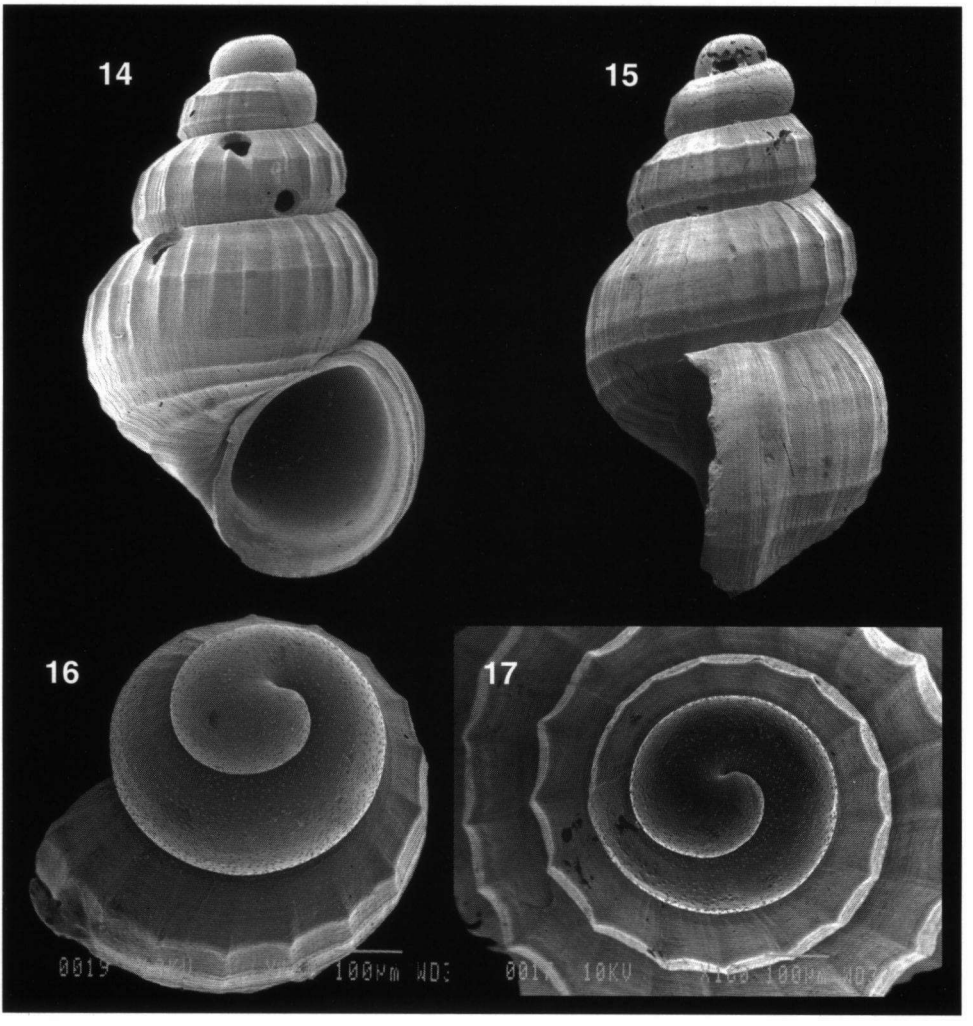
Figs. 9-13. *Alvania denhartogi* spec. nov., type locality, Cape Verde Islands, 540 m. 9, holotype (NNM 57964), 1.7 x 1.2 mm; 10, paratype 1; 11, structure on penultimate whorl of holotype; 12, protoconch of paratype 2; 13, protoconch of paratype 3.

Material. — CANARY ISLANDS: Sta. 4.156, 310 m/3. WEST AFRICA: Sta. 3.123, 125 m/>10; Sta. 3.145, 530 m/5.

Depth range 125-530 m.

Alvania dijkstrai spec. nov. (figs. 14-17)

Material. — SELVAGENS ARCHIPELAGO: Holotype (NNM 57688), 3 paratypes (NNM 57689) and 3 paratypes (HJH) from type-locality: Sta. 4.103, 30 ° 01 ' N, 16 ° 01 ' W, depth 425 m. Paratypes (NNM 57690-



Figs. 14-17. *Alvania dijkstrai* spec. nov., type locality, Selvagens Islands, 425 m. 14, holotype (NNM 57688), 1.9 x 1.15 mm; 15, paratype 1; 16, protoconch of paratype 2, 17, protoconch of paratype 3.

57692): Sta. 3.068, 312 m/1; Sta. 3.070, 645 m/12; Sta. 3.087, 322 m/3.
Depth range 312-645 m.

Description. — Shell ovate with a protruding apex, vitreous and rather solid. Larval shell (figs. 16-17) with 1.3-1.4 convex whorls, covered by numerous micropapillae, without any pattern on the initial whorl but gradually developing to 5-6 rows on the last quarter of the protoconch. Average diameter of the protoconch 0.4 mm. Teleoconch with 2.7- 3.0 convex whorls, separated by a shallow, canaliculate suture. Sculpture of 20-24 low, thin, slightly orthocline, axial ribs, reaching from suture to suture on the whorls of the spire and from suture to suture level only on the body whorl, where these axial ribs end abruptly. Spiral sculpture consisting of six spiral ribs; three ribs on the base and one sub-peripheral rib are as strong as the axial ones, whereas two peripherals are clearly less prominent. Aperture drop-shaped, with a thin parietal callus; inner lip slightly projecting over a nearly invisible umbilical crack. Outer lip thin. Body whorl ending in a strong varix just before the outer lip. The axial ribs vary considerably, even on a single whorl, from barely visible growth lines to sharp thin ribs. Sometimes two rows of very vague, light brown dots are visible on the ultimate whorl, one just subsutural and one on the shell base.

Dimensions. — H 2.10-2.75 mm, W 1.25-1.50 mm (N = 7); holotype: H 1.90 mm, W 1.15 mm.

Differentiation. — The species recalls *A. guancha* Moolenbeek & Hoenselaar,1989, but the latter has stronger spirals and ribs, distinctly less axial and spiral ribs and the protoconch has no papillae. *A. dijkstrai* n. sp. also resembles *A. slieringsi* n. sp., but that species is much smaller, has clearly more axial and less spiral ribs and is not vitreous.

Etymology. — The species is named after Mr. H. H. Dijkstra, for his extensive contribution to the knowledge of the Pectinidae and Propeamussidae.

Alvania electa (Monterosato, 1874)

Rissoa electa Monterosato, 1874: 261.
Alvania electa, Bouchet & Warén, 1993: 633-636, figs. 1410-1420.

Material. — CANARY ISLANDS: Sta. 2.065, 670 m/>10; Sta. 2.066, 886 m/5; Sta. 2.067, 1810-1830 m/1; Sta. 2.074, 530 m/>10; Sta. 2.078, 790 m/4; Sta. 2.079, 870 m/5; Sta. 2.080, 980 m/1; Sta. 4.049. 313 m/5; Sta. 4.058, 509 m/>10; Sta. 4.060, 580-600 m/>10; Sta. 4.062, 820 m/>10; Sta. 4.064, 1030 m/6; Sta. 4.082, 450-480 m/8; Sta. 4.086, about 785 m/>10; Sta. 4.087, 700-900 m/6; Sta. 4.101, 308-330 m/3. WEST AFRICA: Sta. 1.121, 125 m/2; Sta. 1.140, 308-316 m/1; Sta. 1.146, 105 m/1.
Depth range 105-1810 m.

Alvania euchila Watson, 1886

Rissoa novarensis Watson, 1873: 377-378, pl. 35 fig. 13. (non *R. novarensis* Von Frauenfeld, 1867)
Alvania euchila Watson, 1886: 602, nom. nov. for *novarensis*.
Alvania euchila, Moolenbeek & Hoenselaar, 1989: 218-219, figs. 5-6, 21-23.

Material. MADEIRA ARCHIPELAGO: Sta. 1.021, 228-240 m/1; Sta. 1.040, 56 m/1; Sta. 1D117, to 20 m/1. CANARY ISLANDS: Sta. 4.099, 175-200 m/1.
Depth range 56-240 m.

Alvania formicarum Gofas, 1989

Alvania formicarum Gofas, 1989: 40-41, figs. 9-14.

Material. — AZORES: Sta. 5.033, 35 m/1; Sta. 5.038, 38-43 m/9; Sta. 5.039, 43 m/6; Sta. 5.164, 104 m/2; Sta. 5.176, 142 m/>10; Sta. 5.K01, 0 m/>10; Sta. 5.K02, 0 m/>10.
Depth range 0-142 m.

Alvania franseni spec. nov. (figs. 18-21)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57958), 72 paratypes (NNM 57959) and 72 paratypes (HJH) from type-locality: Sta. 6.011, 14° 53' N, 23° 30' W, depth 328 m. Paratypes (NNM 57960-57963): Sta. 6.017, 380 m/5; Sta. 7.049, 273 m/1; Sta. 7.050, 380 m/1; Sta. 7.100, 354 m/1.
Depth range 273-380 m.

Description. — Shell broadly conical, thin, opaque, colourless and very glossy. Larval shell (figs. 20-21) with ca. 1.25 whorls, sculptured with micro-tubercles, disorderly spread, on some places wide-spread, elsewhere densely covering the protoconch. Average diameter of the protoconch 0.39 mm. Teleoconch of about three convex whorls; body whorl somewhat bulging, forming about 70% of the total height of the shell. Axial sculpture of 16-20 low, rounded, axial ribs on the body whorl, ending abruptly at the suture level. The shell base has a sculpture of 4-5 spiral ribs, the uppermost of which is at the suture level, where it contacts the ends of the axial ribs. Microsculpture of about 6-8 widely spaced spiral threads on the first teleoconch whorl only. Aperture broadly ovate, with a thin parietal callus; inner lip strongly reflected over a hardly visible umbilical crevice. Outer lip thin; last axial rib only slightly thickened and situated about a tenth of a whorl before the outer lip.

Dimensions. — H 1.75-2.15 mm, W 1.20-1.30 mm (N = 145); holotype: H 2.00 mm, W 1.35 mm.

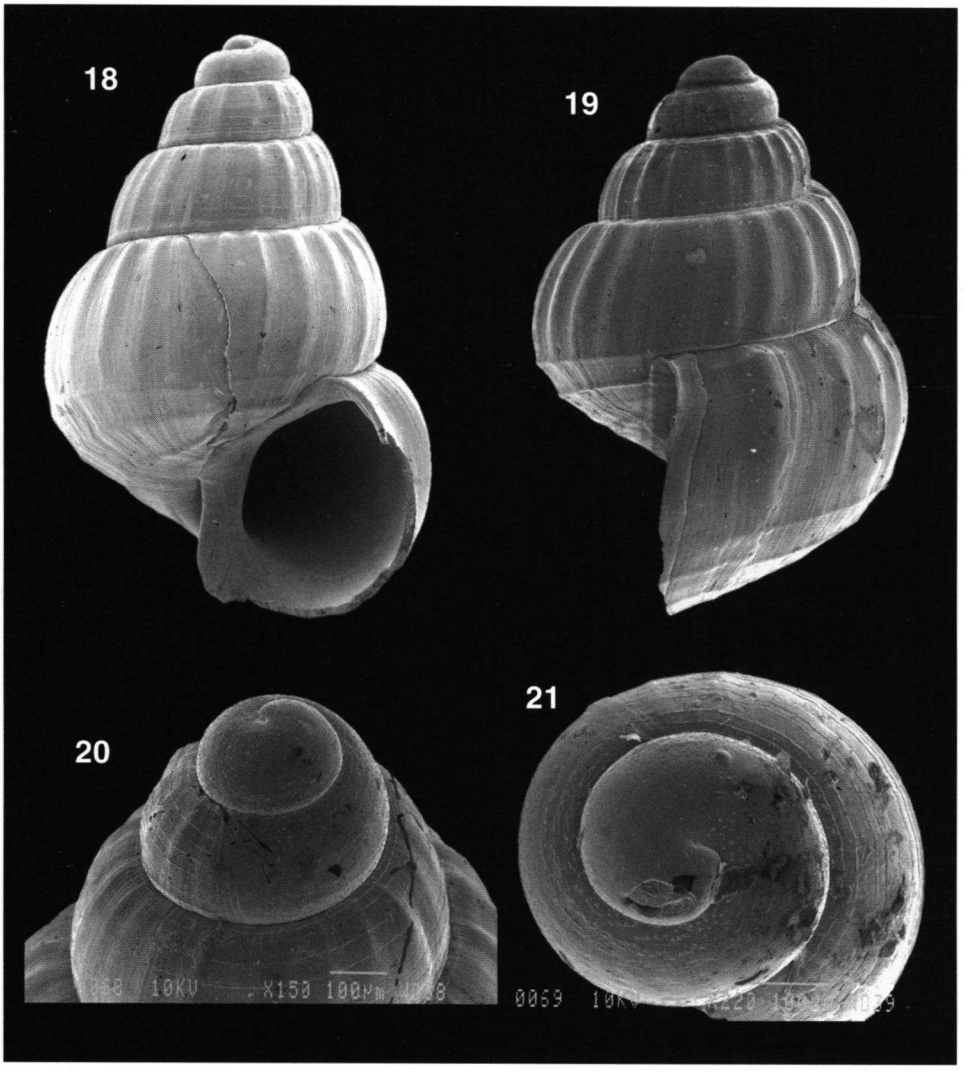
Differentiation. — *Alvania franseni* n. sp. resembles *A. stenolopha* Bouchet & Warén, 1993, but shells of the latter species are less conical, have a clear umbilicus, a protoconch with spiral threads, and a general sculpture of sharp, thin axial ribs, dense microstriae all over, and more spiral ribs on the base.

Etymology. — The species is named after Mr. C.H.J.M. Fransen, for his participation in the CANCAP expeditions.

Alvania guancha Moolenbeek & Hoenselaar, 1989

Alvania guancha Moolenbeek & Hoenselaar, 1989: 217-218, figs. 3-4, 18-20.

Material. CANARY ISLANDS: Sta. 2.075, 550 m/2; Sta. 2.085, 500-700 m/5; Sta. 2.114, 340-480 m/2; Sta. 2.147, 550-600 m/2; Sta. 2.D07, 10-15 m/1; Sta. 4.027, 27-30 m/1; Sta. 4.044, 150 m/6; Sta. 4.110, 110-180 m/>10; Sta. 4.112, 245-141 m/>10; Sta. 4.114, about 200 m/1; Sta. 4.115, 300 m/3; Sta. 4.116, 420 m/>10; Sta. 4.117, 503 m/2; Sta. 4.124, 800 m/2; Sta. 4.138, 75 m/6.
Depth range 10-800 m.

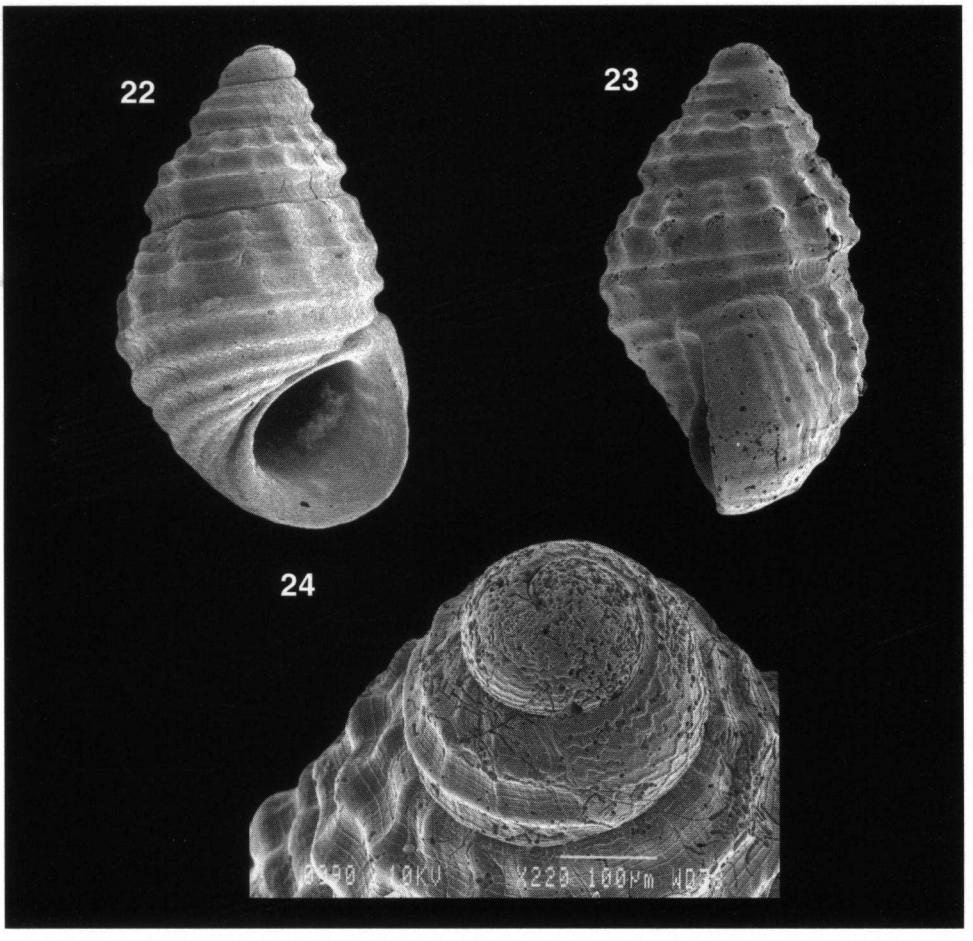


Figs. 18-21. *Alvania franseni* spec. nov., type locality, Cape verde Islands, 328 m. 18, holotype (NNM 57958), 2.0 x 1.35 mm; 19, paratype 1; 20, protoconch from paratype 2; 21, protoconch from paratype 3.

Alvania hoeksemai spec. nov. (figs. 22-24)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57988), 1 paratype (NNM 57989) and 1 paratype (HJH) from type-locality: Sta. 6.040, 14° 55' N, 24° 31' W, depth 55 and 38 m. Paratypes (NNM 57990-57992): Sta. 6.052, 85 m/2; Sta. 6.134, 110-120 m/1; Sta. 6.158, 22 m/1.

Depth range 22-120 m.



Figs. 22-24. *Alvania hoeksemai* spec. nov., type locality, Cape Verde Islands, 38-55 m. 22, holotype (NNM 57988) 1.65 x 0.95 mm; 23, paratype 1; 24, protoconch of paratype 2.

Description. — Shell compact and broadly conical, somewhat plump and very strong, with a slightly dome-shaped protoconch. Larval shell of 1.4 whorls, sculptured by 7-8 zigzag lines. Average diameter of the protoconch 0.37 mm.

Teleoconch of 2.7-3.0 flat whorls, sculptured with 12-14 prominent, short, orthocline, plump axial ribs, running from the suture and abruptly ending just above the periphery of the shell. Spiral sculpture consisting of about 8-10 spiral ribs, clearly running over the axial ribs, and decidedly less prominent than the axial ribs. Aperture drop-shaped, with a strong parietal callus; peristome simple and continuous, inner lip reflecting over a nearly visible umbilical crevice. Inside the outer lip there are 6-7 strong teeth; outside with a very strong and broad varix, overrun by the spiral ribs. Shell straw-coloured, except for the colourless, opaque protoconch and the aperture.

Dimensions. — H 1.65-1.90 mm, W 0.90-1.05 mm (N = 3); holotype: H 1.65 mm, W 0.95 mm.

Differentiation. — *Alvania hoeksemai* n. sp. resembles *Alvania peli* Moolenbeek & Rolán, 1988, but the latter has a protoconch of one whorl, is more slender, has many more, prosocline, axial ribs, and more spiral ribs and lacks the teeth on the inside of the outer lip.

Etymology. — The species is named after Dr. B. W. Hoeksema, for his participation in the CANCAP expeditions.

Alvania internodula spec. nov. (figs. 25-29)

Material. – AZORES: Holotype (NNM 57631), 26 paratypes (NNM 57632) and 26 paratypes (HJH) from type-locality: Sta. 5.140: 38 ° 34' N; 28 ° 33 ' W, depth 88 m. Paratypes (NNM 57633- 57676): Sta. 5.009, 110 m/50; Sta. 5.010, 150 m/8; Sta. 5.017, 88 m/80; Sta. 5.019, 140-170 m/60; Sta. 5.020, 240-245 m/40; Sta. 5.033, 35 m/1; Sta. 5.036, 65 m/20; Sta. 5.037, 122 m/40; Sta. 5.039, 43 m/2; Sta. 5.040, 41-47 m/25; Sta. 5.050, 55 m/6 p; Sta. 5.051, 620 m/80; Sta. 5.055, 125 m/8; Sta. 5.071, 220 m/2; Sta. 5.074, 225 m/2; Sta. 5.078, 77 m/4; Sta. 5.079, 110 m/5; Sta. 5.080, 146 m/2; Sta. 5.084, 188 m/12; Sta. 5.091, 33 m/7; Sta. 5.093, 92 m/25; Sta. 5.094, 90 m/4; Sta. 5.095, 70 m/35; Sta. 5.096, 52 m/20; Sta. 5.098, 40 m/1; Sta. 5.100, 55m/14; Sta. 5.102, 65 m/35; Sta. 5.111, 140 m/22; Sta. 5.112, 85 m/30; Sta. 5.113, 45 m/12; Sta. 5.119, 105 m/2; Sta. 5.120, 150 m/4; Sta. 5.126, 300 m/20; Sta. 5.128, 90 m/25; Sta. 5.129, 100 m/3; Sta. 5.130, 80-90 m/70; Sta. 5.131, 120-135 m/50; Sta. 5.132, 168 m/3; Sta. 5.133, 75-95 m/8; Sta. 5.135, 180 m/20; Sta. 5.138, 70 m/35; Sta. 5.139, 77 m/50; Sta. 5.140, 88 m/40; Sta. AZO.022, 0 m/1.

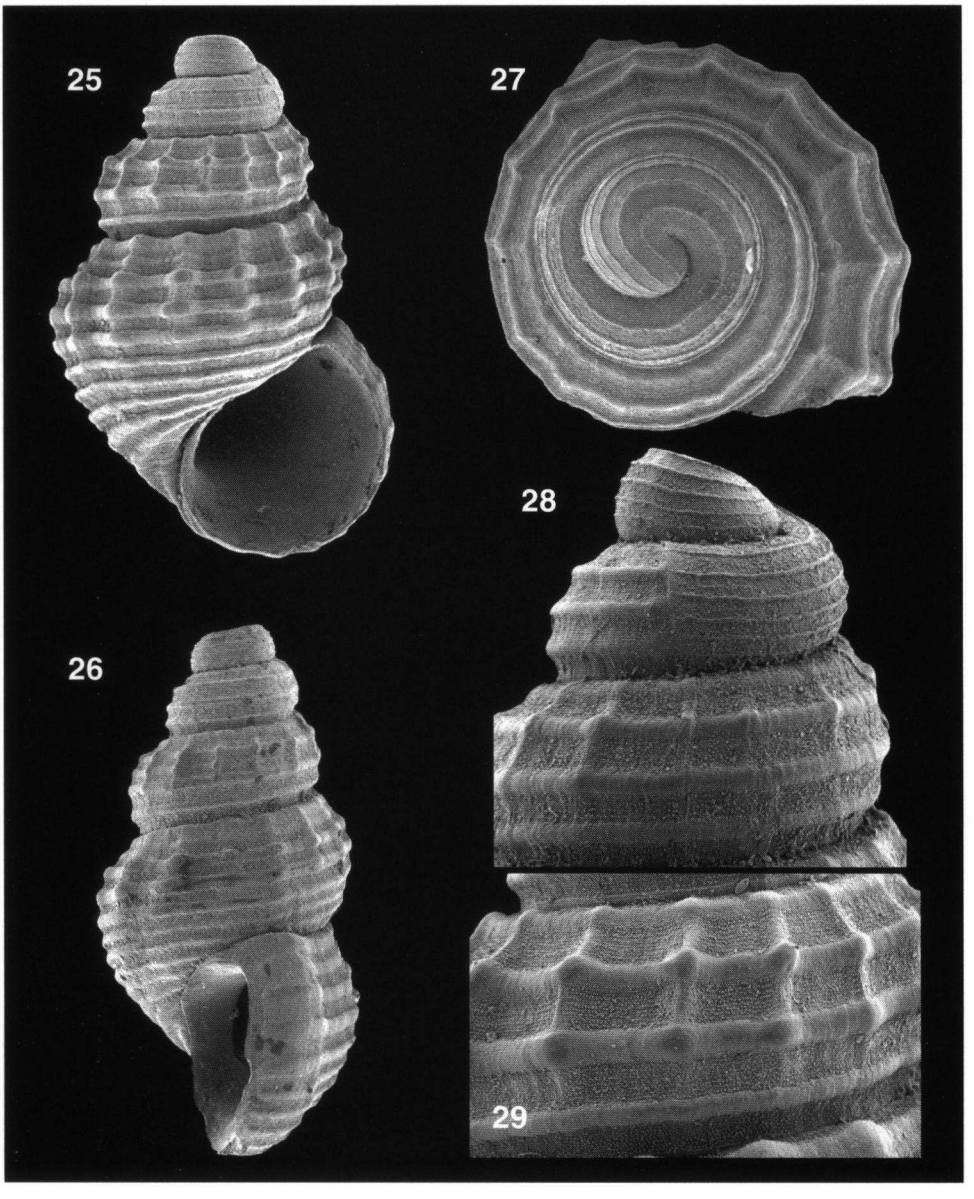
Depth range 33-620 m.

Description. — Shell biconical, solid, with prominent spiral ribs, less conspicuous axial ribs and a protruding apex. Larval shell (figs. 27-28) of ca. 1.1 convex whorl, sculptured with five thin spiral ridges, the interstices four times as wide as the ridges. Average diameter of the protoconch 0.32 mm (N = 53). Teleoconch with 3.5 convex whorls; the body whorl is angulate at the periphery. First teleoconch whorl with two spiral ribs, starting at the protoconch-teleoconch demarcation; second one with three, and body whorl with 11 strong prominent ribs. The interstices are as wide as the spiral ribs. About 1/2 whorl after the protoconch-teleoconch border, faint axial subsutural costae start, gradually increasing in size, but always less pronounced than the spiral ribs and ending just below the periphery. The crossings of spiral ribs and costae produce rather strong nodules. Body whorl with about 10-12 radial costae and ending in a strong varix, overrun by the spiral ribs. The interstices between the spiral ribs are covered by numerous very small nodules (fig. 29), neatly aligned and running over the axial costae. The aperture is semicircular; the peristome is simple, the inner lip with a very thin glaze of callus, reflected over the umbilical area. The shell colour varies from totally brown, partly brown (protoconch and first teleoconch whorl), only a subsutural brown spot just before the varix, to opaque white.

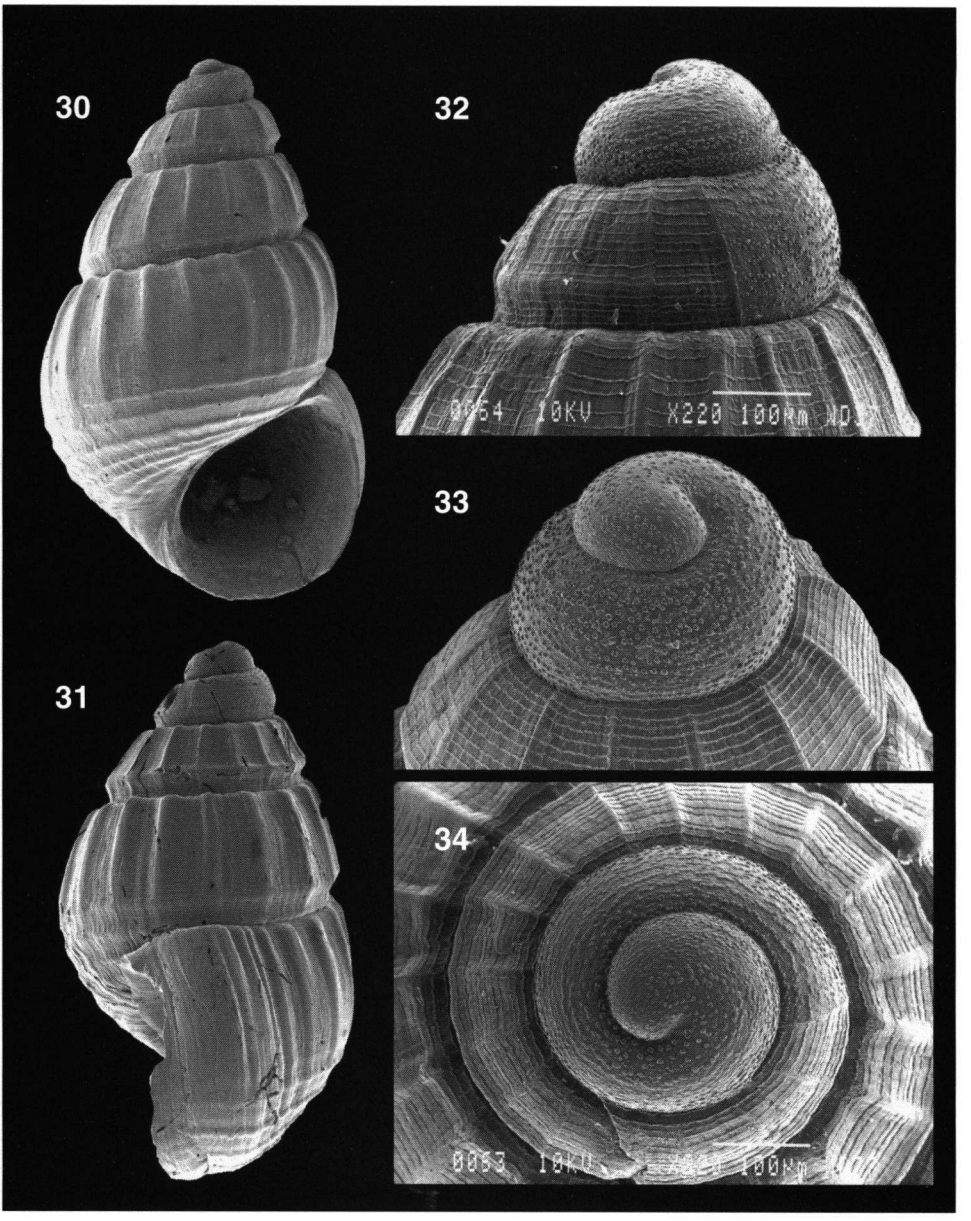
Dimensions. — H 1.50-2.10 mm, W 0.90-1.15 (N = 53); holotype: H 1.60 mm, W 0.90 mm.

Differentiation. — The species is easily recognizable; it is somewhat similar to *Manzonia spreta* (Watson, 1873). However, in that species the interspaces between the spiral ribs are covered with spiral threads, the aperture has a double peristome and the protoconch has 7 spiral threads.

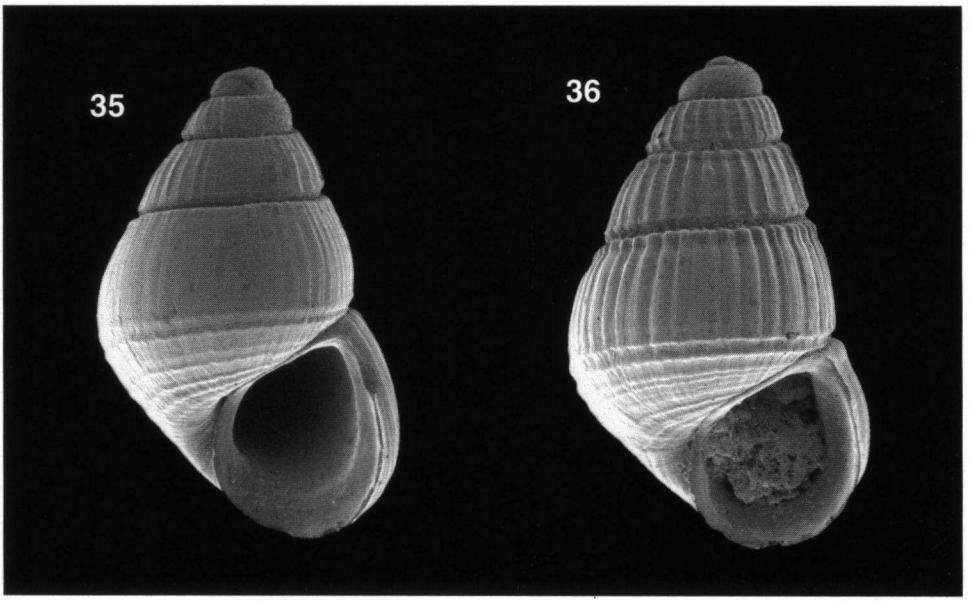
Etymology. — The species is named after the nodules in the interspace of the spiral ribs.



Figs. 25-29. *Alvania internodula* spec. nov., type locality, Azores, 88 m. 25, holotype (NNM 57631), 1.6 x 0.9 mm; 26, paratype 1; 27, protoconch of paratype 2; 28 protoconch of paratype 1; 29, structure on penultimate whorl of holotype.



Figs. 30-34. *Alvania jacquesi* spec. nov., type locality, Cape Verde Islands, 150 m. 30, holotype (NNM 57929), 1.6 x 0.95 mm; 31, paratype 1; 32, protoconch of paratype 4; 33, protoconch of paratype 3; 34, protoconch of paratype 5.



Figs. 35-36. *Alvania jacquesi* spec. nov., type locality, Cape Verde Islands, 150 m. 35, paratype 2; 36, paratype 3.

Alvania jacquesi spec. nov. (figs. 30-36)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57929), 11 paratypes (NNM 57930) and 11 paratypes (HJH) from type-locality: Sta. 6.015, 14° 53' N, 23° 30' W, depth 150 m. Paratypes (NNM 57931-57957): Sta. 6.006, 110-100 m/20; Sta. 6.008, 120 m/4; Sta. 6.009, 175 m/3; Sta. 6.010, 310 m/7; Sta. 6.011, 328 m/1; Sta. 6.015, 150 m/33; Sta. 6.017, 380 m. 1; Sta. 6.024, 540 m/9; Sta. 6.027, 920-970 m/2; Sta. 6.085, 100 m/1; Sta. 6.093, 400-430 m/3; Sta. 6.105, 204 m/20; Sta. 6.138, 50 m/4; Sta. 6.149, 293 m/8; Sta. 7.004, 320 m/10; Sta. 7.007, 420 m/3; Sta. 7.008, 700 m/7; Sta. 7.015, 450-600 m/1; Sta. 7.028, 225 m/6; Sta. 7.030, 165 m/5; Sta. 7.030, 165 m/9; Sta. 7.031, 75 m/5; Sta. 7.037, 285-350 m/3; Sta. 7.038, 410-460 m/6; Sta. 7.119, 140-160 m/9; Sta. 7.128, 400 m/10; Sta. 7.129, 405 m/24.

Depth range 50-700 m.

Description. — Shell conical, solid and semi-transparent. Larval shell (figs. 32-33) consisting of 1.5-1.75 convex whorls, sculptured by numerous microtubercles, in some parts confluent and arranged in parts of spirals, elsewhere disorderly spread. Average diameter of the protoconch 0.34 mm. Teleoconch of 2.7-3.5 flat whorls, sculptured by 20-40 straight, sharp, axial ribs, ending abruptly at the suture level. Spiral sculpture of 16-20 low, spiral ribs, covering the entire shell and less prominent than the axial ribs. One spiral rib, just below the suture, forms together with the axial ribs a series of semi-nodules in the subsutural part of the axial ribs, giving a 'crown-like' impression. Suture small to broadly canaliculate. Microsculpture of the teleoconch consisting of microstriae, regularly covering the two initial adapical whorls. Aperture drop-shaped; parietal callus thin. Inner lip only a little projecting over a very narrow umbilical chink. Outer lip just slightly thickened. The species is very variable, some specimens are

almost smooth, while others are provided with strong ribs. Also, the suture varies from small to broad.

Dimensions. — H 1.40-1.80 mm, W 0.90-1.05 mm (N = 23), holotype: H 1.60 mm, W 0.95 mm.

Differentiation. — *A. jacquesi* n. sp. somewhat resembles *A. multiquadrata* Van der Linden & Wagner, 1989, but the latter has a protoconch with strings of nodules and is more convex. The shell is nearly colourless except for two or three light brown spirals. If there are two colour spirals, one is just above and the second just below the suture level, so that on the spire only a single colour spiral is visible. If there are three lines, there is an extra subsutural one, so that on the whorls of the spire there are two spirals and on the body whorl three.

Etymology. — The species is named after Mr. Jacques Smit for his participation in the CANCAP expeditions.

Alvania joseae spec. nov. (figs. 37-40)

Material. CANARY ISLANDS: Holotype (NNM 57693), 6 paratypes (NNM 57694) and 6 paratypes (HJH) from type-locality: Sta. 4.116, 28 ° 26' N, 17° 51' W, depth 420 m. Paratypes (NNM 57695-57703): Sta. 2.010, 100-300 m/2; Sta. 2.075, 550 m/4; Sta. 2.114, 340-480 m/18; Sta. 4.099, 175-200 m/1; Sta. 4.112, 245-141 m/6; Sta. 4.114, 200 m/2; Sta. 4.115, 300 m/1; Sta. 4.117, 503 m/7; Sta. 4.157, 250-200 m/1.

Depth range 100-550 m.

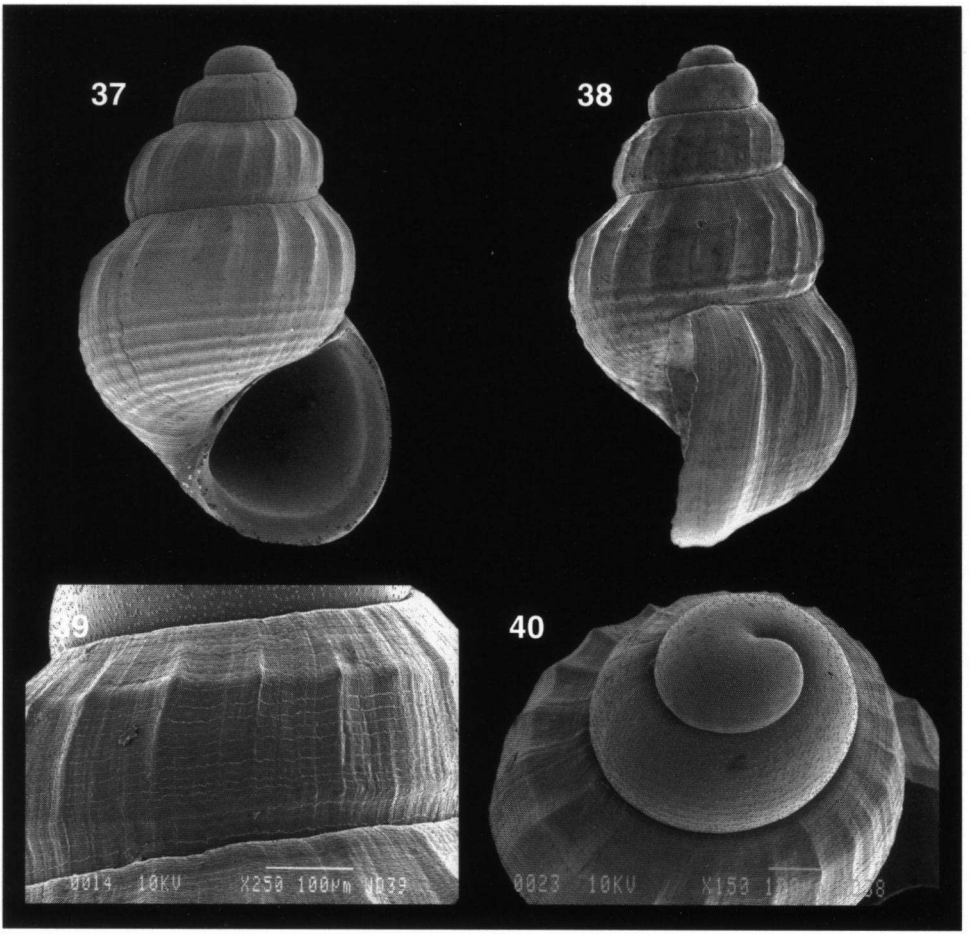
Description. — Shell ovate to cylindrical, with a blunt apex, thin but rather solid, semi-vitreous. Larval shell (figs. 39-40) consisting of 1.5 whorls, densely covered with micro-tubercles, somewhat arranged in spirals. Average diameter of the protoconch 0.38 mm. Teleoconch of 2.75 whorls, with about 16 low axial ribs, which start at the suture and gradually fade just above the next suture. There is a flat subsutural part that covers about 1/3 of the whorl. The spiral sculpture consists of about 10-14 faint spiral ribs; the first and most prominent one forms the borderline between the flat and the rounded part of the whorl, the other ones cover the rounded part and the base of the whorl. These spiral ribs are sometimes hardly discernible. Next to this spiral sculpture there is a structure of microstriae, densely covering all (visible at 60 ×). The basal part of the aperture is semicircular, the upper part is pointed. Peristome simple and continuous. Parietal callus thin. Inner lip reflecting over a narrow umbilical crevice. Outer lip ending in a strong varix.

According to Bouchet & Warén (1993), the faint sculpture and the similarity to species of the genus *Pseudosetia*, are clearly related to the occurrence in deeper water. We studied shells from between 100-300 (Sta. 2.010) and 550 m.

Dimensions. — H 2.15-2.60 mm, W 1.35-1.55 mm (N = 13); holotype: H 2.20 mm, W 1.35 mm.

Differentiation. — The species shows some resemblance with *Alvania watsoni* (Watson, 1873) and *Alvania scabra* (Philippi, 1844) for the flat subsutural part only. The protoconch of *A. watsoni* (Watson, 1873) has coarse tuberculated spiral rows and that of *A. scabra* has spirals. Often *A. joseae* n. sp. shows two or three, vague, broad, light-brown bands or spots arranged in bands on the body whorl.

Etymology. — The species is named after José L. Hoenselaar, daughter of the first author.



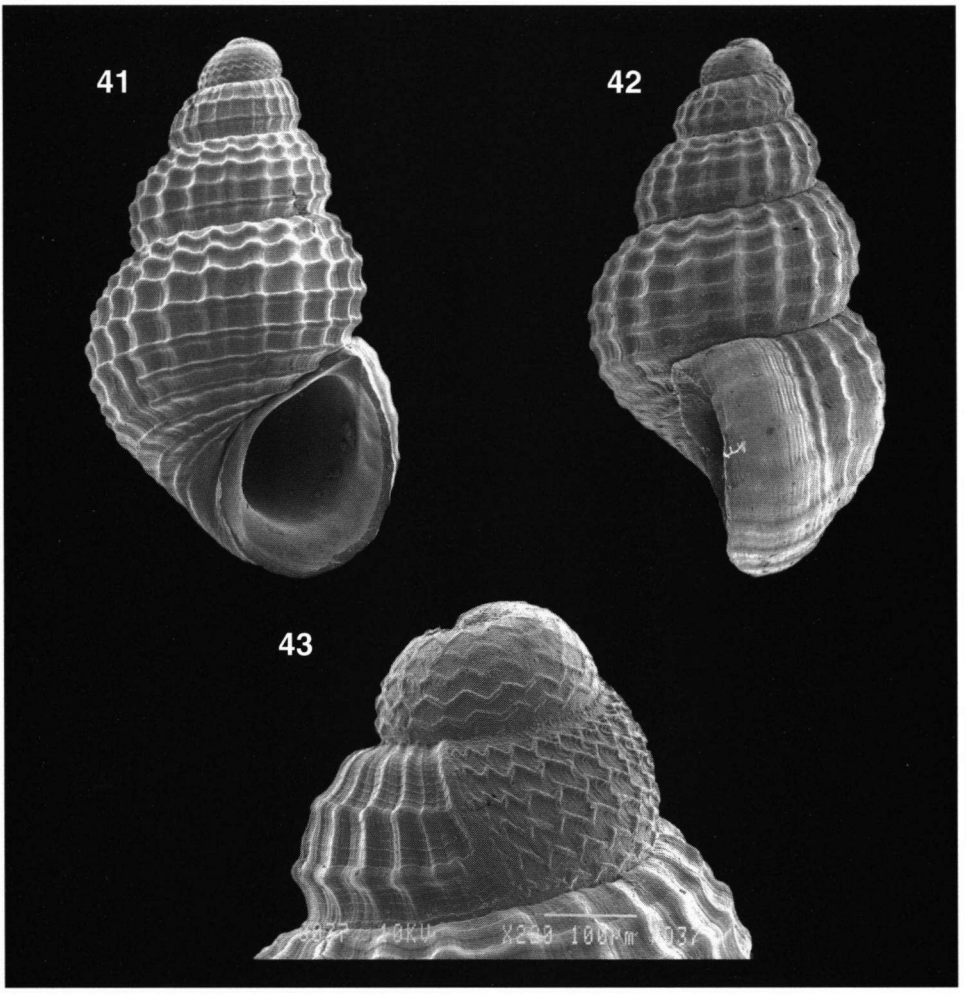
Figs. 37-40. *Alvania joseae* spec. nov., type locality, Canary Islands, 420 m. 37, holotype (NNM 57693), 2.2 x 1.3 mm; 38, paratype 1; 39, protoconch of paratype 2; 40, protoconch of paratype 3.

Alvania lamellata Dautzenberg, 1889

Alvania lamellata Dautzenberg, 1889: 50, pl. 3 fig. 5a, b.
Alvania lamellata, Bouchet & Warén, 1993: 657, figs. 1491, 1497.

Material. — AZORES: Sta. 5.021, 240-245 m/>10; Sta. 5.051, 620 m/>10; Sta. 5.122, 400 m/6; Sta. 5.126, 300 m/>10.

Depth range 240-620 m.



Figs. 41-43. *Alvania lavaleyei* spec. nov., typelocality, Cape Verde Islands, 74 m. 41, holotype (NNM 57723), 1.8 x 1.05 mm; 42, paratype 1; 43, protoconch paratype 2.

Alvania lavaleyei spec. nov. (figs. 41-43)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57723), 100 paratypes (NNM 57724) and 100 paratypes (HJH) from type-locality: Sta. 7.080, 16° 10' N, 23° 01' W, depth 74 m. Paratypes (NNM 57725-57798): Sta. 6.001, 15-20 m/3; Sta. 6.004, 63-58 m/5; Sta. 6.005, 75-68 m/32; Sta. 6.006, 110-100 m/50; Sta. 6.007, 70-88 m/7; Sta. 6.008, 120 m/24; Sta. 6.009, 175 m/6; Sta. 6.010, 310 m/> 200; Sta. 6.011, 328 m/2; Sta. 6.015, 150 m/> 100; Sta. 6.017, 380 m/2; Sta. 6.017, 380 m/5; Sta. 6.024, 540 m/2; Sta. 6.024, 540 m/70; Sta. 6.027, 920-970 m/8; Sta. 6.040, 55-38 m/30; Sta. 6.041, 60 m/40; Sta. 6.052, 85 m/1; Sta. 6.056, 25 m/7; Sta. 6.059, 50 m/8; Sta. 6.059, 50 m/15; Sta. 6.061, 80 m/8; Sta. 6.066, 53 m/40; Sta. 6.073,

90 m/2; Sta. 6.082, 35 m/6; Sta. 6.083, 49 m/4; Sta. 6.084, 72 m/4; Sta. 6.085, 100 m/14; Sta. 6.093, 400-430 m/8; Sta. 6.095, 930 m/6; Sta. 6.103, 102 m/25; Sta. 6.105, 204 m/2; Sta. 6.124, 800 m/70; Sta. 6.130, 50 m/12; Sta. 6.132, 78-80 m/10; Sta. 6.134, 110-120 m/30; Sta. 6.138, 150 m/7; Sta. 6.143, 50 m/2; Sta. 6.147, 99 m/20; Sta. 6.149, 293 m/23; Sta. 6.158, 22 m/3; Sta. 6.162, 38-45 m/5; Sta. 6.175, 50 m/5; Sta. 7.004, 320 m/10; Sta. 7.005, 235 m/12; Sta. 7.007, 420 m/24; Sta. 7.008, 700 m/11; Sta. 7.008, 700 m/20; Sta. 7.015, 450-600 m/20; Sta. 7.028, 225 m/>100; Sta. 7.030, 165 m/30; Sta. 7.031, 75 m/12; Sta. 7.032, 65 m/25; Sta. 7.037, 385-350 m/10; Sta. 7.038, 410-460 m/36; Sta. 7.049, 273 m/10; Sta. 7.050, 380 m/50; Sta. 7.079, 60 m/50; Sta. 7.100, 354 m/26; Sta. 7.101, 262-280 m/5; Sta. 7.101, 262-280 m/12; Sta. 7.102, 165 m/70; Sta. 7.106, 60 m/22; Sta. 7.110, 85 m/8; Sta. 7.115, 80 m/20; Sta. 7.116, 75 m/60; Sta. 7.119, 140-160 m/50; Sta. 7.120, 208 m/30; Sta. 7.121, 200-230 m/> 100; Sta. 7.122, 100 m/2; Sta. 7.128, 400 m/36; Sta. 7.129, 405 m/70; Sta. 7.141, 35 m/36; Sta. 7.146, 64 m/1.

Depth range 15-970 m.

Description. — Shell solid, ovate-conical. Larval shell (fig. 43) somewhat dome-shaped, consisting of 1.5 convex whorls, sculptured by six zigzag lines starting on the initial whorl. Average diameter of the protoconch 0.37 mm. Teleoconch with 3.2 evenly rounded, convex whorls, separated by a distinct suture. Axial sculpture of 18-22 prominent, orthocline, axial ribs, running from the suture down and ending abruptly at the suture level, just below the periphery. Spiral sculpture consisting of 10-11 strong spiral ribs over the total height of the whorls and running over the axial ribs as well. Axial and spiral ribs interact to give a square to oblong reticulation; the spiral ribs cross the axial ones, resulting in a nodular structure. Interspaces of axial and spiral ribs about as wide as the ribs themselves or somewhat wider. On the first teleoconch whorl spiral microscratches are seen. Aperture drop-shaped, peristome simple and continuous, with a clear parietal callus. Inner lip strongly reflected over a deep umbilical crevice. Outer lip ending in a strong, broad varix. The inside of the outer lip is provided with 8-9 very low and inconspicuous, list-like teeth.

Dimensions. — H 1.25-2.05 mm, W 0.90-1.50 mm (N = 201); holotype: H 1.80 mm, W 1.05 mm.

Differentiation. — *Alvania lavaleyei* n. sp. resembles *Alvania parvula* (Jeffreys, 1884), but the latter has more spiral ribs (about 13) and less axial ribs (18-19); axial and spiral ribs interact, giving a clear oblong reticulation. The protoconch of *Alvania parvula* (Jeffreys, 1884) has 12-14 spiral threads instead of the 5 zigzag lines on the protoconch of *Alvania lavaleyei* n. sp. The colour of *Alvania lavaleyei* n. sp. is dirty-white to cream.

Etymology. — The species is named after Mr. M. M. S. Lavaleye for his participation in the CANCAP expeditions.

Alvania leacocki (Watson, 1873)

Rissoa leacocki Watson, 1873: 365-367, pl. 34 fig. 1.

Alvania leacocki, Moolenbeek & Hoenselaar, 1989: 220-221, figs. 7-8, 27-29.

Material. — MADEIRA ARCHIPELAGO: Sta. 1.D117, to 20 m/2; Sta. 1.K03, 0 m/8. SELVAGENS ARCHIPELAGO: Sta. 4.K17, 0-3 m/>10. CANARY ISLANDS: Sta. 4.D02, to 15 m/6.

Depth range 0-20 m.

Alvania macandrewi (Manzoni, 1868)

Rissoa macandrewi Manzoni, 1868a: 164-165; Manzoni, 1868b: 237-238, pl. 10 fig. 1.
Alvania macandrewi, Moolenbeek & Hoenselaar 1989: 222-223, figs. 11-12, 33-35.

Material. — MADEIRA ARCHIPELAGO: Sta. 1.017, 120 m/>10; Sta. 1.020, 144 m/>10; Sta. 1.021, 228-240 m/>10; Sta. 1.025, 78 m/3; Sta. 1.026, 101 m/2; Sta. 1.029, 340 m/3; Sta. 1.040 m/1, 56 m/>10; Sta. 1.057, 100-122 m/>10; Sta. 1059, 280-300 m/8; Sta. 1.062, 680 m/1; Sta. 1.071, 120 m/3; Sta. 1.081, 90-102 m/8; Sta. 1.084, 86 m/>10; Sta. 1.085, 150 m/3; Sta. 1.086, 360 m/.>10; Sta. 1.098, 220-226 m/3; Sta. 1.102, 300 m/1; Sta. 1.114, 280-320 m/1; Sta. 3.059, 108 m/4. CANARY ISLANDS: Sta. 2.129, 900 m/1
Depth range 56-900 m.

Alvania mediolittoralis Gofas, 1989

Alvania mediolittoralis Gofas, 1989: 39-40, figs. 1-4, 15.

Material. — AZORES: Sta. 5.006, 35 m/>10; Sta. 5.025, 10-18 m/5; Sta. 5.037, D122 m/7; Sta., 5.083, 177 m/7; Sta. 5.084, 188 m/6; Sta. 5.093, 92 m/>10; Sta. 5.094, 90 m/7; Sta. 5.102, 65 m/8; Sta. 5.112, 85 m/>10; Sta. 5.113, 45 m/>10; Sta. 5.114, 172 m/1; Sta. 5.136, 95 m/2; Sta. 5.D01, 10-20 m/1; Sta. 5.K10, 0 m/7; Sta. AZO.05, 0 m/>10; Sta.AZO.07, 0 m/1; Sta. AZO.10, o m,1; Sta. AZO.16, 0 m/8; Sta. AZO.20, >10; Sta. AZO.21, 0 m/>10; Sta. AZO.33, 0 m/>10; Sta. AZO.34, 0 m/6; Sta. AZO.37a, 0 m/3. MADEIRA ARCHIPELAGO: Sta. 1.D48, 0-22 m/1; Sta. 1.K14, 0 m/1; Sta. 1.K16, 0 m/2.
Depth range 0-188 m.

Alvania microstriata spec. nov. (figs. 44-47)

Material. — MADEIRAN ARCHIPELAGO: Holotype (NNM 57684), 8 paratypes (NNM 57685) and 7 paratypes (HJH) from type-locality: Sta. 1.086, 32 ° 07' N; 16 ° 51 ' W, depth 360 m. Paratypes (NNM 57686-57687): Sta. 1.021, 228-240 m/3; Sta. 1.059, 280-300 m/6.
Depth range 228-360 m.

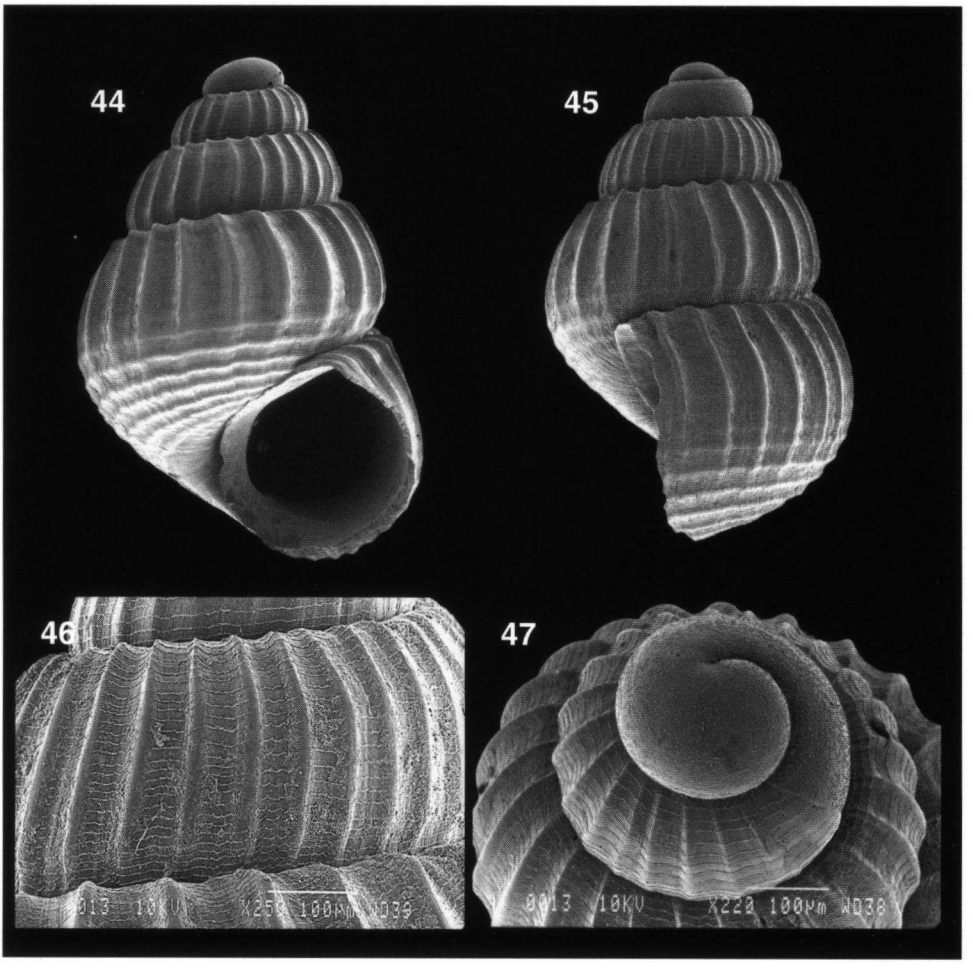
Description. — Shell fairly solid, conical, colourless and semitransparent. Larval shell (fig. 46) dome-shaped, consisting of 0.9-1.0 whorls, densely covered by very fine microtubercles. Average diameter of the protoconch 0.32 mm.

Teleoconch of 2.5-3 well rounded whorls, sculptured by 18-20 slightly curved, rounded, axial ribs that fade away at the suture level. Spiral sculpture of 7-8 spiral ribs, less prominent than the axial ribs, at the periphery and the basal surface, becoming stronger towards the umbilical area. The teleoconch is covered by regularly distributed, spiral microstriae. Suture deep. Aperture drop-shaped, with a parietal callus; inner lip reflected over a moderately developed umbilical crevice. Outer lip thin, no sign of a varix.

Dimensions. — H 1.45-1.6, W 1.50-1.75; holotype (N = 16): H 1.70 mm, W 1.08 mm.

Differentiation. — *Alvania microstriata* n. sp. resembles *Alvania adiaphoros*, Bouchet & Warén, 1993, but the latter has a protoconch of 1.5 whorls, microstriae only on the first whorl of the teleoconch, a channelled suture and a thickened outer lip.

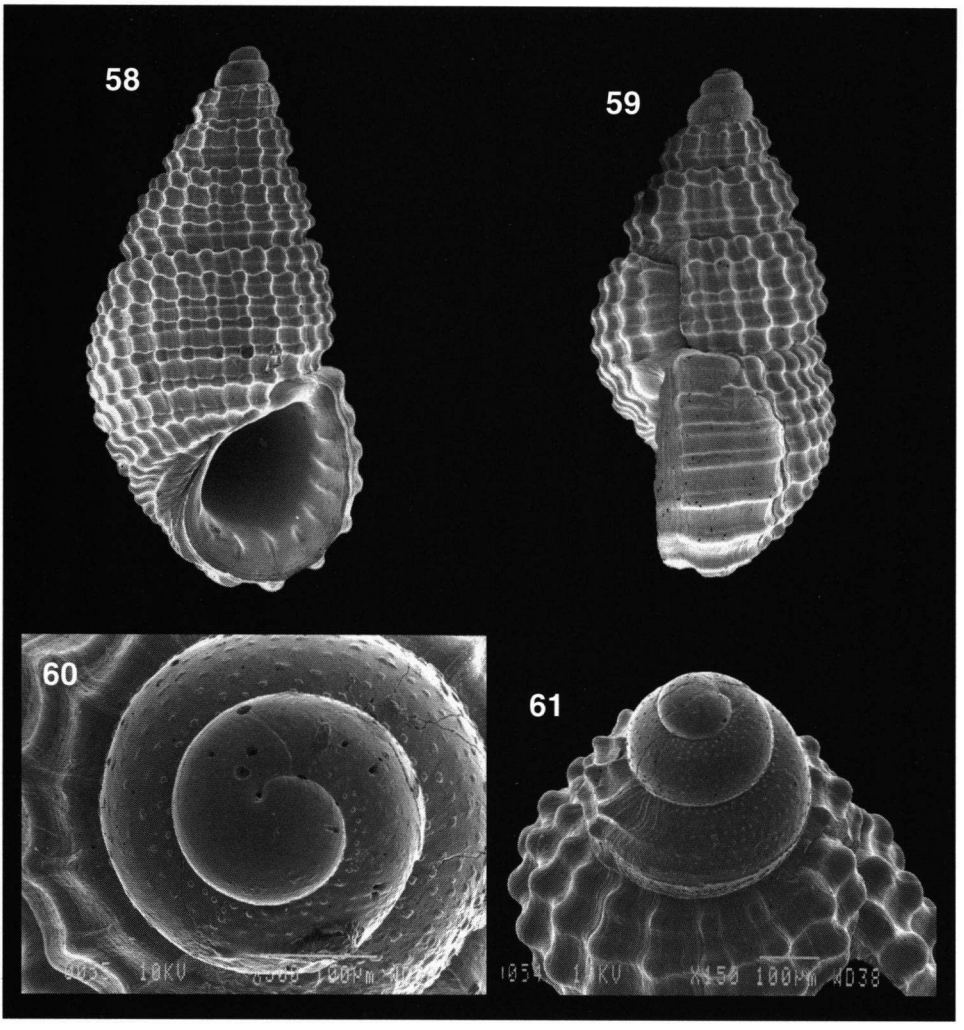
Etymology. — The species is named after the microstriae that cover the teleoconch.



Figs. 44-47. *Alvania microstriata* spec. nov., type locality, Madeira, 360 m. 44, holotype (NNM 57684), 1.7 x 1.08 mm; 45, paratype 1; 46, detail of paratype 1; 47, protoconch of paratype 2.

Alvania multinodula spec. nov. (figs. 58-61)

Material. CAPE VERDE ISLANDS: Holotype (NNM 57865), 57 paratypes (NNM 57866) and 57 paratypes (HJH) from type-locality: Sta. 7.106, 16° 45' N, 23° 00' W, depth 60 m. Paratypes (NNM 57867-57928): Sta. 6.005, 75-68 m/1; Sta. 6.015, 150 m/1; Sta. 6.024, 540 m/5; Sta. 6.027 920-970 m/2; Sta. 6.040, 55-38 m/1; Sta. 6.054, 29-33 m/1; Sta. 6.056, 25 m/> 80; Sta. 6.057, 36 m/2; Sta. 6.059, 50 m/> 80; Sta. 6.064, 29-32 m/30; Sta. 6.066, 53 m/50; Sta. 6.082, 35 m/5; Sta. 6.083, 49 m/60; Sta. 6.084, 72 m/16; Sta. 6.085, 100 m/4; Sta. 6.093, 400-430 m/1; Sta. 6.101, 20 m/70; Sta. 6.103, 102 m/20; Sta. 6.105, 204 m/4; Sta. 6.107, 50 m/12; Sta. 6.124, 800 m/2; Sta. 6.128, 30 m/5; Sta. 6.130, 50 m/> 70; Sta. 6.132, 78-80 m/6; Sta. 6.141, 28 m/1; Sta. 6.145, 73 m/4; Sta. 6.156, 25 m/6; Sta. 6.159, 24 m/6; Sta. 6.162, 38-45m/15; Sta. 6.164, 67



Figs. 58-61. *Alvania multinodula* spec. nov., type locality, cape Verde Islands, 61 m. 58, holotype (NNM 57865) 2.8 x 1.45 mm; 59, paratype 1; 60, protoconch from paratype 2; 61, protoconch from paratype 3.

m/18; Sta. 6.175, 50 m/10; Sta. 7.032, 65 m/1; Sta. 7.038, 410-460 m/3; Sta. 7.042, 76 m/3; Sta. 7.050, 380 m/40; Sta. 7.059, 61 m/1; Sta. 7.064, 25 m/8; Sta. 7.085, 31 m/3; Sta. 7.086, 63 m/10; Sta. 7.088, 59 m/18; Sta. 7.090, 18-28 m/9; Sta. 7.091, 41 m/10; Sta. 7.092, 23 m/6; Sta. 7.093, 42 m/20; Sta. 7.094, 24 m/6; Sta. 7.095, 30-50 m/7; Sta. 7.100, 354 m/10; Sta. 7.101, 262-280 m/12; Sta. 7.102, 165 m/40; Sta. 7.105, 123-142 m/3; Sta. 7.109, 31 m/9; Sta. 7.110, 85 m/6; Sta. 7.115, 80 m/24; Sta. 7.116, 75 m/24; Sta. 7.119, 140-160 m/8; Sta. 7.128, 400 m/45; Sta. 7.141, 35 m/40; Sta. 7.142, 56 m/10; Sta. 7.143, 102 m/2; Sta. 7.151, 75, m/1; Sta. 7.159, 52 m/30; Sta. 7.160, 72 m/2.

Depth range 23-970 m.

Description. — Shell conical, solid, strongly sculptured, straw coloured, with a multispiral, sharp protoconch. Larval shell (figs. 60-61) with 2.3 convex, whorls. Protoconch 1 with 0.7 whorls, 6-7 very faint, spiral threads, beginning on the initial whorl, interspaces smooth. Protoconch 2 with 1.5 whorls, sculptured by micro-tubercles, widely spread and arranged in 7-9 spiral lines. Diameter of protoconchs 1 and 2, 0.21 and 0.43 mm, respectively. Teleoconch with 3.5-4 flat whorls, separated by a deep, canaliculate suture. Sculpture of 20-24 prominent, broad, axial ribs, running over the entire body whorl and from suture to suture on the spire. Interspaces as broad as the ribs themselves. Spiral sculpture of two prominent ribs on the first teleoconch whorl, three on the second, and four to five on the third. Body whorl with c. nine spiral ribs, equally divided over the total height, with interspaces as broad as the ribs. The axial and the spiral ribs are equal in prominence. Axial and spiral ribs form conspicuous nodules on the crossings, enclosing squares. Aperture oval, with a thin parietal callus; peristome simple. Inner lip thin; no umbilicus. Outer lip ending in a very prominent, broad varix, overrun by the spiral ribs; inside with 7-8 clear, lamellar teeth.

Dimensions. — H 2.35-3.25 mm, W 1.30-1.55 mm (N = 115); holotype: H 2.80 mm, W 1.45 mm.

Differentiation. — *Alvania multinodula* n. sp. is probably a sister species of *Alvania subcalathus* Monterosato in Dautzenberg & Fischer, 1906 of the Canary Islands. We hardly see any difference as far as the teleoconch is concerned. The clear difference is the protoconch. The protoconch of *Alvania subcalathus* is paucispiral, with 1.2 whorls and sculptured with 6-7 spiral threads.

Remarks. — Gofas, e.a (1985: 42, figs 1 a,b & f) figure an *Alvania* sp. 1 from Corimba (Luanda) which shows much resemblance to *A. multinodula.*

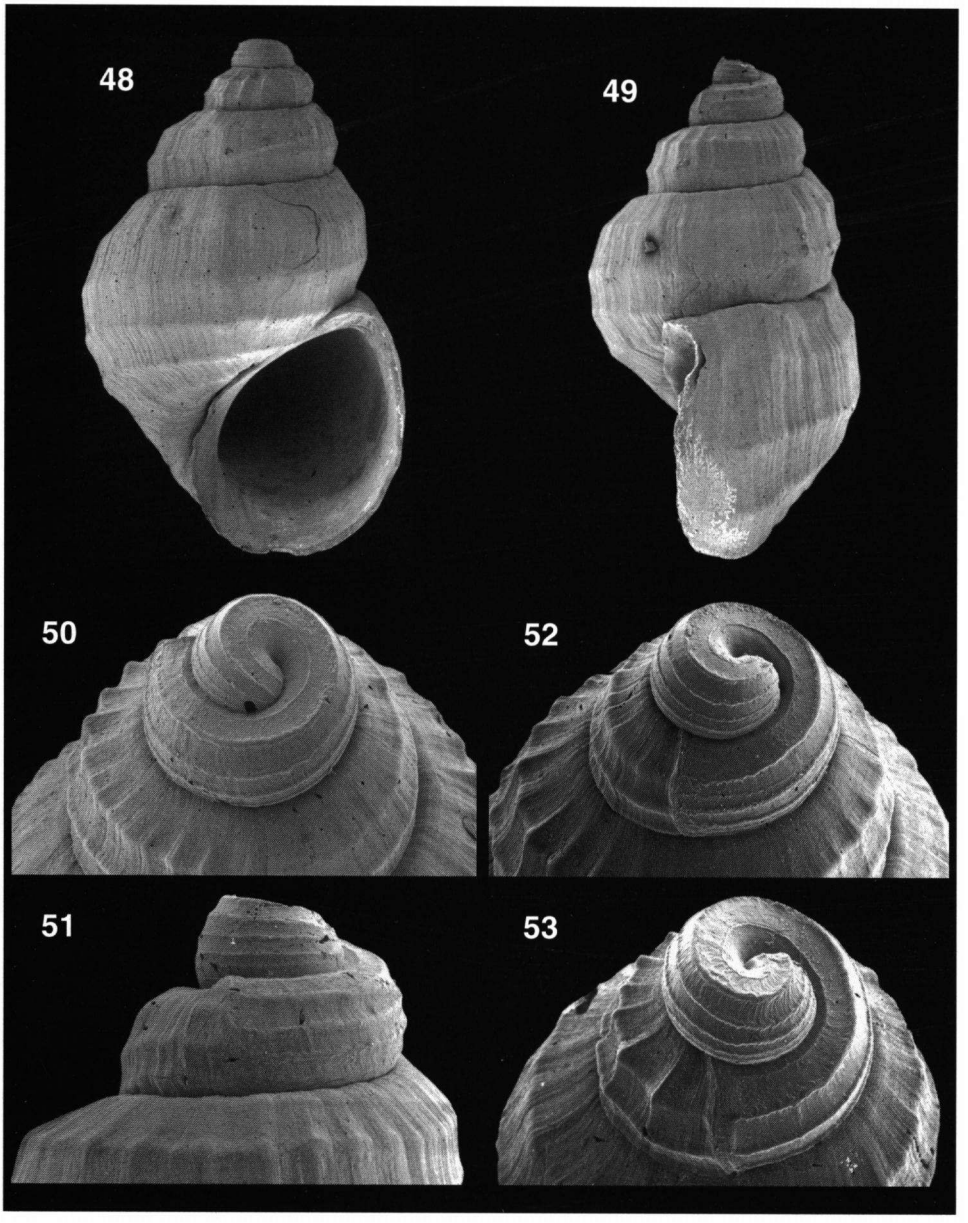
Etymology. — The species is named *A. multinodula* n. sp. after the high amount of nodules on the teleoconch.

Alvania multiquadrata Van der Linden & Wagner, 1989

Alvania multiquadrata Van der Linden & Wagner,1989: 35-37, figs. 1-3.

Material. MADEIRA ARCHIPELAGO: Sta. 1.021, 228-280 m/5; Sta. 1.026, 101 m/5; Sta. 1.040, 56 m/>10; Sta. 1.057, 100-122 m/5; Sta. 1.062, 680 m/2; Sta. 1.067, 30 m/>10; Sta. 1.071, 120 m/>10; Sta. 1.072, 80 m/>10; Sta. 1.081, 90-102 m/>10; Sta. 1.084, 86 m/>10; Sta. 1.086, 360 m/9; Sta. 3.002, 42 m/2; Sta. 3.059, 108 m/1. CANARY ISLANDS: Sta. 2.003, 140-200 m/6; Sta. 2.012, 170 m/5; Sta. 2.022, 83-97 m/8; Sta. 2.023, 154 m/1; Sta. 2.030, 28 m/>10; Sta. 2.032, 4 m/>10; Sta. 2.033, 60 m/>10; Sta. 2.034, 90 m/>10; Sta. 2.035, 90 m/>10; Sta. 2.043, 47 m/>10; Sta. 2.044, 49 m/6; Sta. 2.064, 77 m/>10; Sta. 2.073, 96 m/6; Sta. 2.075, 550 m/>10; Sta. 2.080, 980 m/>10; Sta. 2.085, 500-700 m/5; Sta. 2.096, 260 m/2; Sta. 2.103, 240 m/>10; Sta. 2.114, 340-480 m/3; Sta. 2.135, 1370 m/1; Sta. 4.002, 36 m/>10; Sta. 4.005, 20 m/4; Sta. 4.009, 28-31 m/1; Sta. 4.014, 46-64 m/>10; Sta. 4.015, 35-70 m/2; Sta. 4.016, 36 m/>10; Sta. 4.020, 31-34 m/>10; Sta. 4.022, 37 m/>10; Sta. 4.024, 39 m/>10; Sta. 4.027, 27-30 m/>10; Sta. 4.028, 32 m/1; Sta. 4.029, 30-31 m/>10; Sta. 4.034, 33-34 m/1; Sta. 4.036, 33 m/>10; Sta. 4.038, 82 m/>10; Sta. 4.041, 120 m/>10; Sta. 4.044, 150 m/>10; Sta. 4.048, 215-325 m/>10; Sta. 4.058, 509 m/2; Sta. 4.067, 47-50 m/>10; Sta. 4.068, 74-95 m/4; Sta. 4.070, 41-50 m/8; Sta. 4.073, 48 m/>10; Sta. 4.080, 200-220 m/8; Sta. 4.088, 51 m/>10; Sta. 4.089, 45 m/4; Sta. 4.090, 65 m/>10; Sta. 4.091, 55-82 m/>10; Sta. 4.092, 92 m/1; Sta. 4.110, 110-180 m/>10; Sta. 4.112, 245-141 m/9; Sta. 4.114, about 200 m/>10; Sta. 4.115, 300 m/2; Sta. 4.116, 420 m/>10; Sta. 4.117, 503 m/>10; Sta. 4.137, 50 m/2; Sta. 4.138, 75 m/4; Sta. 4.139, 100 m/>10; Sta. 4.145, 160 m/8; Sta. 4.K04, 0 m/>10.

Depth range 0-980 m



Figs. 48-53. *Alvania nonsculpta* spec. nov., type locality, Azores, 165-190 m. 48, holotype (NNM 57680), 2.65 x 1.75 m; 49, paratype 1; 50, protoconch of paratype 2; 51, protoconch of paratype 1; 52 protoconch of paratype 2; 53, protoconch of paratype 3.

Alvania nicolauensis Moolenbeek & Rolán, 1988

Alvania nicolauensis Moolenbeek & Rolán, 1988: 122-124, figs. 2, 7.

Material. — CAPE VERDE ISLANDS: Sta. 6.024, 540 m/5; Sta. 6.040, 55 and 38 m/4; Sta. 6.085, 100 m/4; Sta. 6.093, 400-430 m/7; Sta. 6.095, 930 m/4; Sta. 6.103, 102 m/6; Sta. 6.105, 204 m/3; Sta. 6.134, 110-120 m/>10; Sta. 6.138, 150 m/3; Sta. 6.147, 99 m/3; Sta. 6.149, 293 m/7; Sta. 7.028, 225 m/6; Sta. 7.031, 75 m/1; Sta. 7.100, 354 m/9; Sta. 7.102, 165 m/5; Sta. 7.115, 80 m/4; Sta. 7.116, 75 m/3; Sta. 7.119, 140-160 m/>10; Sta. 7.120, 208 m/>10; Sta. 7.121, 200-230 m/>10; Sta. 7.128, 400 m/7; Sta. 7.129, 405 m/>10; Sta. 7.143, 102 m/1; Sta. 7.161, 95 m/>10.

Depth range 55-930 m.

Alvania nonsculpta spec. nov. (figs. 48-53)

Material. — AZORES: Holotype (NNM 57679), 3 paratypes (NNM 57680) and 3 paratypes (HJH) from type-locality: Sta. 5.147, 39 ° 26 ' N; 31 ° 06 ' W, depth 165-190 m. Paratypes (57681-57683): Sta. 5.083, 177 m/1; Sta. 5.148, 190 m/5; Sta. 5.150, 200 m/6.

Depth range: 165-200 m.

Description. — Shell conical pear-shaped with an angulated protoconch, fairly solid, opaque to semitransparent, with weak axial and spiral ribs. Larval shell (figs. 50-53) of 1.25 angulate whorls, sculptured with 4-5 spiral threads. Average diameter of the protoconch 0.38 mm. Teleoconch with about three convex whorls, rapidly increasing in width. On the first teleoconch whorl, from the protoconch-teleoconch demarcation on, two faint spiral ridges and some axial ribs start to appear, producing a squarish pattern. The axial ribs slowly fade away on the first teleoconch whorl and are replaced by growth lines, increasing in prominence. On the third whorl, the six spiral ridges are as strong as at the starting point. The third teleoconch whorl measures about 73 % of the total height. The aperture is oval; peristome simple and continuous. The inner lip hides a very narrow umbilical chink. The outer lip is thickened by a moderate labial varix.

Dimensions. — H 2.25-2.65 mm. W 1.50-1.75 (N = 19); holotype: H 2.65 W 1.75 mm.

Differentiation. — *A. nonsculpta* n. sp. is rather constant in appearance. It somewhat resembles *A. moerchi* (Collin, 1886), but the latter has a much more conspicuous spiral sculpture, the aperture is subcircular and the protoconch has evenly rounded whorls.

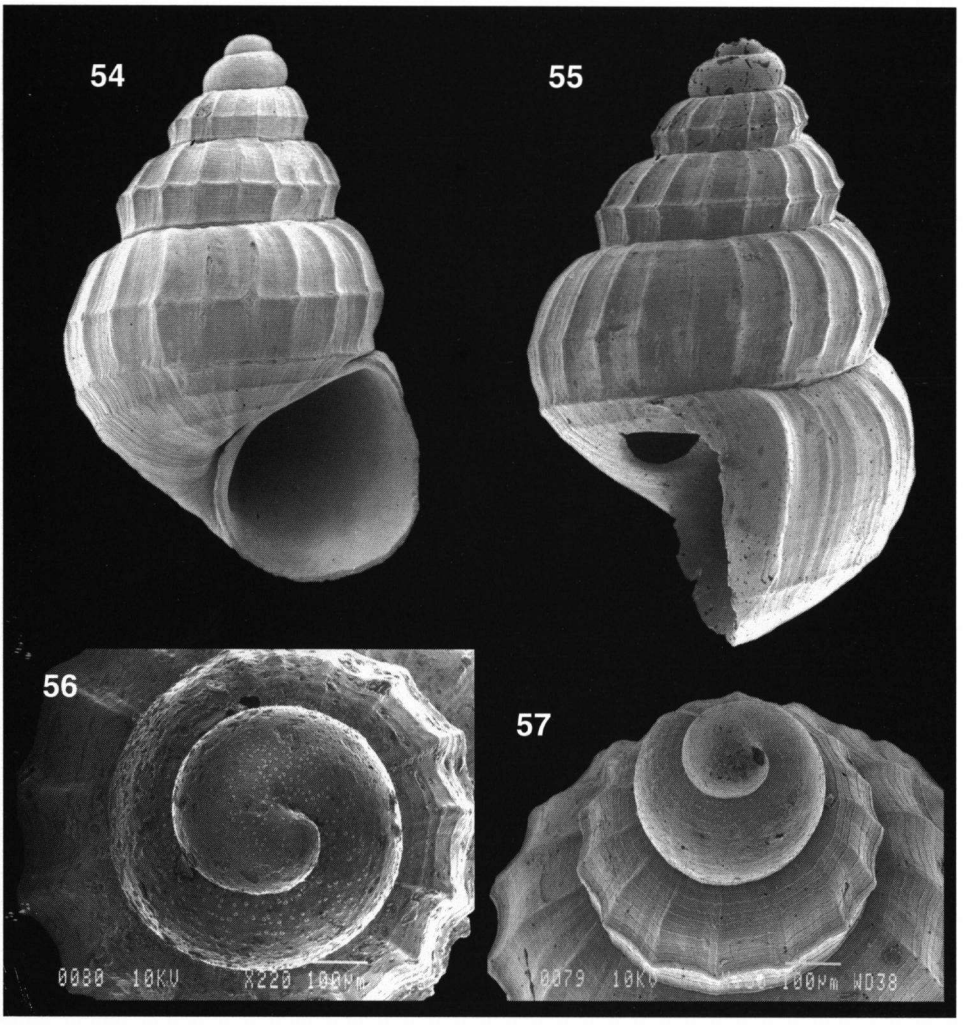
Etymology. — The species is named after the near-absence of sculpture.

Alvania paatsi spec. nov. (figs. 54-57)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57974), 20 paratypes (NNM 57975) and 20 paratypes (HJH) from type-locality: Sta. 6.011, 14° 53' N, 23° 30' W, depth 328 m. Paratypes (NNM 57976-57981): Sta. 6.010, 310 m/11; Sta. 6.024, 540 m/1; Sta. 7.004 320 m/2; Sta. 7.007, 420 m/3; Sta. 7.008, 700 m/1; Sta. 7.005, 235 m/1.

Depth range 235-700 m.

Description. — Shell broadly conical, thin, colourless and opaque. Larval shell (figs.



Figs. 54-57. *Alvania paatsi* spec. nov., type locality, Cape Verde islands, 328 m. 54, holotype (NNM 57974), 2.35 x 1.5 mm; 55, paratype 1; 56, protoconch of paratype 2; 57, protoconch of paratype 3.

56-57) with 1.8 convex whorls, sculptured by numerous micropapillae, scattered all over the initial whorl without any pattern, but later on somewhat arranged in parts of spirals towards the protoconch- teleoconch demarcation. Average diameter of the protoconch 0.41 mm. Teleoconch with 3.2-3.5 convex whorls, quickly increasing in width, sculptured by 12-15 thin, sharp, axial ribs, running from suture to suture on the spire and from suture to suture level on the body whorl. These axial ribs are prominent below the suture, fading away towards the next lower suture level and absent on the last quarter of the body whorl. Spiral sculpture consisting of 2-3 spiral ribs,

which are as prominent as the axial ribs. One spiral rib along the periphery and one at the suture level. At the spire, only the peripheral rib is visible; the one at the sutural level is only seen on the body whorl. When present, a third spiral rib runs between the other two. On the base of the whorl there are 3-4 spiral ribs which are less conspicuous. There is a microsculpture of very thin threads all over the teleoconch. Aperture ovate, parietal callus very thin. Inner lip reflected over the columella. Outer lip very thin; an axial rib just before the edge of the outer lip. An umbilical crevice may be present, sometimes hidden behind the reflected inner lip.

Dimensions. — H 2.00-2.40 mm, W 1.30-1.50 mm (N = 41); holotype: H 2.35 mm, W 1.50 mm.

Differentiation. — *A. paatsi* n. sp. somewhat resembles *A. stenolopha* Bouchet & Warén, 1993. The latter species has the same kind of thin, sharp axial and spiral ribs. It differs in having a dome-shaped protoconch with spiral threads, a less conical general shape, less axial and more spiral ribs, a much denser microsculpture on the teleoconch, and no axial rib just before the edge of the outer lip.

Etymology. — This species is named after Mr. J. J. P. Paats, for his participation in the CANCAP expeditions.

Alvania peli Moolenbeek & Rolán, 1988

Alvania peli Moolenbeek & Rolán, 1988: 122, figs. 1, 5-6.

Material. CAPE VERDE ISLANDS: Sta. 6.001, 15-20 m/5; Sta. 6.007, 70-88 m/1; Sta. 6.009, 175 m/1; Sta. 6.010, 310 m/>10; Sta. 6.011, 328 m/2; Sta. 6.015, about 150 m/4; Sta. 6.017, 380 m/2; Sta. 6.024, 540 m/>10; Sta. 6.025, 728 m/2; Sta. 6.083, 49 m/2; Sta. 6.085, 100 m/1; Sta. 6.093, 400-430 m/5; Sta. 6.095, 930 m/2; Sta. 6.103, 102 m/>10; Sta. 6.138, 150 m/1; Sta. 6.149, 293 m/1; Sta. 7.004, 320 m/8; Sta. 7.005, 235 m/3; Sta. 7.007, 420 m/8; Sta. 7.008, 700 m/7; Sta. 7.015, 450-600 m/5; Sta. 7.028, 225 m/>10; Sta. 7.030, 165 m/>10; Sta. 7.031, 75 m/8; Sta. 7.032, 65 m/4; Sta. 7.037, 385-350 m/4; Sta. 7.038, 410-460 m/>10; Sta. 7.050, 380 m/6; Sta. 7.093, 42 m/3; Sta. 7.094, 24 m/1; Sta. 7.100, 354 m/>10; Sta. 7.101. 262-280 m/3; Sta. 7.102, 165 m/4; Sta. 7.115, 80 m/1; Sta. 7.119, 140-160 m/>10; Sta. 7.120, 208 m/9; Sta. 7.121, 200-230 m/>10; Sta. 7. 122, 100 m/1; Sta. 7.128, 400 m/>10; Sta. 7.129, 405 m/>10; Sta. 7.101. 95 m/>10.

Depth range 15-930 m.

Alvania piersmai Moolenbeek & Hoenselaar, 1989

Alvania piersmai Moolenbeek & Hoenselaar, 1989: 221-222, figs. 9-10, 30-32.

Material. — CANARY ISLANDS: Sta. 2.147, 550-600 m/8; Sta. 2.D07, 10-15 m/4; Sta. 2.D08, 5-25 m/1.

Depth range 5-600 m.

Alvania platycephala Dautzenberg & Fischer, 1896

Alvania platycephala Dautzenberg & Fischer, 1896: 457, pl. 19 figs. 12, 13; Bouchet & Warén, 1993: 626, 627, figs, 1392-1395, 1398.

Material. — AZORES: Sta. 5.009, 110 m/4; Sta. 5.010, 110 m/1; Sta. 5.011, 220-290 m/5; Sta. 5.019, 140-170 m/4; Sta. 5.020, 240-245 m/5; Sta. 5.051, 620 m/>10; Sta. 5.055, 125 m/4; Sta. 5.056, 180 m/2; Sta. 5.071, 220 m/>10; Sta. 5.073, 245 m/2; Sta. 5.074, 225 m/3; Sta. 5.078, 77 m/1; Sta. 5.079, 110 m/6; Sta. 5.080, 146 m/>10; Sta. 5.081, 162 m/9; Sta.5.083, 177 m/>10; Sta. 5.084, 188 m/2; Sta. 5.095, 70 m/5; Sta. 5.096, 52 m/4; Sta. 5.100, 55 m/5; Sta. 5.102, 65 m/>10; Sta. 5.111, 140 m/>10; Sta. 5.112, 85 m/3; Sta. 5.122, 400 m/2; Sta. 5.126, 300 m/>10; Sta. 5.128, 90 m/>10; Sta. 5.129, 100 m/5; Sta. 5.130, 80-90 m/>10; Sta. 5.131, 120-135 m/>10; Sta. 5.135, 180 m/5; Sta. 5.139, 77 m/>10; Sta. 5.140, 88 m/>10. MADEIRA ARCHIPELAGO: Sta.1.021, 228-240 m/5.

Depth range 52-620 m.

Alvania porcupinae Gofas & Warén, 1982

Alvania porcupinae Gofas & Warén, 1982: 6, figs. 23, 30-31

Material. — CANARY ISLANDS: Sta. 2.062, 0-1520 m/3; Sta. 2.067, 1810-1830 m/2; Sta. 2.075, 550 m/1; Sta. 4.055, 1209-1338 m/3; Sta. 4.115, 300 m/1.

Depth range 300-1830 m.

Alvania postrema Gofas, 1990

Alvania postrema Gofas, 1990: 114-116, figs. 8, 24-27.

Material. — AZORES: Sta. 5.006, 35 m/2; Sta. 5.008, to 75 m/8; Sta. 5.037, 122 m/4; Sta. 5.051, 620 m/2; Sta. 5.074, 225 m/3; Sta. 5.078, 77 m/4; Sta. 5.083, 177 m/2; Sta. 5.084, 188 m/>10; Sta. 5.091, 33 m/2; Sta. 5.092, 70 m/>10; Sta. 5.095, 70 m/>10; Sta. 5.112, 85 m/>10; Sta. 5.113, 45 m/3; Sta. 5.136, 95 m/2; Sta. 5.139, 77 m/8; Sta. 5.176, 142 m/6; Sta. 5.K01, 0 m/6; Sta. AZO.022, 0 m/2; Sta. AZO.24a, 0 m/1. MADEIRA ARCHIPELAGO: Sta. 4.K27, 0 m/2.

Depth range 0-620 m.

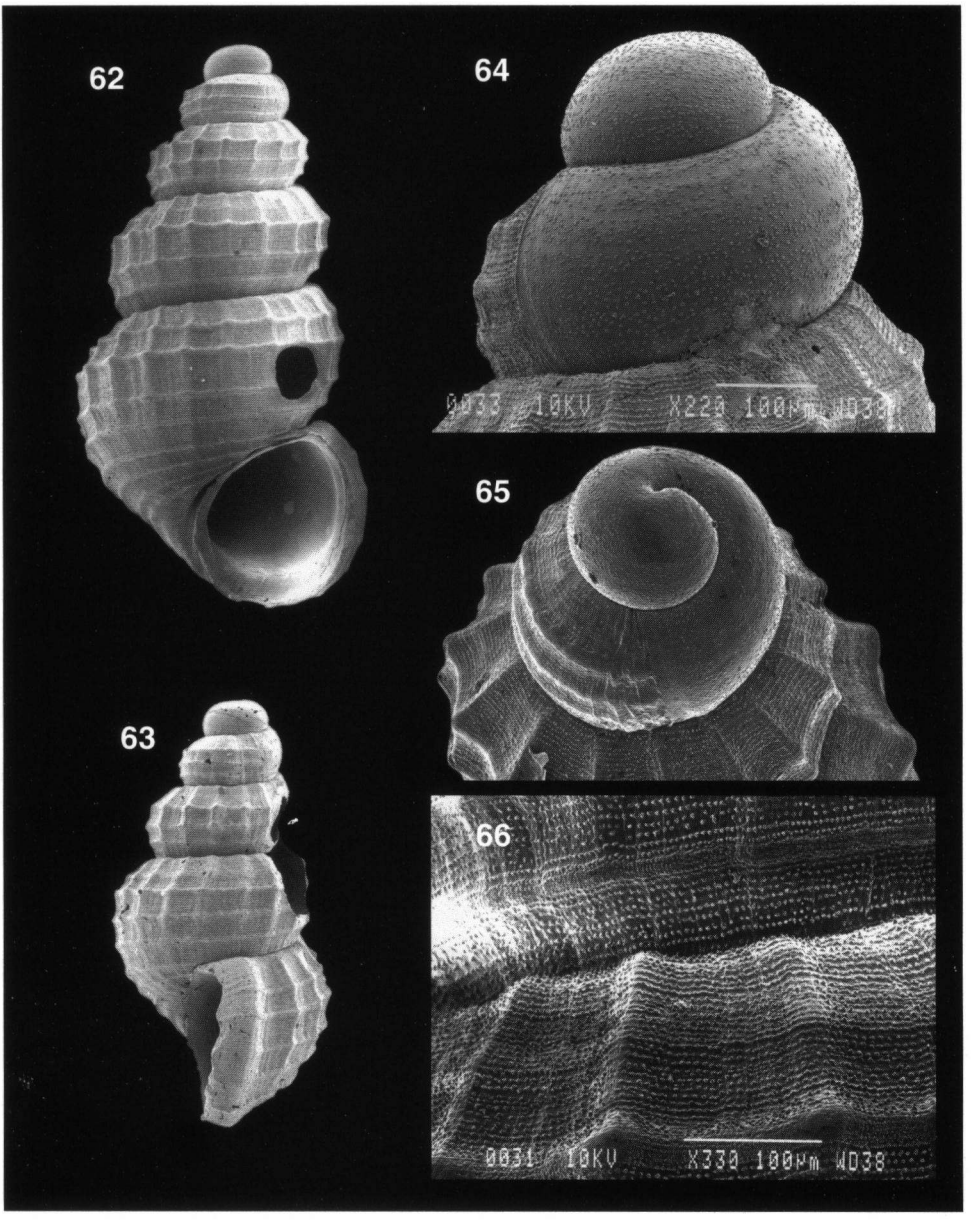
Alvania poucheti Dautzenberg, 1889

Alvania poucheti Dautzenberg, 1889: 49-50, pl. 3 figs. 3a, b; Gofas, 1990: 108,110. figs. 5; 49-53.

Material. — AZORES: Sta. 5.006, 35 m/>10; Sta. 5.008, to 75 m/>10; Sta. 5.038, 38-43, 1; Sta. 5.083, 177 m/>10; Sta. 5.084, 188 m/>10; Sta. 5.091, 33 m/>10; Sta. 5.094, 90 m/5; Sta. 5.095, 70 m/>10; Sta. 5.102, 65 m/>10; Sta. 5.112, 85 m/>10; Sta. 5.113, 45 m/>10; Sta. 5.133, 75-95 m/>10; Sta. 5.136, 95 m/3; Sta. 5.138, 70 m/>10; Sta. 5.139, 77 m/>10; Sta. 5.158, 46 m/>10; Sta. 5.159, 52 m/>10; Sta. 5.173, 50 m/9; Sta. 5.190, 72 m/8; Sta. 5.D0, 10-20 m/1; Sta. 5.K01, 0 m/3; Sta. AZO.05, 0 m/>10; Sta. AZO.16, 0 m/>10; Sta. AZO.20, 4 m/>10; Sta. AZO.21, 0 m/>10; Sta. AZO.22, 0 m/>10; Sta. AZO.24a, 0 m/4; Sta. AZO.33, 0 m/1; Sta. AZO.40, !.5-3 m/1.

Depth range 0-188 m.

Alvania poucheti Dautzenberg, 1889, was already discussed by Gofas (1990: 108) and confirmed as a shallow water species by Bouchet & Warén (1993: 810).



Figs. 62-66. *Alvania renei* spec. nov., type locality, Canary Islands, 150 m. 62, holotype (NNM 57718), 2.4 x 1.2 mm; 63, paratype 1; 64, protoconch paratype 2; 65, protoconch, paratype 3; 66, structure on second and third whorl of holotype.

Alvania renei spec. nov. (figs. 62-66)

Material. — CANARY ISLANDS: Holotype (NNM 57718), 3 paratypes (NNM 57719) and 3 paratypes (HJH) from type-locality: Sta. 4.044, 28° 48' N, 13° 46' W, depth 150 m. Paratypes (NNM 57720-57722): Sta. 4.048, 215-325 m/4; Sta. 4.075, 160 m/3; Sta. 4.092, 92 m/4.

Depth range 92-325 m.

Description. — Shell ovate-cylindrical with a somewhat bulging apex, rather thin, opaque. Larval shell (figs. 64-65) with 1.2 convex whorls, covered with microtubercles which are irregularly arranged. Average diameter of the protoconch 0.43 mm. Teleoconch of about 3.5 convex whorls, slowly increasing in width. Axial sculpture consisting of about 18 thin, straight, opisthocline axial ribs, fading away just below the suture level. Spiral sculpture of 9-10 thin, spiral ribs, as strong as the axial ribs. Axial and spiral ribs enclose open squares. The interspaces between the spiral ribs are densely covered by spiral threads, consisting of close-set micropapillae, running over the axial ribs as well (fig. 66). Aperture drop-shaped; parietal callus thin. Inner lip somewhat reflected over a very narrow umbilical crevice. Outer lip ending in a strong varix.

Dimensions. — H 1.75-2.40 mm, W 1.00-1.20 mm (N = 7); holotype: H 2.40 mm, W 1.20 mm.

Differentiation. — *Alvania renei* n. sp. resembles *Alvania pseudoareolata* Warén, 1974, but the latter has a different sculpture, with fewer spiral and axial ribs, and a protoconch of about 1.5 whorls, sculptured with very close-set, thread-like lines and parts of lines.

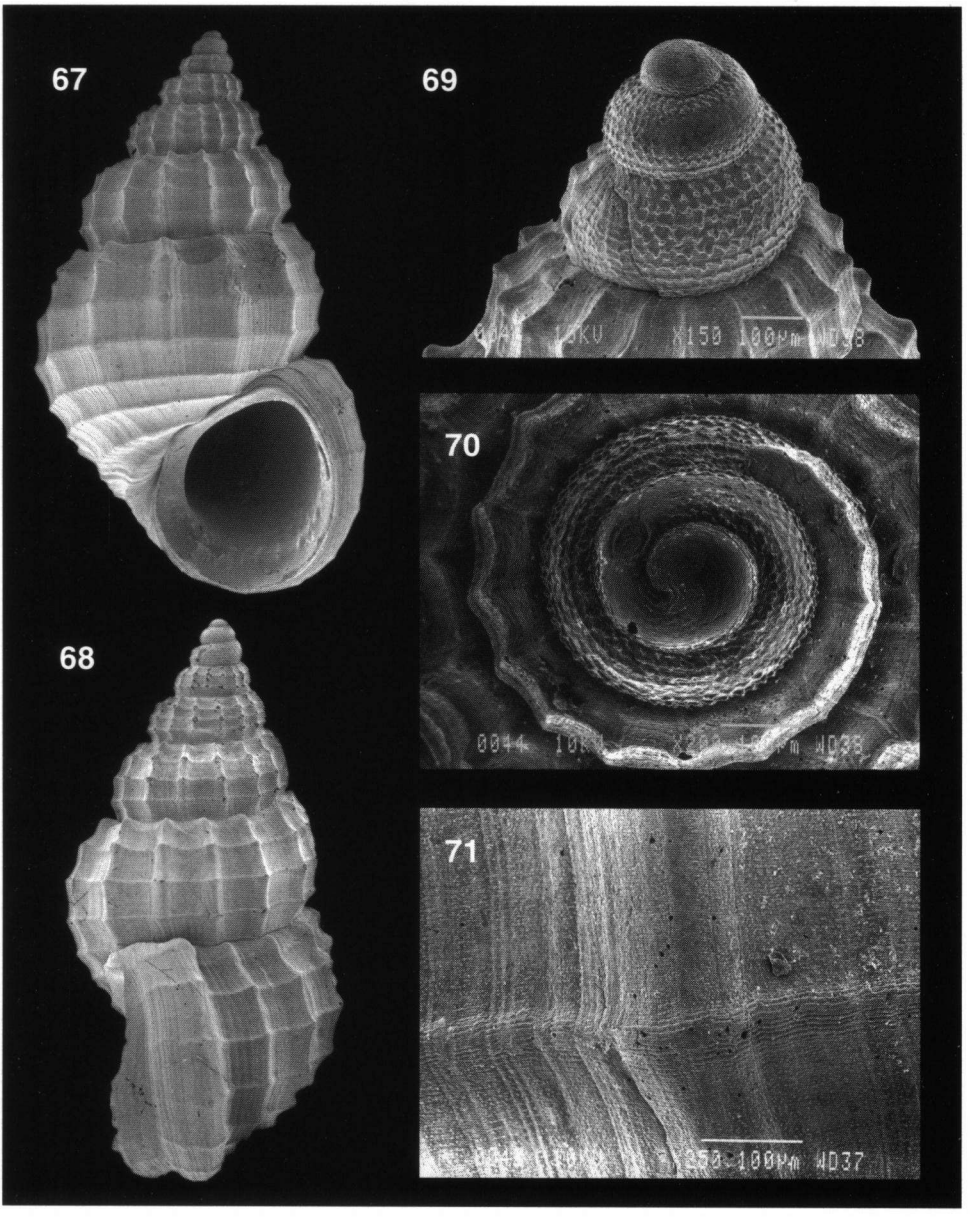
Etymology. — The species is named after René F. Hoenselaar, son of the first author.

Alvania rykeli spec. nov. (figs. 67-71)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57799), 38 paratypes (NNM 57800) and 37 paratypes (HJH) from type-locality: Sta. 6.010, 14° 53' N, 23° 30' W, depth 310 m. Paratypes (NNM 57801-57846): Sta. 6.006, 110-100 m/4; Sta. 6.009, 175 m/1; Sta. 6.011, 328 m/6; Sta. 6.015, 150 m/1; Sta. 6.017, 380 m/6; Sta. 6.024, 540 m/7; Sta. 6.027, 920-970 m/3; Sta. 6.077, 171-179 m/1; Sta. 6.085, 100 m/8; Sta. 6.093, 400-430 m/20; Sta. 6.095, 930 m/20; Sta. 6.105, 204 m/10; Sta. 6.134, 110-120 m/2; Sta. 6.138, 150 m/10; Sta. 6.147, 99 m/3; Sta. 6.149, 293 m/12; Sta. 7.003, 510 m/8; Sta. 7.004, 320 m/10; Sta. 7.005, 235 m/12; Sta. 7.006, 510 m/4; Sta. 7.007, 420 m/12; Sta. 7.008, 700 m/2; Sta. 7.015, 450-600 m/3; Sta. 7.028, 225 m/> 100; Sta. 7.030, 165 m/10; Sta. 7.037, 385-350 m; Sta. 7.038, 410-460 m/7; Sta. 7.039, 590-610 m/30; Sta. 7.048, 166 m/20; Sta. 7.049, 273 m/12; Sta. 7.050, 380 m/12; Sta. 7.061, 605 m/2; Sta. 7.096, 145-160 m/16; Sta. 7.100, 354 m/3; Sta. 7.101, 262-280 m/20; Sta. 7.102, 165 m/5; Sta. 7.105, 123-142 m/1; Sta. 7.119, 140-160 m/20; Sta. 7.120, 208 m/10; Sta. 7.121, 200-230 m/30; Sta. 7.122, 100 m/2; Sta. 7.128, 400 m/50; Sta. 7.129, 405 m/30; Sta. 7.143, 102 m/1; Sta. 7.152, 159 m/1; Sta. 7.156, 90-110 m/1.

Depth range 90-970 m.

Description. — Shell relatively large, conical, with a sharp, multispiral protoconch. Larval shell (figs. 69-70) consisting of 2.25 whorls. Protoconch 1 has one whorl, sculptured with 6-8 spiral threads; the interspaces between these lines are filled with scattered micro-papillae. Protoconch 2 has a sculpture of spirals, composed of v-, x-, and +-shaped marks. Diameter protoconch 1, 0.14 mm; diameter protoconch 2, 0.54 mm. Teleoconch with five, moderately convex whorls, with a somewhat canaliculate suture. Axial sculpture of 12-14 high, sharp, thin, orthocline, axial ribs, slowly fading towards the base of the shell. Spiral sculpture of 7-8 thread-like spiral ribs covering the total



Figs. 67-71. *Alvania rykeli* spec. nov., type locality, Cape Verde Islands, 310 m. 67, holotype (NNM 57799), 4.7 x 2.65 mm; 68, paratype 1; 69, protoconch of paratype 2; 70, protoconch of paratype 3; 71, structure on bodywhorl of paratype 1.

height of the whorls; the two spiral ribs on the base of the shell are much more prominent than the remaining five to six. The interspaces framed by axial- and spiral ribs are clearly oblong, very open and covered by growth lines. The entire teleoconch is covered by a very fine microsculpture of spirals consisting of sometimes parted, sometimes confluent, micro-papillae, running over the axial ribs as well. Aperture drop-shaped; with a clear parietal callus and a solid inner lip, reflected broadly over a deep umbilical crevice. Peristome continuous, simple. Outside of the outer lip ending in a very strong varix, overrun by the spiral ribs; inside with 8-10 very low lamellar teeth, often hardly discernible.

Dimensions. — H 3.95-4.70 mm, W 2.25-2.75 mm (N = 76); holotype: H 4.70 mm, W 2.65 mm.

Differentiation. — *Alvania rykeli* n. sp. strongly resembles *Alvania cimicoides* (Forbes, 1844) as far as the protoconch is concerned. The sculpture looks very similar and even the colour of both protoconchs is light brown; only minor differences can be detected. Clearly different in the two species is the sculpture of the teleoconch. *A. cimicoides* (Forbes, 1844) has 22-25 broad axial ribs and 10-11 broad spiral ones, while the numbers in *Alvania rykeli* n. sp. are 12-14 for the axial, and 7-8 for the spiral ribs, respectively. The axial and the spiral ribs of *Alvania rykeli* n. sp. are also much thinner (sharper), which results in a much more 'open' sculpture. The suture of *Alvania rykeli* n. sp. is somewhat less canaliculate, as compared to that of *Alvania cimicoides* (Forbes, 1844).

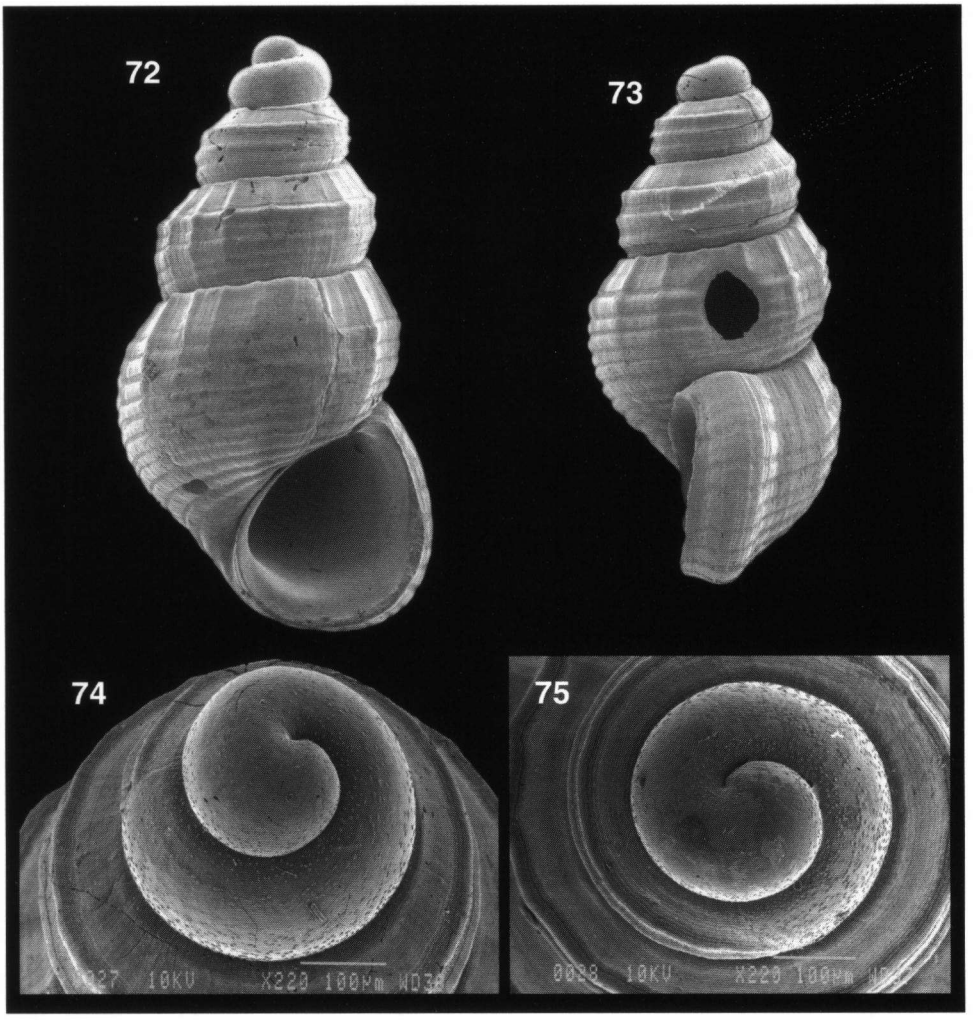
Etymology. — The species is named after Mr. Rykel H. de Bruyne, for his substantial contribution to the malacology of the Netherlands.

Alvania sleursi (Amati, 1987)

Manzonia (*Alvinia*) *sleursi* Amati, 1987: 25-30, figs. 1, 2.
Alvania sleursi, Gofas, 1990: 107-108, figs. 4, 39-42.

Material. — AZORES: Sta. 5.006, 35 m/>10; Sta. 5.008, to 75 m/>10; Sta. 5.009, 110 m/>10; Sta. 5.010, 150 m/1; Sta. 5.017, 88 m/>10; Sta. 5.019, 140-170 m/>10; Sta. 5.020, 240-245 m/>10; Sta. 5.025, 10-18 m/2; Sta. 5.026, 30 m/7; Sta. 5.033, 33 m/>10; Sta. 5.035, 5 m/3; Sta. 5.036, 65 m/>10; Sta. 5.037, 122 m/>10; Sta. 5.038, 38-43 m/>10; Sta. 5.039, 43 m/>10; Sta. 5.040, 41-47 m/>10; Sta. 5.050, 55 m/>10; Sta. 5.051, 620 m/>10; Sta. 5.053, 50 m/2; Sta. 5.055, 125 m/8; Sta. 5.058, 117 m/7; Sta. 5.064, 60-80 m/>10; Sta. 5.068, 210 m/>10; Sta. 5.077, 56-64 m/4; Sta. 5.078, 77 m/>10; Sta. 5.079, 110 m/3; Sta. 5.081, 162 m/4; Sta. 5.084, 188 m/>10; Sta. 5.091, 33 m/3; Sta. 5.093, 92 m/>10; Sta. 5.094, 90 m/>10; Sta. 5.096, 52 m/6; Sta. 5.098, 40 m/2; Sta. 5.100, 55 m/7; Sta. 5.102, 65 m/>10; Sta. 5.112, 85 m/>10; Sta. 5.113, 45 m/>10; Sta. 5.118, 75 m/1; Sta. 5.128, 90 m/5; Sta. 5.130, 80-90 m/>10; Sta. 5.138, 70 m/>10; Sta. 5 139, 77 m/>10; Sta. 5.140, 88 m/8; Sta. 5.145, 75-77 m/3; Sta. 5.146, 100 m/5; Sta. 5.147, 165-190 m/4; Sta. 5.150, 150 m/5; Sta. 5.158, 46 m/>10; Sta. 5.162, 75 m/6; Sta. 5.173, 50 m/3; Sta. 5.176, 142 m/8; Sta. 5.190, 72 m/1; Sta. 5.K01, 0 m/1; Sta. 5.K02, 0 m/4; Sta. AZO.05, 0 m/>10;Sta.AZO.16, 0 m/>10; Sta. AZO.21, 0 m/>10; Sta. AZO.22, 0 m/5; Sta. AZO.33, 0 m/>10. SELVAGENS ARCHIPELAGO, Sta. 3.070, 645 m/8; Sta. 3.072, 830 m/3; Sta. 3.087, 322 m/8 (all specimens strongly eroded.).

Depth range 0-830 m.



Figs. 72-75. *Alvania slieringsi* spec. nov., type locality, Canary Islands, 110-180 m. 72, holotype (NNM 57704) 1.95 x 1.0 mm; 73, paratype 1; 74, protoconch of paratype 2; 75, protoconch of paratype 3.

Alvania slieringsi spec. nov. (figs. 72-75)

Material. — CANARY ISLANDS: Holotype (NNM 57704), 48 paratypes (NNM 57705) and 47 paratypes (HJH) from type-locality: Sta. 4.110, 28° 27 ' N, 17° 51' W, depth 110-180 m. Paratypes (NNM 57706-57717): Sta. 2.099, 160 m/8; Sta. 2.103, 240 m/35; Sta. 2.114, 340-380 m/1; Sta. 2.120, 350-400 m/9; Sta. 4.112, 245-141 m/30; Sta. 4.114, 200 m/4; Sta. 4.115, 300 m/6; Sta. 4.116, 420 m/35; Sta. 4.117, 503 m/10; Sta. 4.124, 800 m/1; Sta. 4.145, 160 m/6; Sta. 4.157, 250-200 m/1.

Depth range 110-800 m.

Description. — Shell solid, sub-cylindrical with a somewhat protruding apex, opaque. Larval shell (figs. 74-75) consisting of 1.3-1.4 whorls, densely covered by micro-tubercles without any pattern. Average diameter of the protoconch 0.36 mm. Teleoconch with 3.5-3.8 whorls, slowly increasing in width. The upper third of the spire is clearly cone-shaped, the lower part is evenly rounded. There is an axial sculpture of 14-16 straight, low, narrow ribs, which are most prominent near the distinct suture and gradually fade towards the periphery. Spiral sculpture of 10-14 indistinct spiral ribs over entire body whorl, but nearly invisible on the cone-shaped part. Aperture oval; thin parietal callus. Inner lip reflecting over the columella; no umbilicus. Outer lip ending in a strong varix, overrun by the spiral ribs. The colour varies from pale straw to medium orange-brown. The spirals on the whorls are covered with brown, dotted lines.

Dimensions. — H 1.45-2.05 mm, W 0.73-1.05 mm (N = 96); holotype: H 1.95 mm, W 1.00 mm.

Differentiation. — *Alvania slieringsi* n. sp. resembles *Alvania scabra* (Philippi, 1844) in profile, but the latter is about 20 % larger, less cylindrical, with less spiral ribs, a protoconch with spiral lines, a less prominent varix, and spiral ribs which are much more prominent than in *A. slieringsi* n. sp.

Etymology. — The species is named after Mr. M. Slierings for his participation in the CANCAP expeditions.

Alvania subcalathus Monterosato, in Dautzenberg & Fischer, 1906

Rissoa calathus, Manzoni, 1868: 251, pl. X, fig. 9. (non Forbes & Hanley).
Alvania subcalathus Monterosato in Dautzenberg & Fischer, 1906: 47.
Turbona calathus manzonii Nordsieck, 1972: 184, pl. R7 fig. 9.
Alvania manzonii, Gofas, 1989: 40, figs. 7-8.

Material. — SELVAGENS ARCHIPELAGO: Sta. 3.061, 84 m/>10; Sta. 3.063, 80 m/6; Sta. 3.065, 100 m/>10; Sta. 3.081, 91 m/2; Sta. 3.099, 585 m/3. CANARY ISLANDS: Sta. 2.K17, 0-6 m/4; Sta. 2.013, 225 m.; Sta. 2.034, 90 m/6; Sta. 2.035, 90 m/7; Sta. 2.103, 240 m/8; Sta. 2.120, 350-400 m/4; Sta. 2.147, 550-600 m/4; Sta. 4.K01, 0-5 m/>10; Sta. 4.110, 110-180 m/>10; Sta. 4.112, 245-141 m/>10; Sta. 4.114, about 1000 m/>10; Sta. 4.115, 300 m/>10; Sta. 4.116, 420 m/>10; Sta. 4.117, 5.103 m/10; Sta.4.124, 800 m/6; Sta. 4.129, 1000 m/1; Sta. 4.137, 50 m/4; Sta. 4.138, 75 m/3; Sta. 4.139, 100 m/>10.

Depth range 0-585 m.

Remarks. – *A. subcalathus* Monterosato in Dautzenberg & Fischer, 1906 is better known as *A. manzonii* (Nordsieck, 1972). However, Moolenbeek & Hoenselaar (in press) have demonstrated that *A. manzonii* is a junior synonym of *A. subcalathus*.

Alvania subsoluta (Aradas, 1847)

Rissoa subsoluta Aradas, 1847: 77.
Alvania subsoluta, Bouchet & Warén, 1993: 645-648, figs. 1377, 1453-1461, 1464-1474.

Material. MADEIRA ARCHIPELAGO: Sta. 1.067, 30 m/>10. CANARY ISLANDS: Sta. 4.055, 1209-1338 m/1; Sta. 4.077, 1085 m/2; Sta. 4.087, 700-900 m/1. WEST AFRICA: Sta. 2.036, 540-580 m/4.; Sta. 2.058, 500 m/5.

Depth range 30-1085 m.

Alvania tarsodes (Watson, 1886)

Rissoa (Alvania) tarsodes Watson, 1886: 595, pl. 44 fig. 2.
Alvania tarsodes, Bouchet & Warén, 1993: 642, figs. 1442-1446, 1450,1452.

Material. — AZORES: Sta. 5.009, 110m/ > 50; Sta. 5.010, 150m/10; Sta. 5.011, 220-290 m/4; Sta.5.017, 88 m/40; Sta. 5.019, 140-170 m/25; Sta. 5.020, 240-245 m/27 m/ Sta. 5.033, 35 m/3; Sta. 5.036, 65 m/3; Sta. 5.037, D122 m/6; Sta. 5.039, 43 m/8; Sta. 5.040, 41-47 m/8; Sta. 5.050, 55 m/3; Sta. 5.051, 620 m; Sta. 5.055, 125 m/40; Sta. 5.068, 210 m/1; Sta. 5.071, 220 m/16; Sta. 5.073, 245 m/2; Sta. 5.074, 225 m/3; Sta. 5.079, 110 m/1; Sta. 5.080, 146 m/3; Sta. 5.083, 177 m/4; Sta. 5.093, 92 m/3; Sta. 5.095, 70 m/7; Sta. 5.096, 52 m/4; Sta. 5.100, 55 m/1; Sta. 5.102, 65 m/3; Sta. 5.113, 45 m/1; Sta. 5.128, 90 m/8; Sta. 5.130, 80-90 m/3; Sta. 5.131, 120-135 m/25; Sta. 5.134, 132-135 m/1; Sta. 5.138, 70 m/2; Sta. 5.140, 88 m/10; Sta. 5.190, 72 m/1.
Depth range 35-620 m.

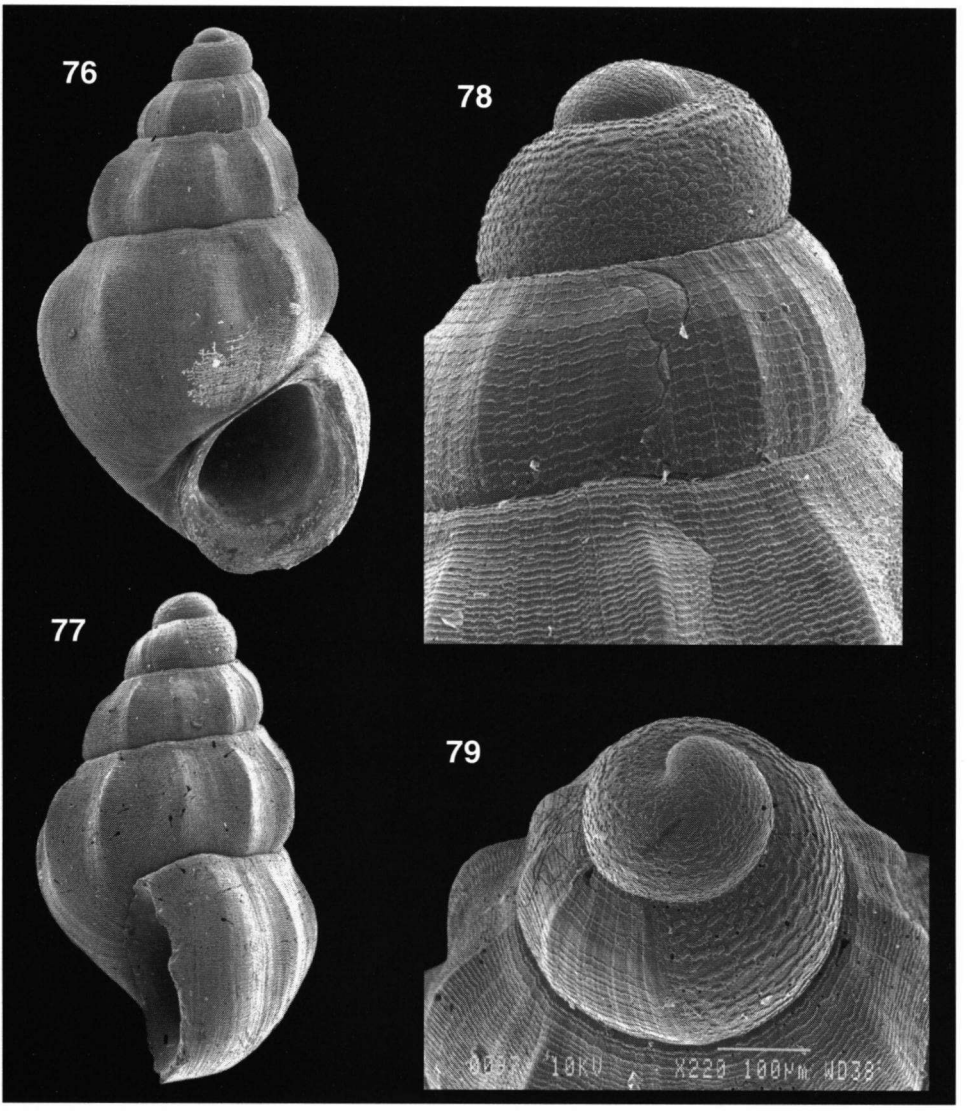
The more than 400 specimens studied show a striking variability in shape, surface structure and colour. Samples collected in 'shallow' water contain dirty white to light brown specimens, as well as specimens with only a brown protoconch, or with one or two brown, postnuclear whorls. Nearly all specimens have a brown spot on the initial whorl. With increasing depth, the colour of the protoconch and the percentage of protoconchs with brown tips, diminishes considerably. On the body whorl, the number of axial and spiral ribs varied from 20-40, and 9-12, respectively. Also the prominence of the axial costae and spirals differ and, accordingly the internodes vary from very small rounded knobs to sharp spiny-like projections, similar to the lamellae on the teleoconch of *A. lamellata*. However, in *A. tarsodes* the projections never cover the shell base, as is the case in *A. lamellata*. We did not find any relation between the varying sculpture of the teleoconch and the depth. Bouchet & Warén (1993: 643) already illustrated the great variability of this species.

Alvania tenhovei spec. nov. (figs. 76-79)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57993), 1 paratype (NNM 57994) and 1 paratype (HJH) from type-locality: Sta. 7.119, 16° 36' N, 24° 36' W, depth 140-160 m. Paratypes (NNM 57995-57997): Sta. 6.095, 200-230 m/1; Sta. 6.149, 293 m/3; Sta. 7.121; 200-230 m/10.
Depth range 140-293 m.

Description. — Shell very solid, broadly conical, with few axial ribs, opaque. Larval shell (fig. 79) consisting of 1.25 whorls, densely covered by incoherent small parts of dotted lines, higgledy-piggledy arranged, and only vaguely spirally arranged. Average diameter of the protoconch 0.31 mm.

Teleoconch of 2.0-2.3 convex whorls, rapidly increasing in width. The body whorl measures about 60% of the total height of the shell. The whorls are sculptured with 10-12 prominent, broad, axial ribs. The interstices are about 1.5 times as broad as the axial ribs. At the sutural level, the axial ribs quickly fade away. The entire teleoconch is covered by a dense sculpture of spirally arranged microthreads. Aperture oval, with a rather straight part at the basal side. Parietal callus visible. Inner lip strongly reflected over the clear umbilicus. There is a prominent axial rib at the end of the body whorl, just before the thin outer lip.



Figs. 76-79. *Alvania tenhovei* spec. nov., type locality, Cape Verde Islands, 140-160m. 76, holotype (NNM 57993), 1.6 x 1.0 mm; 77, paratype 1; 78, protoconch and first teleoconch whorl of holotype; 79, protoconch of paratype 1.

Nothing can be added about the variability of this species because only a limited number of specimens are available.

Dimensions. — H 1.45-1.70 mm, W 0.95-1.10 mm (N = 3); holotype: H 1.60 mm, W 1.00 mm.

Differentiation. — We provisionally placed this species in the genus *Alvania*, although

there is no sign of a spiral sculpture. The sculpture of the protoconch, the spiral microsculpture on the teleoconch and the thickness of the shell are features known from many *Alvania* species. However, the general impression is more that of a *Pusillina* species and as such, *A. tenhovei* n. sp. somewhat resembles *P. hadra* Bouchet & Warén,1993. The latter species has a smooth protoconch, more axial ribs, a less prominent varix and a more fragile shell.

Etymology. — The species is named after Dr. H. A. ten Hove, for his participation in the CANCAP expeditions.

Alvania testae (Aradas & Maggiore, 1844)

Rissoa testae Aradas & maggiore, 1844: 135.
Alvania testae, Bouchet & Warén, 1993: 628-630, figs. 1386-1387, 1400-1405.

Material. — WEST AFRICA: Sta. 1.120, 340 m/2; Sta. 1.121, 125 m/1; Sta. 1.123, 89 m/5; Sta. 1.147, 100 m/2; Sta. 2.036, 540-580 m. 2. Sta. 3.133, 75 m/1; Sta. 3.194, 78 m/3.
Depth range 75-580 m.

Alvania tomentosa (Pallary, 1920)

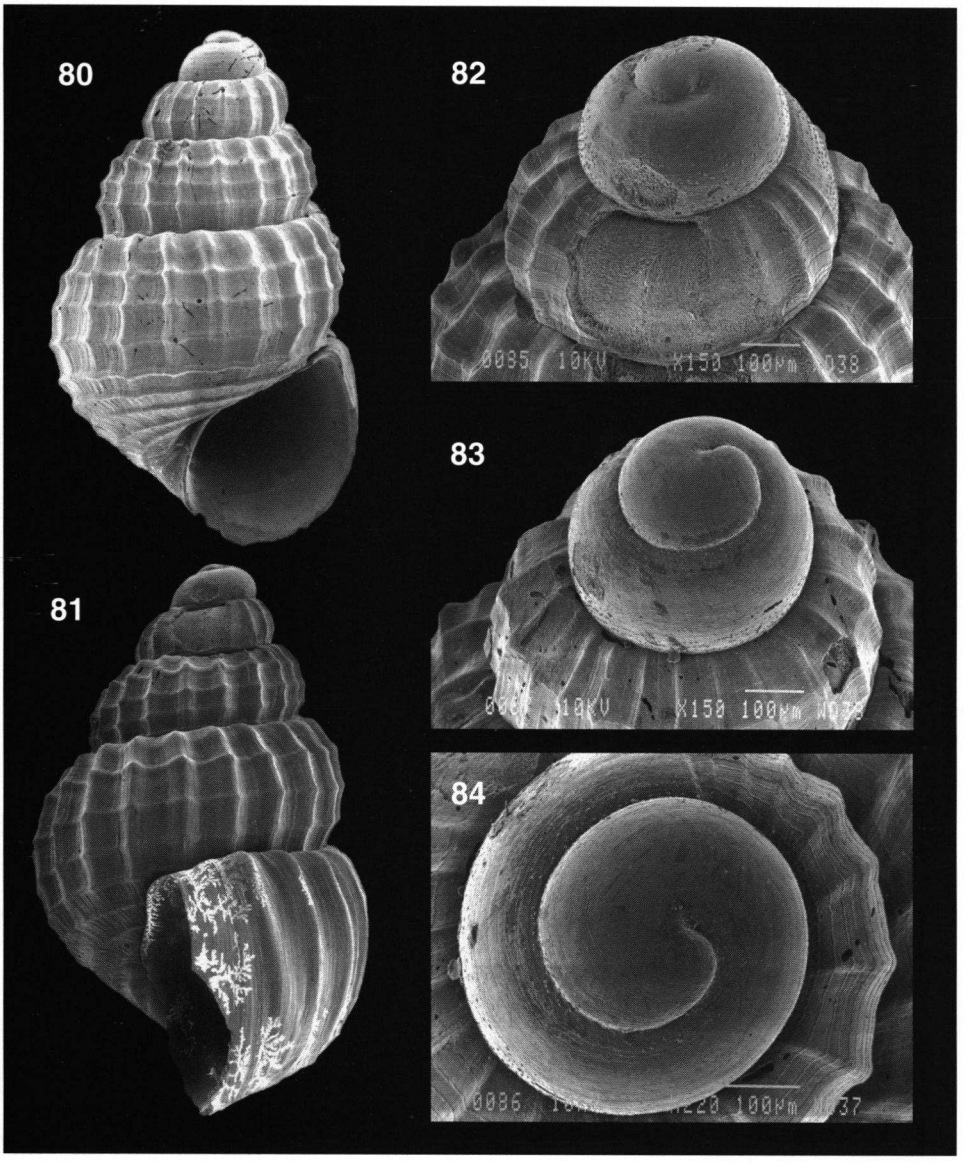
Alvania tomentosa Monterosato MS, Pallary, 1902: 18 (nom. nud.); Monterosato MS, Pallary, 1920: 50, fig. 27.
Alvania altenai Aartsen, Menkhorst & Gittenberger, 1984: 23, fig. 99.
Alvania tomentosa, Bouchet & Warén, 1993: 631-632, figs. 1388-1389, 1406-1408.

Material. — WEST AFRICA: Sta. 1.121, 125 m/5.

Alvania vanegmondi spec. nov. (figs. 80-84)

Material. — CAPE VERDE ISLANDS: Holotype (NNM 57982), 10 paratypes (NNM 57983) and 10 paratypes (HJH) from type-locality: Sta. 7.061, 15° 07' N, 23° 15' W, depth 605 m. Paratypes (NNM 57984-57987): Sta. 7.015, 450-600 m/20; Sta. 7.039, 590-610 m/12; Sta. 7.052, 594 m/4; Sta. 7.008, 700 m/10.
Depth range 450-930 m.

Description. — Shell conical, rather thin, dirty white, coarsely reticulate, with a somewhat dome-shaped protoconch. Larval shell (figs. 82-84) consisting of 1.5 convex whorls with 7-10 very thin spiral threads, evenly divided over the total height of the whorls. Micropapillae widely scattered all over the protoconch, except for the initial part. These micropapillae are more dense near the suture. Average diameter of the protoconch 0.44 mm. Teleoconch of 3-3.5 convex whorls, rapidly increasing in width, with 16-22 axial ribs, running from suture to suture on the spire, and from suture to suture level on the body whorl; ending abruptly at the suture level. The axial ribs are crossed by 8-10 spiral ribs, which are as prominent as the axial ribs, resulting in a regular pattern of squares or rectangles and small nodules on the crossings. The spiral ribs on the shell base run as far as the outer lip, whereas the ones from the periphery and upwards are absent for about 1/5 of the last part of the body whorl. Aperture



Figs. 80-84. *Alvania vanegmondi* spec. nov., type locality, Cape Verde Islands, 605 m. 80, holotype (NNM 57982), 1.85 x 1.2 mm; 81, paratype 1; 82, protoconch of paratype 1; 83, protoconch of paratype 2; 84, protoconch of paratype 2.

drop-shaped; parietal callus clearly present. Peristome simple. Inner lip moderately thick to strong, reflecting over a clear umbilical crevice.

The outline of the teleoconch varies from clearly conical to slightly stepped. Depending on the amount and distance of the axial and the spiral ribs, they produce horizontal or vertical rectangles, or squares.

Dimensions. — H 2.10-2.40 mm, W 1.35-1.55 mm (N = 21); holotype: H 1.85 mm, W 1.20 mm.

Differentiation. — *Alvania vanegmondi* n. sp. somewhat resembles *A. jeffreysi* (Waller, 1864), but the latter has a protoconch with zigzag lines, is more slender, has more axial and spiral ribs and has a faint varix.

Etymology. — The species is named after Mr. J. van Egmond, for his participation in the CANCAP expeditions.

Alvania watsoni (Watson, 1873)

Rissoa watsoni (Schwartz), Watson, 1873: 375, pl. 35 fig. 11.
Alvania watsoni, Verduin, 1984: 66, fig. 32.

Material. MADEIRA ARCHIPELAGO: Sta. 1.029, 340 m/2; Sta. 1.059, 280-300 m/1; Sta. 1081, 90-102 m/4; Sta. 1.086, 360 m/5; Sta. 1.098, 220-226 m/1; Sta. 1.D80, 0-20 m/4. CANARY ISLANDS: Sta. 2.003, 140-200 m/1; Sta. 2.075, 550 m/1; Sta. 2.085, 500-700 m/1; Sta. 2.114, 340-480 m/1; Sta. 4.024, 39 m/1; Sta. 4.027, 27-30 m/1 Sta. 4.038, 82 m/5; Sta. 4.048, 215-325 m/1; Sta. 4.138, 75 m/3; Sta. 4.D02, to 15 m/1; Sta. 4.K01, 0-5 m/2.

Depth range 0-550 m.

Alvania zetlandica (Montagu, 1815)

Turbo zetlandicus Montagu, 1815: 194, pl. 13 fig. 3.
Alvania zetlandica, Bouchet & Warén, 1993: 655-657, figs. 1494-1496, 1502.

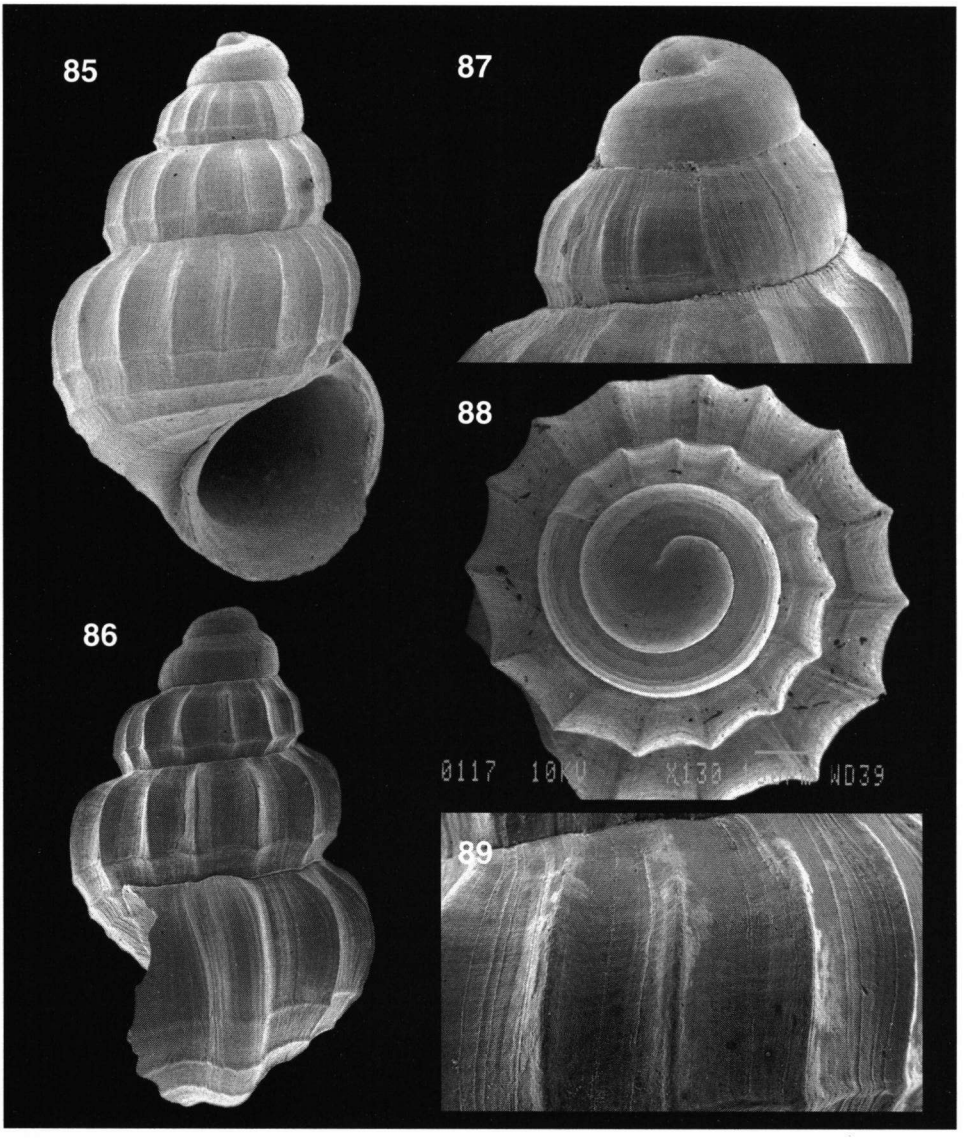
Material. CANARY ISLANDS: Sta. 2.013, 225 m/2; Sta. 2.074, 530 m/1. CAPE VERDE ISLANDS: Sta. 6.010, 310 m/5; Sta. 6.024, 540 m/2; Sta. 6.093, 400-430 m/2; Sta. 7.128, 400 m/2.

Depth range 225-540 m.

Alvania zoderi spec. nov. (figs. 85-89)

Material. AZORES: Holotype (NNM 57677), 12 paratypes (NNM 57678) and 12 paratypes (HJH) from type-locality: Sta. 5.051, 36° 55' N, 25° 07' W, depth 620 m. Only known from the type-sample.

Description. — Shell conical ovate with a somewhat blunt apex, solid, semitransparent, with prominent axial ribs. Larval shell (fig. 87) of 1.25 angulate whorls without any sculpture. Average diameter of the protoconch 0.4 mm. Teleoconch with 3.25 convex whorls, regularly increasing in width; the peripheral part somewhat flattened, with about 15-17 sharp strong axial ribs on the body whorl. These ribs fade below the suture level of the body whorl. On the spire they run from suture to suture. The spiral sculpture consists of 4-5 spiral ribs, less prominent than the axial ribs, on the lower



Figs. 85-89. *Alvania zoderi* spec. nov., type locality, Azores, 620 m. 85, holotype (NNM 57677), 2.05 x 1.20 mm; 86, paratype 1; 87, protoconch of paratype 2; 88, protoconch of paratype 3; 89 structure on bodywhorl of paratype 1.

third of the body whorl only. On the spire only a single spiral is to be seen. Enlargement up to 200 times only shows fine growth lines. Aperture drop shaped; with a parietal callus. Inner lip reflected over a very narrow umbilical crevice. Outer lip thickened by a labial varix.

The species varies considerably in length. The amount of axial ribs varies from 16-20.

Dimensions. — H 1.75-2.20, W 1.05-1.25 (N = 25); holotype: H 2.05 mm, W 1.20 mm.

Differentiation. — *A. zoderi* n. sp. somewhat resembles *Alvania pseudoareolata* Warén, 1970, but the latter is more slender, has a slightly sculptured protoconch and the whorls of the spire have two spiral ribs above the suture. Whether *Alvania zoderi* n. sp. really belongs to the genus *Alvania* will possibly become clear after studying the animal. All the shells in the type series were empty.

Etymology. — The species is named after Dr. B. Zoder, who stimulated the second author to investigate micromolluscs.

ACKNOWLEDGEMENTS

We are grateful to Mrs. J. Hoenselaar who spent five years in sorting the 400 sediment samples, and so made the material accessible for study and to Prof. Dr. E. Gittenberger for critically reading the manuscript.

REFERENCES

AARTSEN, J. J. VAN, 1982. Synoptic tables of Medit. & Europ. Conchology. Gen. Alvania (Sbg. Arsenia e Alvaniella). — La Conchiglia 164-165: 4-6.

——, H.P.M.G. MENKHORST & E. GITTENBERGER, 1984. The marine Mollusca of the Bay of Algeciras, Spain, with general notes on Mitrella, Marginellidae and Turridae. — Basteria Suppl. 2: 1-135.

AMATI, B., 1987. Manzonia sleursi sp. n. (Gastropoda, Prosobranchia). — Notiziario CISMA 10: 25-30.

ARADAS, A., 1847. Descrizione delle conchiglie fossili di Gravitelli presso Messina. — Atti Accad. Gioenia Sci. Natur. Catania (2) 4: 57-88.

——, & G. MAGGIORE, 1844. Catalogo ragionato delle conchigli viventi e fossili di Sicilia. — Atti Accad. Gioenia Sci. Natur. Catania 20: 101-142.

BOUCHET, P., & A. WARÉN, 1993. Revision of the Northeast Atlantic bathyal and abyssal Mesogastropoda. — Boll. Malac. Suppl. 3: 579-840.

COSTA, E. M. DA, 1778. Historia Naturalis Testaceorum Britanniae or The British Conchology: 1-254. London.

DAUTZENBERG, P., 1889. Contribution à la faune malacologique des Iles Açores. – Rés. Camp. Scientif. Albert Ier 1: 1-112.

——, & H. FISCHER, 1896. Dragages effectués par l'Hirondelle et de la Princesse-Alice: 1. Mollusques Gasteropodes. – Mém. Soc. Zool. France 9: 1-104.

——, & H. FISCHER, 1906. Mollusques provenant des dragages effectués à l'Ouest de l'Afrique pendant les campagnes scientifiques de S.A.S. le Prince de Monaco. — – Rés. Camp. Scientif. ..... Albert Ier 32: 1-125.

FORBES, E., 1844. Report on the Mollusca and Radiata of the Aegean Sea, and on their distribution, considered as bearing on geology. – Rep. Brit. Assoc. Adv. Science for 1843: 130-193.

GIUSTI, F., & I. NOFRONI, 1989. Alvania dipacoi new species from the Tuscan Archipelago. — La Conchiglia 242-245: 54-56.

GOFAS, S., 1989. Two new species of Alvania (Rissoidae) from the Açores. — Publ. Ocas. Soc. Port. Malac. 14: 39-42.

——, 1990. The littoral Rissoidae and Anabathridae of San Miguel. Azores. – Açoreana Suppl.: 97-134.

——, J. PINTO AFONSO & M. BRANDÃO, 1985. Conchas e moluscos de Angola. Coquillages et mollusques

d'Angola. Univ. Agostinho Neto/Elf Aquitaine Angola: 1-144. Luanda.

——, & A. WARÉN, 1982. Taxonomie de quelques espèces du genre Alvania (Mollusca, Gastropoda) des côtes iberiques et marocaines. — Boll. Malac. 18: 1-16.

LAND, J. VAN DER, 1987. Report on the CANCAP-project for marine biological research in the Canarian — Cape Verdean region of the North Atlantic Ocean (1976-1986) Part 1. List of stations. — Zool. Ver. 243: 1-94.

LINDEN, J. VAN DER, 1993. Alvania obsoleta spec. nov. from the Azores (Gastropoda, Prosobranchia: Rissoidae). — Basteria 57: 79-82.

——, & J.J. VAN AARTSEN, 1994. Alvania abstersa nom. nov., a new name for A. obsoleta Van der Linden, 1993, non A. obsoleta (S.V. Wood, 1848) (Gastropoda Prosobranchia: Rissoidae). — Basteria 58: 2.

——, & W.M. WAGNER, 1989. Alvania multiquadrata spec. nov. from the Canary Islands (Gastropoda Prosobranchia: Rissoidae). — Basteria 53: 35-37.

MANZONI, A., 1868a. Nouvelles espèces de Rissoa recueillies aux îles Canaries et a Madère par M. Mac-Andrew, en 1852. — J. Conchyl. Paris 16: 164-168.

——, 1868b. Sur les Rissoa des îles Canaries et de Madère recueillis par M. Mac-Andrew en 1852. – J. Conchyl. Paris 16: 236-256.

MONTAGU, G., 1815. An account of some new and rare marine British shells and animals. — Trans. Linn. Soc. London 9: 179-204.

MONTEROSATO, A. T. DI, 1874. Recherches conchiliologiques effectues au Cap San Vito, en Sicile. — J. Conchyl Paris 23: 243-282.

MOOLENBEEK, R.G., & H.J. HOENSELAAR, 1989. The genus Alvania on the Canary Islands and Madeira (Mollusca: Gastropoda) Part 1. — Bull. Zool. Mus. Amsterdam 11(27): 215-230.

—— & ——, in press. The genus Alvania on the Canary Islands and Madeira (Mollusca: Gastropoda) Part II.

——, & E. ROLÁN, 1988. New species of Rissoidae from the Cape Verde Islands (Mollusca: Gastropoda) Part 1. — Bull. Zool. Mus. Amsterdam 11(14): 121-128.

NORDSIECK, F., 1972. Die europäischen Meeresschnecken (Opisthobranchia mit Pyramidellidae; Rissoacea): I-XIII; 1-327. Stuttgart.

ORBIGNY, A. D', 1839. Mollusques, echinodermes, foraminiféres et polypiers, recuillis aux îles Canaries par MM. Webb et S. Berthelot: Histoire naturelle des îles Canaries 2(2): 1-117. Paris.

PALLARY, P., 1902. Liste des mollusques de la Baie de Tanger. — J. Conchyl. Paris 50:1-39.

PALLARY, P., 1920. Exploration scientifique du Maroc. Malacologie: 1-108. Paris.

ROLÁN, E. 1987. Alvania gomezi nomen novum para Rissoa aurantiaca, Watson, non Brusina. — Publ. Ocas. Soc. Port. Malac. 8: 9-10.

VERDUIN, A., 1984. On the taxonomy of some Recent European marine species of the genus Cingula s.l. (Gastropoda: Prosobranchia). — Basteria 48: 37-87.

WARÉN, A., 1974. Revision of the Arctic-Atlantic Rissoidae (Gastropoda, Prosobranchia). — Zool. Scripta 3: 121-135.

——, 1996. Ecology and systematics of the North European species of Rissoa and Pusillina (Prosobranchia: Rissoidae). — J. Mar. Biol. Ass. U. K. 76: 1013-1059.

WATSON, R. B., 1873. On some marine mollusca from Madeira, including a new genus of Muricidae, a new Eulima and the whole Rissoae of the group of islands. — Proc. Zool. Soc. London (1873): 361-391.

——, 1886. Report on the Scaphopoda and Gasteropoda collected by H.M.S. "Challenger" during the years 1873-76. – Rep. Scient. Res. Challenger Exped., Zoology 42: 1-756.

——, 1898. On the marine Mollusca of Madeira; with descriptions of thirty-five new species, and an index-list of all the known sea-dwelling species of that Island. – J. Linn. Soc. Lond. 26: 233-329.

species	Azores	Madeira	Selvagens	Canary Is.	West Africa	Cape Verde Is.	total	depth range	0-300 m	300-500 m	500-1000 m	1000-1500 m	1500-2000 m
A. abstersa	6						6	0-35	6				
A. adiophorus	6						6	142-620	2	4			
A. adinogramma	2						2	300-620		2			
A. angioyi	49						49	0-620	48		1		
A. aurantiaca		2					2	80-86	2				
A. canariensis		5	12	47			64	0-1085	46	8	9	1	
A. cancapae		1		15			16	220-700	4	6	6		
A. cancellata	55	23	1	48	8	1	136	0-1085	128	5	3		
A. cimicoides	13	1		5	4	2	25	89-620	18	2	5		
A. corneti						16	16	165-728	5	8	3		
A. denhartogi						9	9	29-700	4	2	3		
A. dipacoi				1	2		3	125-530	1	1	1		
A. dijkstrai			4				4	312-645		3	1		
A. electa				16	3		19	105-1810	2	4	11	1	1
A. euchila		3		1			4	56-240	4				
A. formicarum	7						7	0-142	7				
A. franseni						5	5	273-380	1	4			
A. guancha				15			15	10-800	7	3	5		
A. hoeksemai						4	4	22-120	4				
A. internodula	45						45	33-620	43	1	1		
A. jacquesi						28	28	50-700	14	10	4		
A. joseae				10			10	100-550	5	3	2		
A. lamellata	4						4	240-620	1	2	1		
A. lavaleyi						75	75	15-970	54	13	8		
A. leacocki		2	1	1			4	0-20	4				
A. macandrewi		19		1			20	56-900	15	3	2		
A. manzonii			5	15			20	0-585	13	2	5		
A. mediolittoralis	23	3					26	0-188	26				
A. microstriata		3					3	228-360	2	1			
A. multiquadrata		13		60			73	0-980	62	3	8		
A. nicolauensis						24	24	55-930	18	4	2		

species	Azores	Madeira	Selvagens	Canary Is.	West Africa	Cape Verde Is.	total	depth range	0-300 m	300-500 m	500-1000 m	1000-1500 m	1500-2000 m
A. nonsculpta	4						4	165-200	4				
A. paatsi						7	7	235-700	1	4	2		
A. peli						41	41	15-930	24	12	5		
A. piersmai				3			3	5-600	2		1		
A. platycephala	32	1					33	52-620	30	2	1		
A. porcupinae				5			5	300-1830		1	1	2	1
A. postrema	19	1					20	0-620	19		1		
A. poucheti	29						29	0-188	29				
A. multinodula						63	63	23-970	55	5	3		
A. renei				4			4	92-325	4				
A. rykeli						47	47	90-970	26	12	9		
A. sleursi	59		3				62	0-830	58	2	2		
A. slieringsi				13			13	110-800	7	4	2		
A. subsoluta		1		3	2		6	30-1085	1		3	2	
A. tarsodes	35						35	35-620	32	2	1		
A. tenhovei						4	4	140-293	4				
A. testae					7		7	75-580	5	1	1		
A. tomentosa					1		1	125	1				
A. vanegmondi						5	5	450-930			5		
A. watsoni		6		11			17	0-550	12	3	2		
A. zetlandica				2		4	6	225-540	1	3	2		
A. zoderi	1						1	620			1		
number of samples	389	84	26	276	27	335	1137		861	145	123	6	2
number of species	17	15	6	20	7	16			48	35	37	4	2
endemic species	12	2	1	6	2	13							

Table 1. Indication of the geographical and the bathymetrical distribution of the *Alvania* species sampled by the CANCAP expeditions. Numbers of samples are given for the separate archipelago's as well as for different depth ranges all over the area. Indicated by 'endemic' species is the number of species found in a particular archipelago and not found in any of the others.