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Mollusca Gastropoda : Four new rissoinine species (Rissoininae) from deep water in the New Caledonian region

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ABSTRACT

Four new species, belonging to the subfamily Rissoininae (Neotaenioglossa : Truncatelloidea : Rissoidae), are described from deep water in the New Caledonian region : *Rissoina (Rissoina) boucheti* sp. nov., *R. (R.) longispira* sp. nov., *Zebina (Zebina) reclina* sp. nov. and *Z. (Z.) retusa* sp. nov. An anatomical description of *R. boucheti* is given.

RÉSUMÉ

Mollusca Gastropoda : Quatre espèces nouvelles de Rissoininae (Rissoidae) des eaux profondes néo-calédoniennes.

Quatre nouvelles espèces de la sous-famille Rissoininae (Neotaenioglossa : Truncatelloidea : Rissoidae) sont décrites : *Rissoina (Rissoina) boucheti* sp. nov., *R. (R.) longispira* sp. nov., *Zebina (Zebina) reclina* sp. nov. et *Z. (Z.) retusa* sp. nov.

Rissoina est présent jusqu'à 700 m de profondeur, ce qui représente les occurences les plus profondes actuellement connues.

* The author is granted by the " National Fund for Scientific Research (Belgium) ".

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INTRODUCTION

Most of the material reported here was collected during the BIOCAL Expedition, conducted in 1985 aboard the R. V. "*Jean-Charcot*", under the direction of Prof. C. LEVI. Specimens were sorted on board by P. BOUCHET, B. METIVIER and B. RICHER DE FORGES, and residues were saved for further sorting at CENTOB, Brest, under the supervision of M. SEGONZAC. For further information on the expedition, see RICHER DE FORGES (1990).

Additional material collected during the SMIB 3 Expedition (1986), south of Ile des Pins and on the guyots of the Norfolk ridge is included. Furthermore also a small collection, made aboard the "*Kimbla*" in 1971 and housed in the AMS, in included.

This paper represents the first study on the deep water Rissoininae from New Caledonia : all previous studies on New Caledonian rissoinines refer to shallow water species. This study forms part of a species review on the Rissoininae, currently in progress.

Abbreviations of institutions :

AMS : Australian Museum, Sydney.
BMNH : The Natural History Museum, London.
KBIN : Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels.
LACM : Los Angeles County Museum.
MNHN : Muséum national d'Histoire naturelle, Paris.
NMNZ : National Museum of New Zealand, Wellington.

SYSTEMATIC ACCOUNT

Superorder CAENOGASTROPODA Cox, 1959

Order NEOTAENIOGLOSSA Haller, 1882

Superfamily TRUNCATELLOIDEA Gray, 1840

Family RISSOIDAE Gray, 1847

Subfamily RISSOININAE Stimpson, 1865

The genera of the family Rissoidae are revised by PONDER (1985), and the classification proposed in that paper is followed here ; therefore we refer to that paper for generic diagnoses.

Genus *RISSOINA* d'Orbigny, 1840

Rissoina (Rissoina) boucheti sp. nov.
Figs 1-2, 3 a-c, 5-11

TYPE MATERIAL. — All from BIOCAL, stn DW 44, 30.VIII.1985. Holotype : empty shell in MNHN. Paratypes : 30 specimens (some of them with dried animal) in MNHN. One paratype in the following institutions or museums : AMS, KBIN, LACM and NMNZ.

TYPE LOCALITY. — New Caledonia, 22°47′ S, 167°14′ E, 440-450 m.

MATERIAL EXAMINED (Apart from type material). — **New Caledonia**. BIOCAL : stn DW 33, 23°10′ S, 167°10′ E,

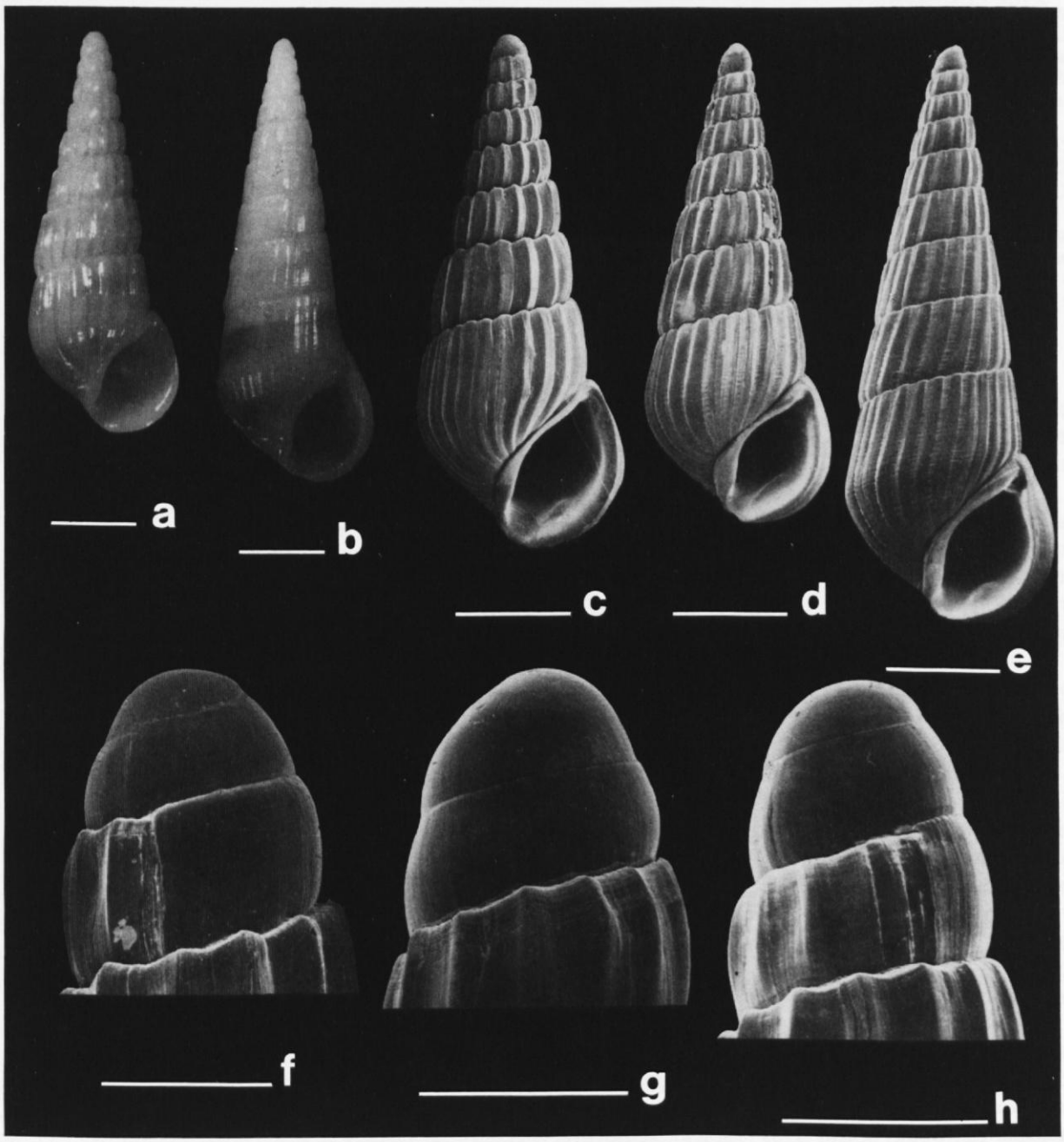

FIG. 1. — *Rissoina (s. s.) boucheti* sp. nov. : **a-e** : shells and **f-h** : protoconchs. **a** — holotype, New Caledonia, BIOCAL stn DW 44 (MNHN) ; **b** — south New Caledonia, SMIB 3 stn DW 22 (MNHN) ; **c** — paratype, New Caledonia, BIOCAL stn DW 44 (MNHN) ; **d** — New Caledonia, BIOCAL stn DW 77 (MNHN) ; **e** — south New Caledonia, SMIB 3 stn DW 22 (MNHN) ; **f** — paratype, New Caledonia, BIOCAL stn DW 44 (MNHN) ; **g** — paratype, New Caledonia, SMIB 3 stn DW 22 (same specimen of Fig. 1 e) ; **h** — New Caledonia, BIOCAL stn 77 (MNHN).
Scale : a-e = 2 mm ; f-h = 0.5 mm.

675-680 m, 29.VIII.1985 : 6 spec. (MNHN). — Stn DW 41, 22°45′ S, 167°12′ E, 380-410 m, 30.VIII.1985 : 1 spec. (MNHN). — Stn DW 43, 22°46′ S, 167°15′ E, 400 m, 30.VIII.1985 : 4 spec. (MNHN). — Stn DW 44, 22°47′ S, 167°14′ E, 440-450 m, 30.VIII.1985 : 90 spec. (with animals preserved in alcohol) (MNHN). — Stn DW 46, 22°53′ S, 167°17′ E, 570-610 m, 30.VIII.1985 : 2 spec. (MNHN). — Stn DW 56, 23°35′ S, 167°12′ E, 705-695 m, 01.IX.1985 : 3 spec. — Stn DW 77, 22°15′ S, 167°15′ E, 440 m, 05.IX. 1985 : 75 spec. (MNHN).

SMIB 3, R. V. "*Vauban*" : stn DW 10, 235 m, 21.V.1987 : 1. spec. — Stn DW 21, 22°59′ S, 167°19′ E, 525 m, 24.V.1987 : 1 spec. (MNHN). — Stn DW 22, 23°03′ S, 167°19′ E, 503 m, 24.V.1987 : 73 spec. (MNHN).

HMAS "*Kimbla*", stn K4-71-3, 22°50′ S, 167°34′ E (approx. 7 km S. of I. des Pins), 275 m, coral sand bottom, 08.V.1971, coll. P. H. COLMAN & J. PAXTON : 3 spec. (AMS, C153935) ; *Ibidem*, 274 m : 3 spec. (AMS, C153936).

DESCRIPTION. — *Shell* (Fig. 1 a-e) : moderately large (length 9.9 mm in holotype), solid, more or less elongate conical ; last whorl moderately angulate to subangulate at the periphery.

Protoconch (Fig. 1 f-h) : of non-planktotrophic larval type (and probably with intracapsular metamorphosis), moderately elongate conical to subcylindrical, glossy, of about 2 smooth whorls ; transition to teleoconch abruptly with a straight, non-thickened margin.

Teleconch : of about 7 to 8 whorls ; spire whorls almost flat, weakly to moderately angulate just below and/or above the deeply to moderately impressed, weakly undulating sutures.

Axial sculpture of slightly opisthocline axial ribs, the latter variable in strength, ranging from very prominent, sharp, distantly spaced, to weak, densely spaced and rounded ; axial sculpture usually somewhat more prominent on spire whorls than on last whorl, but sometimes equal in strength throughout ; axial ribs on last whorl somewhat weaker below periphery, but continuous to peristome.

Spiral sculpture very variable, ranging from microscopic, irregular and irregularly spaced scratches (Fig. 3 a-c), to moderately prominent, more or less regularly and densely spaced spiral threads or weak spiral ribs ; spiral sculpture, when present, mostly more prominent on penultimate and last whorl than on the early spire whorls.

Aperture : moderately large, D-shaped to lenticular or auriculiform ; columellar side moderately concave ; anterior channel narrow, short, shallow ; outer lip with a prominent interior swelling near the transition to the anterior channel ; posterior channel very short, triangular ; outer lip slightly opisthocline in profile with a moderately wide, rounded, prominent varix externally.

Colour : yellowish white with large orange spots on last and penultimate whorl or with a rather wide orange spiral band below the suture ; some specimens white throughout.

Operculum (Fig. 2 e-f) : thick, with weakly curved, hollow peg ; muscle-attachment area sausage-shaped.

Radula (Fig. 2 a-d) : central teeth of taeniglossate radula with the formula (PONDER, 1985 : 10) : $\frac{3\text{-}4 + 1 + 3\text{-}4}{1 \qquad 1}$; ventral margin with strongly-developed U-shaped extension ; lateral margins making an angle of ca. 30° with dorsoventral axis. Lateral teeth 7-9 + 1 + 3-4. Inner marginal teeth with 7-11 sharp cusps on distal half of outer edge and with some weak cusps just below. Outer marginals with weak cusps on outer and inner edge.

Head-foot characters : cephalic tentacles usually covered by a thin sheath (probably an artifact due to preservation), the latter with deeply indented margins ; right pallial tentacle narrow, rather long, simple ; left pallial tentacle deeply bifurcate, consisting of 2, rather wide, lobes ; metapodial tentacle not observed in preserved specimens.

Mantle cavity (Fig. 11) : mean ctenidium length : 2.45 mm (n = 5) ; mean number of gill filaments : 45 (n = 5) ; gill filaments rather short, longest gill filament measuring approx. 0.25 mm ; osphradium somewhat shorter than ctenidium, consisting of a rather thick, wide undulating (probably due to contraction) main ridge ; lateral ridges very narrow, hidden beneath the mean ridge ; hypobranchial gland inconspicuous.

Digestive system (Figs 5, 7, 11) : mouth opening between two fleshy lips into a rather long buccal tube ; one pair of jaws in anterior third of buccal tube ; salivary glands simple single tubes, not reaching the nerve ring and with distal part folded ; oesophagus rather uniform in structure from its departure from buccal cavity to the opening into the anterior chamber of the stomach ; oesophagus with about 10 folds internally. Stomach occupying about one whorl ;

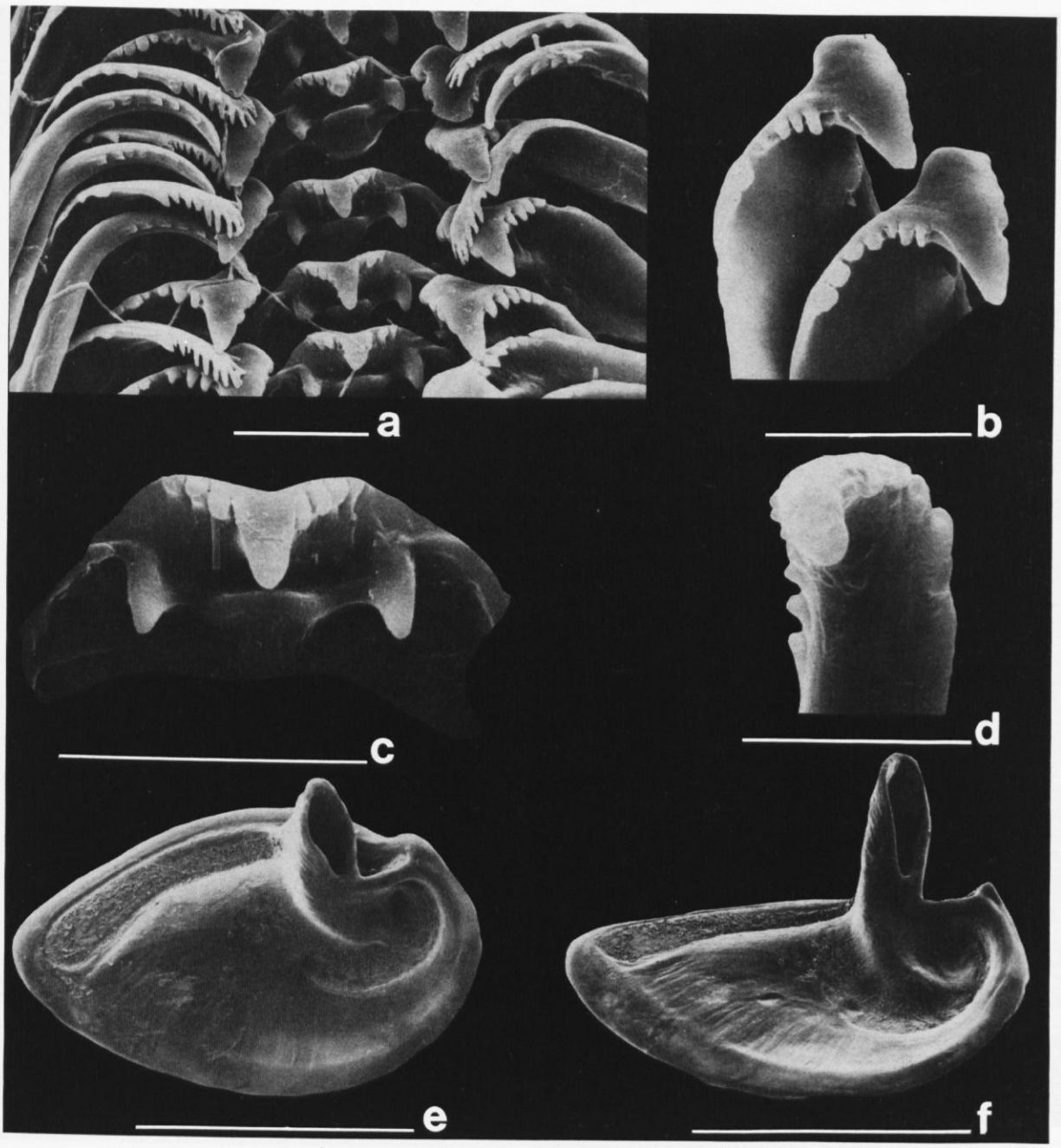

FIG. 2. — SEM micrographs of radula and operculum of *Rissoina (s. s.) boucheti* sp. nov., (KBIN stub 77 E-F), New Caledonia, BIOCAL stn DW 44. **a** — centrals, laterals and inner marginals ; **b** — laterals ; **c** — central ; **d** — distal part of outer marginal ; **e** — inner side of operculum ; **f** — lateral aspect of inner side of operculum.
Scale : a, b, c = 0.02 mm ; d = 0.01 mm ; e, f = 1 mm.

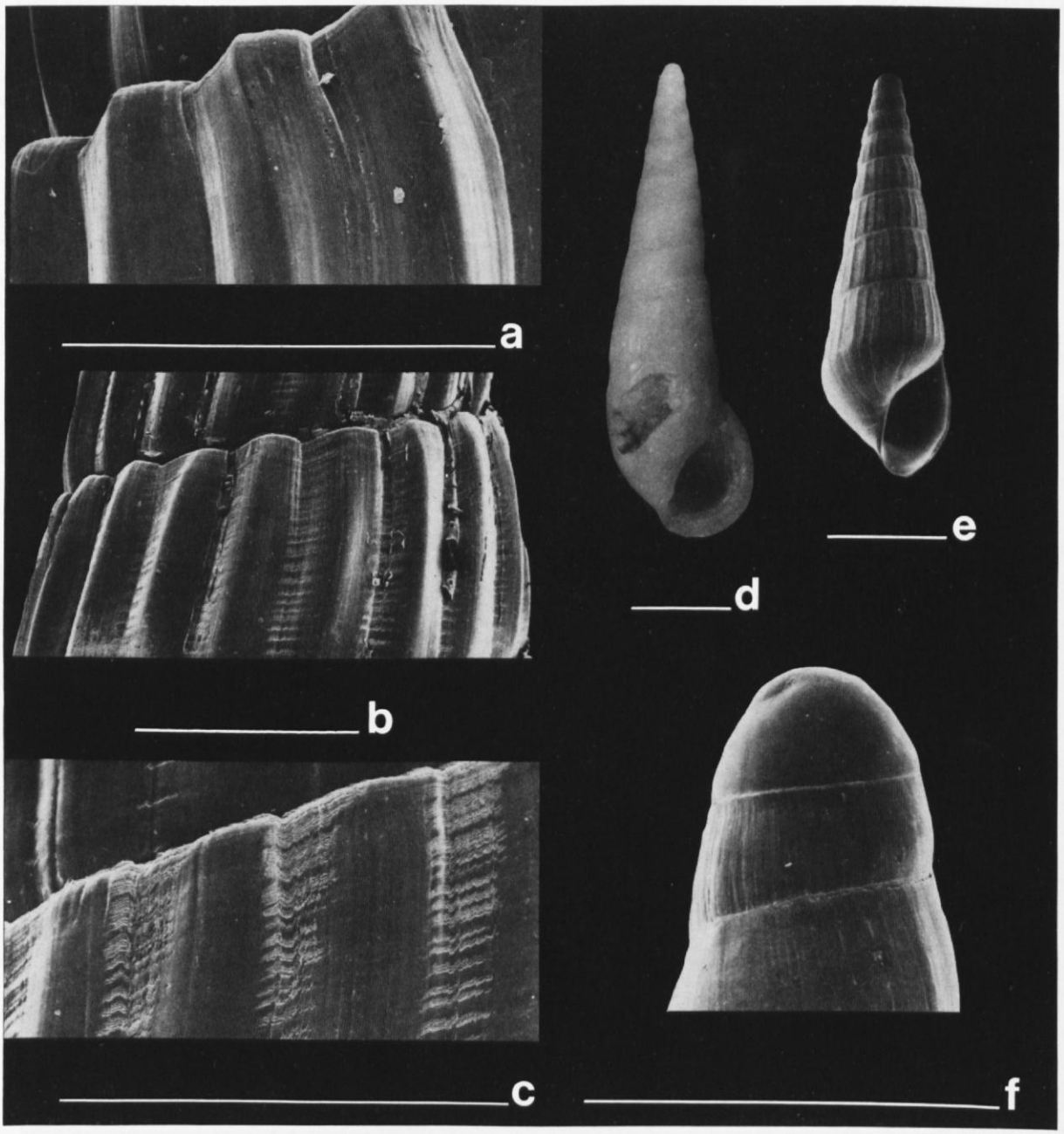

FIG. 3 a-c. — Variation in microsculpture of teleoconch (penultimate whorl) of *Rissoina (Rissoina) boucheti* sp. nov. : **a** — paratype, New Caledonia, BIOCAL stn DW 44 (MNHN) ; **b** — New Caledonia, BIOCAL stn DW 77 (MNHN) ; **c** — New Caledonia, BIOCAL stn DW 22 (MNHN).

FIG. 3 d-f. — *Rissoina (Rissoina) longispira* sp. nov. : **d** — holotype (MNHN) ; **e** — paratype (immature specimen), New Caledonia, BIOCAL stn DW 33 (MNHN) ; **f** — protoconch (same specimen as Fig. 3 e).
Scale : a, b, c = 0.1 mm ; d, e = 2 mm ; f = 1 mm.

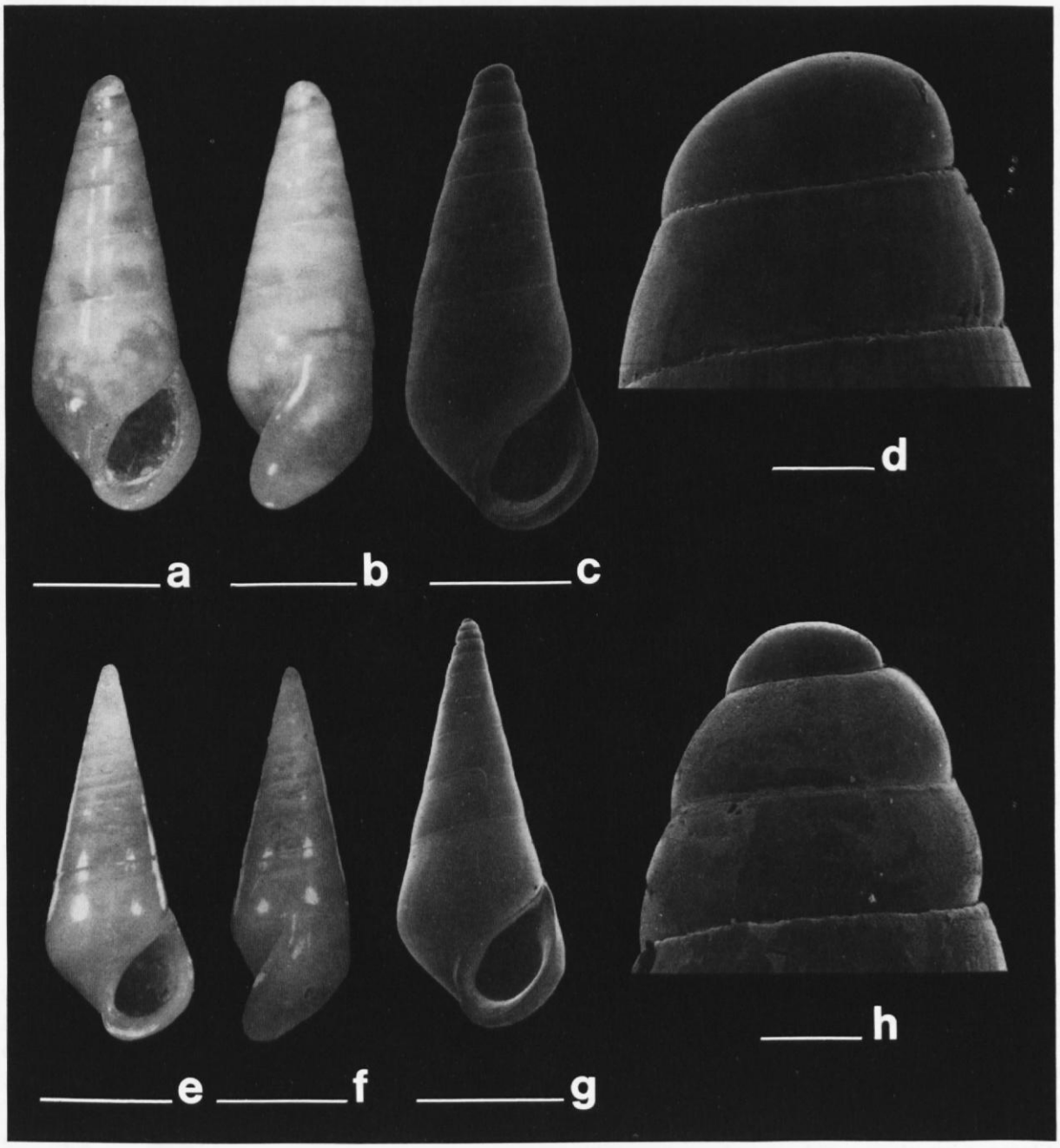

FIG. 4 a-d. — *Zebina (Zebina) retusa* sp. nov. : **a, b** — holotype (MNHN) ; **c, d** — shell and protoconch of paratype, New Caledonia, BIOCAL stn DW 38 (MNHN).
FIG. 4 e-h. — *Zebina (Zebina) reclina* sp. nov. : **e, f** — holotype (MNHN) ; **g, h** — shell and protoconch of paratype, New Caledonia, BIOCAL stn DW 44 (MNHN).
Scale a, b = 1 mm ; c, e, f, g = 2 mm ; d, h = 0.1 mm.

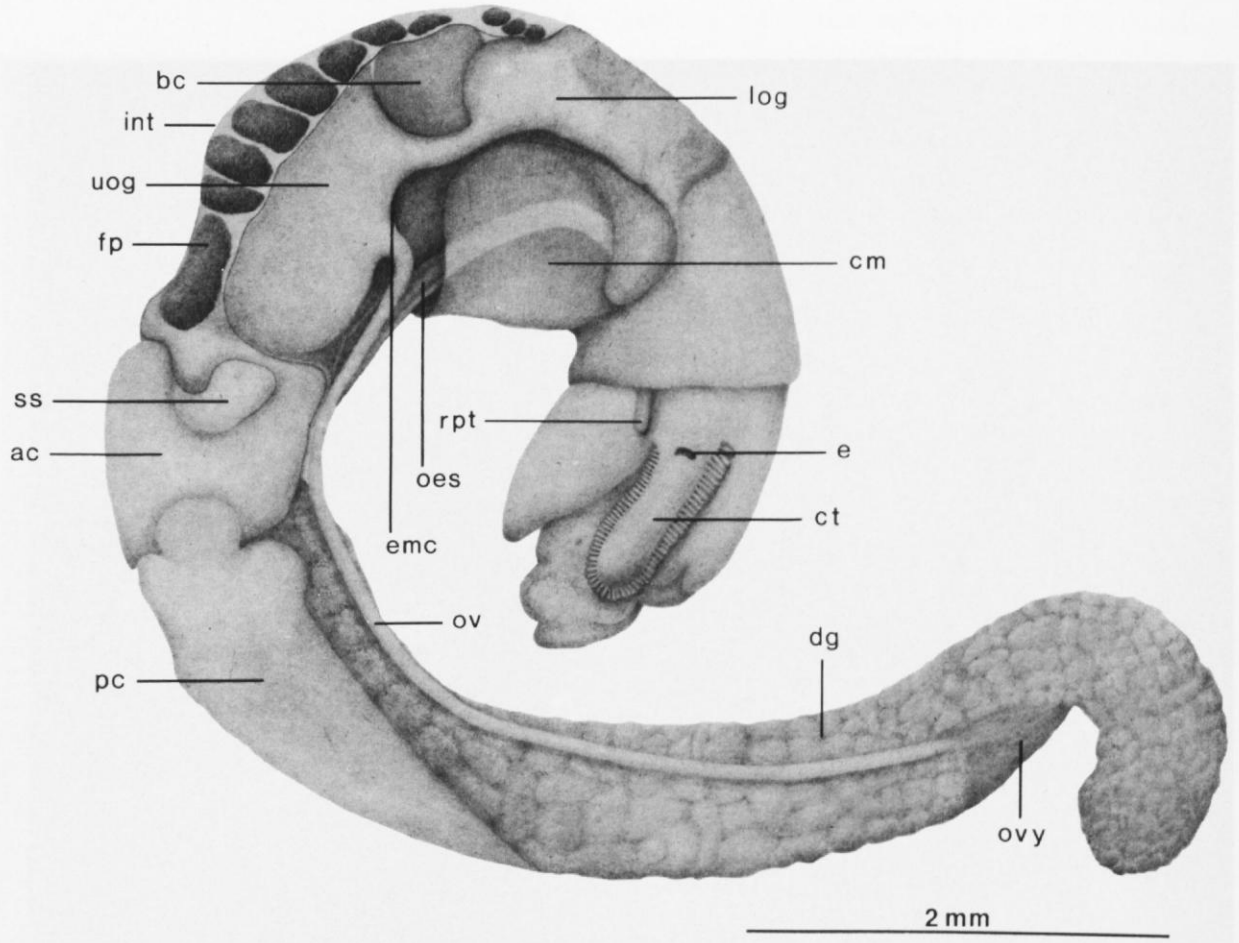

FIG. 5. — Anatomy of uncoiled female of *Rissoina (s. s.) boucheti* sp. nov., New Caledonia, BIOCAL stn DW 44.
(Abbreviations : ac — anterior chamber of stomach ; bc — bursa copulatrix ; cm — columellar muscle ; ct — cephalic tentacle ; dg — digestive gland ; e — eye ; emc — end of mantle cavity ; fp — faecal pellet ; int — intestine ; log — lower oviduct gland ; oes — oesophagus ; ov — oviduct ; ovy — ovary ; pc — posterior chamber of stomach ; rpt — right pallial tentacle ; ss — style sac ; uog — upper oviduct gland).

stomach morphology typical of genus : stomach/style sac ratio (as defined by PONDER, 1984 : 13) : 13 (n = 3) (due to the very elongate posterior chamber) ; length/width ratio (as defined by PONDER, 1985 : 13) : 3.7 ; stomach containing foraminiferan material and fragments of filamentous algae ; style sac short (crystalline style not observed) ; gastric shield broadly triangular ; digestive gland dark brown, occupying about 2 1/2 whorls, not anterior to anterior chamber of stomach ; intestine very thin-walled, very wide in mid-section, filled with numerous cylindrical fecal pellets with rounded anterior and posterior ends.

Female reproductive system (Figs 5-6) : ovary very short ; oviduct thin-walled ; upper oviduct gland large, more or less bilobed, subequal to length of lower oviduct gland, oval in section, with a slit-like lumen ; bursa copulatrix rather small, between lower and upper oviduct gland, partly overlying both glands at the right side ; seminal receptacle not observed (probably overlooked or inconspicuous when not filled with sperm) ; sperm duct strongly muscular, narrow, lying along left side of lower oviduct gland, only very weakly expanded near anterior end. One mature female was found with normal female reproductive organs and with a non-functional

penis, the latter very short as in immature male specimens.

Male reproductive system (Figs 7-8) : testis occupying about 1 whorl, overlying the digestive gland ; seminal vesicle highly coiled, strongly expanded, with posterior half folded over posterior half of posterior chamber of stomach ; anterior half covered by digestive gland ; visceral vas deferens, passing along stomach ; prostate gland open, elongate, thin. Penis occupying most of mantle cavity, large with a wide, spoon-shaped, distal lobe ; penial groove open, the latter terminating as a somewhat expanded gutter just above the spoon-shaped lobe ; one margin of the latter weakly denticulate ; ventral side of spoon-shaped lobe almost flat sided ; dorsal side of lobe with a median crest, the latter with a denticulate summit.

Central nervous system (Figs 9-10) : cerebral ganglia joined by a rather long commissure for genus ; RPG ratio (as defined by DAVIS *et al.*, 1976 : 263) : 0.6 ; pleural ganglia separated from cerebral ganglion by a rather deep constriction ; statocysts on the posterior edge of the pedal ganglia.

Shell dimensions and sculpture counts : See table 1.

VARIATION. — *Rissoina boucheti* sp. nov. shows considerable interpopulation variation with respect to shell sculpture, but is strikingly uniform within the same population. In the type series (Fig. 1 a, c), the axial ribs are very prominent, regularly spaced and sharp, while the spiral sculpture is almost absent except for some irregularly spaced scratches ; in specimens of other populations the axial sculpture ranges from moderately prominent (Fig. 1 d) to very weak, rounded, closely spaced ribs (Fig. 1 b, e) ; the spiral sculpture ranges from irregularly spaced microscopic scratches (Fig. 3 a) to more or less regularly spaced, moderately prominent spiral threads or fine spiral ribs (Figs 1 d ; 3 b, e).

In the type series the whorls are moderately angulate below the suture (Fig. 1a, c) ; in other

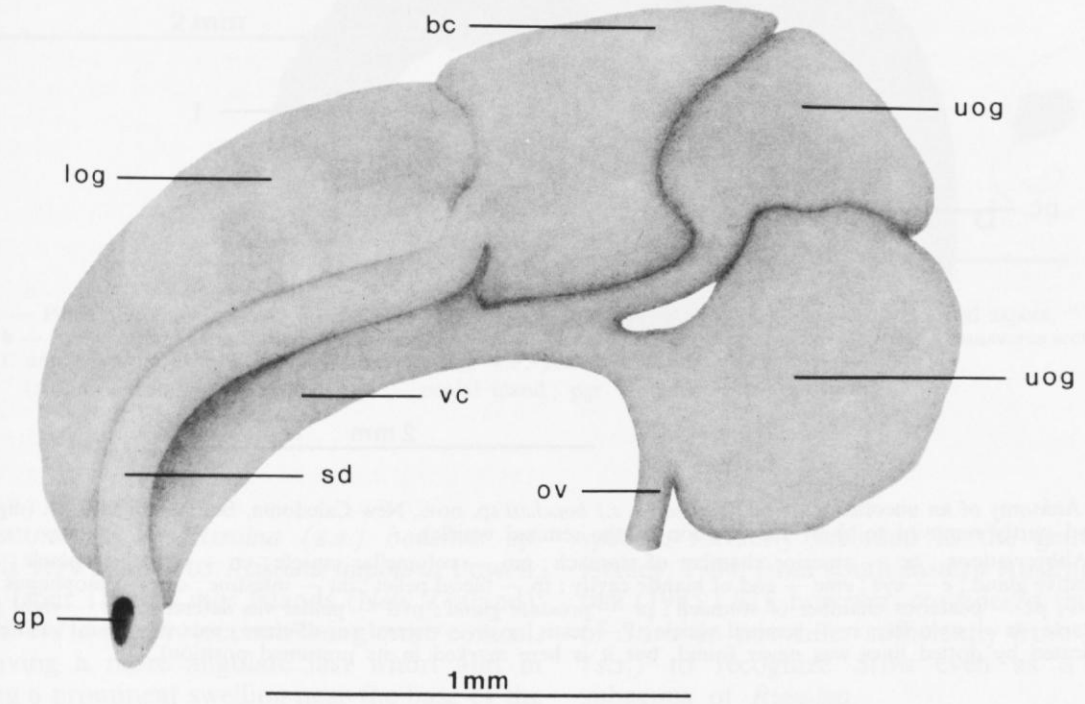

FIG. 6. — Female genitalia of *Rissoina (s. s.) boucheti* sp. nov. (visceral oviduct and ovary omitted), New Caledonia, BIOCAL stn DW 44.

(Abbreviations : bc — bursa copulatrix ; gp — genital porus ; log — lower oviduct gland ; ov — oviduct ; sd — sperm duct ; vc — ventral channel ; uog — upper oviduct gland).

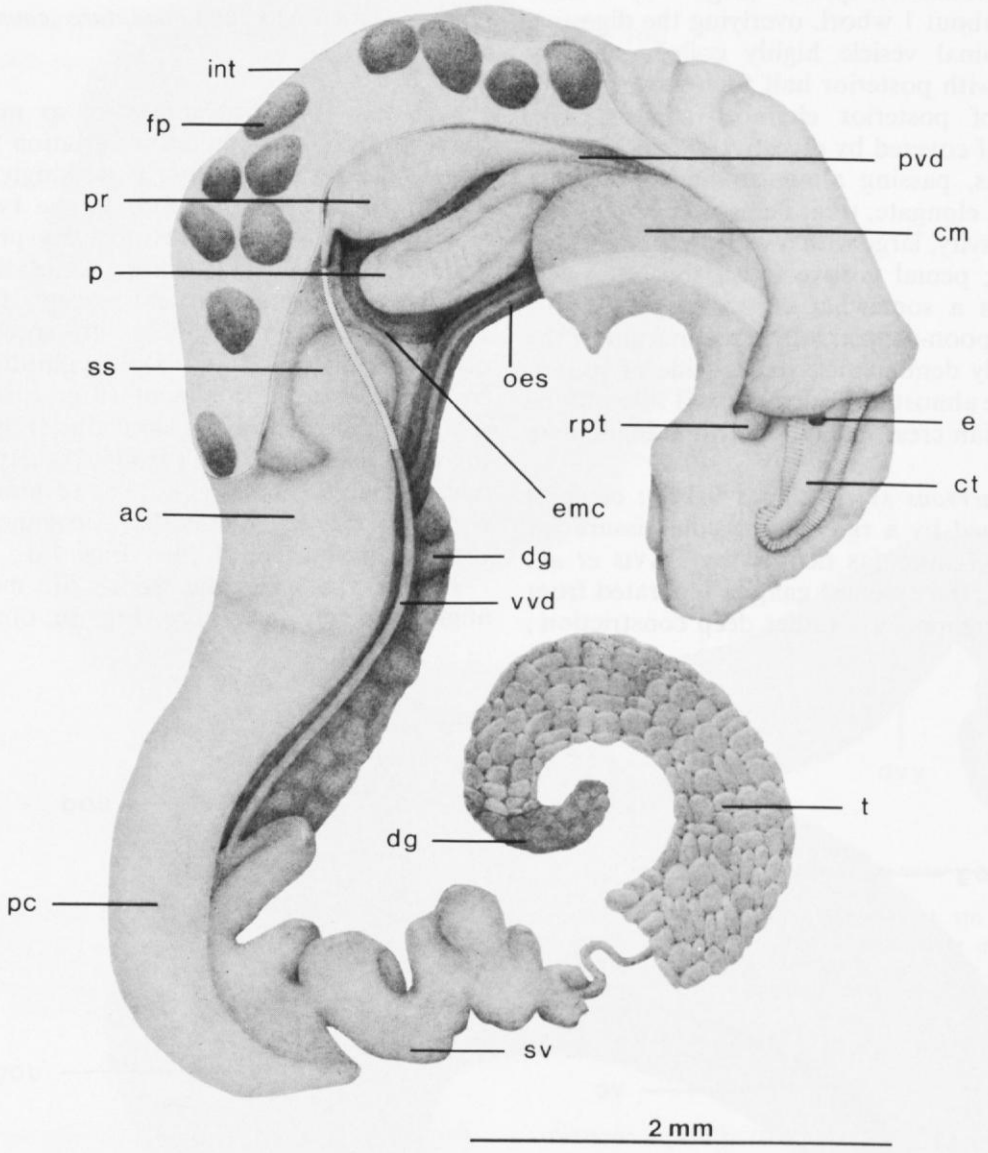

FIG. 7. — Anatomy of an uncoiled male of *Rissoina (s. s.) boucheti* sp. nov., New Caledonia, BIOCAL stn DW 44. (digestive gland partly removed to show the position of the seminal vesicle).

(Abbreviations : ac — anterior chamber of stomach ; cm — columellar muscle ; ct — cephalic tentacle ; dg — digestive gland ; e — eye ; emc — end of mantle cavity ; fp — faecal pellet ; int — intestine ; oes — oesophagus ; p — penis ; pc — posterior chamber of stomach ; pr — prostate gland ; pvd — pallial vas deferens ; rpt — right pallial tentacle ; ss — style sac ; sv — seminal vesicle ; t — testis ; vvd — visceral vas diferens ; part of visceral vas deferens indicated by dotted lines was never found, but it is here marked in its presumed position).

populations we found specimens with no or only very weakly angulate whorls (Fig. 1 b, d, e).

ETYMOLOGY. — This species is named after Dr Philippe BOUCHET of the MNHN, who made this New Caledonian collection of rissoinines available for examination, and who was one of the collectors of this new species.

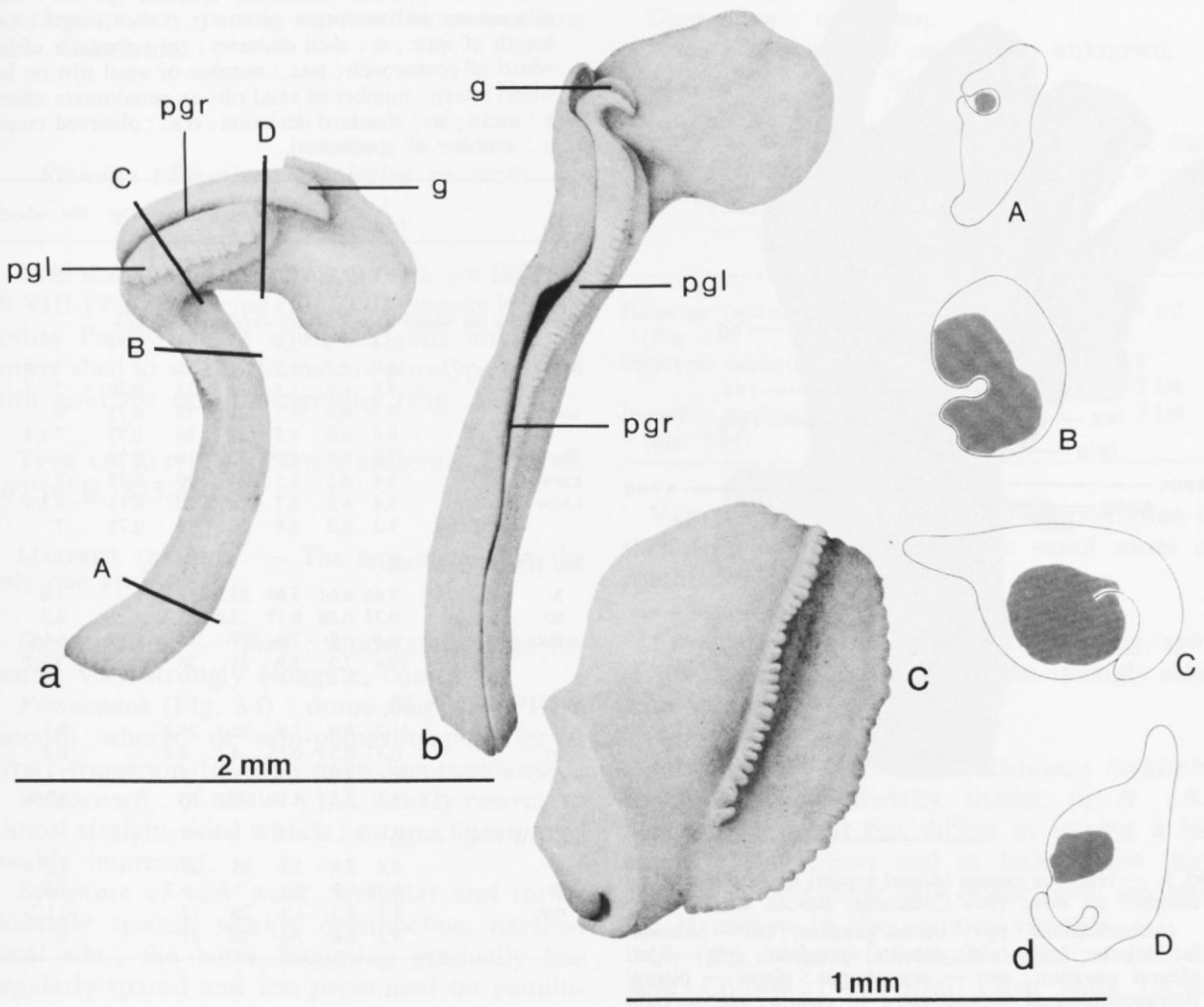

FIG. 8. — Penis of *Rissoina (s. s.) boucheti* sp. nov., New Caledonia, BIOCAL stn DW 44 (**a** — dorsal aspect, " in situ " ; **b** — ventro-lateral aspect after stretching ; **c** — ventral aspect of spoon-shaped distal lobe ; **d** — transverse sections A, B, C and D, taken at positions indicated in Fig. 4 a ; penial gland dark).
(Abbreviations : g — gutter ; pgl — penial gland ; pgr — penial groove).

DISCUSSION. — *Rissoina (s.s.) boucheti* sp. nov. is very similar to *Rissoina aupouria* Powell, 1937, from Three Kings Islands (New Zealand), but differs in the protoconch being more conical, in having a more angulate last whorl and in having a prominent swelling near the base of the inner side of the outer lip ; furthermore the spiral sculpture is much weaker in *R. aupouria* and consists of numerous, very closely spaced, microscopic striations.

The new species is also very similar to three species, formerly included in the genus *Stiva* Hedley, 1904, from south-eastern Australia. PONDER (1985 : 82), however, considered the species of *Stiva* do not differ sufficiently from *Rissoina (s.s.)* to recognize *Stiva* even as a distinct subgenus of *Rissoina*.

R. (R.) boucheti differs primarily from *R. (R.) ferruginea* (Hedley, 1904), *R. (R.) royana* (Iredale, 1924) and *R. (R.) nielseni* (Laseron, 1950) in having a prominent ridge or swelling on the inner side of the outer lip, near the transition to

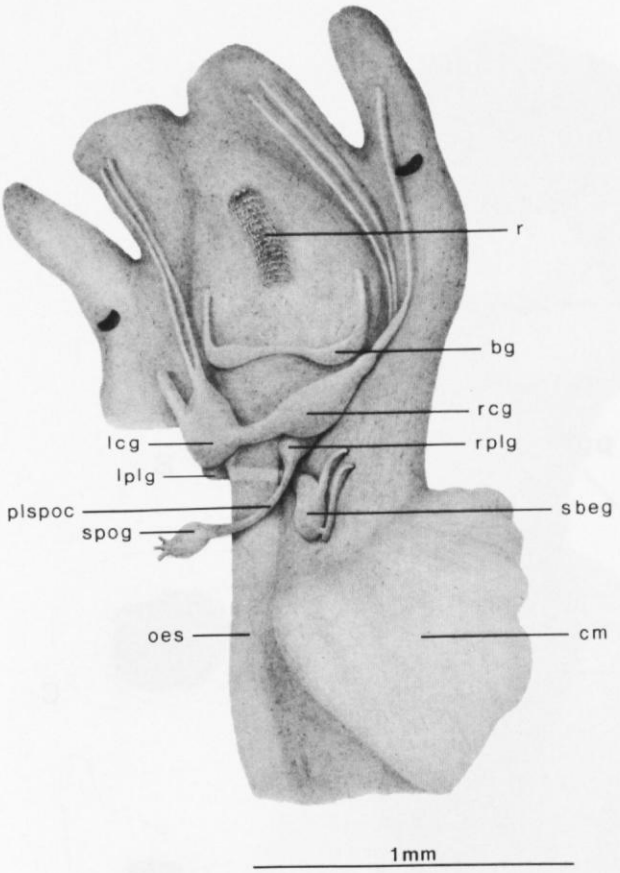

FIG. 9. — Nervous system (dorsal aspect) of *Rissoina (s. s.) boucheti* sp. nov., New Caledonia, BIOCAL stn DW 44.

(Abbreviations : bg — buccal ganglion ; cm — columellar muscle ; lcg — left cerebral ganglion ; lplg — left pleural ganglion ; oes — oesophagus ; plspo — pleural supraoesophageal connective ; r — radula ; rcg — right cerebral ganglion ; rplg — right pleural ganglion ; sbeg — suboesophageal ganglion ; spog — supraoesophageal ganglion).

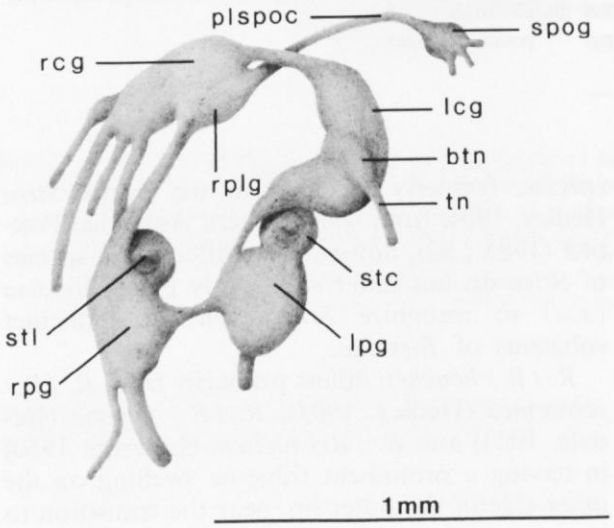

TABLE 1. — *Rissoina (Rissoina) boucheti* sp. nov. Shell dimensions and sculpture counts (L : shell length ; Ls : length of spire ; D : shell diameter ; Dp : diameter of last whorl of protoconch ; Nax : number of axial ribs on last whorl ; Naxp : number of axial ribs on penultimate whorl ; X : mean ; SD : standard deviation ; O.R. : observed range ; n : number of specimens).

	L (mm)	Ls (mm)	D (mm)	Nax	Naxp	Dp	No. whorls
Holotype (Fig. 1 a)	9.9	6.8	3.6	24	21	0.73	7
Paratypes (in MNHN except where explicitely stated)							
	10.4	7.3	3.8	22	16	0.75	7
NMNZ	10.0	6.7	3.9	21	21	?	7 1/4
	9.8	6.8	3.5	21	18	0.70	7
AMS	9.7	6.6	3.7	21	18	0.75	7
	9.6	6.8	3.5	27	26	0.73	7 1/4
Fig. 1 c	9.6	6.5	3.7	25	16	0.75	7
KBIN	9.4	6.5	3.5	24	20	0.75	7
LACM	9.4	6.3	3.7	22	20	0.75	6 3/4
	9.2	6.3	3.6	30	19	0.75	7
Stn DW 44 (n = 32)							
X	9.65	6.61	3.64	23.9	19		7.0
SD	0.33	0.28	0.17	3.0	2.3		0.2
O.R.	9.1-	6.2-	3.0-	19-	16-		6 1/2-
	10.4	7.3	3.9	31	26		7 1/2
Stn DW 22 (n = 22)							
X	11.2	8.0	3.8	32.2	26.8		8.1
SD	0.47	0.35	0.15	4.1	4.4		0.3
O.R.	10.8-	7.6-	3.5-	25-	19-		7 1/2-
	11.8	8.5	4.1-	41	40		8 3/4-
Stn DW 77 (n = 22)							
X	8.8	5.8	3.2	23	19		7.3
SD	0.36	0.9	0.1	1.9	1.5		0.3
O.R.	8.1-	5.5-	3.1-	20-	17-		6 1/2-
	9.2	6.6	3.4-	26	21		8

the anterior channel. *R. (R.) boucheti* differs anatomically from *R. (R.) ferruginea* in having an osphradium consisting of a thick undulating ridge, while the osphradium in the latter is of the bipectinate type ; futhermore *R. (R.) ferruginea* has a simple, very short left pallial tentacle, while the latter is bifurcate and well developed in *R. (R.) boucheti* sp. nov.

FIG. 10. — Nervous system (lateral aspect) of *Rissoina (s. s.) boucheti* sp. nov., New Caledonia, BIOCAL stn DW 44 (buccal ganglia omitted and left pleural ganglion covered by left cerebral ganglion).

(Abbreviations : btn — bulbus of tentacular nerve ; lcg — left cerebral ganglion ; lpg — left pedal ganglion ; plspoc — pleuro-supraoesophageal connective ; rcg — right cerebral ganglion ; rpg — right pedal ganglion ; rplg — right pleural ganglion ; spog — supraoesophageal ganglion) ; stc — statocyst ; stl — statholith ; tn — tentacular nerve).

DISTRIBUTION. — Thus far *Rissoina (Rissoina) boucheti* sp. nov. is only reported from southern New Caledonia.

Rissoina (Rissoina) longispira sp. nov.

Fig. 3 d-f

TYPE MATERIAL. — All from BIOCAL, stn DW 33, 29.VIII.1985. Holotype (Fig. 3 d) : empty shell in MNHN. Paratypes : 2 adult and one immature empty shell in MNHN. Immature paratype coated with gold for SEM-photography (Fig. 3 e-f).

TYPE LOCALITY. — New Caledonia, 23°10′ S, 167°10′ E, 675-680 m.

MATERIEL EXAMINED. — The type material is the only one available.

DESCRIPTION. — *Shell* : moderately large for genus, very strongly elongate, conical.

Protoconch (Fig. 3 f) : dome-shaped, of 1 1/2 smooth whorls, of non-planktotrophic larval type ; transition to teleoconch inconspicuous.

Teleoconch : of about 8 1/2, weakly convex to almost straight-sided whorls ; sutures linear, very weakly impressed.

Sculpture of very weak, irregular and rather distantly spaced, weakly opisthocline, narrow, axial ribs ; the latter becoming gradually less regularly spaced and less prominent on penultimate and last whorl ; axial ribs very weak to almost absent on abapical half of last whorl ; spiral sculpture of very weak, irregular and very irregularly spaced spiral threads, on the abapical half of spire whorls ; spiral threads slightly more prominent on last whorl.

Aperture : D-shaped ; inner lip thin with a very weak thickening near the transition to the anterior channel ; the latter narrow, moderately deep ; outer lip weakly thickened internally, with a weak, narrow varix externally ; outer lip weakly opisthocline to almost orthocline in profile.

Colour : glossy white throughout.

Operculum : unknown.

Radula and internal anatomy : unknown.

Shell dimensions : See table 2.

TABLE 2. — *Rissoina (Rissoina) longispira* sp. nov. Shell dimensions. (L : shell length ; LS length of spire ; D : shell diameter).

	L (mm)	Ls (mm)	D (mm)	No. whorls
Holotype (MNHN) (Fig. 3 d)	9.7	6.9	3.0	8 1/2
Paratypes (MNHN)	9.4	4.1	3.2	8
	8.8	6.3	2.8	7 3/4
Immature specimen (Fig. 3 e-f)	8.1	5.8	2.3	7 1/4

VARIATION. — There is barely any variation in shell size and sculpture in the small series of specimens examined.

ETYMOLOGY. — *Longus* (Latin) = long, *spira* (Latin) = spire : referring to the strongly elongate spire.

DISCUSSION. — *Rissoina (Rissoina) longispira* sp. nov. is superficially similar to *R. (R.) boucheti* sp. nov., but differs in having a less angulate last whorl and in lacking the thick swelling on the inner side of the outer lip, near the transition to the anterior channel.

R. (R.) longispira is most similar to *Rissoina jaffa* Cotton, 1952 from Cape Jaffa (South Australia) and collected from a depth of about 500 m ; the latter species, however differs from *R. longispira* in being much more acuminate, in having a rather angulate last whorl instead of a rather subglobose last whorl in *R. longispira* and in having more prominent and somewhat more opisthocline axial ribs. There are no other similar species described.

DISTRIBUTION. — *R. (R.) longispira* sp. nov. is thus far only known from the type locality.

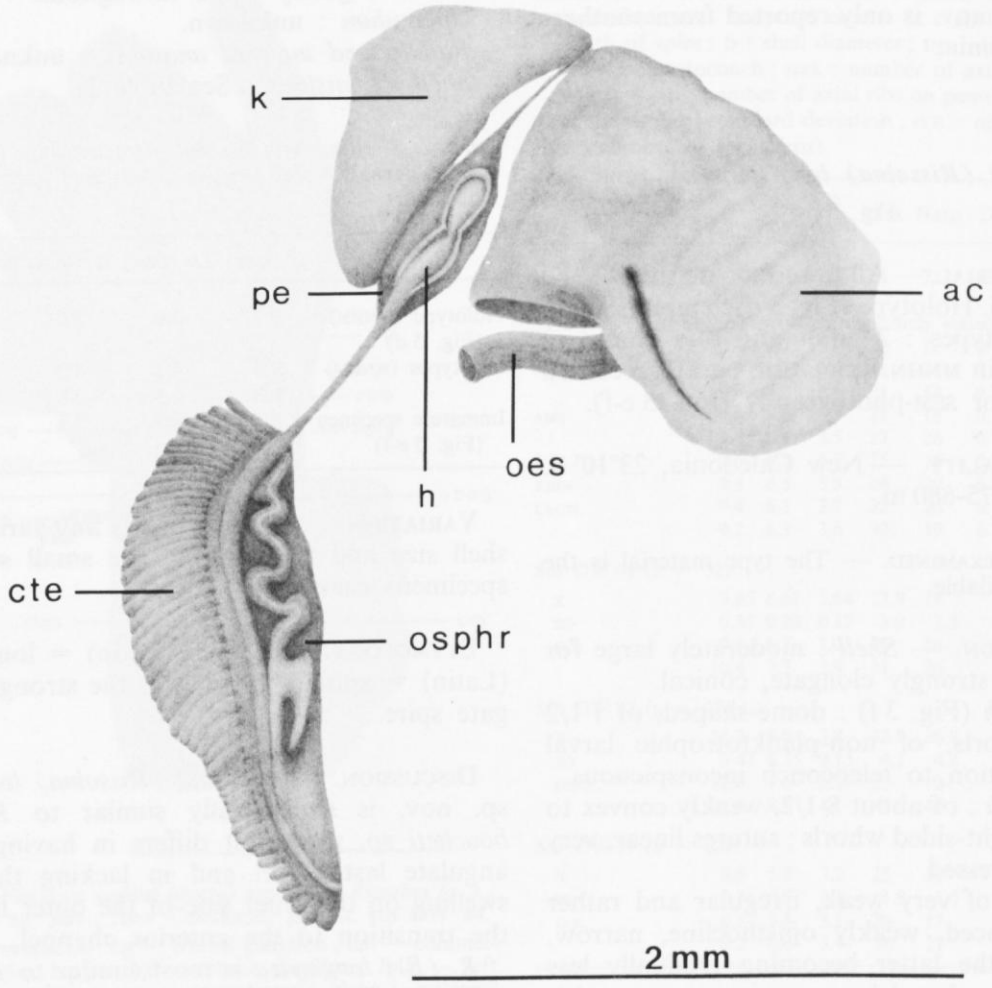

FIG. 11. — Mantle cavity structure and anterior part of stomach of *Rissoina (Rissoina) boucheti* sp. nov., New Caledonia, BIOCAL stn DW 44.

(Abbreviations : ac — anterior chamber of stomach ; cte — ctenidium ; k — kidney ; oes — oesophagus ; osphr — osphradium ; pe — pericardium).

Genus *ZEBINA* H. & A. Adams, 1854

Zebina (Zebina) reclina sp. nov.

Fig. 4 e-h

TYPE MATERIAL. — All from BIOCAL, stn DW 44, 30.VIII.1985. Holotype (Fig. 4 e-f) : empty shell in MHNH. Paratypes : 3 empty shells in MNHN.

TYPE LOCALITY. — New Caledonia, 22°47′ S, 167°14′ E, 440-450 m.

MATERIAL EXAMINED. — The type material is the only one available.

DESCRIPTION. — *Shell* : moderately large for genus, glossy, strongly elongate-conical.

Protoconch : of planctotrophic larval type, of 2 1/4, slightly convex, weakly ad-abapically compressed, smooth, whorls ; transition to teleo-

conch abruptly, with a rather deep sinusigeral notch.

Teleoconch : of about 7 to 7 3/4 whorls ; adapical spire whorls weakly convex ; abapical spire whorls becoming gradually less convex to almost flat-sided ; last whorl moderately angulate ; suture linear, not impressed. Whorls smooth, except for some very weak, densely spaced, growth lines.

Aperture : pyriform ; inner lip thin posteriorly, but becoming wider and thicker anteriorly near the shell base ; anterior channel absent ; posterior channel short, very narrow, triangular ; outer lip thin except for a weak thickening near the transition to the posterior channel and with basal part strongly protracted ; outer lip externally with a moderately thick, rounded, narrow varix.

Colour : glossy white throughout.
Operculum : unknown.
Radula and internal anatomy : unknown.
Shell dimensions : See table 3.

TABLE 3. — *Zebina (Zebina) reclina* sp. nov. Shell dimensions. (L : shell length ; LS length of spire ; D : shell diameter).

	L (mm)	Ls (mm)	D (mm)	No. whorls
Holotype (MNHN)	5.9	3.8	2.3	7 3/4
Paratypes (MNHN)	6.0	4.0	2.3	7 3/4
	5.5	3.5	2.2	7 1/4
	5.3	3.4	2.1	7

VARIATION. — The four specimens examined (the type material) show only small differences in shell dimensions, but do not differ in size and shape.

ETYMOLOGY. — *Reclinus* (Latin) = leaning back, referring to the strongly opisthocline outer apertural lip.

DISCUSSION. — *Zebina reclina* sp. nov. is superficially similar to *Zebina acicula* Laseron, 1956 from Christmas I. in shell shape, but differs in having a more angulate last whorl and in the base of the outer lip being much more protracted.

Z. reclina is easily distinguished from all other known congeners by the strongly angulate last whorl.

DISTRIBUTION. — *Zebina reclina* sp. nov. is known only from the type locality.

Zebina (Zebina) retusa sp. nov.

Fig. 4 a-d

TYPE MATERIAL. — All from BIOCAL, stn DW 38, 30.VIII.1985. Holotype (Fig. 4 a-b) : empty shell in MNHN. Paratypes : 5 adult, empty shells and 1 immature, empty shell in MNHN.

TYPE LOCALITY. — New Caledonia, 23°00′ S, 167°15′ E, 360 m.

MATERIAL EXAMINED (Apart from type material). — **New Caledonia**. BIOCAL : stn DW 44, 22°47′ S, 167°14′ E, 440-450 m, 30.VIII.1985 : 1 spec. (MNHN).

DESCRIPTION. — *Shell* : small, glossy, conical, with bluntly rounded apex.

Protoconch : of non-planktotrophic larval type, of about 2, relatively wide, smooth whorls ; transition teleoconch abruptly.

Teleoconch : of 5 1/2 to 6 whorls ; adapical spire whorls slightly convex ; abapical spire whorls becoming gradually less convex to almost flat-sided ; last whorl subangulate near the periphery.

Spire whorls and last whorl smooth, apart from some weak growth lines.

Aperture : pyriform ; inner lip thin, becoming moderately expanded anteriorly, partly covering the shell base ; anterior channel absent ; outer lip thin, with about 3 weak parallel threads on the outer margin of the inner side ; outer lip with a moderately thick, rounded, narrow varix externally ; outer lip strongly opisthocline in profile.

Colour : spire whorls opaque white with some very irregular large semitransparent dots just above the suture ; last whorl with a rather wide opaque band below the suture and with abapical half semitransparent with irregular and irregularly distributed subcircular opaque white dots.

Operculum, radula and internal anatomy : unknown.

Shell dimensions : See table 4.

TABLE 4. — *Zebina (Zebina) retusa* sp. nov. Shell dimensions. (L : shell length ; LS length of spire ; D : shell diameter).

	L (mm)	Ls (mm)	D (mm)	No. whorls
Holotype (MNHN) (Fig. 4 a, b)	3.4	2.3	1.4	5 3/4
Paratypes (MNHN)	3.5	2.2	1.4	6
	3.4	2.1	1.3	6
	3.4	2.2	1.3	5 3/4
	3.4	2.1	1.4	5 1/2
(Fig. 4 c, d)	3.3	2.2	1.3	6
New Caledonia (Stn DW 44) (MNHN)	3.6	2.3	1.5	5 1/2

VARIATION. — *Zebina retusa* sp. nov. appears to be very uniform in shell shape and shell size.

ETYMOLOGY. — *Retusus* (Latin) = blunt, referring to the blunt apex of the shell.

DISCUSSION. — *Zebina retusa* sp. nov. differs from *Z. reclina* sp. nov. in having a bluntly rounded apex instead of being strongly acuminate, in the last whorl being less angulate and in colour pattern.

Z. retusa differs from all its known congeners in colour pattern and in the blunt, almost rounded apex.

DISTRIBUTION. — *Z. retusa* sp. nov. is known only from the type locality.

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