

A New Genus and Two New Species of Typhinae from the Panamic Province

(Gastropoda : Muricidae)

BY

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(Plate 54)

IT SEEMS DESIRABLE to put on record the following undescribed forms of Typhinae. One is of a group previously not known in the Panamic province. In Typhinae, with a world wide range of distribution from the Eocene to the Recent, it is unusual to have in one's possession two new species to be described, one of them even requiring a new genus. Since KEEN's (1944) revision of the Typhinae, new interpretations of typhine morphology have been projected by FLEMING (1962) and VELLA (1961). However, until such time as workers have expressed their views in a proposed revisional work the author prefers to follow the outline presented by KEEN (*op. cit.*).

Cinclidotyphis DUSHANE, gen. nov.

(Plate 54, Figures 1 to 3)

Varices 4 per whorl; sculpture of numerous axial riblets and fine, raised spiral cords that are continuous across the varices and interspaces; tubes folded back, not forming vertical ribs; cancellate sculpture distinctive and unlike that in all other species of Typhinae.

Type Species: *Cinclidotyphis myrae* DUSHANE, spec. nov.

Cinclidotyphis myrae DUSHANE, spec. nov.

(Plate 54, Figures 1 to 3)

Shell small, fusiform, color dingy white, protoconch white (nuclear whorl worn off in holotype), followed by 4 subsequent whorls; shoulder narrow, sloping, not deeply channeled between whorls; varices 4 per whorl, each a rounded fold which extends above shoulder to join preceding varix; tubes folded back, not forming vertical ribs,

each with a suture on the anterior surface which is carried horizontally onto face of succeeding varix; varices with prominent spiral and axial sculpture producing a beaded effect at the junction, about 22 spiral cords on the last whorl; every other cord at the middle of the body whorl being smaller; 18 axial ribs on the body whorl at a line with the top of the aperture; aperture oval elongate and set off by a raised margin; lip narrow and crenulated; anterior canal open, narrowing toward the base with a slight dorsal curve; operculum lacking in type.

Type Material: The holotype is on deposit in the Los Angeles County Museum of Natural History, Invertebrate Zoology Type collection, catalogue number 1194.

Type Locality: The holotype was collected by the author at Tenacatita Bay, Jalisco, Mexico, January 25, 1968, among rocks near a sand beach; Lat. 19°16'50" N; Long. 104°48'27" W. It is the only specimen known.

Dimensions: Height 13 mm; maximum diameter 6.5 mm.

Discussion: The appearance of this shell in the Panamic province is all the more remarkable because of the paucity of world wide material in the nearest related genus, *Siphonochelus*. The largest concentration of species of this genus occurs in the Tertiary of Europe with the earliest known species *S. parisiensis* (D'ORBIGNY, 1850) dating back to the Middle Eocene according to KEEN & CAMPBELL (1964). The genus is represented in the Australian fauna with 5 species and in the Japanese fauna with 2, but up to the present time no specimens of this genus have been reported from the Panamic province.

The Mexican specimen differs from those in the genus *Pterotyphis* by having more than 3 tubes per whorl and in having finer sculpture. It has weak varices as in *Siphonochelus*, with 4 tubes per whorl. The cancellate sculpture is unlike that in all species of *Siphonochelus*. The open canal is distinctive. Perhaps it is closed in some

part of the growth cycle, but one would have to have more material to be certain. Another peculiar feature is the manner in which the tubes seem to have been folded back, not forming vertical ribs.

This species is named in honor of Dr. A. Myra Keen whose ready help is always a boon to the worker.

Pterotyphis (Tripterotyphis) arcana DUSHANE, spec. nov.
(Plate 54, Figures 4 to 6)

Shell small, base and tubes ivory white, body whorl brown with blotches of brown on earlier whorls, whorls 5 to 6, nuclear whorls two in number, rounded, smooth; adult sculpture developed in first postnuclear whorl, the third with the first tube; varices 3 per whorl, the upper end of each varix left open as a tube; tube openings elevated and at tips of spine; outer face of body whorl with 2 strong white spiral ribs riding over the varices; aperture oval, outer lip with a wide sinuous margin, reflected against the ends of 6 to 10 spiral ribs, smooth within; anterior canal sealed except at end; pillar with remnants of 2 previous canals.

Type Material: The holotype is on deposit in the Los Angeles County Museum of Natural History, Invertebrate Zoology Type Collection, catalogue number 1195; 2 paratypes, DuShane collection.

Type Locality: Mazatlan, Sinaloa, Mexico; Lat. 23°11' N, Long. 106°26' W. The 3 specimens were collected by the author on a rocky reef, February 24, 1968.

Two additional specimens from Banderas Bay, collected in January 1969 by J. DuShane indicate that the range of this species extends at least as far as 275 miles south of the type locality.

Dimensions: Holotype, height 15 mm, maximum diameter 8 mm, length of aperture 3.2 mm; Paratype 1, height 16

mm, diameter 8.5 mm; Paratype 2, height 14 mm, diameter 7 mm.

Discussion: Unlike *Pterotyphis (Tripterotyphis) sayae* KEEN & CAMPBELL, 1964, which is sculptured with about 22 spiral ribs, specimens of the new taxon have 2 major cords or ribs on the body whorl. Also, the brown coloration is less diffused on *P. (T.) arcana*. It differs from *P. (T.) lowei* PILSBRY, 1931 of the West Central American coast, by being easily separable on the basis of the 2 major ribs and the remnants of 2 previous canals; *P. (T.) lowei* has 3.

The earliest fossil record seems to be in the Miocene of Europe. Recent species occur in the Caribbean, Panamic, and Gulf of California areas.

ACKNOWLEDGMENTS

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LITERATURE CITED

- FLEMING, C. A.
1962. The genus *Pterynotus* SWAINSON (Gastropoda, Family Muricidae) in New Zealand and Norfolk Island. Trans. Roy. Soc. New Zealand, Zool. 2 (14): 109-119; 22 figs.
- KEEN, A. MYRA
1944. Catalogue and revision of the gastropod subfamily Typhinae. Journ. Paleontology 18 (1): 50-72; 20 figs.
- KEEN, A. MYRA, & G. BRUCE CAMPBELL
1964. Ten new species of Typhinae (Gastropoda: Muricidae). The Veliger 7 (1): 46-57; pls. 8-11; 3 text figs. (1 July)
- VELLA, PAUL
1961. Australasian Typhinae (Gastropoda) with notes on the subfamily. Palaeontology, 4 (3): 362-391; pls. 46-47.

Explanation of Plate 54

- Figure 1: *Cinclidotyphis myrae* DUSHANE, gen. nov., spec. nov. Ventral view of holotype, LACM, Invertebrate Zoology Type Collection, catalog number 1194 (×4)
Figure 2: Lateral view of the holotype
Figure 3: Apical view of the holotype

- Figure 4: *Pterotyphis (Tripterotyphis) arcana* DUSHANE, spec. nov. Ventral view of holotype, LACM, Invertebrate Zoology Type Collection, catalog number 1195 (×4)
Figure 5: Lateral view of the holotype
Figure 6: Apical view of the holotype

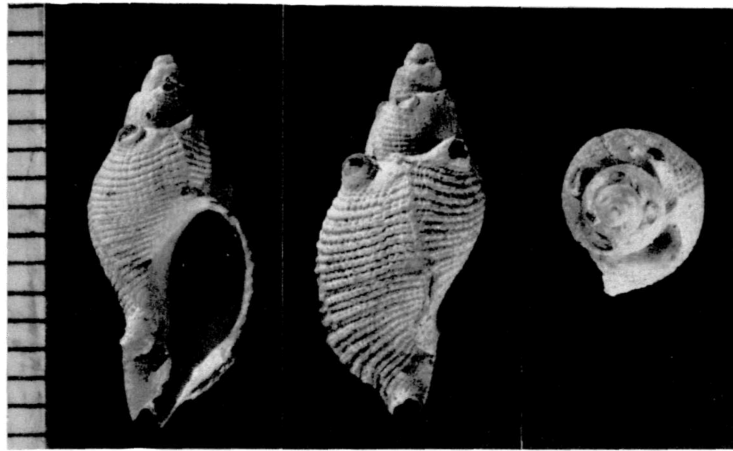


Figure 1

Figure 2

Figure 3

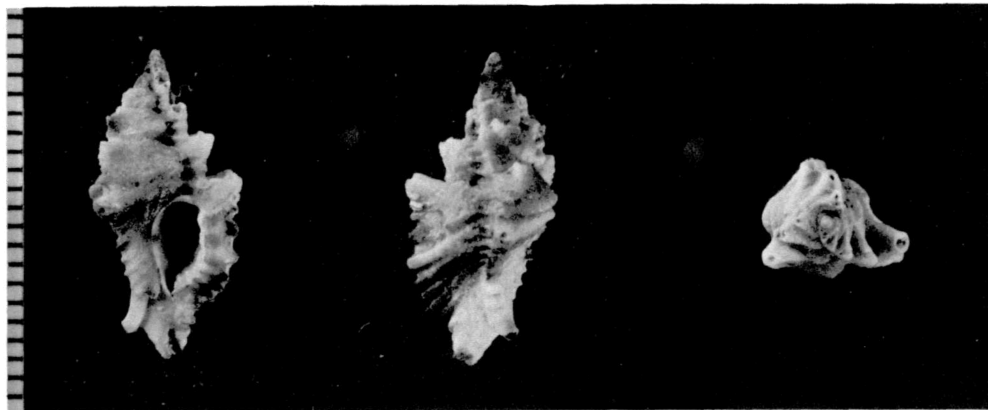
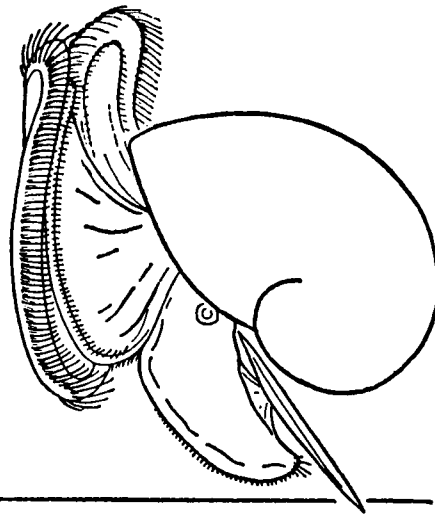


Figure 4

Figure 6

Figure 5

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CONTENTS

The Muricidae of Fiji — Part II. Subfamily Thaidinae. (Plates 47 to 49; 21 Text figures; 1 Map)
WALTER OLIVER CERNOHORSKY 293

Effects of Turbidity-Producing Substances in Sea Water on Eggs and Larvae of Three Genera of Bivalve Mollusks. (7 Text figures)
HARRY C. DAVIS & HERBERT HIDU 316

A New Species of *Murexsul* (Gastropoda:Muricidae) from the Galápagos Islands. (Plate 50; 1 Text figure)
WILLIAM K. EMERSON & ANTHONY D'ATILIO 324

Predators on *Olivella biplicata*, Including a Species-Specific Predator Avoidance Response. (Plate 51; 1 Text figure)
D. CRAIG EDWARDS 326

Rediscovery of *Terebra trochlea* DESHAYES. (Plate 52)
TWILA BRATCHER 334

Growth Characteristics of *Acmaea persona* ESCHSCHOLTZ. (4 Text figures)
RON KENNY 336

Use of the Propodium as a Swimming Organ in an Ancillid (Gastropoda:Olividae). (Plate 53; 1 Text figure)
BARRY R. WILSON 340

Reprint ▶ A New Genus and Two New Species of Typhinae from the Panamic Province (Gastropoda:Muricidae). (Plate 54)
HELEN DUSHANE 343

Gross Anatomy and Classification of the Commensal Gastropod, *Caledoniella montrouzieri* SOUVERBIE, 1869. (Plate 55; 4 Text figures)
JOSEPH ROSEWATER 345

A Preliminary Survey of Mollusks for Consag Rock and Adjacent Areas, Gulf of California, Mexico. (1 Map)
HELEN DUSHANE & ELLEN BRENNAN 351

[Continued on Inside Front Cover]

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CONTENTS — *Continued*

Two New Species of the Genus <i>Volva</i> RÖDING, 1798 (Ovulidae FLEMING, 1828). (Plate 56)	
CRAWFORD NEILL CATE	364
Zoogeographical Studies on Living Cowries. (1 Map)	
FRANZ ALFRED SCHILDER	367
Seasonal Observations on Diet, and Stored Glycogen and Lipids in the Horse Clam, <i>Tresus capax</i> (GOULD, 1850). (Plate 57; 1 Text figure)	
ROBERT G. B. REID	378
Seasonal Gonadal Changes in Two Bivalve Mollusks in Tomales Bay, California. (Plates 58 to 60; 4 Text figures; 1 Map)	
VERNON KENNETH LEONARD, Jr.	382
The Shell Structure and Mineralogy of <i>Chama pellucida</i> BRODERIP. (Plates 61 to 64; 6 Text figures)	
JOHN DAVID TAYLOR & WILLIAM JAMES KENNEDY	391
Molluscan Faunas of Pacific Coast Salt Marshes and Tidal Creeks. (1 Map)	
KEITH B. MACDONALD	399
The Type of <i>Tegula funebris</i> (A. ADAMS, 1855). (Plate 65)	
RUDOLF STOHLER	408
The <i>Littorina ziczac</i> Species Complex. (Plate 66; 4 Text figures)	
THOMAS V. BORKOWSKI & MARILYNN R. BORKOWSKI	410
Spawning and Development in the Trochid Gastropod <i>Euchelus gemmatus</i> (GOULD, 1841) in the Hawaiian Islands. (2 Text figures)	
THOMAS M. DUCH	415
New Records of Nudibranchs from New Jersey.	
ROBERT E. LOVELAND, GORDON HENDLER & GARY NEWKIRK	418
Nomenclatural Changes for the New Species Assigned to <i>Cratena</i> by MACFARLAND, 1966. (2 Text figures)	
RICHARD A. ROLLER	421
An Annotated List of Opisthobranchs from San Luis Obispo County, California. (1 Map)	
RICHARD A. ROLLER & STEVEN J. LONG	424
A Note on the Range of <i>Gastropteron pacificum</i> (Opisthobranchia:Cephalaspidea) (1 Map)	
HANS BERTSCH	431
An Immunological Study of Pelecypod Taxonomy. (3 Text figures)	
LARKLYN FISHER	434
NOTES & NEWS	439
An Overlooked Subgenus and Species from Panama. A. MYRA KEEN	
<i>Laternula</i> Living on the Pacific Coast? A. MYRA KEEN	
Sexual Dimorphism in <i>Tegula funebris</i> . PETER W. FRANK	
Spawning Notes — III. <i>Strombina maculosa</i> . FAY HENRY WOLFSON	
Spawning Notes — IV. <i>Cerithium stercusmuscarum</i> . FAY HENRY WOLFSON	
BOOKS, PERIODICALS & PAMPHLETS	444

Note: The various taxa above species are indicated by the use of different type styles as shown by the following examples, and by increasing indentation.

ORDER, Suborder, DIVISION, Subdivision, SECTION,
SUPERFAMILY, FAMILY, Subfamily, Genus, (Subgenus)
New Taxa

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