

1657

Bull. Inst. r. Sci. nat. Belg. Bull. K. Belg. Inst. Nat. Wet.	Bruxelles Brussel	31-XII-1983
55	B I O L O G I E	2

THE MARINE MICROGASTROPODS  
FROM THE NORTHERN COAST OF PAPUA NEW GUINEA  
(MOLLUSCA : GASTROPODA)

I. FAMILY : *OMALOGYRIDAE*  
(WITH DESCRIPTION OF TWO NEW SPECIES) (1)

BY

Willy SLEURS

(With 1 plate)

ABSTRACT

This publication deals with the Omalogyridae found off the Northern coast of Papua New Guinea.

Three species have been recorded; two of them, *Omalogyra nodicarinata* sp. nov. and *O. vangoethemi* sp. nov. are described as new.

The validity of the genus *Ammonicera* VAYSSIERE, 1893 is discussed.

SAMENVATTING

Deze publikatie behandelt de Omalogyridae van de noordelijke kust van Papoea Nieuw-Guinea.

Drie soorten werden waargenomen, waarvan *Omalogyra nodicarinata* sp. nov. en *O. vangoethemi* sp. nov. als nieuw worden beschreven.

De geldigheid van het genus *Ammonicera* VAYSSIERE, 1893 wordt besproken.

(1) Leopold III Biological Station, Laing Island, Contribution n° 51.

## RESUME

Ce travail traite des Omalogyridae provenant de la côte nord de Papouasie Nouvelle-Guinée.

Trois espèces ont été trouvées, dont deux, *Omalogyra nodicarinata* sp. nov. et *O. vangoethemi* sont nouvelles pour la science.

La validité du genre *Ammonicera* VAYSSIERE, 1893 est discutée.

## I. INTRODUCTION

This is the first of a series of forthcoming papers, concerning the marine microgastropods mainly found on *Halimeda*-algae and in sediments off the Northern coast of Papua New Guinea.

The material for this study has been collected during several expeditions to Laing Island (Madang Province, Papua New Guinea). These expeditions were sponsored by the Leopold III Foundation and by the Ministry of National Education.

## II. MATERIAL AND METHODS

The material has been collected by Dr. J. VAN GOETHEM and by Mrs. D. CHRISTENSEN-PIERRET by scuba-diving or by hand-sampling.

The samples, originally fixed in 5 % buffered formalin, were washed in the laboratory and the microgastropods picked out.

All specimens, with or without soft parts, were preserved in 75 % alcohol, except for some specimens, which are housed in micropaleontological slides.

## III. LIST OF THE STATIONS

- PNG 77/30 : Papua New Guinea, Laing Island (Madang Province), E-reef flat, intertidal zone, on *Halimeda*-algae. Leg. J. VAN GOETHEM, 3.V.77.
- PNG 77/94 : Papua New Guinea, Laing Island, lagoon, - 3/- 4 m on *Halimeda*-algae. Leg. J. VAN GOETHEM, 12.V.77.
- PNG 77/95 : Papua New Guinea, Laing Island, lagoon, - 4 m on *Halimeda*-algae. Leg. J. VAN GOETHEM, 12.V.77.
- PNG 77/Sed. 107 : Papua New Guinea, Laing Island, East-side, - 10 m, sediment-sample. Leg. J. VAN GOETHEM, 14.V.77.
- PNG 77/225 : Papua New Guinea, Laing Island, lagoon, Western subtidal zone, on *Halimeda*-algae. Leg. J. VAN GOETHEM, 28.V.77.

- PNG 77/245 : Papua New Guinea, Laing Island, lagoon, inner side of the outer reef, - 3/- 4 m, on *Halimeda*-algae. Leg. J. VAN GOETHEM, 30.V.77.
- PNG 77/335 : Papua New Guinea, Boisa Island (Madang Prov.) - 4/- 10 m, on various algae and sponges. Leg. J. VAN GOETHEM, 9.VI.77.
- PNG 77/404 : Papua New Guinea, Laing Island, E-reef flat, intertidal zone, on *Halimeda*-algae. Leg. J. VAN GOETHEM, 20.VI.77.
- PNG 78/70 : Papua New Guinea, Laing Island (Hansa Bay, Madang Prov.), lagoon, South-end, between *Halimeda*-algae and other algae growing between dead branches of *Acropora*-staghorn coral, - 7 m. Leg. J. VAN GOETHEM, 15.V.78.
- PNG 78/150 : Papua New Guinea, Laing Island, N.W. outer reef, - 1/- 3 m, on *Halimeda*-algae on dead coral. Leg. J. VAN GOETHEM, 25.V.78.
- PNG 78/156 : Papua New Guinea, Laing Island, E.-reef flat, on *Halimeda*-algae, at low tide; nearly dried up. Leg. J. VAN GOETHEM, 26.V.78.
- PNG 78/158 : Papua New Guinea, Laing Island, on *Halimeda*-algae, near the edge of the reef flat, in tide pools. Leg. J. VAN GOETHEM, 26.V.78.
- PNG 78/174 : Papua New Guinea, Laing Island, lagoon, inner edge of the outer reef, on *Halimeda*-algae on dead coral, - 1 m. Leg. J. VAN GOETHEM, 28.V.78.
- PNG 78/225 : Papua New Guinea, Laing Island, lagoon, top of the outer reef, on *Halimeda*-algae, - 3/- 4 m. Leg. J. VAN GOETHEM, 4.VI.78.
- PNG 78/304 : Papua New Guinea, Blup Blup Island (East Sepik Prov.), on *Halimeda*-algae, between sponges and coral fragments at - 1/- 2 m. Leg. J. VAN GOETHEM, 16.VI.78.
- PNG 78/323 : Papua New Guinea, Laing Island, E.-reef flat at low tide, in coral sediment in small tide pools. Leg. J. VAN GOETHEM, 19.VI.78.
- PNG 79/349 : Papua New Guinea, Hansa Bay, Northern side of Duangit reef, sediment-sample, - 15/- 10 m. Leg. Mrs. D. CHRISTENSEN-PIERRET, 17.VI.79.

## IV. SYSTEMATICS

Family OMALOGYRIDAE P. FISCHER, 1885

Genus *Omalogyra* JEFFREYS, 1860*Omalogyra japonica* (HABE, 1972)

(Pl. I, figs 1, 6, 9)

## Synonymy

1972. *Ammonicera japonica*, sp. nov.; HABE, p. 115-116, text-figs. 1-4.1974. *Omalogyra japonica* (HABE, 1972); KAY and SWITZER, p. 278.1979. *Omalogyra japonica* (HABE, 1972); KAY, p. 92, fig. 32 A-C.

**Diagnosis.** — Species of the genus *Omalogyra* (sensu lato) with the following characteristics: teleoconch with axial ribs, becoming obsolete at the periphery; protoconch with a reticulated sculpture at the abapical side.

**Description.** — HABE (1972) and KAY (1979, p. 92, fig. 32 A-C).

Additional description; protoconch: 1/2 whorl with a strong carina in the middle of the whorl, limited by a deep groove at the adapical side and by a flattened side at the abapical side; the abapical side with relatively strong, regularly spaced axial ribs, crossed by two obsolete spiral ribs: transition to teleoconch well marked.

Teleoconch: whorls strongly convex, with obsolete growth lines between the axial ribs and the periphery.

Measurements (in mm): samples PNG 77/404 and PNG 78/156. (N = number of specimens, Diam. max. = maximum diameter, Diam. min. = minimum diameter, mean and standard deviation in parentheses).

N	Diam. max.	Diam. min.
18	0.30 — 0.35 (0.32 ± 0.02)	0.25 — 0.29 (0.27 ± 0.02)
30	0.36 — 0.40 (0.38 ± 0.01)	0.29 — 0.32 (0.31 ± 0.01)
35	0.41 — 0.45 (0.41 ± 0.01)	0.32 — 0.37 (0.34 ± 0.01)

**Material examined** (sp : indicates the fraction of the total number of specimens with soft parts): PNG 77/30 (16/4 sp), PNG 77/94 (1/1 sp), PNG 77/225 (13/5 sp), PNG 77/245 (4/1 sp), PNG 77/404 (42/8 sp), PNG 78/70 (6/2 sp), PNG 78/156 (45/27 sp), PNG 78/174

(5/3 sp), PNG 78/225 (10/3 sp), PNG 78/245 (4/1 sp), PNG 78/304 (5/0 sp), PNG 78/323 (34/2 sp).

**Distribution.** — Honshu, Japan (HABE, 1972); Fanning Island (KAY and SWITZER, 1974); Hawaii (KAY, 1979); Laing Island, Hansa Bay, Papua New Guinea.

**Habitat.** — Living specimens were found on *Halimeda*-algae.

**Discussion.** — The species is strongly related to the Atlantic and Mediterranean species *Omalogyra rota* FORBES and HANLEY, 1853, but can be distinguished by the smaller number of axial ribs on the teleoconch and by the presence of a reticulated sculpture on the abapical side of the groove on the protoconch.

The genus-assignment is discussed further.

### *Omalogyra nodicarinata* sp. nov.

(Pl. I, figs. 4, 5, 7, 10)

**Derivatio nominis.** — Referring to the upper and lower nodose carinae.

**Diagnosis.** — Teleoconch with one row of nodules on the ventral and dorsal side of the shell and with a strong peripheral carina.

**Type-locality.** — Laing Island (4° 10' 20" S, 144° 52' 20" E), Papua New Guinea, lagoon, top of the outer reef, on *Halimeda*-algae, at a depth of 3 to 4 meters (station PNG 78/225).

**Holotype.** — A specimen with soft parts.

**Paratypes.** — 4 specimens with soft parts, 4 empty shells.

**Description.** — Protoconch: first part with a deep, narrow groove extending to the first three quarters of the whorl; transition to teleoconch indistinct.

Teleoconch: shell extremely small, planorbic, about three times as broad as high; body whorl with a strong carina at the periphery and two weaker carinae, one on the ventral and one on the dorsal side of the shell; interstitials between carinae slightly concave with fine obsolete axial growth striae; the upper and lower surface with about twelve axial ribs, forming strong nodules on the carinae of the upper and lower surface of the shell; upper and lower carinae undulate as a consequence of the nodules; suture contracted, deep, obvious and slightly undulating on the last quarter of the shell.

Aperture: subquadrate, peristome continuous, clasping at both sides of the periphery; inner lip straight; outer lip thin.

Colour: transparent, yellow-brown; fresh specimens having a deep brown suture between protoconch and first whorl of the teleoconch.

Operculum: subcircular, chitinous, paucispiral, straight at the parietal side; central nucleus.

Measurements (in mm) of the type-material (Station PNG 78/225). (Diam. max. = maximum diameter, Diam. min. = minimum diameter, sp = presence or absence of soft parts).

	Diam. max.	Diam. min.	No axial ribs on last whorl	Sp
Holotype ... ..	0.46	0.40	12	+
Paratypes ... ..	0.43	0.35	12	-
	0.40	0.34	11	+
	0.37	0.32	11	+
	0.37	0.32	12	+
	0.48	0.42	15	-
	0.46	0.40	13	-
	0.48	0.40	13	-
	0.35	0.29	10	+

Dimensions (in mm) of additional material examined (samples PNG 78/156, PNG 78/158, PNG 77/94). (N = number of specimens examined, mean and standard deviations in parentheses).

N	Diam. max.	Diam. min.
4	0.26 — 0.30 (0.27 ± 0.01)	0.20 — 0.22 (0.21 ± 0.01)
5	0.31 — 0.35 (0.32 ± 0.01)	0.25 — 0.29 (0.26 ± 0.02)
22	0.36 — 0.40 (0.38 ± 0.01)	0.29 — 0.34 (0.32 ± 0.01)
13	0.41 — 0.45 (0.41 ± 0.01)	0.32 — 0.38 (0.35 ± 0.01)
26	0.46 — 0.50 (0.46 ± 0.01)	0.37 — 0.43 (0.40 ± 0.02)

Occurrence. — Laing Island (type-locality); Boisa Island; Hansa Bay; Blup Blup Island (only empty shells have been found).

**Habitat.** — Specimens with soft parts have been found on *Halimeda*-algae (PNG 77/30, PNG 77/94, PNG 77/335, PNG 77/404, PNG 78/70, PNG 78/156, PNG 78/158, PNG 78/174, PNG 78/225).

**Discussion.** — *Omalogyra nodicarinata* sp. nov. shows some resemblance with *Homalogyra gemmulata* TURTON, 1932, reported from Port Alfred (South Africa), but differs from this species by having only one row of nodules on the ventral and the dorsal side of the shell and by the presence of a strong carina at the periphery.

### *Omalogyra vangoethemi* sp. nov.

(Pl. I, figs. 2, 3, 8)

**Derivatio nominis.** — In honour of Dr. J. VAN GOETHEM.

**Diagnosis.** — Teleoconch with small, regularly spaced spiral threads, crossed by obsolete axial ribs.

**Type-locality.** — Boisa Island (4° 00' 50" S, 144° 57' 00" E), Madang Province, Papua New Guinea, on *Halimeda*-algae (Station PNG 77/335).

**Holotype.** — A specimen with soft parts.

**Paratypes.** — 3 specimens with soft parts, 5 empty shells (stations PNG 77/335, PNG 78/156, PNG 78/304).

**Description.** — Protoconch: almost one whorl; initial part slightly swollen; a deep, rather broad groove in the middle of the whorl and a second one near the suture; area between the grooves flattened.

Teleoconch: planorbid, small, spire slightly sunk; about three times as broad as high; body whorl strongly convex, with 20-30 weak axial ribs, running from the suture of the dorsal side to the suture of the ventral side of the body-whorl and forming weak nodules in the middle of the ventral and dorsal surface of the body-whorl; axial ribs crossed by narrow, obvious and regularly spaced spiral threads, forming a strong reticulated surface; suture obvious, deep and somewhat contracted.

Aperture: subcircular, peristome continuous, clasping at both sides of the periphery; inner lip straight, outer lip circular.

Colour: transparent, yellow-brown.

Measurements (in mm) of type-material (Diam. max. = maximum diameter, Diam. min. = minimum diameter, sp = presence or absence of soft parts).

	Diam. max.	Diam. min.	Sp	Station
Holotype ... ..	0.49	0.43	+	PNG 77/335
Paratypes ... ..	0.43	0.37	-	PNG 78/156
	0.43	0.37	-	PNG 78/156
	0.38	0.32	+	PNG 78/156
	0.46	0.40	+	PNG 78/156
	0.38	0.32	-	PNG 78/156
	0.37	0.30	-	PNG 78/304
	0.26	0.22	-	PNG 78/304

**Occurrence.** — Laing Island; Blup Blup Island (only empty shells have been sampled from this locality); Boisa Island.

**Habitat.** — Specimens with soft parts have been found on *Halimeda*-algae (PNG 77/225, PNG 77/245, PNG 77/335, PNG 77/404, PNG 78/150, PNG 78/156).

**Discussion.** — BARNARD (1963, p. 164) reports the occurrence of *Omalogyra cancellatum* (KRAUSS, 1848) from the South African coast. The original description as well as the figures of *Solarium cancellatum* KRAUSS clearly show that this species does not belong to the genus *Omalogyra*: the shell is not coiled in the same plane and the dorsal and ventral side are not symmetrical.

*Omalogyra vangoethemi* sp. nov. is also related to *Homalogyra pulcherrima* BRAZIER in HENN, 1894, but can be distinguished from this species by the slowly growing whorls, by the more obsolete axial ribs, and by the yellow-brown colour of the shell.

In *H. pulcherrima* the last whorl is growing fast, the axial ribs are more distinct and the colour of the shell is white.

#### V. DISCUSSION ON THE GENUS-ASSIGNMENT

On the basis of protoconch and teleoconch characters, the three *Omalogyra*-species, found at the Northern coast of Papua New Guinea, form a very homogeneous « group ».

This group is characterized by the presence of at least one strong groove on the protoconch and of at least one axial sculpture on the teleoconch.



A fourth species, *Omalogyra rota* FORBES and HANLEY, 1850, from the European Atlantic coasts, with nearly the same characteristics, can be added to this species-group.

The protoconch of *O. rota* has been figured and described by RODRIGUEZ BABIO and THIRIOT-QUIEVREUX (1974, p. 534, pl. II, fig. F-H). The authors identified the species as *Ammonicera fischeriana* (MONTEROSATO, 1869), but after comparison with specimens from the DAUTZENBERG-collection of the K. B. I. N., we believe the figured specimen is conspecific with *Omalogyra rota*.

A second group contains species with a smooth protoconch and a teleoconch without axial or spiral sculpture, with the exception of fine growth striae.

This group is represented by *Omalogyra atomus* (PHILIPPI, 1841), the type-species of the genus *Omalogyra* JEFFREYS, 1860.

*O. atomus* has been reported from the Northern European Seas (DAUTZENBERG-coll., K. B. I. N.) to the Antarctic waters (ARNAUD, 1972, p. 122). It is hard to believe that all those specimens should be conspecific; because of the absence of any sculpture on the shell, it is difficult, however, to distinguish any differences on specific level.

VAYSSIERE (1893) created a new genus *Ammonicera* for *Homalogyra fischeriana* MONTEROSATO, 1869.

But, as FRANC (1948) states, the figures given by MONTEROSATO (1869, pl. XIII, fig. 1) and by VAYSSIERE (1893, figs. 8, 9) show no resemblance; the species figured by MONTEROSATO shows only fine growth striae on the teleoconch, in contrast with the species figured by VAYSSIERE, having strong axial ribs.

There is a good reason to believe that the species meant by VAYSSIERE is *O. rota* FORBES and HANLEY. If this is true, a problem is rising about the validity of the type-species of the genus *Ammonicera* VAYSSIERE, 1893.

If it can be unequivocally proved that the species figured by VAYSSIERE is *Omalogyra rota*, the genus-name *Ammonicera* could be applied to all the species of the Omalogyridae with a groove on the protoconch and with an axial sculpture on the teleoconch. In this case, the species *O. rota* should be designated as the type-species of the genus *Ammonicera*.

## VI. ACKNOWLEDGEMENTS

I am especially indebted to Dr. J. VAN GOETHEM for critically reading the manuscript and for his constant encouragement. I also wish to thank Dr. K. WOUTERS for his assistance with the scanning electron microscopy.

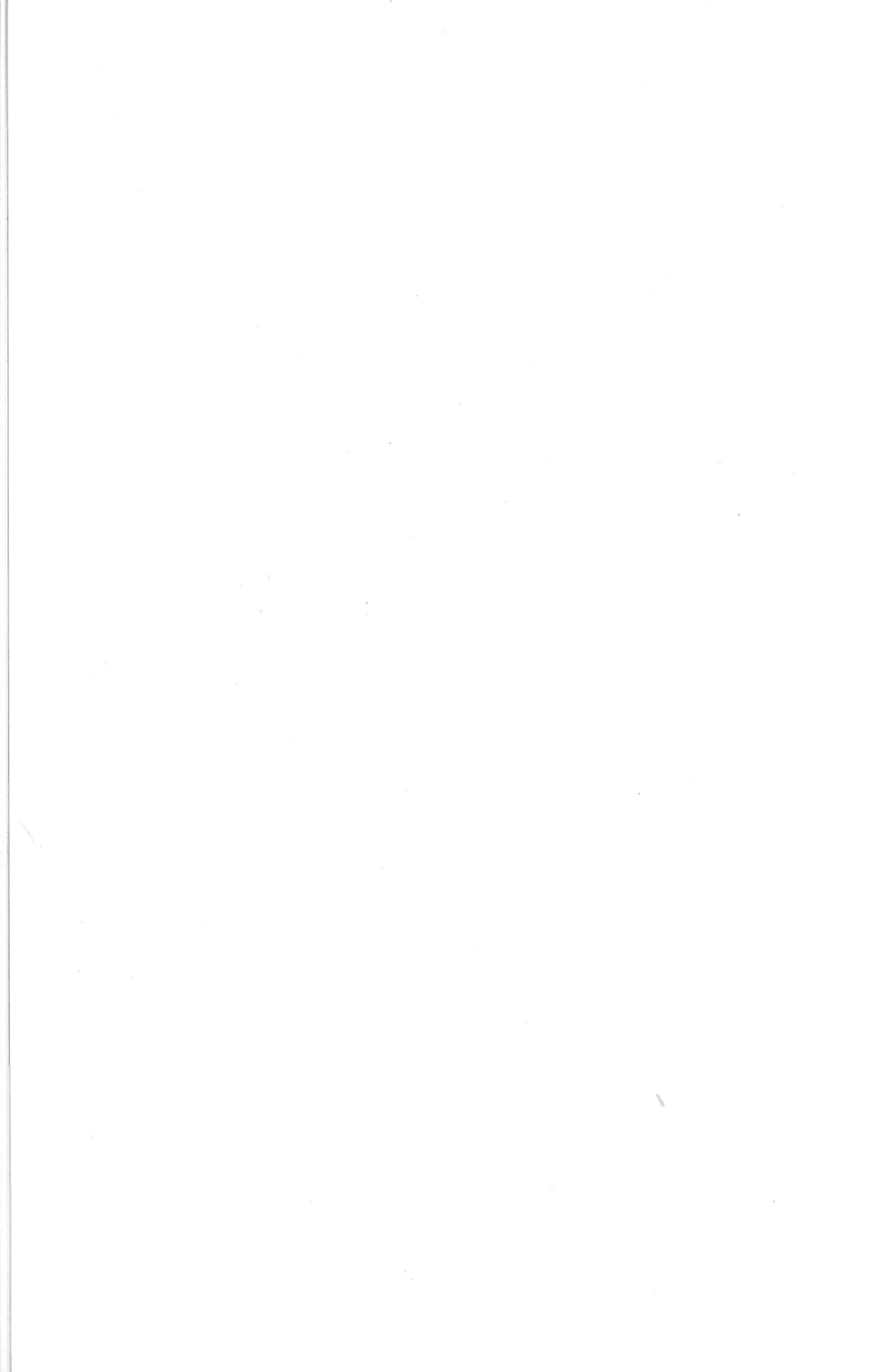
## VI. REFERENCES

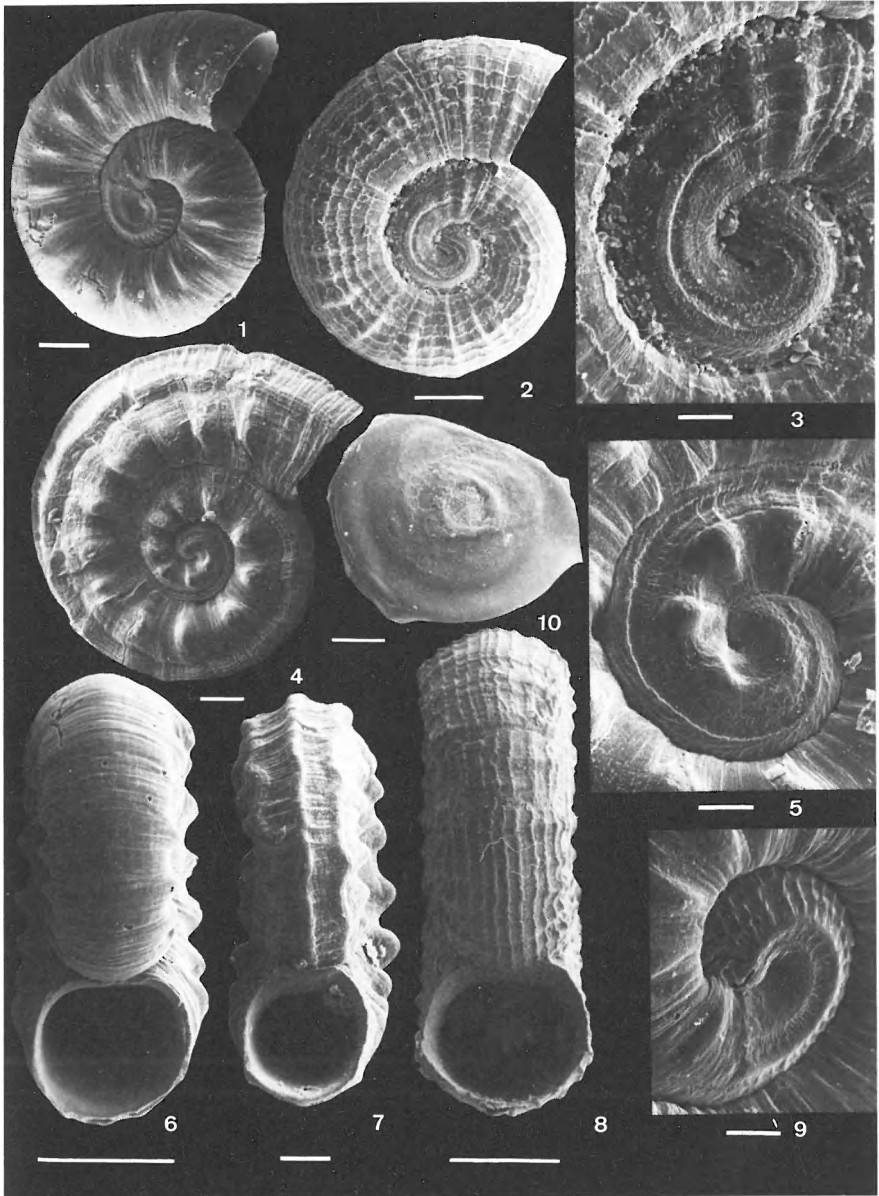
- ARNAUD, P. M.  
1972. Invertébrés marins des XII<sup>e</sup> et XV<sup>e</sup> expéditions Antarctiques Françaises en Terre Adélie. 8. — Gastéropodes prosobranches. — *Téthys Suppl.*, 4, 105-134.
- BARNARD, K. H.  
1963. Contributions to the knowledge of South African Marine Mollusca. Part III. *Gastropoda: Prosobranchiata: Taenioglossa*. — *Ann. S. Afr. Mus.*, 47 (1), 1-199.
- FORBES, E. & HANLEY, S.  
1849-53. A history of British Mollusca and their shells. Vol. 3. — *John Van Voorst*, London, X + 616 pp.
- FRANC, A.  
1948. Notes sur deux Homalogyridés: *H. Fischeriana* et *H. Atomus* (Gastéropodes Prosobranches) et sur leur développement. — *Bull. Soc. Hist. nat. Afr. Nord*, 39 (7-8), 142-145.
- HABE, T.  
1972. The Japan's smallest Gastropod, *Ammonicera japonica* sp. nov. — *Venus, Kyoto*, 31 (3), 115-116.
- HENN, A. U.  
1894. List of Mollusca found at Green Point, Watson's Bay, Sydney. — *Proc. Linn. Soc. N. S. W.*, 9 (1), 165-182.
- JEFFREYS, G.  
1860. Sur le Mollusque désigné par MM. FORBES et HANLEY sous le nom de *Skenea nitidissima*. — *J. Conch.*, Paris, 8, 108-111.
- KAY, E. A.  
1979. Hawaiian Marine Shells. — Reef and shore fauna of Hawaii; Section 4: Mollusca. — *Bernice P. Bishop Museum Special Publication*, 64 (4), 653 pp.
- KAY, E. A. & SWITZER, M. F.  
1974. Molluscan Distribution Patterns in Fanning Island Lagoon and a Comparison of the Mollusks of the Lagoon and Seaward Reefs. — *Pacif. Sci.*, 28 (3), 275-295.
- KRAUSS, F.  
1848. Die Südafrikanischen Mollusken. — *Verlag von Ebner & Seubert*, Stuttgart, 140 pp.
- MONTEROSATO, T. A.  
1869. Description d'espèces nouvelles de la Méditerranée. — *J. Conch.*, Paris, 42, 274-277.
- PHILIPPI, A.  
1841. Über das Genus *Truncatella*. — *Arch. Naturgesch.*, 7 (1), 51-55.
- RODRIGUEZ BABIO, C. & THIRIOT-QUIEVREUX, C.  
1974. Gastropodes de la région de Roscoff. Etude particulière de la protoconque. — *Cah. Biol. mar.*, 15, 531-549.
- TURTON, W. H.  
1932. The Marine Shells of Port Alfred, S. Africa. — *Oxford University Press*, London, 331 pp.
- VAYSSIÈRE, A.  
1893. Observations zoologiques et anatomiques sur l'*Ammonicera*, nouveau genre de Gastéropode Prosobranch. — *Annl. Fac. Sci. Marseille*, 3, 15-28.

## EXPLANATION OF PLATE

## PLATE I

- Fig. 1. — *Omalogyra japonica* (HABE, 1972); adult shell (PNG 78/156).  
Fig. 2. — *O. vangoethemi* sp. nov.; adult shell (PNG 77/404).  
Fig. 3. — *O. vangoethemi* sp. nov.; protoconch (PNG 77/404).  
Fig. 4. — *O. nodicarinata* sp. nov.; adult shell (PNG 78/156).  
Fig. 5. — *O. nodicarinata* sp. nov.; protoconch (PNG 78/156).  
Fig. 6. — *O. japonica* (HABE, 1972); adult shell, apertural view (PNG 78/156).  
Fig. 7. — *O. nodicarinata* sp. nov.; adult shell, apertural view (PNG 78/156).  
Fig. 8. — *O. vangoethemi* sp. nov.; adult shell, apertural view (PNG 78/156).  
Fig. 9. — *O. japonica* (HABE, 1972); protoconch (PNG 78/156).  
Fig. 10. — *O. nodicarinata* sp. nov.; operculum (PNG 78/158).  
(Scale: 1 = 60  $\mu\text{m}$ ; 2 = 86  $\mu\text{m}$ ; 3, 5, 9, 10 = 20  $\mu\text{m}$ ; 4 = 38  $\mu\text{m}$ ; 6 = 72  $\mu\text{m}$ ;  
7 = 62  $\mu\text{m}$ ; 8 = 100  $\mu\text{m}$ ).





Willy SLEURS. — The marine Microgastropods from the Northern Coast of Papua New Guinea (Mollusca : *Gastropoda*)