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A REVIEW OF THE TRIVIIDAE (Mollusca: Gastropoda)

CRAWFORD NEILL CATE

SAN DIEGO NATURAL HISTORY MUSEUM

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A Review of the Triviidae (Mollusca: Gastropoda)

Crawford Neill Cate¹

INTRODUCTION

This work on the Triviidae brings to a conclusion the planned trilogy of monographic treatments of cypraeacean forms: Ovulidae, Eratoidae and Triviidae. Its purpose is to bring together under one cover the pertinent text relating to the combined Holocene species, and to illustrate them, wherever possible, with photographs of the type specimens or their nearest equivalents. It is hoped that this will assist future students of the group in identifying their specimens; at the very least it should provide a base from which further research may proceed.

None of the early workers in malacology seem to have treated the Triviidae in separate monographic form; usually a relatively few species were tacked on at the end of a comprehensive review of the *Cypraea*. Kiener illustrated only 25 triviid species; Reeve, 32; Sowerby II (1832), 25; Sowerby II (1870), 48; Roberts in Tryon, 43; Weinkauff figured 40, and Joyce Allan only 20. In modern times, the Schilders published a helpful list of triviid species-names they had encountered during the course of studying the Cypraeacea in various museums; they listed ≈ 212 Holocene triviid names, but did little or no revisionary work in this group beyond some rather complicated tables which were intended as a guide to the morphological characters of certain species.

This present work, then, is a more comprehensive review of the Triviidae. Listed herein are 6 valid genera (2 of them new taxa), 7 subgenera, and 138 valid species, of which 41 are new to science. Synonymy accounts for approximately another 115 species-names. Fossil species have been omitted except where photographs of certain fossil type specimens came to hand by chance, along with other photographs from museums assisting in my studies.

Due to a nearly total lack of live material, it will be necessary at least for now to ignore the anatomy of the Triviidae until further collections of living animals may be made available to workers. For the present it can only be assumed that the Triviidae relate more closely to the Cypraeidae than to the other members of

the Cypraeacea (Keen, 1971: 482 & 485). This assumption is based on the structural outline of the shells, on the form of the terminal processes, in the placement and appearance of the aperture, and in the similar appearance of their front and rear canals. They are separated from other cypraeaceans on the basis of the strong transverse ribs present in nearly every triviid species.

Except for limited dorsal spotting in a very few species, shell pigmentation in triviids nearly always consists of a single solid color, without design or pattern. The adult shell is nearly always more or less covered with transverse, upraised ribs; *Trivia europaea* (Montagu, 1808) under certain conditions, and members of the *Triviella*, may be the only exceptions. The longitudinal dorsal medial furrow, although present in most Triviidae, is never seen in Cypraeacea.

In the Triviidae there are roughly 3 different color-groups, which seem to cluster together in certain areas of distribution. What I call the "brown" shells seem to range from the British Isles to Spain and Portugal, into the Mediterranean Sea to Malta and North Africa, then south from Gibraltar to Mauretania. A second, completely separate range for the brown group is the Panamic area, from the southern coast of California, the Gulf of California and south to Peru and the Galápagos Islands.

What may be termed the "white" shells (including the grayish ones) are found south of Mauretania to the Cape of Good Hope, in relatively cold seas. For the most part, however, the white species inhabit the Pacific waters from Hawaii to Japan, throughout Asian habitats including the Philippines, east India, the entire circumference of Australia, Indian Ocean generally, the Red Sea, Persian Gulf and the east African coast south to roughly the coasts of Natal and South Africa.

The final color-group of triviid species, the pink and reddish shells, seem to be confined to the southeast coast of Africa, roughly from Durban to False Bay, Cape of Good Hope.

There are exceptions to the above generalities, as would be expected. However, generally speaking, the color-groups fall into the above pattern with surprising regularity.

¹ Museum Associate, San Diego Natural History Museum.

SYSTEMATICS

Schilder and Schilder (1971) established a workable arrangement of the Triviidae which I have found convenient to adopt here, with a few changes. As closely as it is possible to ascertain, it follows the chronological evolutionary shell development.

References to the fossil species may be found in Schilder (1932) and Schilder and Schilder (1971). However, as mentioned above, a few random illustrations of fossil triviid types appear here simply because their photographs were readily available.

TYPE LOCALITIES

Due in large part to the fact that a very great number of triviid species were described from the collection of Hugh Cuming, many of their collecting localities have been lost and type localities never heretofore designated. Cuming was well known by his contemporaries for his dislike of "disfiguring" labels; he felt that the addition of a label made the collection unattractive, and in his mind, because he knew where the shells came from, it seemed quite acceptable to him either to hide or to destroy the labels. Subsequent misuse of the collection by others has only worsened the situation. Hence, the provenance of several species has never been known; a few have had new type localities designated herein, where there seemed to be no question of range through recent collections of the species. Further study will be needed to locate the range of certain others.

Another case in point is the Agnes Kenyon Collection, housed in the South Australian Museum at Adelaide. Here, too, there were many trays of shells without locality data, or even several different species lumped together into a single lot. These have now been sorted out, identified and returned to the museum.

In view of the many years these specimens have been in storage, once again I should like to point out that the present study must be considered as only a beginning for future work in the Triviidae.

MAGNIFICATION

It will be noted that the illustrations in this paper have been greatly enlarged to facilitate study of the tiny specimens. It should be pointed out that this amount of magnification sometimes has a tendency to distort the appearance of the shells; fine rib-striae may be transformed to seem large and coarse, whereas in

reality they should be considered slender or fine. Therefore it will be necessary for the student to use the illustrations with caution, and to try to obtain an approximately equal amount of magnification, through use of a microscope, in any shells being studied and compared with the illustrations.

CREDITS

Over the years this author has had occasion to work with the late Drs. Schilder on various studies; they very graciously granted their permission for me to use certain of their line drawings to emphasize points under discussion, or to illustrate species impossible to photograph for one reason or another. At this time I wish to credit the publications from which the Schilder drawings used in my present work were derived: the *Bulletin de la Société Zoologique de France* (Tôme LVII, 1932: 399) [Figure 112a herein], and the *Proceedings of the Malacological Society of London* (Vol. 19, 1931 (6): 274; figs. a-e) [Figure 87a herein].

Other sources are listed in the appendix.

ACKNOWLEDGMENTS

During the course of this research into the Triviidae, the author has had the generous assistance of many people in the United States as well as elsewhere throughout the world. Their interest in this work has been most gratifying.

I express my special gratitude to Kathie Way, BM(NH) for an extended effort in my behalf, for the tireless hours she put into a great part of this work and others, without which my own work would have been much more arduous.

Due to the broad scope of this paper, it has been necessary to ask for a great deal of assistance from many people. They gave generously of their time and their knowledge and provided important photographic material or loaned specimens for study. More than this, they provided encouragement. There were others, not specifically named here, whose assistance in very many ways will not be forgotten.

To the following, in alphabetical order, I extend my appreciation and thanks for their part in this monograph: W. Adam, IRSN; Margaret Amtmann, Rancho Santa Fe; Ake Andersson, NRS; P. L. G. Benoit, MRAC; Eugene Ernest Binder, MHNG; Lilia Capocaccia, MCSN; Jean Cate, Rancho Santa Fe; June Chatfield, NMW; Henry E. Coomans, ZMA; Françoise Danrigal, MNHN; Bertram Draper, LACM; Helen DuShane, LACM; J. van Goethem, IRSN; Tadashige Habe, NMST; David Heppell, RSME; Robert Jullien, MHNM; A. Myra Keen, Stanford University; Brian F. Kensley, SAMC; Richard Neil Kilburn, NM; J. Knudsen, UZM; Rudolf Kilius, ZMB; R. V. Melville, ICZN-BM(NH); Wilhelm Odelberg, RSAS; Winston Ponder, AM; George Radwin, SDNHM; Emily Reid, Berkeley; Peter U. Rodda, CAS; Barry Roth, CAS; Joseph Rosewater, USNM; the late Franz Alfred and Maria Schilder, Halle-Saale, DDR; Alan Solem, FMNH; Gale Sphon, LACM; Tina Sponsler, ANSP; Rudolf Stohler, Berkeley; Anne-Marie Testud, MNHN; G. A. Tunncliffe, CM; and Wolfgang Seidler, SAM.

My sincere thanks also go to Barbara Good, San Diego, for her help in typing the final manuscript, and to George Hanselman, San Diego, for translation of several important German language papers. It goes without saying that this paper's value would have been considerably

diminished without the excellent photographs taken by Bert Draper.

Finally, to my wife Jean Cate, a very special thanks for all that she has contributed to this work, as well as my other papers over the years.

Abbreviations and Conventions

AM	– The Australian Museum, Sydney, New South Wales, Australia	NSMT	– National Science Museum, Tokyo, Japan
ANSP	– The Academy of Natural Sciences, Philadelphia, Pennsylvania, USA	NMW	– National Museum of Wales, Cardiff, Wales (United Kingdom)
BM(NH)	– British Museum (Natural History), London, England	NRS	– Naturhistoriska Riksmuseet, Stockholm, Sweden
BSF	– Bulletin de la Société Zoologique de France.	PMSL	– Proceedings of the Malacological Society of London, England
CAS	– California Academy of Sciences, Golden Gate Park, San Francisco, California, USA	RAMM	– Royal Albert Memorial Museum, Exeter, England
CM	– Canterbury Museum, Christchurch, New Zealand	RSAS	– The Royal Swedish Academy of Sciences, Stockholm, Sweden
DHS	– Indicates holotype is described by Franz Alfred Schilder	RSF	– The Village of Rancho Santa Fe, California, USA
DP	– Photographs by Bertram Draper, Los Angeles, California, USA	RSME	– Royal Scottish Museum, Edinburgh, Scotland
FMNH	– Field Museum of Natural History, Chicago, Illinois, USA	SAM	– South Australian Museum, Adelaide, South Australia
ICZN	– International Commission on Zoological Nomenclature	SAMC	– South African Museum, Capetown, South Africa
IRSN	– Institut Royal des Sciences Naturelles de Belgique, Bruxelles, Belgium	SDNHM	– San Diego Natural History Museum, San Diego, California, USA
LACM	– Los Angeles County Museum of Natural History, Los Angeles, California, USA	UMZC	– University Museum of Zoology, Cambridge, England
MCSN	– Museo Civico di Storia Naturale, Genova, Italy	USNMNH	– United States National Museum of Natural History, Washington, D. C., USA
MHNM	– Musée D'Histoire Naturelle, Marseille, France	UZM	– Universitetets Zoologiske Museum, Copenhagen, Denmark
MHNG	– Muséum D'Histoire Naturelle Ville de Genève, Geneva, Switzerland	ZMA	– Zoologisch Museum, University of Amsterdam, The Netherlands
MNHN	– Muséum National D'Histoire Naturelle, Paris, France	ZMB	– Zoologisches Museum für Naturkunde, Humboldt University, Berlin, Germany
MRAC	– Musée Royal de l'Afrique Central, Tervuren, Belgium	[OD]	– by original designation
NM	– Natal Museum, Pietermaritzburg, South Africa	[SD]	– by subsequent designation
		[T]	– by absolute tautonymy
		(C0000)	– shell specimen in collection of C. N. Cate

SYSTEMATICS

TRIVIACEA Troschel, 1863

TRIVIIDAE Troschel, 1863

TRIVIINAE Troschel, 1863

TRIVIELLINI Schilder, 1939

Fossatrivia Iredale, 1931

Fossatrivia caelatura (Hedley, 1918)

1927 *Trivirostra caelatura* Schilder

1956 *Semitrivia* (*Fossatrivia*) *caelatura* Allan

Fossatrivia paucicostata (Schepman, 1909)

1956 *Semitrivia* (*Fossatrivia*) *paucicostata* Allan

Triviella Jousseaume, 1884

Triviella amaryllis Schilder, 1927

Triviella rubra (Shaw, 1909)

1956 *Triviella ovulata rubra* Allan

1963 *Trivia* (*Triviella*) *ovulata rubra* Shikama and Horikoshi

Triviella porcellio Cate, nom. nov.

1811 *Cypraea oniscus* (non Röding, 1798) Lamarck

Triviella carnea (Gray, 1828)

1828 *Cypraea carnea* var. *oblonga* Gray

Triviella aperta aperta (Swainson, 1822)

1828 *Cypraea rosea* Wood

1828 *Cypraea aperta*. Gray

1856 *Cypraea aperta*. Hanley

1870 *Cypraea oniscus*. Sowerby II (1870)

1963 *Trivia* (*Triviella*) *aperta*. Shikama and Horikoshi

Triviella aperta neglecta Schilder, 1930

1811 *Cypraea oniscus* Lamarck

- Triviella pseudovulata* Schilder and Schilder, 1929
Triviella vesicularis (Gaskoin, 1836)
 1885 *Trivia vesicularis*. Tryon
 1927 *Triviella vesicularis*. Schilder
Triviella australis Cate, sp. nov.
Triviella phalacra Schilder, 1930
 1929 *Triviella vesicularis* (Gaskoin) of Schilder and Schilder
Triviella costata (Gmelin, 1791)
 Triviini Troschel, 1863
 Das Gebiss der Schnecken (Berlin) 1: 214.
 [*Trivia* Gray, 1832]
 (Descr. Cat. Shells [unpublished proofs only]; name not established in valid way).
Trivia Broderip, 1837
 in: Knight, Penny Cyclopaedia 8: 256.
 Type species [SD: Gray, 1847]: *Cypraea europaea* Montagu, 1808 (see Schilder, 1939: 174 [34]).
Trivea Swainson, 1840
 Treatise on Malacology: 325.
 Type species [OD]: *Cypraea coccinella* Lamarck, 1811. Ann. Mus. Nat. Hist. (Paris) 16: 104.
Coccinella Herrmannsen, 1847 (non Linnaeus, 1758)
 Index Genr. Malacoz. 1: 254.
 Type species [OD]: *Cypraea arctica* Pulteney, 1799; Cat. Birds, Shells, Plants, Dorsetshire: 39.
- Galeatrivia* Cate, gen. nov.**
Galeatrivia ovulata (Lamarck, 1811)
 1811 *Cypraea ovulata* Lamarck
 1822 *Cypraea ovula* Lamarck
 1852 *Trivia ovulata* var. *alba* Mörch
 1873 *Trivia (Trivia) ovularia* Paetel
 1879 *Trivia ovulum* Schmeltz
Galeatrivia millardi Cate, sp. nov.
- (*Trivia*) Broderip, 1837
Trivia (Trivia) monacha tripunctata (Bucquoy, Dautzenberg and Dollfus, 1883)
 1848 *Cypraea europaea* var. *tripunctata* Requier [nom. nud.]
 1872 *Trivia europaea* var. *maculata* Monterosato
 1878 *Cypraea europaea* var. *trimaculata* Monterosato
 1883 *Cypraea europaea* var. *major* Bucq., Dautz. and Dollfus
 1971 *Trivia (Trivia) monacha tripunctata*. Schilder and Schilder
- Trivia (Trivia) monacha monacha* (da Costa, 1778)
 1767 *Cypraea pediculus* forma *europaea* Linnaeus
 1845 *Cypraea pediculus* syn. *vulgaris* Chenu
 1845 *Cypraea uropaea* MacGillivray
Trivia (Trivia) europaea (Montagu, 1808)
 1811 *Cypraea coccinella* Lamarck
 1836 *Trivia jousseaumei* Locard
Trivia (Trivia) arctica (Pulteney, 1799)
 1767 *Cypraea pediculus* forma *anglica* Linnaeus
 1777 *Cypraea pediculus* (non Linnaeus) Pennant
 1797 *Cypraea arctica* Humphrey
 1803 *Cypraea bullata* Montagu
 1827 *Cypraea europaea* var. *immaculata* Gray
 1835 *Cypraea norvegica* Sars
 1881 *Cypraea europaea* syn. *pullus* Weinkauff
 1893 *Cypraea europaea* var. *minor* Marshall
 1933 *Trivia arctica minuta* Schilder
 1950 *Trivia candidula*. (Gaskoin) Nicklès
Trivia (Trivia) napolina (Kiener, 1843)
 1845 *Cypraea napolini* (Duclos, err.)
 1971 *Trivia (Trivia) napolina*. Schilder and Schilder
Trivia (Trivia) dakarensis Schilder, 1967
Trivia (Trivia) hispania Cate, sp. nov.
 1900 *Trivia pullicina* var. *globosa* Locard and Cazier
 1941 *Trivia (Trivia) arctica*. Schilder
Trivia (Trivia) grateloupi Schilder
Trivia (Trivia) tortuga Cate, sp. nov.
Trivia (Trivia) procella Cate, sp. nov.
Trivia (Trivia) islahispaniolae petrela (Olsson and Harbison, 1953)
Trivia (Trivia) mollerati Locard
 1878 *Cypraea europaea* var. *minor* Monterosato
 1878 *Cypraea europaea* var. *solida* Monterosato
 1894 *Trivia mollerati* Locard
 1897 *Trivia mollerati*. Locard
Trivia (Trivia) multilirata (Sowerby II, 1870)
 1826 *Cypraea europaea* Risso
 1829 *Cypraea umbilicalis* da Costa
 1848 *Cypraea europaea* var. *carnea* Requier
 1870 *Cypraea formosa* syn. *crebricostata* Sowerby II
 1878 *Cypraea europaea* var. *major-globosa* Monterosato
 1883 *Cypraea europaea* var. *globosa* Bucq., Dautz. and Dollfus
 1887 *Trivia (Trivia) sphaerica* Paetel
 1900 *Trivia globulosa* Locard and Cazier
 1900 *Trivia europaea* var. *ventricosa* Locard and Cazier

- 1900 *Trivia europaea* var. *albida* Locard and Cazier
 1924 *Trivia mediterranea* var. *albula* Sullioti
 1933 *Trivia mediterranea* var. *pelluscens* Coen
 1937 *Trivia dalmatica* Coen

(*Sulcotrivia*) Schilder, 1933

- Trivia* (*Sulcotrivia*) *africana* (Schilder, 1931)
 1899 *Trivia pulex* var. *minor* Dautzenberg
Trivia (*Sulcotrivia*) *lathyrus* (Blainville, 1826)
 1811 *Ovula triticea* Lamarck
 1817 *Cypraea sulcata* syn. *pulex* Dillwyn
 1826 *Cypraea mediterranea* Risso
 1827 *Cypraea pulex* Gray
 1828 *Cypraea lacrymalis* Menke (nom. nud.)
 1830 *Cypraea lacrymalis* Menke
 1843 *Cypraea lathyrus* (Dufresne). Kiener
 1848 *Cypraea pulex* var. *fusca* Requien (nom. nud.)
 1878 *Cypraea pulex* var. *minor* Monterosato
 1883 *Cypraea pulex* var. *rosea* Bucq., Dautz. and Dollfus
 1890 *Trivia pullicina* Mollaret
 1900 *Trivia pullicina* var. *pullicida* Locard and Cazier
 1900 *Trivia pullicina* var. *violacea* Locard and Cazier
 1900 *Trivia pullicina* var. *brunnea* Locard and Cazier
 1900 *Trivia pullicina* var. *albida* Locard and Cazier
 1900 *Trivia pullicina* var. *grisea* Locard and Cazier

Pusulini Schilder, 1936

Pseudotrivia Schilder, 1936

- Pseudotrivia schepmani* Schilder, 1941
 1909 *Trivia sibogae* forma *minor* Schepman
Pseudotrivia suavis (Schilder, 1931)
 1836 *Cypraea formosa* Gaskoin
Pseudotrivia sibogae (Schepman, 1909)
Pseudotrivia abyssicola (Schepman, 1909)
Pseudotrivia sagamiensis Kuroda and Habe, 1971
Pseudotrivia problematica (Schilder, 1931)
Pseudotrivia samarensis Cate, sp. nov.
Pseudotrivia dumaliensis Cate, sp. nov.

Robertotrivia Cate, gen. nov.

- Robertotrivia eos* (Roberts, 1913)
 1932 *Pusula* (*Ellatrivia*) *eos* Schilder

1941 *Pseudotrivia eos* Schilder

1963 *Trivia* (*Pseudotrivia*) *eos*. Shikama and Horikoshi

Robertotrivia kiiensis Kuroda and Cate, sp. nov.

Robertotrivia speciosa Kuroda and Cate, sp. nov.

1963 *Trivia* (*Pseudotrivia*) sp. Shikama and Horikoshi

Robertotrivia opalina Kuroda and Cate, sp. nov.

Niveria Jousseaume, 1884

- Niveria* (*Niveria*) *quadripunctata* (Gray, 1827)
 1826 *Cypraea rosea* Blainville
 1827 *Cypraea 4-punctata* Gray
 1827 *Cypraea quadripunctata* var. *immaculata* Gray
 1843 *Cypraea rotunda* Kiener
 1928 *Trivia quadripunctata*. Faustino
Niveria (*Niveria*) *hybrida* (Schilder, 1931)
Niveria (*Niveria*) *nix* (Schilder, 1922)
 1832 *Tri. Nivea* Gray
 1832 *Cypraea nivea* Sowerby II
 1838 ? *Cypraea grando* Potiez and Michaud
 1922 *Trivia nix* Schilder
Niveria (*Niveria*) *pacifica* (Sowerby II, 1832)
 1971 *Trivia* (*Niveria*) *pacifica* (Sowerby, 1832). Keen
Niveria (*Niveria*) *suffusa* (Gray, 1827)
 1827 *Cypraea pediculus* var. *suffusa* Gray
 1838 *Cypraea armandina* Potiez and Michaud
 1843 *Cypraea armandiana* "Duclos". Kiener
 1870 *Cypraea suffusa* var. *pullata* Sowerby II
 1870 *Cypraea suffusa*. Abbott
Niveria (*Niveria*) *maugeriae* (Sowerby II, 1832)
 1832 *Trivia maugeri* [sic] Gray; (nom. nud.)
 1833 *Cypraea maugeri* Gray
 1971 *Trivia* (*Niveria*) *maugeriae*. Keen
Niveria (*Niveria*) *pediculus* (Linnaeus, 1758)
 1767 *Cypraea pediculus* forma *indica* Linnaeus
 1778 *Cypraea pisum* Meuschen (non-binomial)
 1781 *Cypraea pisum* Meuschen (non-binomial)
 1798 *Cypraea oniscus* Röding
 1798 *Cypraea pulex* Röding
 1807 *Cypraea pulex*. Link
 1817 *Cypraea sulcata* Dillwyn
 1838 *Cypraea pediculus* var. *minor* Schlüter
 1877 *Trivia pediculus* var. *picturata* Mörch
 1922 *Cypraea restituta* Sullioti
 1927 *Triviella gamma* Mestayer
 1953 *Trivia* (*Trivia*) *pediculus*. Olsson and Harbison

(Ellatrivia) Iredale, 1931*Niveria (Ellatrivia) merces* (Iredale, 1924)1822 *Cypraea australis* Lamarck1838 *Cypraea rosea* Potiez and Michaud1963 *Trivia (Ellatrivia) merces merces*. Shikama and Horikoshi*Niveria (Ellatrivia) memorata* (Finlay, 1927)1927 *Triviella memorata* Finlay1927 *Triviella maoriensis* Mestayer1931 *Ellatrivia (merces) addenda* Iredale1956 *Ellatrivia merces*. Allan1971 *Niveria (Ellatrivia) merces addenda* Schilder and Schilder*(Cleotrivia)* Iredale, 1930*Niveria (Cleotrivia) vitrea* (Gaskoin, 1849)1928 *Trivia vitrea*. Faustino*Niveria (Cleotrivia) candidula* (Gaskoin, 1836)1757 *Cypraea bitou* Adanson1836 *Cypraea approximans* Gaskoin1836 *Cypraea olorina* Gaskoin1885 *Trivia subrostrata* var. *alba* "Krebs" of Roberts1903 *Trivia candidula*. Dall1912 *Cypraea arctica* var. *alba* Dautzenberg and Fischer1920 *Trivia bitou* Pallary*Niveria (Cleotrivia) leucosphaera* (Schilder, 1931)1931 *Pusula (Cleotrivia) leucosphaera* Schilder*Niveria (Cleotrivia) globosa* (Sowerby II, 1832)1832 *Trivia globosa* Gray1832 *Cypraea globosa* Sowerby II1870 *Cypraea brevissima* Sowerby II1900 *Trivia acuti-sulcata* Kenyon1906 *Cypraea fibula* Standen and Leicester1921 *Trivia cosmoi* Dautzenberg*Niveria (Cleotrivia) meridionalis* Cate*Niveria (Cleotrivia) dorsennus* Cate, sp. nov.*Niveria (Cleotrivia) corallina* Cate, sp. nov.*Niveria (Cleotrivia) pisum* (Gaskoin, 1836)1846 *Cypraea pisum* Gaskoin1885 *Trivia pisum*. Tryon1932 *Pusula (Cleotrivia) globosa pisulum* Schilder*Niveria (Cleotrivia) pilula* (Kiener, 1843)1843 *Cypraea pilula* Kiener1845 *Cypraea sphaerula* Mighels1935 *Cleotrivia pilula*. Iredale*Niveria (Cleotrivia) pilula euclaensis* Cate, ssp. nov.1918 *Trivia globosa*. Verco1935 *Cleotrivia bathypilula* Iredale1971 *Niveria (Cleotrivia) pilula bathypilula* Schilder*Niveria (Cleotrivia) atomaria atomaria* (Dall, 1902)1902 *Trivia atomaria* Dall1907 *Cypraea atomaria*. Hidalgo1971 *Trivia (Pusula) atomaria*. Keen*Niveria (Cleotrivia) atomaria pygmaea* (Schilder, 1931)1931 *Pusula (Cleotrivia) pygmaea* Schilder*Niveria (Cleotrivia) occidentalis* (Schilder, 1922)1827 *Cypraea sub-rostrata* Gray1846 *Cypraea pulla* Gaskoin1922 *Trivia occidentalis* Schilder, nom. nov. pro *C. subrostrata*1922 *Trivia antillarum* Schilder*Niveria (Cleotrivia) aquatanica* Cate, sp. nov.*Trivirostra* Jousseaume, 1884*Trivirostra corinneae* (Shaw, 1909)1867 *Trivia affinis* Marrat1909 *Trivia corinneae* Shaw1920 *Trivia hidalgoi* Vredenburg1932 *Trivirostra corinneae*. Schilder1932 *Trivirostra corinneae* syn. *puellula* Schilder*Trivirostra thaamumi* Cate, sp. nov.*Trivirostra hordacea* (Kiener, 1843)1843 *Cypraea hordacea* Kiener1845 *Cypraea insecta* Mighels1928 *Trivia insecta*. Faustino1934 *Trivia koroensis* Ladd*Trivirostra boswellae* Cate, sp. nov.*Trivirostra oshimaensis* Cate, sp. nov.*Trivirostra desirabilis* (Iredale, 1912)*Trivirostra clariceae* Cate, sp. nov.*Trivirostra sphaeroides* Schilder, 1933*Trivirostra insularum* Schilder, 19441944 *Trivirostra edgari insularum* Schilder*Trivirostra edgari edgari* (Shaw, 1909)1827 *Cypraea scabriuscula* var. *minor* Gray1849 *Cypraea grando* Gaskoin1870 *Cypraea grando* (Gaskoin). Sowerby II1909 *Trivia oryza* forma *minor* Schepman1909 *Trivia edgari* Shaw, nom. nov. pro *Cypraea grando* Gaskoin*Trivirostra edgari tomlini* Schilder, 1944*Trivirostra oryzoidea* Iredale, 19351917 *Trivia oryza* Odhner*Trivirostra vitrina* Cate, sp. nov.*Trivirostra shawi* Schilder, 1933*Trivirostra bocki* Schilder, 19441944 *Trivirostra shawi bocki* Schilder*Trivirostra spioinsula* Cate, sp. nov.

- Trivirostra pellucidula* (Gaskoin, 1846)
 1846 *Cypraea pellucidula* Gaskoin
 1881 *Cypraea pellicula* Weinkauff
 1928 *Trivia pellucidula*. Faustino
 1930 *Trivia pellucida* Iredale
 1968 *Trivirostra (Dolichupis) pellucidula*. Cernohorsky
Trivirostra corrugata corrugata (Pease, 1868)
 1868 *Trivia corrugata* Pease
 1914 *Trivia exigua* var. *alba* Sowerby II
Trivirostra corrugata hyalina Schilder, 1933
 1933 *Trivirostra exigua hyalina* Schilder
Trivirostra exigua (Gray, 1831)
 1831 *Cypraea exigua* Gray
 1833 *Cypraea tremeza* Duclos
 1845 *Cypraea gemmula* Gould
 1963 *Trivia (Trivirostra) exigua*. Shikama and Horikoshi
 1968 *Trivia tremeza* syn. *gemmata* Schmeltz
Trivirostra polynesiae Cate, sp. nov.
Trivirostra keehiensis Cate, sp. nov.
Trivirostra natalensis Schilder, 1932
 1923 *Trivia pellucidula* (Gaskoin). Vayssi  re
 1932 *Trivirostra pellucidula natalensis* Schilder
Trivirostra vayssi  rei Cate, nom. nov.
 1923 "*Trivia pellucidula* (Gaskoin, 1846)." of Vayssi  re
Trivirostra turneri Schilder, 1932
 1861 *Cypraea oryza* (Lamarck) var. Dunker
 1896 *Cypraea turneri* (Jouss.) Shopland (nom. nud.)
 1932 *Trivirostra oryza turneri* Schilder
Trivirostra triticum Schilder, 1932
 1870 *Cypraea oryza sandwichensis* Sowerby II
 1932 *Trivirostra oryza triticum* Schilder
 1933 *Trivirostra triticum subinflata* Schilder
Trivirostra obscura (Gaskoin, 1849)
 1849 *Cypraea obscura* Gaskoin
Trivirostra bipunctata (Odhner, 1917)
 1917 *Trivia bipunctata* Odhner
 1956 *Trivia (Dolichupis) obscura* (Gaskoin). Allan
Trivirostra exmouthensis Cate, sp. nov.
Trivirostra pargando Iredale, 1935
 1917 *Trivia grando* (Gaskoin). of Odhner
Trivirostra oryza oryza (Lamarck, 1811)
 1705 *Porcellana pediculus* Rumphius
 1811 *Cypraea oryza* Lamarck
 1817 *Cypraea sulcata* var. *oryza* syn. *nivea* Dillwyn
 1843 *Cypraea intermedia* Kiener
 1870 *Trivia pediculus* Roberts
 1909 *Trivia oryza* Lam. forma *minor* Schepman
 1928 *Trivia oryza*. Faustino
 1963 *Trivia (Trivirostra) oryza*. Shikama and Horikoshi
Trivirostra zzyzyxia Cate, sp. nov.
Trivirostra scabriuscula (Gray, 1827)
 1827 *Cypraea scabriuscula* Gray
 1831 *Cypraea rugosa* Gray
 1849 *Cypraea sulcata* Gaskoin
 1870 *Trivia gaskoini* Roberts
 1928 *Trivia scabriuscula*. Faustino
Trivirostra aussiorum Cate, sp. nov.
Trivirostra cydarum Cate, sp. nov.
- Decoriatrivia* Cate, gen. nov.**
- Decoriatrivia paucilirata* (Sowerby II, 1870)
 1870 *Cypraea paucilirata* Sowerby II
 1900 *Cypraea buttoni* Melvill
 1931 "*Dolichupis acutidentata* (Gaskoin)." of Schilder and Tomlin
 1963 *Trivia (Dolichupis) paucilirata* Solem
 1971 *Trivia (Dolichupis) acutidentata* (Gaskoin). Keen
Decoriatrivia artema Cate, sp. nov.
Decoriatrivia halians Cate, sp. nov.
Decoriatrivia burius Cate, sp. nov.
Decoriatrivia acutidentata (Gaskoin, 1836)
 1836 *Cypraea acutidentata* Gaskoin
Decoriatrivia pulloidea (Dall and Ochsner, 1928)
 1928 *Trivia pulloidea* Dall and Ochsner
 1971 *Pusula (Pusula) acutidentata pulloidea* Schilder and Schilder
Decoriatrivia citeria Cate, sp. nov.
Decoriatrivia ritteri (Raymond, 1903)
 1903 *Trivia ritteri* Raymond
Decoriatrivia wayiana Cate, nom. nov.
 1832 *Trivia rufescens* Gray
 1832 *Cypraea rufescens* Sowerby II
 1870 *Cypraea rubescens* Sowerby II
- Pusula* Jousseaume, 1884**
- : *Pustula* Roberts, 1885
 : *Vusula* Cossmann, 1896
- Pusula (Pusula) panamensis* (Dall, 1902)
 1902 *Trivia panamensis* Dall
Pusula (Pusula) rubescens (Gray, 1833)
 1833 *Cypraea rubescens* Gray
 1971 *Trivia (Cleotrivia) rubescens* (Gray, 1833). Keen
Pusula (Pusula) fusca (Sowerby II, 1832)
 1832 [*Cypraea fusca* Gray]

- 1971 *Trivia (Pusula) fusca* (Sowerby II, 1832, ex Gray MS). Keen
- Pusula (Pusula) galapagensis* (Melvill, 1900)
- 1900 *Cypraea (Trivia) galapagensis* Melvill
- 1963 *Trivia (Pusula) rufescens* (Gray, 1832) Solem
- 1971 *Pusula (Pusula) fusca galapagensis* (Sowerby II, 1832) Schilder
- Pusula (Pusula) carabus* Cate, sp. nov.
- Pusula (Pusula) cherobia* Cate, sp. nov.
- Pusula (Pusula) campus* Cate, sp. nov.
- Pusula (Pusula) sanguinea* (Sowerby II, 1832)
- 1832 *Cypraea sanguinea* Sowerby II
- 1971 *Trivia (Pusula) sanguinea* (Sowerby, 1832, ex Gray MS). Keen
- Pusula (Pusula) maltbiana* (Schwengel and McGinty, 1942)
- 1942 *Trivia maltbiana* Schwengel and McGinty
- Pusula (Pusula) californiana* (Gray, 1827)
- 1827 *Cypraea californiana* Gray
- 1971 *Trivia (Pusula) californiana*. (Gray, 1827). Keen
- Pusula (Pusula) californica* (Sowerby II, 1832)
- 1832 [*Trivia californica* Gray, MS] (June)
- 1832 *Cypraea californica* Sowerby II (November)
- 1843 *Cypraea depauperata*. Kiener
- 1963 *Pusula* (text figure) Keen
- 1971 *Trivia (Pusula) californiana*. (Gray, 1827). Keen
- 1974 *Trivia californiana* (Gray, 1827). Abbott
- Pusula (Pusula) californica loochooensis* Cate, ssp. nov.
- Pusula (Pusula) elsia* (Howard and Sphon, 1960)
- 1960 *Trivia (Pusula) elsia* Howard and Sphon
- 1971 ? *Trivia (Pusula) californiana* (Gray). Keen
- Pusula (Pusula) solandri* (Sowerby II, 1832)
- 1832 *Cypraea solandri* Sowerby II
- 1927 *Pusula (Pusula) solanderi* [emend.] (Sowerby, 1832) Schilder
- 1971 *Trivia (Pusula) solandri* (Sowerby, 1832, ex Gray, MS). Keen =
- Pusula (Pusula) padreserrai* Cate, sp. nov.
- 1971 *Trivia (Pusula) solandri*. Keen
- Pusula (Pusula) radians* (Lamarck, 1811)
- 1811 *Cypraea radians* Lamarck
- 1817 *Cypraea oniscus* Dillwyn
- 1971 *Trivia (Pusula) radians* (Lamarck, 1811). Keen
- 1971 *Cypraea rota* (Weinkauff, 1881). Keen
- Pusula (Pusula) costispunctata* (Sowerby II, 1870)
- 1870 *Cypraea costispunctata* Sowerby II
- 1971 *Niveria (Niveria) costispunctata*. Schilder
- (*Dolichupis*) Iredale, 1930
: *Trivellona* Iredale, 1931
- Pusula (Dolichupis) producta producta* (Gaskoin, 1836)
- 1836 *Cypraea producta* Gaskoin
- 1941 *Trivia (Trivia) latensis* Schilder
- 1967 *Pusula producta*. Cernohorsky
- Pusula (Dolichupis) akroterion* Cate, sp. nov.
- Pusula (Dolichupis) excelsa* (Iredale, 1931)
- 1931 *Trivellona excelsa* Iredale
- Pusula (Dolichupis) rubinicolor* (Gaskoin, 1836)
- 1836 *Cypraea rubinicolor* Gaskoin
- 1885 *Trivia rubinicolor*. Tryon
- Pusula (Dolichupis) fultoni* Cate, sp. nov.
- 1927 "*Trivia acutidentata*" of Fulton
- Pusula (Dolichupis) cicatrosa* (Sowerby II, 1870)
- 1870 *Cypraea cicatrosa* Sowerby II
- 1885 *Trivia cicatrosa*. Tryon
- Circumscapula* Cate, gen. nov.
- Circumscapula myrae* (Campbell, 1961)
- 1961 *Trivia (Pusula) myrae* Campbell
- Circumscapula iota* Cate, sp. nov.
- Discotrivia* Cate, gen. nov.
- Discotrivia circumdata* (Schilder, 1931)
- 1931 *Trivia (Pusula) sanguinea circumdata* Schilder
- Discotrivia dartevellei* (Knudsen, 1955)
- 1955 *Trivia dartevellei* Knudsen
- Discotrivia splendidissima* (Tomlin and Schilder, 1934)
- 1934 *Triviella splendidissima* Tomlin and Schilder
- Discotrivia depauperata* (Sowerby II, 1832)
- 1832 *Cypraea depauperata* Sowerby II
- Discotrivia labiosa* (Gaskoin, 1836)
- 1836 *Cypraea pediculus* var. *labiosa* Gaskoin
- Discotrivia rota* (Weinkauff, 1881)
- 1881 *Cypraea rota* Weinkauff

SYSTEMATIC ACCOUNT

Triviacea Troschel, 1863

Das Gebiss der Schnecken (Berlin) 1: 201.

Triviidae Troschel, 1863

Das Gebiss der Schnecken (Berlin) 1: 201.

Triviinae Troschel, 1863

Das Gebiss der Schnecken (Berlin) 1: 201.

Triviellini Schilder, 1939

Arch. Moll. 71: 165.

Fossatrivia Iredale, 1931

Austral. Moll. Notes 18/4: 222.

(Ref. Schilder, 1939: 173 [29])

[SD; Schilder, 1971].

Type species: *Trivia caelatura* Hedley, 1918

Proc. Roy. Soc. New South Wales, 51

Suppl.: M 71.

1. *Fossatrivia caelatura* (Hedley, 1918)

(Fig. 1: holotype)

1918 *Trivia caelatura* Hedley, Proc. Roy. Soc. New South Wales 51, Suppl.: M 71.

1927 *Trivirostra caelatura*. Schilder, Revision der Cypraea: 63.

1956 *Semitrivia* (*Fossatrivia*) *caelatura*. Allan, Cowry Shells of World Seas: 152; pl. 15, figs. 15-16.

Original description.—"Trivia caelatura nom. nov. for *avellanoides* Hedley [Hedley, 1907: 293] not McCoy [1867: 436]."

Hedley 1907: "*Trivia avellanoides*, McCoy, sp. . . . Two specimens, one perfect, the other broken, are the first of this species reported as recent. The perfect specimen, of which I offer a figure, is 4.5 mm. in length, has thirty-seven thread-like riblets which are interrupted by a smooth, not excavate, dorsal space. Its color is white, the smooth dorsal area more opaque than the rest." (Hedley, 1907: 293).

Measurements, holotype.—L = 4.5 mm (Ponder, in litt.).

Type locality.—80 fathoms (146 metres), off Tasmania (neither Bass Strait nor the Tasman Sea has been indicated).

Holotype.—AM No. C. 25769.

Discussion.—Hedley: "All authors who have dealt with the species comment on its extreme variability. The recent example, though not typical, certainly intergrades with a small delicately sculptured form of the fossil." Hedley apparently is referring to *Trivia avellanoides* McCoy, 1867, a fossil species. Because many of the triviid species from the old Tertiary beds of Australia, New Zealand and Tasmania were lumped together under the McCoy (1867) name, it is difficult to be sure which form of the morphological variations of *T. avellanoides* he was using as a comparison. According to Schilder (1935: 330), the species was extremely variable, with the possibility of taxonomic distinction existing among the many forms.

Etymology.—The name *caelatura* appears to have been taken from the Latin word *caelatus*, meaning an engraving.

2. *Fossatrivia paucicostata* (Schepman, 1909)

(Fig. 2: lectotype herein)

1909 *Trivia paucicostata* Schepman, Proso. Siboga Exped. II, *Trivia*: 139; pl. 11, fig. 2.

1956 *Semitrivia* (*Fossatrivia*) *paucicostata*. Allan, Cowry Shells of World Seas: 152.

Original description.—"Trivia paucicostata . . . Shell shortly ovate, swollen, greyish-white (perhaps flesh-coloured in life), with few strong ribs and rather wide, smooth interstices, considerably broader than the ribs; no dorsal impression, the majority of the ribs run from one side to the other, with a few intermediate ones which don't reach the center. Aperture rather wide, running on the right side of the ventral face, slightly wider at the anterior end. Right margin relatively thin, with a thickened rib exteriorly and only 13 teeth, columellar margin with about 14 teeth, slightly excavated interiorly [fossula], front sinus large, posterior one narrower, with a small callosity on the left side, anterior end slightly rostrate or produced; interstices of the ribs on the apertural margins granose" (Schepman, 1909: 139).

Measurements, holotype.—"long. 8½, lat. 6¼, alt. 5½ Mill."

Type locality.—"Stat. 95. 5° 43.5' N., 119° 40' E. Sulu Sea. 522 M. stony bottom. 3 spec."

Distribution.—NE Borneo; Sulu Sea; S Philippines.

Lectotype.—ZMA No. 2734 d.

Discussion.—Schepman remarked: "This and the next species [*Trivia sibogae* sp. nov. (elsewhere herein)] resemble some of the South-African species by their aperture, which lies on the right side of the base, and is larger than usually in *Trivia*. In sculpture, but not in shape, it resembles *T. Butoni* Melv. [1900] (Ann. Mag. Nat. Hist. Ser. 7, Vol. 6, 1900, p. 209) [Fig. 3: holotype] this species is however more regularly ovate in outline, the dorsal view of the new species being subtrigonal, in consequence of the blunt posterior part, in [*T.*] *Butoni* the aperture is much narrower and is situated more centrally."

Etymology.—The name of this species would seem to be a combination of the 2 Latin words *paucitas* and *costatus*, meaning of few ribs.

Galeatrivia Cate, gen. nov.

Type species: *Cypraea ovulata* Lamarek, 1811

Ann. Mus. Nat. Hist. (Paris) 16: 99; (see species No. 3 herein).

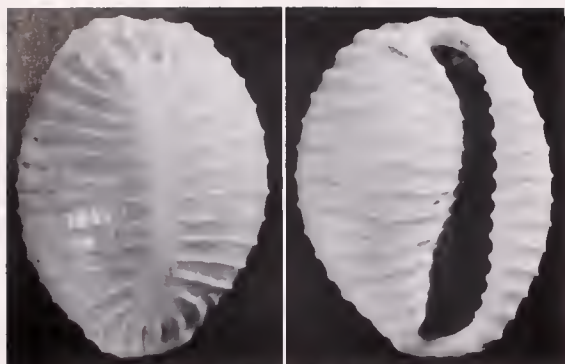


Fig. 1: *Fossatrivia caelatura*:
DP photo, [1], holotype: L—4.5 mm.

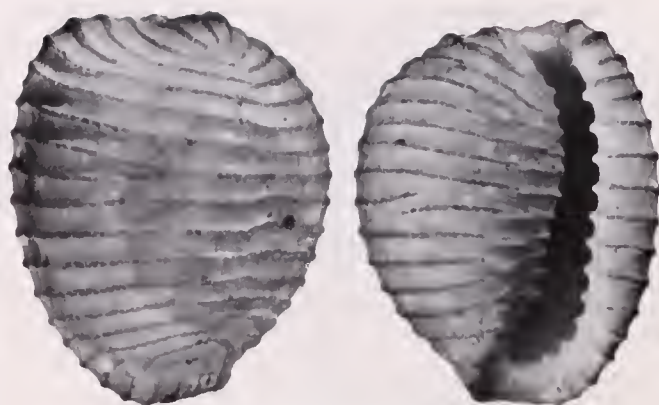


Fig. 2: *Fossatrivia paucicostata*:
ZMA photo, [2], lectotype: L—8.5 mm.

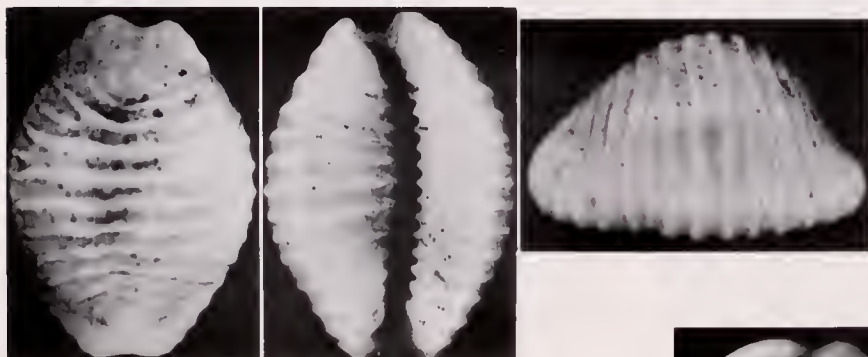


Fig. 3: *Cypraea (Trivia) buttoni*:
FMNH photo, [2, 101], holotype: L—6.0 mm.

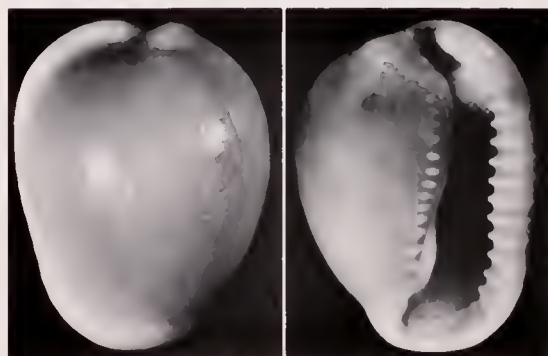


Fig. 4: *Cypraea ovulata*:
DP photo, [3], holotype: L—19.0 mm.

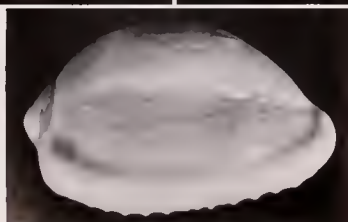
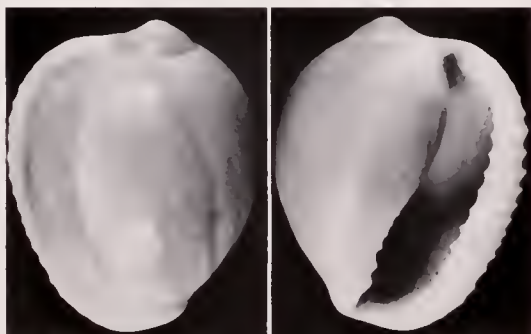


Fig. 4a: *Galeatrivia ovulata*:
DP photo, [3], hypotype: L—19.8 mm.

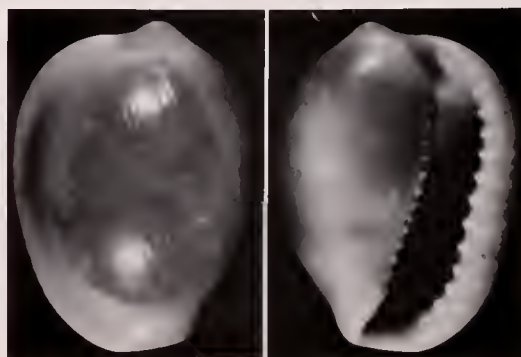


Fig. 4b: *Galeatrivia ovulata*:
DP photo, [3], hypotype: L—16.6 mm.

It will be noted that the author has herein removed the Lamarck species, *C. ovulata*, from the triviid genus, *Triviella* Jousseaume, 1884 (Type species: *Cypraea oniscus* Lamarck, 1811) because it does not conform morphologically with other members of *Triviella* Jousseaume. However, with the recently discovered South Africa cold water species, *Galeatrivia millardi* Cate (sp. nov., herein), which shares a similar cold water habitat as well as similar morphological characters, the 2 species are now grouped into a new genus, *Galeatrivia*, here proposed for them.

The shells of *Galeatrivia* differ from those in the genus *Triviella* Jousseaume, 1884 by generally having a slightly smaller shell-form; by having a low, narrowly elongate lateral profile (rather than having a more roundly inflated subglobular shell): the dorsum lacks transverse incised striation, instead having a tendency toward longitudinal growth lines; the apex protrudes, not being buried or overlaid with nacre; and the shell color is more grey to greyish pale pink (not a more or less constant shade of pink to red, as is nearly always observed in the shells of *Triviella*).

Etymology.—The name for this new genus is taken from the Latin feminine noun, *galea*, meaning a helmet, a head-dress.

3. *Galeatrivia ovulata* (Lamarck, 1811)

(Fig. 4: holotype)

- 1811 *Cypraea ovulata* Lamarck, Ann. Mus. Nat. Hist. (Paris) 16: 99.
- 1822 *Cypraea ovula* Lamarck, Hist. Nat. Anim. sans Vert. 7: 398 [err., interpretation of taxon in doubt].
- 1852 *Trivia ovulata* var. *alba* Mörch, Cat. Conch. Yoldi: 118.
- 1873 *Trivia* (*Trivia*) *ovularia* Paetel, Conch. Samml.: 54.
- 1879 *Trivia ovulum* Schmeltz, Cat. Mus. Godeffroy 7: 88.

Original description.—"Cypraea ovulata . . . *C. Ovato-ventricosa*, alba; uno latere marginato; aperturâ laxissimâ; dentibus minimis" (Lamarck, 1811, 16: 99).

"Cette porcelaine, constituée peut-être par des individus imparfaits, est toute blanche, ovale, bombée, presque globuleuse, lisse, mince comme une bulle, et à bord droit muni d'un bourrelet en dehors. Sa spire est petite et un peu saillante. Son ouverture est très-lâche, et dentée des deux côtés."

"This cowry, perhaps established by imperfect individuals, is entirely white, ovate, convex, almost globose, smooth, thin as a bulla [bubble] and on the right side furnished with a callus [thickened outer lip] on the [right] margin. Its spire is small and a little produced. Its aperture is very open, and toothed on both sides" (translation by Jean Cate).

Measurements, holotype.—"La longueur de cette coquille est de 19 millimètres" [L = 18.0 mm; Binder, *in litt.*].

Measurements, hypotype.—L = 19.8; W = 16.7; H = 12.5 mm (C4263; Fig. 4a: hypotype 1).

Measurements, hypotype 2.—L = 16.6; W = 12.5; H = 9.5 mm (C2455; Fig. 4b: hypotype 2).

Type locality.—"Habite . . . ?" Designated herein: Cape of Good Hope: Port Beaufort (31° 35' S; 24° 00' E).

Distribution.—False Bay, Cape of Good Hope; Mossel Bay; Cape Agulhas; Port Beaufort, South Africa.

Holotype.—MHNG, No. 1104/37/1.

Galeatrivia ovulata (Lamarck, 1811) may best be identified by the lack of the dorsal ribbing typical of the genus (cf. the shell ribbing in the genus *Triviella* Jousseaume, 1884); the species almost invariably has a prominently protruding apex, and the body whorl of the shell, grey to pale pink in color, often has a lighter, almost white clouding in the basic body whorl color.

Etymology.—The adjective name *ovulata* is derived from *ovulum*, diminutive of the Latin *ovum*, egg, shaped like a little egg.

4. *Galeatrivia millardi* Cate, sp. nov.

(Fig. 173)

Description.—Shell large, solidly constructed, somewhat rectangularly elongate, helmet-shaped; broader centrally to the rear. Terminals both broad, not protruding. Apex boldly produced, uncovered. Dorsum semismooth, subglossy, often with longitudinal incremental growth lines visible. Base convex, rectangularly, evenly elongate. Aperture very wide, almost straight, flaring somewhat openly abapically. Columella convex, not depressed, deepening as a fairly deep 2-walled fossula in front; large, coarse, transverse [dental] striae (15), terminating as distinct knobby teeth on inner margin of columellar base, otherwise denticular striae transverse columella adaxially, except that striae do not cross lower fossula. Funiculum barely upraised, forming the base of last two columellar teeth. Apertural canals open, expansive, very broadly, thickly formed. Outer lip ventrally broad, convex; strongly, coarsely dentate (15), terminating at side-margin; margin sharply defined, somewhat upswept, though not deeply shouldered above. Shell color: apex dark grey; dorsum light grey; both side margins, outer lip, teeth, columella-fossula and funiculum off-white.

Measurements, holotype.—L = 18.2; W = 14.1; H = 10.6 mm.

Type locality.—(found on beach) off Sea Point, South Africa (34° 38' S; 19° 17' 36" E), leg. Victor Millard, Sea Point, 2 August 1977, at low tide, after a violent storm.

Holotype.—Los Angeles County Museum of Natural History No. 1843.

Discussion.—This new triviid species may best be compared with another cold water species (as differentiated from the warmer water East African *Trivellas*), *Galeatrivia ovulata* (Lamarck, 1811). *Galeatrivia millardi* differs from it by having a more

rectangular, nonpyriform [shell] peripheral outline; by having a less prominent, though distinctly elevated, spire; by having a straighter, broader aperture with more numerous, differently structured apertural dentition; by its more squarely angular posterior outer lip. The base is rectangularly elongate, rather than pointedly ovate; the front terminal ridge is more developed, and overall shell colors are different.

Etymology.—The new name honors Victor Millard, Sea Point, South Africa, who found the holotype, making it available to science for the first time.

Triviella Jousseaume, 1884

Naturaliste 1884: 415 (nom. nud.).

Triviella Jousseaume, 1884

Bull. Soc. Zool. France 9: 99 (cf. Schilder, 1939: 172 [25]).

Type species [SD: Schilder, 1971]: *Cypraea oniscus* Lamarck, 1811 [name preoccupied] = (*Triviella porcellio* Cate, nom. nov., herein).

“Genre *Triviella* . . . Coquille ovoïde ou globuleuse un peu déprimée en dessous, lisse ou cerclée de petites côtes régulières quelquefois interrompues à la face dorsale. Spire en forme de nucléus; ouverture large, courbée, à bord externe étroit; columellaire sans sillon longitudinal; fossette antérieure dont le bord intérieur forme un cuilleron assez saillant” (Jousseaume, 1884: 19).

“Shell ovate or globose, a little depressed underneath, smooth or encircled by small, even ribs, sometimes interrupted on the dorsum. Spire in the shape of a nucleus; aperture wide, curved, straight on the outer lip; columella without longitudinal furrow; small anterior fossula forms a projecting terminal ridge” (translation by Jean Cate).

5. *Triviella amaryllis* Schilder, 1927

(Fig. 5: holotype)

1927 *Triviella amaryllis* Schilder, Arch. Naturgesch. 91/A 10: 164.

Original description.—“*Triviella amaryllis* . . . Schale mässig dick, rein weiss, bis auf undeutliche Anwachslineien des R. glatt, Sp. deutlich spitz vorgezogen, aber von Callus bedeckt, AR. und VE. etwas wulstig gerandet, M. sehr weit, kaum gebogen, K. (bes. VK.) weit, AL. beiderends gleichmässig gebogen, in der Mitte verbreitert und etwas nach aussen abgeflacht, hinten kaum vorragend, mit Ausnahme der E. von 13 distanten, scharfen AZ-Rippen fast bis zum AR. gequert, IL. konvex, an der gleichmässig schwach gebogenen beiderends etwas dorsal aufgebogenen, ziemlich scharfen Kante längs der M. mit 16 scharfen IZ-Knötchen besetzt, die vorne unmerklich gröber und weniger dicht werden (das vorderste ist aber wieder obsolet), auswärts jäh endigen und einwärts (nur in der Mitte und hinten) über den äusseren Teil der

Col. fein fortgesetzt sind; die Col. geht ohne auffällige Abschnürung in die mit ihr gleichbreite, seichte, glatte, mit dem R. vorn ohne Einschnürung verwachsene Foss. über” (Schilder, 1927: 164).

“*Triviella amaryllis* . . . 18 × 15 × 11 mm., shell moderately thick, pure white, smooth except for indistinct growth lines of the dorsum, spire distinctly drawn out in a point, but covered with a callus, exterior edge and front terminal somewhat swelled marginally, aperture very wide, hardly bent, canal (especially the anterior canal) wide, outer lip uniformly curved at both ends, widened in the middle and somewhat flattened to the outside, posteriorly scarcely projecting forward, except for the terminal of 13 distant, sharp outer teeth—Lips cut across almost to the outer edge, inner lip convex, on both the uniformly weakly curved ends somewhat upcurved, quite sharp edge along the aperture with 16 sharp tubercles, the anterior imperceptibly coarser and less dense (the most anterior is again obsolete), outwards suddenly terminated and inwards (only in the middle and rear) fine and continuous over the other part of the columella; the columella extends without noticeable constriction into the equally broad, shallow, smooth, anteriorly unconstricted fossula” (translation by George Hanselman).

Measurements, holotype.—“18 × 15 × 11 mm” (L – 18.1 mm, Kilias, *in litt.*).

Type locality.—Southeast Africa.

Distribution.—Schilder, 1941: Algoa; Port Alfred; East London; Pondoland [one of the Transkeian Territories = E Cape Province, S Union of South Africa; the coast of the Indian Ocean between Umtata river and Natal border]; Natal, Richards Bay.

Holotype.—ZMB, Schilder coll. No. 104 (Kilias, *in litt.*).

Etymology.—The name, *amaryllis*, was the name of a country-girl shepherdess in the writings of Theocritus.

6. *Triviella rubra* (Shaw, 1909)

(Fig. 6: holotype)

1909 *Trivia ovulata*, Lam., var. *rubra* Shaw, Proc. Malac. Soc. London: 312.

1956 *Triviella ovulata rubra*. Allan, Cowry Shells of World Seas: 148.

1963 *Trivia (Triviella) ovulata rubra*. Shikama and Horikoshi, Selected Shells of the World: 43.

Original description.—“. . . Shell differing from the typical white form [of *ovulata*] in having the interior and the whole of the dorsal surface of a deep rose colour. The outer lip and base are white. This is a common variety of the above species [*ovulata*], and the specimens are frequently only slightly tinged with rose colour” (Shaw, 1909: 312).

Measurements, holotype.—Not recorded (L – 22.1 mm, Way, *in litt.*).

Measurements, hypotype.—L – 21.0; W – 17.3; H – 13.3 mm (C2580; Fig. 6a).

Measurements, hypotype 2.—L – 24.3; W – 20.5; H – 15.9 mm (C4258).

Type locality.—“Hab. . . . Jeffrey’s Bay [SE Africa].”

Distribution.—Algoa Bay; Port Alfred; East London; Union of South Africa.

Holotype.—BM(NH) Register No. 197629 (Way, *in litt.*).

Discussion.—On this species, Shaw commented: “T.

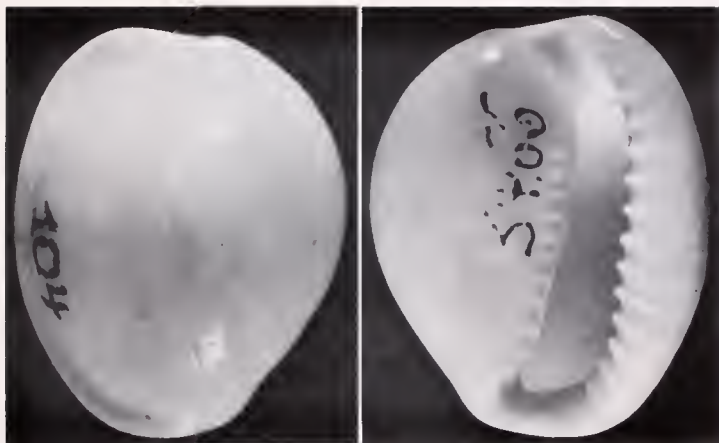


Fig. 5. *Triviella amaryllis*.
ZMB photo, [5], holotype: L—18.1 mm.

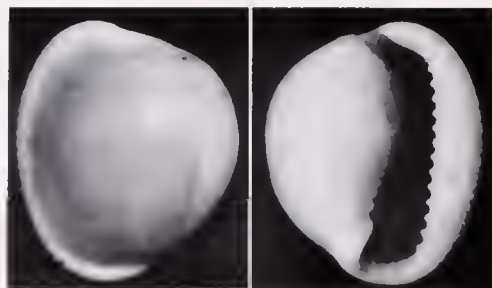


Fig. 6. *Trivia ovulata* Lam. var. *rubra*:
BM(NH) photo, [6], holotype: L—22.1 mm.

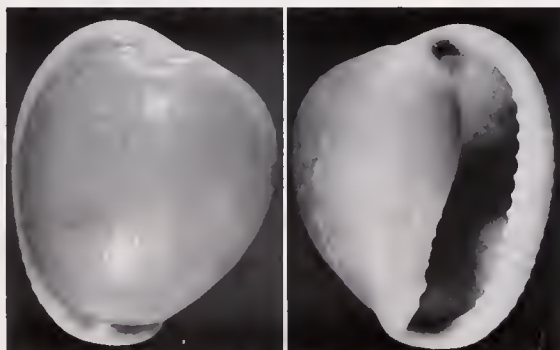


Fig. 6a: *Triviella rubra*:
DP photo, [6], hypotype: L—21.0 mm.

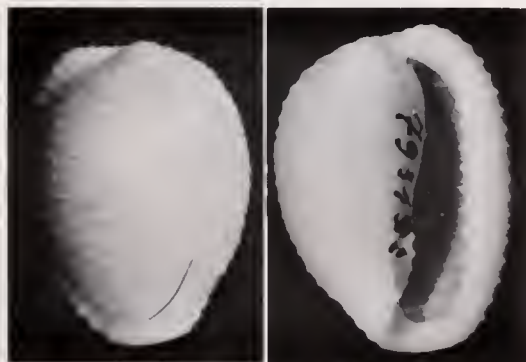


Fig. 7a: *Cypraea oniscus*:
MRAC photo, [7] = *Triviella porcellio*: L—20.0 mm.



Fig. 7: *Cypraea oniscus*:
DP photo, [7], (Sowerby II, fig. 416): L—not recorded.



Fig. 8: *Cypraea carnea*:
DP, [8], (Sowerby II, figs. 414–415): L—not recorded.

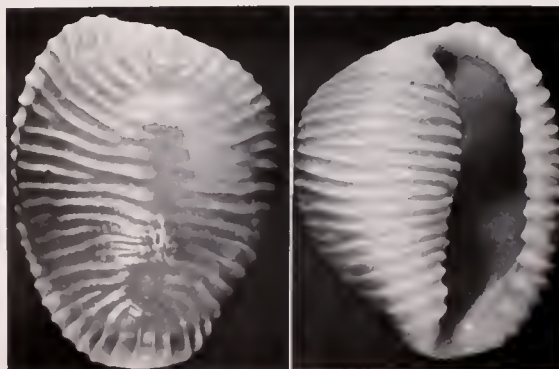


Fig. 8a: *Triviella carnea*:
DP, [8], hypotype: L—21.5 mm.

ovulata was originally described by Lamarck in Ann. du Mus. as *C. 'ovulata.'* In Anim. sans Vert., 2 ed., vol. x, p. 533, probably from a typographical error, it appears as '*ovula.*' Reeve (Conch. Icon., sp. 112) gives the following note: "*Cypraea 'ovulata'* was the first name given to the shell by Lamarck, but finding probably that it had been already used by Gmelin in reference to the *C. cervus* [= *Cypraea cervus* Linnaeus, 1771; Mantissa Plantarum: 548] he dropped the last syllable for the sake of distinction, though both terms are sufficiently corrupt. [It should be noted] if Reeve had referred to Gmelin's species, he would have found that it was *oculata* and not *ovulata*. It is therefore obvious that the species in question must be known by its original appellation, *ovulata*, and not *ovula*, as favored by some writers and monographers."

Triviella rubra (Shaw, 1909) may best be identified by the usually large size of the shell, which is almost subspherical; by the nearly total lack of any shell ribbing either dorsally or ventrally (sometimes, under magnification, there may be a hint of rudimentary ribbing on the shouldered [upper] edge of the outer lip); and the deep, rich rosy-red color is significant.

Etymology.—The name is undoubtedly derived from the Latin word, *rubor*, meaning red, redness.

7. *Triviella porcellio* Cate, nom. nov.

(Fig. 7: possible type of *oniscus*)

1811 *Cypraea oniscus* Lamarck (non Röding, 1798), Ann. Mus. Nat. Hist. (Paris) 16: 103 (name preoccupied).

Original description.—"Cypraea oniscus . . . *C. ovato-globosa*, inflata, subvesiculosa, albidocarnea, immaculata; sulco dorsali; striis transversis subramosis; ventre convexo striato; aperturâ latissimâ" (Lamarck, 1811: 103).

"Quoique cette porcelaine ait de grands rapports avec la suivante, elle est beaucoup plus grosse, plus vésiculeuse; ses stries dorsales sont lisses et jamais granuleuses; son ouverture large et très-dilatée la caractérise particulièrement."

"Although this cowry has a great deal of similarity with the following [*Cypraea pediculus* Linnaeus, 1758], it is much larger, more inflated, its dorsal striae are smooth and never granule, its broad and very expanded aperture is particularly characteristic" (translation by Jean Cate).

Measurements, holotype.—" . . . 21 millimètres."

Measurements, poss. type.—L – 20; W – 18; H – 13 mm (Benoit, in litt.).

Type locality.—"Habite l'Océan de l'Amérique." Subsequently determined to be "Jeffrey's Bay, S Africa" (Benoit, in litt.).

Possible type.—MRAC, No. 793.192 (Benoit, in litt.).

Discussion.—It was suggested that the type of *Cypraea oniscus* Lamarck, 1811, had been lost. However,

P. L. G. Benoit, MRAC, found a specimen of this species in the museum's collection (Fig. 7a). In an extensive correspondence with several European museums, I failed to locate any other specimens. The shell figured herein, bearing the Lamarckian name, appears to answer adequately to the species' original description. It would also seem that the discrepancy of 1 millimetre between the shell length given by Lamarck and that of Benoit might well fall within a reasonable amount of variation.

Because the Lamarck name is a primary homonym of *Cypraea oniscus* Röding, 1798, the new name *porcellio* is proposed here for the species.

Etymology.—The Latin noun, *porcellio*, has exactly the same meaning as the Greek word, *oniscus*: both meaning sowbug.

8. *Triviella carnea* (Gray, 1828)

(Fig. 8: Sowerby II, 1870: figs. 414–415)

1828 *Cypraea carnea* Gray, Zool. Journ. 3: 569.

1828 *Cypraea carnea* var. *oblonga* Gray, Zool. Journ. 3: 569.

Original description.—"Cypraea carnea . . . Testâ ovato-globosâ, inflatâ, roseâ, immaculatâ; striis longitudinalibus laevibus; lineâ dorsali nullâ; aperturâ albidâ, amplissimâ, abbreviatâ; dentibus inaequalibus."

"Shell ovate-globose, inflated, thin, semitransparent, rose-coloured, spotted; spire rather produced, white; the longitudinal thread-like smooth striae are continued over the centre of the back without interruption; base rather convex; aperture white, very much dilated, shorter than the body of the shell; outer lip rather thickened above, rounded, slightly incurved; the teeth of the inner lip are small, close together; those of the outer lip larger, rather distant, there being often an intermediate thread-like stria between each of those that form the teeth" (Gray, 1828: 569).

Measurements, holotype.—"Length $\frac{3}{10}$, breadth $\frac{1}{10}$ of an inch [10.7; 10.1 mm].

Measurements, hypotype.—L – 21.5; W – 17.1; H – 13.5 mm (C2576; Fig. 8a).

Type locality.—Not recorded. Sowerby II, 1870: Cape of Good Hope.

Distribution.—Unknown.

Holotype.—Appears to have been lost.

Discussion.—Gray (1828): "The shell varies from ovate globose to ovate oblong." Later, Gray (1832), sp. 109: 13: "Shell oblong, thin, pellucid, pure rose-coloured, with very thin distant continued ribs; lips whitish. Varies, with an indistinct dorsal groove." I am inclined to suspect this species may be synonymous with *Triviella oniscus* (Lamarck, 1811) = *T. porcellio* Cate (cf. Fig. 7).

Etymology.—The name, *carnea*, from the Latin adjective, *carneus*, meaning of flesh, flesh colored.



Fig. 9 *Cypraea aperta*:
DP, [9], Hanley fig. 10: $\times 3\frac{1}{2}$.

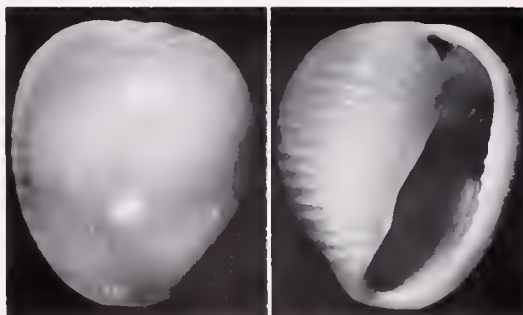


Fig. 9b: *Triviella aperta*
DP, [9], hypotype: L—23.4 mm.

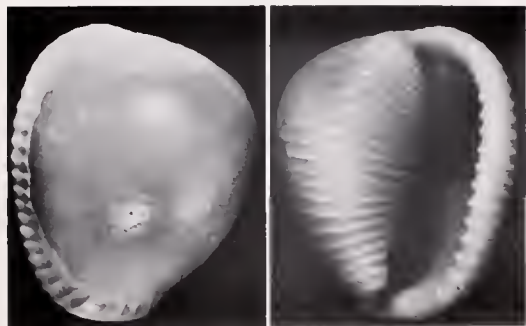


Fig. 9a: *Triviella aperta*:
DP, [9], hypotype: L—18.9 mm.



Fig. 10: *Cypraea rosea*:
DP, [9], Hanley fig. 15: $\times 3\frac{1}{2}$.

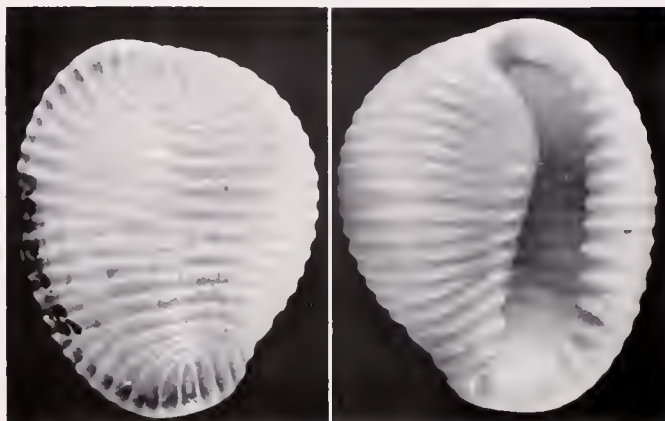


Fig. 11. *Triviella aperta neglecta*:
ZMB photo, [10], holotype: L—18.0 mm.

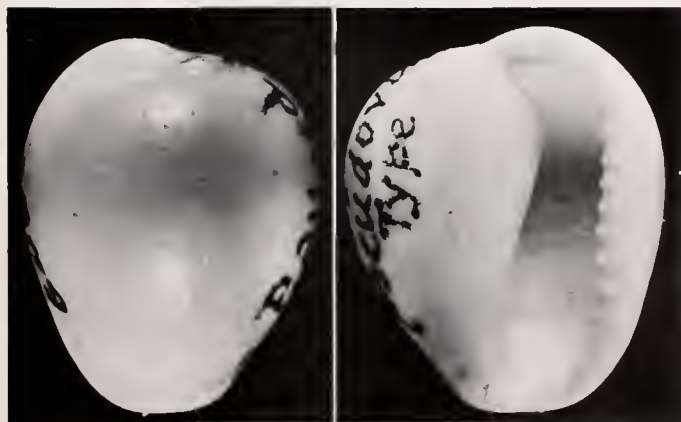


Fig. 12: *Triviella pseudovulata*:
ZMB photo, [11], holotype: L—16.4 mm.

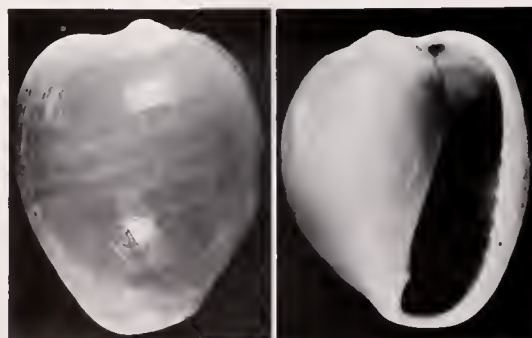


Fig. 12a: *Triviella pseudovulata*:
DP, [11], hypotype: L—20.0 mm.

9. *Triviella aperta aperta* (Swainson, 1822)

(Fig. 9: Hanley fig.: plt. 3, fig. 10)

- 1822 *Cypraea aperta* Swainson, Cat. Shells Coll. Bligh: Exotic Conch. Shells (London), Append.: 39.
 1828 *Cypraea rosea* Wood, Index Testaceologicus (ed. 2), Suppl.: 9; plt. 3, fig. 15. (Fig. 10).
 1828 *Cypraea aperta*. Gray, Zool. Journ. (3): 571.
 1856 *Cypraea aperta*. Hanley, Index. Test., Suppl.: plt. 3, fig. 10. (Fig. 9).
 1870 *Cypraea oniscus*. Sowerby II, Thes. Conchyl., *Cypraea*: 51; Figs. 416–417. (Fig. 7).
 1963 *Trivia* (*Triviella*) *aperta*. Shikama and Hori-koshi, Selected Shells of the World: 43.

Original description.—"Cypraea aperta . . . Testá roseá, labiis albis striis levatis vix ad testae dorsam extensis, insignibus; aperturá valde effusá" (Swainson, 1822; Append.: 39).

"Shell rose colored, lips white, with elevated striae extending near to the back of shell; mouth very wide" (Author's translation).

Measurements, holotype.—Not recorded.

Measurements, hypotype 1.—L – 23.4; W – 19.6; H – 15.2 mm (C2575); (Fig. 9b).

Measurements, hypotype 2.—L – 18.9; W – 16.1; H – 12.4 mm (C2582A); (Fig. 9a).

Type locality.—"Cape of Good Hope" [Hanley, 1856: 208]. Correction: here designated as Jeffrey's Bay, S E Africa (34° 01' S; 24° 55' E) = hypotypes 1 and 2. The ocean waters in the areas of Cape of Good Hope are considered to be too cold for this species. The warmer Indian Ocean currents seem to disappear at about Simonstown, False Bay; the cold waters from the south Atlantic Ocean penetrate into Table Bay, Cape Town, thus precluding an acceptable habitat for the Swainson species (Clarice Connolly, *in litt.*).

Distribution.—East London; Port Elizabeth; Jeffrey's Bay (C2582A), South East Africa.

Holotype.—Location unknown.

Discussion.—This species differs from *Triviella rubra* (Shaw, 1909), by having strong dorsal and ventral upraised transverse ribbing; it also has a deep, strong distinctive longitudinal medial dorsal furrow, which *T. rubra* Shaw does not have.

It is not precisely known what shell Sowerby II (1870) (figs. 416–417) [cf. Fig. 7], used to illustrate this species. Because Sowerby II referred to his 'oniscus' figures as being the same as *Cypraea aperta* of Swainson (1882), it may be reasonable to assume that he did, in fact, misrepresent the Swainson species as *Cypraea oniscus* Lamarck, 1811.

Etymology.—*oniscus*, from the Greek, *oniskos*, means sowbug.

10. *Triviella aperta neglecta* Schilder, 1930

(Fig. 11: holotype)

- 1811 *Cypraea oniscus* Lamarck, of Kiener, 1843, Spec. Gen. Coq. Viv., Porcelaine: 134; pl. 51, fig. 2a; (a misidentification).
 1930 *Triviella neglecta* Schilder, Zool. Anz. 92: 72–73.

TABLE 1. Translation of Schilder (1930: 73) table (by George Hanselman). *Triviella neglecta*.

German		English	Application
L. normal	18	Length (norm.) in mm	18
Length extrem		Length extreme	[not given]
BL. meist	80	Base to length, most	80
HL. meist	64	Height to length, most	64
Gestalt	k	Shape	nearly globular
Schale	c	Shell	calloused, thick
Rücken	r	Dorsum	ribbed
R.-Furche	v	Dorsal sulcus	obsoletely impressed
AR.	r	Outer margin	sharply transversely ribbed
M.	w	Aperture	wide
IZ. vorn	z, f	Inner teeth (ant. 2–3)	receding, wrinkled
IL. vorn	4k7	Inner lip (anteriorly)	not impressed, projecting 47 angularly
IZ. hinten	vv	Inner teeth?/ribs? (Post.)	sharply tuberculately reinforced
IL. hinten	kk	Inner lip (posteriorly)	sharply tuberculate
IL. Fläche	lr4	Inner lip surface	transversely ribbed 14
IRZ.	v	Teeth, inner edge of fossula	usually present
Rippen	g	Ribs	smooth
AZ.	f	Outer teeth	F.
IZ.	e	Inner teeth	E.
RS.	h	Dorsal side	H.
RR.	7E*	Dorsal margin	E. 7 *
R.-Farbe	rf	Dorsal color	rose-yellow.

Original description.—"Cypraea oniscus Lamarck . . . C. testá ovato-globosa, inflatá, sub-vesiculosa, albedo-carneá; immaculatá; striis transversis subgranosis; linea dorsali impressá; ventre convexo, striato; aperturá latissimá. (Kiener, 1843: 134; pl. 51, fig. 2a.)

The Schilder redescription of *Triviella neglecta*, as translated from the German by George Hanselman (Schilder, 1930: 73), may be found on Table 1. Schilder also used this Table (1) to describe the following additional species: *T. ovulata*, *T. rubra*, *T. pseudovulata*, *T. vesicularis*, *T. phalacra*, *T. aperta*, *T. neglecta*, *T. costata*.

A footnote 12 (Schilder, 1930: 72) "Typus ohne Fundortangabe in coll. aut. 275 (von GERETS Witwe gekauft; es könnte sich leicht um das von KIENER abgebildete Stück handeln)."

"12. The type, without locality data, is No. 275 in the author's collection (bought from Gerets' widow, it could easily be the specimen pictured in Kiener!)."

Triviella neglecta: Normal length 18 mm, base-to-length ratio mostly 80, height-to-length ratio mostly 64, shape nearly globular, shell calloused, thick, dorsum ribbed, dorsal sulcus obsoletely impressed, outer margin sharply transversely ribbed, aperture wide, anterior 2 or 3 inner teeth receding, wrinkled, inner lip anteriorly not impressed, projecting angularly, posterior inner teeth sharply tuberculately reinforced, posterior inner lip sharply tuberculate, surface of inner lip transversely ribbed, teeth usually present on inner edge of fossula, ribs smooth, dorsal color rose-yellow.

11. *Triviella pseudovulata* Schilder and Schilder, 1929

(Fig. 12: holotype)

1929 *Triviella vesicularis pseudovulata* Schilder and Schilder, Ann. Nat. Hist. Mus. Wein 43: 233.

Original description.—"Triviella vesicularis pseudovulata . . . dünnchalig, oft sogar durchscheinend, blassrosa bis weiss, Rippen auf der Aussenlippe kaum über den Rand emporreichend und auch hier obsolet, Rücken ganz glatt, bisweilen wie gehämmert, [IZ = inner teeth] (mit Ausnahme der vordersten und hintersten) auf den Mündungsrand beschränkt, Mündung sehr weit" (Schilder, 1929: 233).

"Shell thin, often translucent, pale rose to white, ribs on the outer lip barely protruding above the margin, and here also obsolete. Dorsum entirely smooth, occasionally as if hammered [cf. hammered effect: Fig. 12a]. Inner teeth (with the exception of the anteriormost and hindmost ones) restricted to the apertural margin. Aperture very wide. In the shell length there is no difference [between *vesicularis* and subspecies]" (translation by Dr. R. Stohler).

Measurements, holotype.—L = 16.4 (Kiliass, in litt.).

Measurements, hypotype.—L = 20.0; W = 16.7; H = 13.2 mm (C4299; Fig. 12a).

Type locality.—Port Elizabeth, SE Africa.

Distribution.—East London, SE Africa (C4299).

Holotype.—ZMB, Schilder coll., No. 109 (Kiliass, in litt.).

Discussion.—This species is listed only on a provisional basis, as it could possibly belong in the synonymy of *Triviella rubra* (Shaw, 1909), because the shell's general morphology seems to exhibit many aspects often observed in the Shaw species (cf. Fig. 6a: C2580). There is, however, one outstanding difference which may set it apart from the other species in the genus: there are broad, flattened, transverse bands the full length of the dorsum, giving the appearance of having been hammered (Fig. 12a). Otherwise, the shell is totally without surface ribbing.

Etymology.—The prefix, *pseudo*, is derived from the Greek noun, *pseudos*, meaning false, fallacy; combined with the Latin adjective *ovulata* it may be translated "little egg-shaped."

12. *Triviella vesicularis* (Gaskoin, 1836)

(Fig. 13: lectotype herein)

1836 *Cypraea vesicularis* Gaskoin, Proc. Zool. Soc. London 3: 203.

1885 *Trivia vesicularis*. Tryon, Man. Conch., *Trivia* 7: 199; pl. 21, figs. 73–74.

1927 *Triviella vesicularis*. Schilder, Archiv. für Naturgeschichte 91/A 10: 61.

Original description.—"Cypraea vesicularis . . . Cypr. testá inflatá, subglobulosá, subtrigoná, rubellá; costis transversis, approximatis, laevibus, concoloribus supra columellam continuis; aperturá amplá; labro intus albido, dentato."

"Shell ovato-subglobose, inflated; semipellucid, of a faint rose, or flesh colour. Aperture very broad, a little

longer than the spire. Posterior [fossular] part of the columella rather ventricose: the anterior forming a broadish groove, the inner border of which is most prominent at its middle, and the ribs passing through it terminate, at its posterior part, in a serrated edge, the anterior part being even and forming a smooth notch. Lip a lighter colour than the rest of the shell, straight at its base, longer than the body of the shell, forming a very slight notch as it joins the columellar side of the posterior extremity, and anteriorly a broader and deeper one between the beaks. Beaks very slightly produced, and the anterior ones a little divergent. Teeth numerous and even, about twenty on the lip, and about twenty-three on the columella. Ribs even, close, numerous, not prominent, extending transversely across the shell in parallel lines, and passing entirely around the columella to its inner margin; about eight of the ribs terminate on the lip, and consequently form no denticulations and almost alternately between the teeth from the anterior extremity, some few terminate on the outer part of the columella. Ribs very faintly marked on the back. No dorsal line. Margin a little thickened. Spire visible, depressed" (Gaskoin, 1836: 203).

Measurements, holotype.—"Length of columella .475 of an inch" [12.2 mm].

Measurements, lectotype.—L = 11.8 mm (Way, in litt.).

Measurements, hypotype 1.—L = 16.1; W = 13.0; H = 10.5 mm (C4307; Fig. 13a).

Measurements, hypotype 2.—L = 16.4; W = 13.9; H = 11.2 mm (C4260; Fig. 13b).

Type locality.—"Cape of Good Hope."

Distribution.—Jeffrey's Bay (C4260); East London (C4252), SE Africa. (The author has worked with many specimens of *Triviella vesicularis* (Gaskoin, 1836), and the only localities recorded for this species have been from East London and Jeffrey's Bay, SE Africa. Because of this there is some reason to doubt the Gaskoin locality.)

"Lectotype (here designated): BM(NH) Register No. 197631 (Way, in litt.)." One of 3 syntypes.

Discussion.—Gaskoin (1836): "From *Cypr. aperta* it differs by the anterior columellar beak being divergent; posterior end of the shell blunter and broader; ribs infinitely more numerous [and finer] and even, and extending entirely over the columella to its inner edge within the aperture."

Of 34 specimens in the author's collection, none have the dorsal ribbing as seen in the lectotype (Fig. 13), nor have I seen a similar specimen in many museum collections studied. One would think the incidence of dorsal ribbing to be of rather rare occurrence. The shells of this species are somewhat thin in form; of a very pale, peculiar pink color; and, in comparison with *Triviella aperta* (Swainson, 1822), they average much smaller in shell size (from 9.6 to 18.9 mm); however, *T. aperta* averages from 19.5 (C4250) to 24.9 mm (C2578).

Etymology.—The shell's name appears to have been derived from the Latin noun, *vesicula*, diminutive of bladder, *vesica*, meaning bladder or purse.

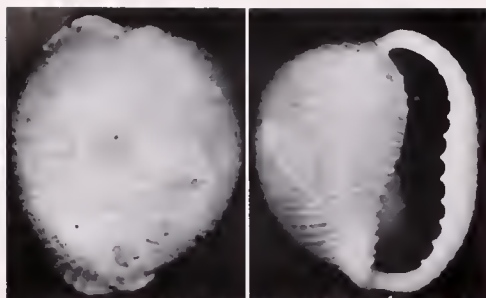


Fig. 13: *Cypraea vesicularis*.
BM(NH) photo, [12], lectotype: L—11.8 mm.

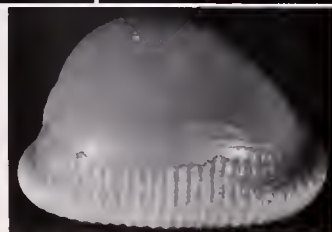
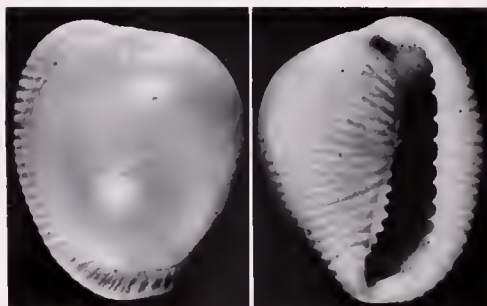


Fig. 13a: *Triviella vesicularis*:
DP, [12], hypotype: L—16.1 mm.

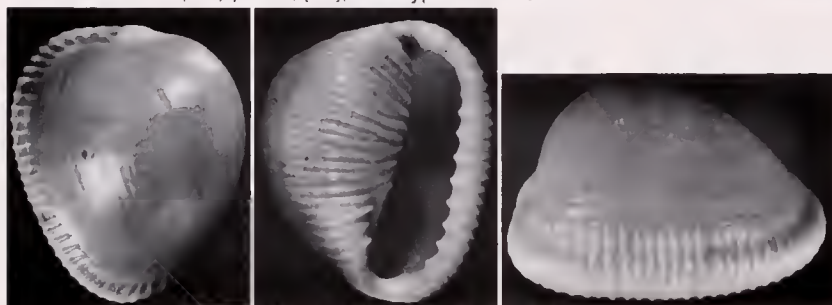


Fig. 13b: *Triviella vesicularis*:
DP, [12], hypotype: L—16.4 mm.

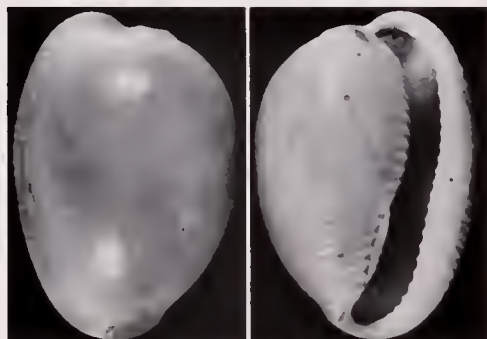


Fig. 14: *Triviella australicana*:
DP, [13], holotype: L—14.9 mm.

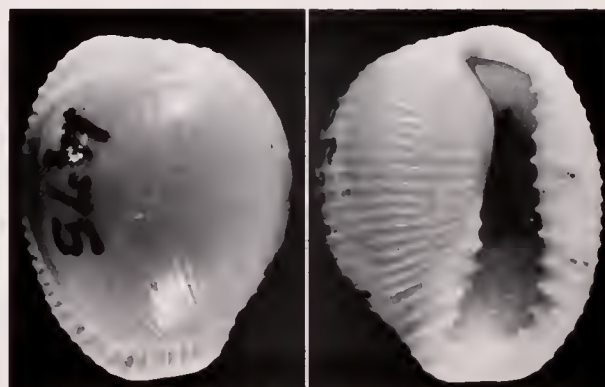


Fig. 15: *Triviella phalacra*:
ZMB photo, [14], holotype: L—16.5 mm.

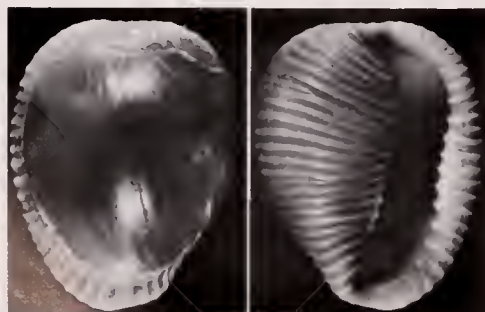


Fig. 15a: *Triviella phalacra*:
DP, [14], hypotype: L—18.7 mm.

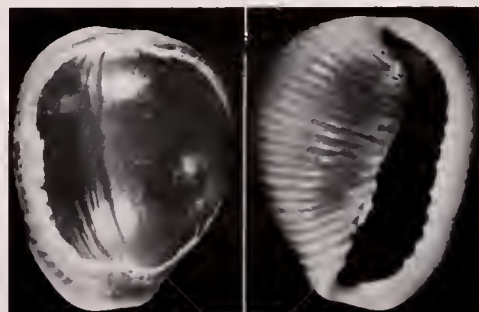


Fig. 15b: *Triviella phalacra*:
DP, [14], hypotype: L—15.6 mm.

13. *Triviella australica* Cate, sp. nov.

(Fig. 14: holotype)

Description.—Shell rather small for the genus, elongate, sub-rectangular, and having a long, low, lateral profile. Terminals slightly produced, with a flattened, flange-like shouldering margin above, which continues very weakly along the right side-margin; the left margin rounded, a continuous unthickened curve from dorsum to base. Base elongate, convex, bluntly rounded adapically, narrowing more pointedly in front; with a distinct low, lengthened funicular protuberance that outlines a large, smooth area adjacent left margin of posterior canal. Aperture longer than body whorl of shell; moderately wide, with a slight curving its entire length. Columella without unusual character, convex, a part of the normal curvature of the base. Fossula large, voluminous, with a highly elevated, arched, adaxial wall within. Outer lip narrow, convex, with a rolled ventral surface and a narrow shouldering above. Shell ribbing restricted, being confined to the shell sides, terminal flanges, base, columella, very weakly on the fossula, and on the outer lip; dorsum without ribbing, smoothly polished. Shell color a very pale pink, the same color so characteristic of *Triviella vesicularis* (Gaskoin, 1836).

Measurements, holotype.—L = 14.9; W = 10.4; H = 8.3 mm.

Type locality.—St. Francis Bay, South Africa (34° 02' S; 24° 58' E); leg. Helen Boswell, December 1951.

Holotype.—LACM, No. 1827.

Discussion.—This new species was 1 of 6 specimens sent from St. Francis Bay bearing the name *Trivia vesicularis* (collected by Helen Boswell, Valhalla, South Africa). However, this unique specimen is sufficiently distinct, in my estimation, to be considered worthy of a name. It differs from *T. vesicularis* (Gaskoin, 1836) by having a longer, lower profile and narrower shell; the shell ribbing is less numerous, coarser, less distinct; the fossula and fossular adaxial inner wall are differently constituted; the posterior terminal process is more narrowly produced and more flaring; and the funicular callus, with its unusual smooth platform-like area, is entirely different.

Etymology.—The new name is derived from the combination of the Latin words, *auster*, a noun meaning south and *africanus*, an adjective, the combination meaning South Africa.

14. *Triviella phalacra* Schilder, 1930

(Fig. 15: holotype)

1929 *Triviella vesicularis* (Gaskoin) of Schilder and Schilder, Ann. Nat. Mus. Wein: 233.

1930 *Triviella phalacra* Schilder, Zool. Anz. 92: 72–73.

Original description.—Shell form nearly globular; shell thin to very thin; dorsal costation on sides only; dorsal furrow lacking; sulcus above right marginal edge sharply, transversely ribbed; aperture very wide, open; anterior 2 to 3 lip teeth fold-shaped (plait-like); rear inner lip teeth sharply notched, strong; inner lip surface on central base transversely ribbed; teeth on inner margin of fossula mostly

present; ribs sharp and distant; (rib density is charted on an original reference [Schilder] table); shell color variable: rose, light rose; rose lilac (translation of tabular material by Dr. R. Stohler).

Measurements, holotype.—L = 16.5 mm (Kilias, *in litt.*).

Measurements, hypotype 1.—L = 18.7; W = 15.5; H = 12.0 mm (C4254a; Fig. 15a).

Measurements, hypotype 2.—L = 15.6; W = 12.6; H = 9.9 mm (C4254b; Fig. 15b).

Type locality.—Algoa Bay, SE Africa.

Distribution.—East London (C4254a–b); leg. C. M. Connolly. Schilder, 1941: South Africa–Natal: Algoa, Port Alfred, East London.

Holotype.—ZMB, Schilder collection No. 472 (Kilias, *in litt.*).

Discussion.—For a detailed study of this species it will be necessary to refer to the original Schilder text. However, for purposes of identification, it may be said: the shells are comparatively smaller than most congeners; the dorsum is without shell ribbing; and perhaps most important of all is the peculiar, rather outstanding, shell color of a very dark rose-lilac. The shells, like those of *Triviella pseudovulata* Schilder and Schilder, 1929, also, more often than not, have a broad, transverse (hammered-like) dorsal surface banding, and may in reality be related to the above-mentioned Schilder and Schilder species.

Etymology.—The name *phalacra* taken from the Greek adjective, *phalacros*, meaning bald, smooth.

15. *Triviella costata* (Gmelin, 1791)

(Fig. 16: hypotype)

1791 *Cypraea costata* Gmelin, Systema Naturae (ed. 13) 1/6: 3418.

Original description.—"Cypraea costata . . . C. testa dilute carnea: dorso striis elevatis subtilissimis transversis aspero" (Gmelin, 1791: [94]: 3418).

Measurements, holotype.—"C. pediculo affinis, et testa magis elongata, ½ pollicem superante."

Measurements, hypotype.—L = 12.8; W = 10.3; H = 8.3 mm (C4252).

Type locality.—Not recorded. Designated herein: Table Bay, Cape Town, South Africa (35° 55' S; 18° 22' E).

Holotype.—Unknown.

Hypotype.—Cate collection (C4252). (Fig. 16: hypotype): ex Clarice Connolly, Kenwyn, S Africa.

Distribution.—Known only from Table Bay, S Africa, living in colder water, where it is occasionally washed up on the beaches; leg. C. M. Connolly.

Discussion.—Gmelin does not illustrate this species, but instead refers to Knorr's reference and illustration: 1772, Vergnug. d. Augen u. d. Gemuths (Nürnberg) 6: p. div.; plt. 15, figure 7, as typical of his species.

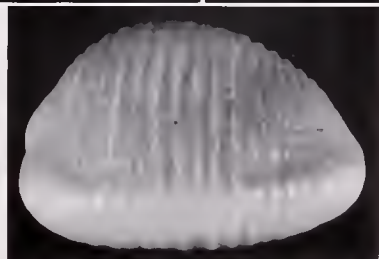
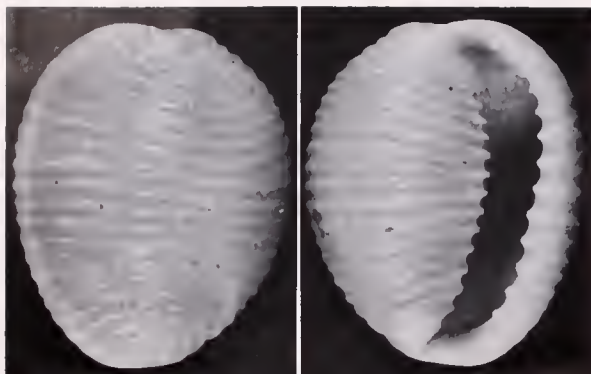


Fig. 16: *Triviella costata*:
DP, [15], hypotype: L—12.8 mm.



Fig. 18a: *Trivia (Trivia) monacha monacha*:
DP, [17], hypotype: L—12.4 mm.

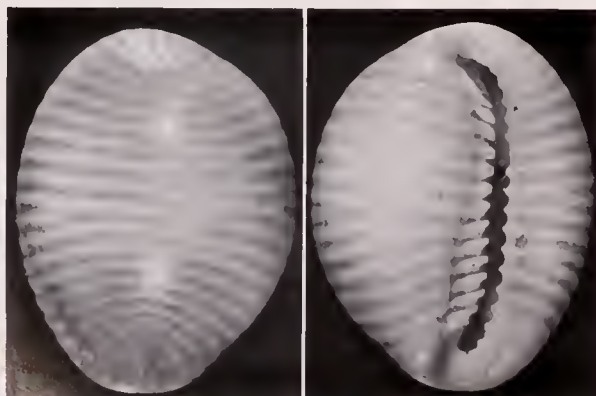


Fig. 19a: *Trivia (Trivia) europaea*:
DP, [18], hypotype: L—9.5 mm.

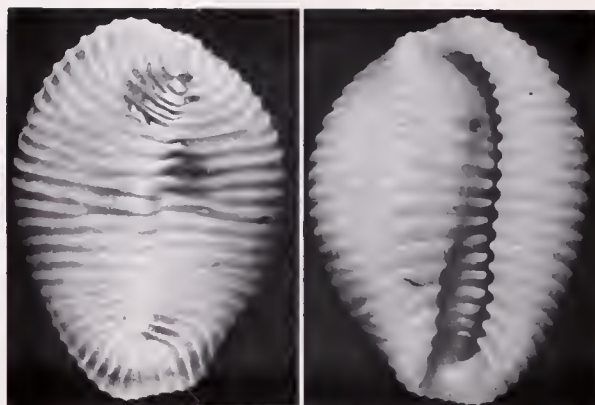


Fig. 17: *Trivia (Trivia) monacha tripunctata*:
DP, [16], hypotype: L—10.6 mm.



Fig. 18 *Cypraea monacha*:
DP, [17], (Sowerby II, fig. 503): $\times 4$.

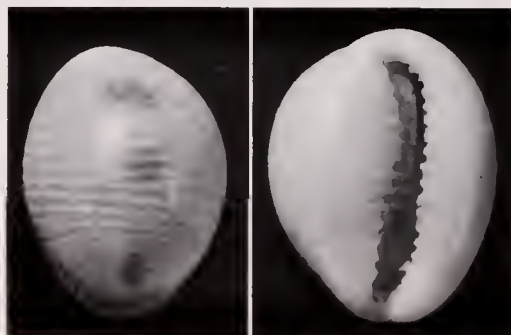


Fig. 19: *Cypraea europaea*:
BM(NH) photo, [18], lectotype: L—9.8 mm.



Etymology.—The name of this species is derived from the Latin noun *costatus*, meaning ribbed.

Triviini Troschel, 1863

Das Gebiss der Schnecken (Berlin) 1: 214.

Trivia Gray, 1832

Descr. Cat. Shells (unpublished; proofs only):
13 (names not established in a valid way).

Trivia Broderip, 1837

in: Knight, Penny Cyclopaedia 8: 256.

Type species [S.D.; Gray, 1847]: *Cypraea europaea* Montagu, 1808 (See Schilder, 1939: [34] 174).

Trivea Swainson, 1840

Treatise on Malacology: 325.

Type species [OD]: *Cypraea coccinella* Lamarck, 1811 Ann. Mus. Nat. Hist. (Paris) 16: 104.

Coccinella Herrmannsen, 1847 (non Linnaeus, 1758)

Index Genr. Malacoz. 1: 254.

Type species [OD]: *Cypraea arctica* Pulteney, 1799 Cat. Birds, Shells, Plants, Dorsetshire: 39.

“Genre *Trivia* . . . Coquille ovoïde déprimée, en dessous, subglobuleuse en dessus, armée de stries circulaires quelquefois interrompues à la face dorsale; ouverture étroite, courbe, à bords larges; le columellaire calleux aux deux extrémités est déprimé par un sillon longitudinal” (Jousseume, 1884: 19–20).

“Shell depressed ovoid underneath, subglobose on top, furnished with circular ribs sometimes interrupted on the dorsum; aperture straight, curved, with broad outlets; the columellar callus at both extremities is depressed by a longitudinal furrow” (translation by Jean Cate).

(*Trivia*) Broderip, 1837

16. *Trivia (Trivia) monacha tripunctata* (Bucquoy, Dautzenberg, and Dollfus), 1883

(Fig. 17: hypotype)

1848 *Cypraea europaea* var. *tripunctata* Requier [nom. nud.]. Cat. Coq. Corse: 86.

1872 *Trivia europaea* var. *maculata* Monterosato, Nuova Revista Conch. Mediterranean 1: 49 [nom. nud.].

1878 *Cypraea europaea* var. *trimaculata* Monterosato, Enum. Sinon. Conch. Mediterranean 1: 49 [nom. nud.].

1883 *Cypraea europaea* var. *tripunctata* Bucquoy, Dautzenberg, and Dollfus, Moll. Mar. Roussillon: 129; pl. 16, figs. 20, 24.

1883 *Cypraea europaea* var. *major* Bucquoy, Dautzenberg, and Dollfus, Moll. Mar. Roussillon: 129; pl. 16, figs. 18–19.

1971 *Trivia (Trivia) monacha tripunctata*. Schilder and Schilder, Cat. Liv. and Foss. Cowries, Mem. Institut Roy. des Sciences Nat. Belgique (ser. 2) 85: 16.

Original description.—“*C. europaea* var. *tripunctata* . . . Coquille—ovale, globuleuse, aplatie du côté de l'ouverture, très convexe du côté opposé; spire complètement enveloppée par le dernier tour. Toute la surface est couverte de cordons transversaux lisses et saillants, qui semblent partir de l'intérieur de l'ouverture et se rejoindre au milieu du dos de la coquille. Ouverture très étroite à bords parallèles; canal ouvert, peu distinct. Bord columellaire présentant dans l'intérieur une dépression qui est moins accentuée vers son milieu qu'à ses extrémités. Labre faiblement bordé à l'extérieur, infléchi dans l'ouverture. Coloration: fond d'un gris rosé sur lequel les cordons se détachent en clair. Péristome et bord extérieure du labre blancs” (B, D, and D, 1883: 129).

“Shell ovate, globose, flattened on the edge of the aperture, very convex on the opposite lip; spire completely enveloped by the last whorl. The entire surface is covered with smooth and projecting transverse ribs which seem to proceed from the interior to the aperture and to join themselves at the middle of the dorsum of the shell. Aperture is very straight along the edges; canal open, rather indistinct. Columellar lip furnished with an anterior depression [fossula] which is less accentuated in the center than at the extremities. Lip weakly flanged on the outside, inflected in the aperture. Coloration: background rosy gray, on which the ribs stand out brightly. Peristome and outer border of the lip are white” (translation by Jean Cate).

Measurements, holotype.—“Coquille, haut. 9 millim., larg. 7 millim.”

Measurements, hypotype.—L – 10.6; W – 7.8; H – 6.2 mm (C2539).

Type locality.—“Du Roussillon” [i.e., the Mediterranean coast of France; however, Roussillon, in the strict sense, is a region of south central France, bounded historically on the north by Languedoc, on the S by the Pyrenees, on the W by Andorra, and on the NW by the County of Foix] (Web. Geogr. Dict., 1960: 961).

Distribution.—île d'Yeu, France (C2539). Schilder, 1941: N Africa: Bône, Oran, Algeria; Ceuta, Morocco; Catalonia, Spain; Gulf of Spezia, NW Italy; Sicily; Malta.

Holotype.—Location unknown. Hypotype, Cate collection, No. C2539.

Discussion.—The authors of this species made the following observation: “M. Hidalgo prend pour type du *C. europaea* la variété à trois taches (var. *tripunctata* Req.) et il regarde comme variété la coquille sans tache, que nous considérons comme le vrai type.”

The authors (B, D, and D): “M. Hidalgo designated as type of *C. europaea* the variety with 3 spots and regarded as a variety the shell without the spots [= *Trivia (Trivia) arctica* (Pulteney, 1799)], which we consider the true type” (translation by Jean Cate).

The complex aspect of the British Isles triviid animals and their shells has prompted various authors over the years to use many names to identify them. However, after studying numerous specimens from almost as many widespread localities, from the British

Isles, the coast of western Europe, and the western Mediterranean Sea, I believe that in most cases the unspotted shells are distinctly separable from their congeners.

Schilder (1971: 16), recognizes these ecologically separated animals as a subspecies of *Trivia* (*Trivia*) *monacha monacha* (da Costa, 1778); this decision is provisionally retained here.

17. *Trivia* (*Trivia*) *monacha monacha* (da Costa, 1778)

(Fig. 18: Sowerby II, 1870: figs. 503–504)

1767 *Cypraea pediculus* forma *europaea* Linnaeus, *Systema Naturae* (ed. 12): 1180 (name not established in a valid way).

1778 *Cypraea pediculus* seu *monacha* da Costa, *British Conchology*: 33; pl. 2, fig. 6.

1845 *Cypraea pediculus* syn. *vulgaris* Chenu, in: Donovan, *Hist. Nat. Coq. Angleterre*: 39 (name not established in a valid way).

1845 *Cypraea uropaea*. MacGillivray, in: Bronn, *Conch. Text Book* (ed. 6): 50 (spelling error).

Original description.—"The sea louse of Nun—*Pediculus*, seu *Monacha*—*Cypraea* exigua transversim striata, maculae fuscae dorso inspersa. *Pediculus* seu *Monacha*."

"The shell is thick and strong, very convex, about the size of a horse bean [a coarse variety of the common bean, used as horse food], striated circularly or across the back; the striae fine, and like prominent threads, and run quite to the lips of the aperture on the under part; some of them are often furcated, or inosculate into one another. The aperture linear, both the lips dentated, and on the outer one rises in a thick high border on the back. In color it varies much; a washy red or pale flesh, without any spots; but more generally they are of pale red, with a tint of ashen, and have three spots in a row on the top or summit [dorsum] of the back. These spots are of a dark or deep ash color, irregularly roundish, and the middle one is the largest" (da Costa, 1778: 33–34).

Measurements, holotype.—Not recorded.

Measurements, hypotype 1.—L = 12.4; W = 10.0; H = 7.5 mm (C2445; Fig. 18a).

Measurements, hypotype 2.—L = 10.5; W = 8.1; H = 6.2 mm (C4133).

Type locality.—Not recorded.

Distribution.—England: Northumberland, Cheshire, Cornwall, Devonshire, Yorkshire, Sussex.

Holotype.—Location unknown.

Discussion.—da Costa: "Linne errs in saying the English shells are only white, and without spots. It is a common shell on most of our shores . . ."

Etymology.—The name appears to have been derived from the Greek adjective, *monachos*, meaning single, solitary.

A preface to *Cypraea europaea* Montagu, 1808: often among the Mollusca generally there are small groups of species that pose various problems in identification and species separation. In the Triviidae such a condition exists which has not been fully resolved at this writing. Three small triviid species, whose presently known living ranges appear to be confined mostly to the intertidal waters of the British Isles, present a case in point, because of overlapping living ranges.

Chronologically, these species are: *Trivia monacha* (da Costa, 1778), *Trivia arctica* (Pulteney, 1799), and *Trivia europaea* (Montagu, 1808).

It is generally agreed among students of the Triviidae that 2 of the species, *T. monacha* (da Costa, 1778) and *T. arctica* (Pulteney, 1799), appear to be readily separable, valid species, as significant shell morphology and the color patterns of their animals seem to distinguish them adequately. The problems begin to present themselves, however, when the shell-form called *T. europaea* (Montagu, 1808) enters the picture.

According to Melville, ICZN (*in litt.*), in reference to existing extensive literature on the subject: "Current practice, which has been basically uniform for long enough, is to recognize two species, *T. monacha* (da Costa) and *T. arctica* (Pulteney). E. M. da Costa's collection was dispersed at auction and his types might be anywhere, so if they cannot be traced there might be a case for designating a neotype. [We have found Montagu's syntypes of *T. europaea* at RAMM, Exeter: Boot, *in litt.*]. *T. europaea* (Montagu) is considered a synonym of it [*T. monacha*], and since large numbers of specimens have been seen by numerous specialists, this view is well founded."

Therefore, with syntypes of *Trivia europaea* (Montagu, 1808) now at hand (Boot, RAMM; and Way BM[NH]), this species is being separately listed herein, on a provisional basis only, in order that pertinent detail concerning the Montagu species be made available for reference work. This author's opinion of the species will be found in the species text.

18. *Trivia* (*Trivia*) *europaea* (Montagu, 1808)

(Fig. 19: lectotype herein)

1808 *Cypraea europaea* Montagu, *Test. Britann.*, Suppl.: 88.

1811 *Cypraea coccinella* Lamarck, *Ann. Mus. Nat. Hist. (Paris)* 16: 104; (Fig. 20: holotype).

1836 *Trivia jousseaumei* Locard, *Cat. Gen. Moll. Viv.*, France: 525; (Fig. 21: holotype).

Original description.—"Cypraea europaea . . . differs from *Cypraea pediculus* [Linnaeus, 1758] . . . so essentially in several particulars, especially in a character that should seem to mark so strongly a specific distinction; that of being

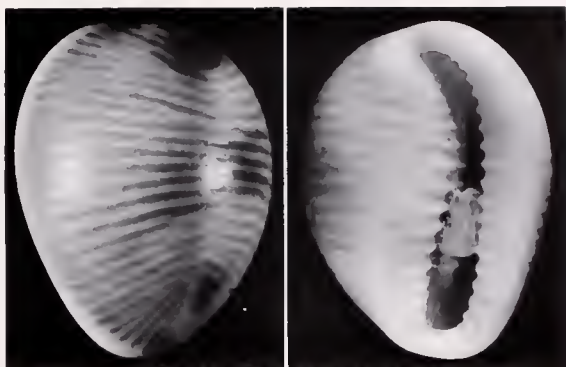


Fig. 20: *Cypraea coccinella*:
MHNG photo, [18], holotype: L—14.0 mm.

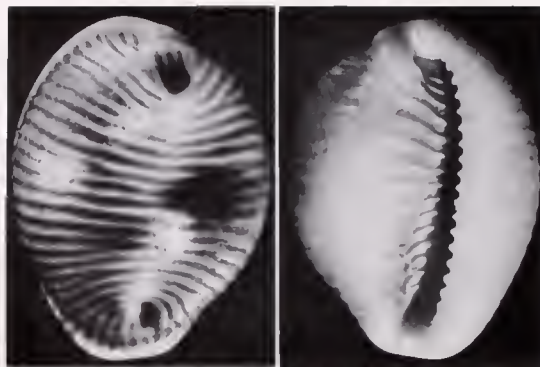


Fig. 21 *Trivia jousseaumeri*:
MNHN photo, [18], holotype: L—10.3 mm.

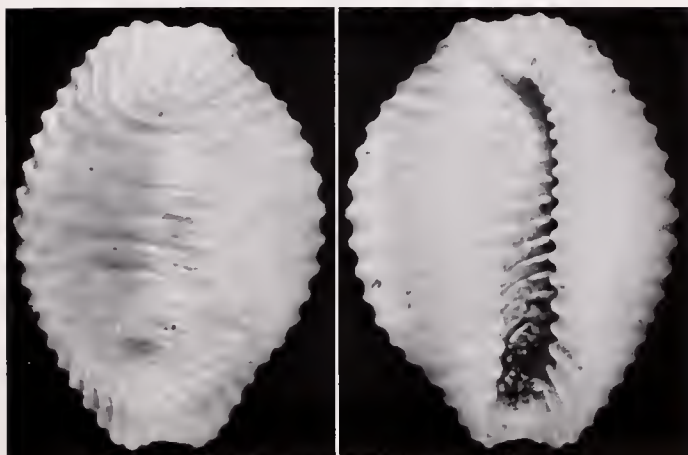


Fig. 22: *Trivia (Trivia) dakarensis*:
ZMB photo, [21], holotype: L—5.2 mm.



Fig. 23: *Porcelaine napolina*:
DP, [20], Type fig.: L—8.0 mm.

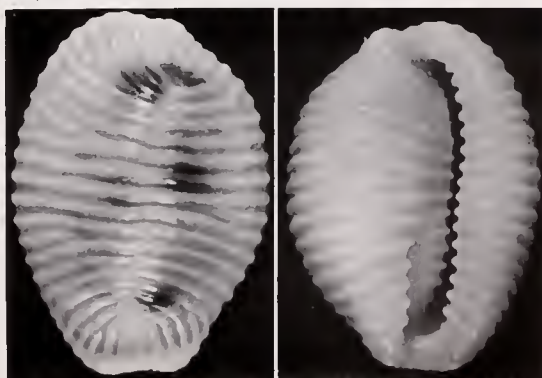


Fig. 23a: *Trivia (Trivia) napolina*:
DP, [20], hypotype: L—7.2 mm.

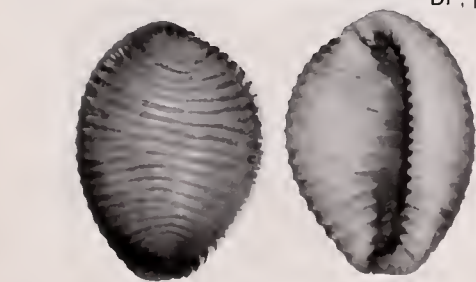
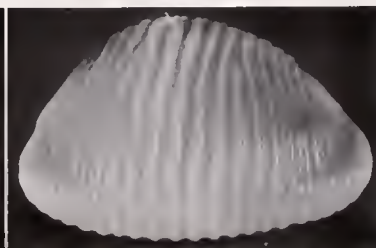


Fig. 24: *Cypraea pediculus* Pennant:
BM(NH) photo, [19], lectotype: L—12.0 mm. = *Cypraea arctica* Pulteney.

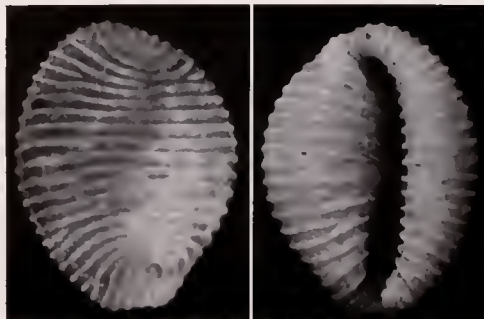


Fig. 24a: *Trivia (Trivia) arctica*:
BM(NH) photo, [19], hypotype: L—11.1 mm.

destitute of the dorsal sulcus. . . [and having] three dorsal spots. [It should be added that some specimens are even destitute of any dorsal spotting (cf. Fig. 19a)]" (Montagu, 1808: 88–89).

Description, lectotype.—Shell rather small, short, subglobose to subpyriform, somewhat bulbously ovate, often smooth (beach worn?), subglossy. Terminals not prominent, though distinct, usually having a flaring to one side of the posterior beak. Base short, broad, spindly-ovate, smooth, subglossy, with a faint hint of surface ribbing. Aperture fairly wide, almost straight, with a slight recurving to the left adapically. Columella wide, rather deeply concave; broadening and becoming deeper in front to form a fossula. Outer lip convex, half the width of the base, both apertural lips denticulate; columella transversely weakly ribbed. There is no longitudinal medial dorsal furrow; transverse ribbing on the dorsum and base is very weakly elevated (magnification is nearly always needed to observe it); dorsum polished, subglossy. Shell color: ribbing, seemingly subsurfaced, is pale beige; dorsal shell color is a deeper, rich café-au-lait, which sets off the lighter colored weak ribbing; there may or may not be present 3 large diffused equidistant dark brown color spots positioned longitudinally on the central dorsum.

Measurements, holotype.—Not recorded.

Measurements, lectotype.—L – 9.8; W – 7.5 mm (Way, *in litt.*).

Measurements, paralectotype.—L – 9.5; W – 7.3 mm [RAMM, No. 63, 1976.1 (d)].

Type locality.—"the Frith [sic] of Forth, nearly opposite Edinburgh [east coast of Scotland]."

Distribution.—Because of widespread misidentification among several British species (cf. *T. arctica*, *T. europaea*, *T. lathyrus*, and *T. monacha*), and unsubstantiated overlapping collecting localities, early authors appear to have been unable to separate clearly these triviid species; at least the identifying labels in collections give this impression.

Lectotype.—RAMM, No. 63, 1976.1 (c); 1 of 6 syntypes (Boot (RAMM) and Way (BM[NH]), *in litt.*).

Discussion.—In spite of his long discussion of this species, Montagu seemed assured of a difference between these shells and the other British triviid species. His description was not precise; however, his intention to establish a new species was clear. Because of this I have redescribed it according to more modern standards.

19. *Trivia (Trivia) arctica* (Pulteney, 1799)

(Fig. 24; lectotype herein)

1767 *Cypraea pediculus* forma *anglica* Linnaeus, *Systema Naturae* (ed. 12): 1180 (name not established in valid way).

1777 *Cypraea pediculus* (non Linnaeus) Pennant [= *Cypraea arctica* Pulteney, 1799], *British Zoology* (ed. 2): 70, 80 (Fig. 24); (interpretation of taxon in error).

1797 *Cypraea arctica* Humphrey, *Mus. Calonnianum*: 7 (name not established in a valid way).

1799 *Cypraea arctica* Pulteney, *Cat. Birds, Shells, Plants, Dorsetshire*: 39.

1803 *Cypraea bullata* Montagu, *Test. Britann.* 1: 202;

plt. 6, fig. 1 (name preoccupied by primary homonym).

1827 *Cypraea europaea* var. *immaculata* Gray, *Zool. Journ.* 3: 367.

1835 *Cypraea norvegica* Sars, *Besk. Moll. Bergenske Kyst*: 71; plt. 12, fig. 35.

1881 *Cypraea europaea* syn. *pullus* Weinkauff: in Martini and Chemnitz, *Syst. Conch. Cab.* (ed. 2) 5/3, *Cypraea*: 144 (name not established in a valid way).

1893 *Cypraea europaea* var. *minor* Marshall, *Journ. Conch.*, 7: 263 (name preoccupied by primary homonym).

1933 *Trivia arctica minuta* Schilder, *Bull. Mus. Hist. Nat. Belg.* 9 9: 13, 14.

1950 *Trivia candidula* (Gaskoin) Nicklès, *Moll. Test. Mar. Côte Occident. d'Afrique*, Paris: 82.

Original description.—Note: as a prelude to designating this new species, Pulteney referred to a preceding species in his text, *Cypraea pediculus* Linnaeus, 1758, from the West Indies (cf. Fig. 55). "Shell differs from the foregoing in being smaller; in wanting the longitudinal furrow on the back; and in being without spots." However, it would seem more appropriate to have compared his new species with that of *Trivia (Trivia) monacha monacha* (da Costa, 1778), since Pulteney continues by saying: "I have found it [*Cypraea pediculus*] at Poole, and at Waymouth [sic] of southern England" (Pulteney, 1799: 39).

Description, lectotype.—Shell large, ovate, solidly formed; terminals not protruding; flaring peripherally posteriorly, somewhat squared in front. Dorsum roundly elevated, tapering evenly to either end; right side margin angularly, laterally ridged, shouldered above. Base narrowly ovate, convex. Aperture long, narrow, with a moderate curving adapically. Columella-fossula somewhat narrow, shallowly concave, transversely ribbed. Outer lip fairly wide, becoming narrower toward either end, convex. Shell ribbing numerous, very fine, sharply defined overall; dorsal ribs continuous, uninterrupted to either side-margin; with no medial dorsal longitudinal furrow; base and outer lip ribs continuous from dorsum, terminating at apertural edge of outer lip as strong, protruding, sharp denticles, while at columellar-base inner margin, they continue over columellar-fossula as narrow, weaker transverse ridges to their inner, adaxial edge. Overall dorsal shell color a rich pale orange-beige; the base white, with no dorsal color spotting.

Measurements, holotype.—"half an inch long, and three-eighths of an inch wide [= approx. L – 12.5; W – 9.5 mm] Note: "Pulteney's *Cypraea arctica* was based on reference to 'Solander, Mus. Portland; List. Angl. t.3.17.; Ejusd. Conch. 707.57; Gualt. t. 14; [W] Borlase, t.28.13.; Pen.: 70.80, and a description. Of these at least the Pennant specimens might be in existence here (BM[NH]) . . ." (Melville, ICZN-BM[NH], *in litt.*). The Pennant figured specimen (Fig. 24) is designated herein the lectotype of the Pulteney (1799) species.

Measurements, lectotype.—BM(NH) Register No. 1912.12.30.19; one of several Pennant syntypes.

Measurements, lectotype.—L – 12.0; W – 8.8 mm (measurements taken from millimetre scale accompanying type photograph [photo, Way, *in litt.*]).

Measurements, hypotype.—L – 11.1; W – 8.3 mm; RAMM, No. 63, 1976 (b); (Boot, *in litt.*) (Fig. 24a).

Type locality.—"Poole" [and Dorsetshire, England]; 40 miles [≈72 km] W of Portsmouth.

Distribution.—Croyde Bay; Weymouth, southern, eastern coasts of England; Wales; Shetland Islands; N Scotland.

Discussion.—*Trivia (Trivia) arctica* (Pulteney, 1799), in addition to having a different appearing animal within the shell, differs from *T. (T.) monacha* (da Costa, 1778), by having finer rib striae; the shell is less acutely pyriform; the terminal processes are evenly rounded adapically, with the shell's ribs more evenly continuous; there is no dorsal furrow; and the adapical canal is more closed, less sharply reflected; there are no dorsal color spots.

Etymology.—From the Greek adjective, *arktikos*, northern, great bear.

Note: Melville (*in litt.*) contributes the following: "A difficulty with Pulteney is that it is not certain whether his Dorset Catalogue [1799] is duly published under the Code (see Heppell, 1968, *J. Conch.* vol. 26: 321–328). If the Pulteney name, *T. arctica* became invalid, depending upon the synonymy, either *Cypraea europaea* (Montagu), or, *C. immaculata* of Gray, 1827, would seemingly become available."

20. *Trivia (Trivia) napolina* (Kiener, 1843)

(Fig. 23: Kiener, fig. 3)

1843 *Porcelaine napolina* Kiener, Spec. Icon. Coq. Viv., *Cypraea*: 144; pl. 53, fig. 3.

1845 *Cypraea napolini* (Duclos). err. Reeve, *Conch. Icon. Cypraea*: sp. 149; pl. XXVI (spelling error).

1971 *Trivia (Trivia) napolina*. Schilder and Schilder, Cat. Liv. and Foss. Cowries: 16.

Original description.—"Porcelaine napoline . . . *C. testâ* ovato-oblongâ; subglobosâ, fulvâ, nigro-maculatâ; extremitibus depressis, superiori subrostratâ; striis tenuibus, flexuosis, non interruptis; columellâ callosâ; ventre et marginibus, caeruleis" (Kiener, 1843: 144).

"Coquille ovale, oblongue, subglobuleuse, convexe au milieu, atténuée vers ses extrémités; la supérieure est allongée et subrostrée. L'ouverture est très-étroite, légèrement sinueuse; les échancrures qui la terminent sont peu profondes. Le bord droit est épais, large et convexe, pourvu à l'extérieur d'un bourrelet peu saillant et à peine sensible. La columelle est épaisse, calleuse, creusée d'un large sillon longitudinal, munie comme le bord droit d'une série de denticulations assez fines et régulières qui se continuent sur la face dorsale, en forme de côtes un peu aplaties et flexueuses, plus ou moins anastomosées entre elles et qui se joignent sur le milieu de la coquille, sans aucune interruption. La coquille est fauve avec deux petites taches noirâtres sur la ligne médiane; la face inférieure et les bourrelets sont blancs."

"Shell oblong ovate; subglobose, convex at the center, attenuated at its extremities; the upper is elongate and subrostrate. The aperture is very straight, slightly sinuous; the grooves [fossula] which end it are rather shallow. The right edge [outer lip] is thick, broad and convex, provided on the outside with a faintly projecting and hardly noticeable rim [outer lip side-margin]. The columella is thick, calloused, creased by a wide longitudinal groove, provided on the right side with a series of rather fine and regular denticles, which

continue on the dorsum in the form of ribs, a little flattened and sinuous, more or less interconnected and joining themselves without interruption in the middle of the shell. The shell is rust color (fawn) with 2 small blackish spots on the median line; the base and the ribs are white" (translation by Jean Cate).

Measurements, holotype.—"Long. 8 millim."

Measurements, hypotype.—L = 7.2; W = 5.2; H = 4.5 mm (C4306; Fig. 23a).

Type locality.—Not recorded. Herein designated Agadir, Morocco, NW Africa (30° 30' N; 09° 33' W).

Distribution.—NW Africa, West Africa: Senegal (Dakar); Gambia; Conakry (Guinea, formerly French Guiana); Agadir (C4306).

Holotype.—Locality unknown; was in the "Madame Dupont" collection; now apparently scattered (Danrigal, *in litt.*).

Discussion.—This species appears to represent the southernmost living range for *Trivia (Trivia) monacha* (da Costa, 1778).

Of this species, Kiener made the following comment: "Small species extremely close to *C. coccinella*, but it differs from that species by its slightly longer form, especially by its extremities which are slightly rostrate; the transverse ribs are also a little weaker and a little less sinuous" (translation by Jean Cate).

Etymology.—Apparently from the French word, *napoline*, a French napoleon, a gold coin worth about \$3.85 (1960).

21. *Trivia (Trivia) dakarensis* Schilder, 1967

(Fig. 22: holotype)

1967 *Trivia (Trivia) dakarensis* Schilder, Arch. Mollusk. 96: 196; fig. 1.

Original description.—"Very small (usually 4.3–5.5 mm. long), broad (71–77% of the length), solid, margined on the right; aperture straight, almost central, usually with 18–20 labial and a total of 14–16 columellar teeth; ribs about as thick as their interstices, all around usually 45–48, of which 16–22 extend to the dorsal furrow; this furrow is fairly short but broad, spindle-shaped, shallow and transversely ribbed in spite of the usually distinct formation of knobs on its margins; interstices of the ribs smooth; inner lip posteriorly acute; fossula broad and deep, columellar furrow somewhat narrower but concave toward the posterior and transversely ribbed. Shell white, ends and sides, especially the outer lip, bright pink, also an irregular maculation of the dorsum which is reminiscent of *Trivirostra exigua* Gray [(Gray, 1831) (Fig. 135)] to which are usually added two light brown spots at the ends of the dorsal line (similar to those of *Trivia napolina* Kiener) [(1843: 144; pl. 55, fig. 5) (Fig. 23)]; base white only along the aperture" (Schilder, 1967: 196).

Measurements, holotype.—L = 5.2 mm; Schilder formula: 5.2/77, 19:15, 50:22 = [L = 5.2; W = 4.0 mm].

Type locality.—"Région de Dakar" [W Africa].

Distribution.—Gorée, Dakar Bay; Cape Verde Islands.

Holotype.—ZMB, Cat. No. 21777 (Kiliass, *in litt.*).

Discussion.—Twelve specimens were in the type lot at the “Inst. Fond. d’Afri.,” which donated a specimen of this species to Schilder. The mean “Schilder Formula” of all 12 specimens is: 46/75, 19:15, 47:20. It is said the dorsal furrow is always clearly impressed, with only 1 specimen narrower and deeper. Bleached shells show the pink dorsal pattern disappearing more quickly than the pair of brownish spots, with the pink extremities more visible than the overall color.

Schilder compares *Trivia dakarensis* with *T. napolina* (Kiener, 1843), saying: “. . . the sympatric *dakarensis* is smaller, broader, rounder, and different principally through the distinctly impressed broad dorsal color pattern. *Trivia dakarensis* is easily distinguished from the sympatric *T. candidula* (Gaskoin, 1836), which is always pure white and shows no trace of dorsal furrow.”

22. *Trivia (Trivia) hispania* Cate, sp. nov.

(Fig. 25: holotype)

1900 *Trivia pullicina* var. *globosa* Locard and Caziot, Coq. Mar. Côtes Corse: 32 (name not established in a valid way; preoccupied by primary homonym); (Fig. 64: holotype).

1941 *Trivia (Trivia) arctica* Schilder, Arch. Moll., 73 (2 3): 73, 63 (Ab.)

Description.—Shell fairly large, ovate, highly humped, solidly formed. Terminals faintly produced, roundly so in back, more squarely in front. Base somewhat pointedly ovate, convex. Aperture fairly narrow, straight, with an acute reflection to the left adapically. Columella concavely depressed, curving front to back. Fossula a broadening and deepening of anterior columella. Outer lip half the width of the base, convex. Shell ribbing comparatively fine, numerous overall, with no longitudinal medial dorsal sulcus; dorsal ribs continuous to and over either side margin; ribs on the left side crossing base and columella to inner adaxial carinal ridge, terminating as strong denticles; ribs on the right traversing the ventral outer lip surface, becoming bold, sharp denticles on the apertural edge. There is no dorsal spotting; the color is a distinctive pinkish-beige; the terminals, base, and most of side margins are white.

Measurements, holotype.—L = 12.4; W = 9.3; H = 7.8 mm.

Measurements, paratype 1.—L = 11.9; W = 9.0; H = 7.2 mm (C2443; Fig. 25a).

Measurements, paratype 2.—L = 10.0; W = 7.4; H = 6.3 mm (C2442).

Type locality.—At the mouth of the Río Mino (Mimho), S of Pontevedra, Galicia, NW Spain (42° 27' N; 08° 39' W).

Distribution.—NW Spain; coast of France north to Guernsey Islands, English Channel (C2442); Lavadores, Galicia, Spain (C2443).

Holotype.—LACM No. 1824.

Discussion.—This new species seems to have been erroneously listed by some authors as *Trivia arctica*

(Pulteney, 1799). There are, however, major differences between the 2 species which seem to set them apart. *Trivia (T.) hispania* is much larger; it has a broader, more highly elevated shell, and lacks the projection of the dorsal ribs at the peripheral outline; further, it has a more smoothly rounded posterior terminal beak; the columella-fossula is more heavily, transversely ribbed; and the shell colors are different.

Etymology.—Hispania was the ancient name for Spain.

23. *Trivia (Trivia) grateloupi* Schilder, 1941

(Fig. 26: holotype)

1941 *Trivia (Trivia) grateloupi* Schilder, Arch. Mollusk. 73: 73, 114.

Discussion.—This is a fossil species from the Helvetian Miocene, according to Schilder (1941: 61), with a distribution in the Netherlands and NW France. With photographs of the holotype at hand, it seemed pertinent to illustrate it here. Its length is 6.0 mm; the holotype is at ZMB, in the Schilder collection, No. 3630 (Kiliass, *in litt.*).

24. *Trivia (Trivia) tortuga* Cate, sp. nov.

(Fig. 27: holotype)

Description.—Shell fairly large, ovate, solidly formed. Terminals restrictedly produced, somewhat squarely in front, more or less pointedly so in back. Dorsum roundly humped, tapering abruptly to the apex, more gently so to the front. Spire tending to elevate, with rear apex enveloped in ribs (cf. *Robertia kiliensis*, Figs. 44, 44a). Base broadly ovate, convex, with the continuation of outer lip onto rear base effecting a pseudo-thickening of the funicular callus. Aperture broad, almost straight, except for restricted curving of the canal adapically. Columella broad, deepening at the front as a fossula. Outer lip broad, convex, evenly curving throughout. Ribbing numerous, covering entire shell. There is no medial dorsal line, except that in paratype 3 one may observe, under magnification, an unmistakable hint of a medial dorsal line; transverse dorsal rib-striae are continuous over dorsum and either side-margin; on the left they continue over base and columellar sulcus, terminating as strong dental projections on inner, adaxial carinal ridge; to the right the same ribs traverse the outer lip where they end at the apertural edge as strong, heavy denticles. Shell color is coffee-bean brown overall.

Measurements, holotype.—L = 10.8; W = 8.6; H = 6.7 mm.

Measurements, paratype 1.—L = 11.7; W = 8.7; H = 7.4 mm (C2471).

Measurements, paratype 2.—L = 10.7; W = 8.4; H = 6.6 mm (C2471).

Measurements, paratype 3.—L = 10.8; W = 8.0; H = 7.0 mm (C2471).

Type locality.—Vera Cruz Beach, Panama Bay, Pacific Panama (08° 50' N; 79° 15' W).

Holotype.—LACM No. 1817; leg. B. D. Harris, ex Lloyd E. Berry collection, Los Angeles, California.

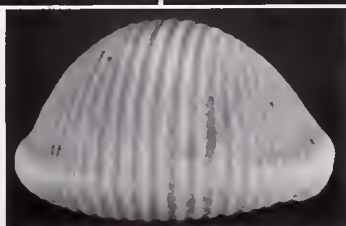
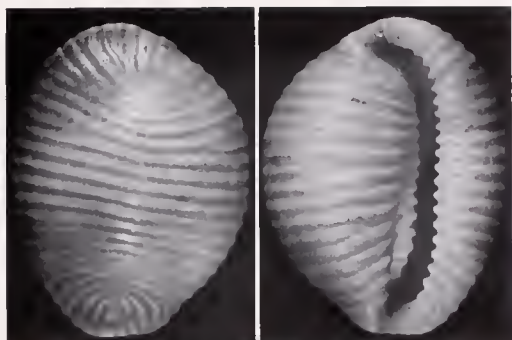


Fig. 25: *Trivia (Trivia) hispania*:
DP, [22], holotype: L—12.4 mm.

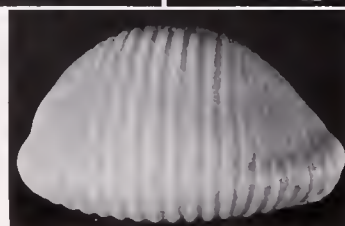
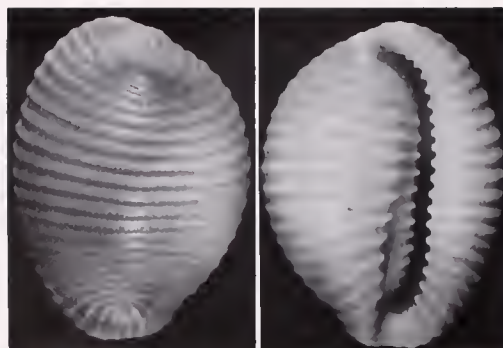


Fig. 25a: *Trivia (Trivia) hispania*:
DP, [22], paratype: L—11.9 mm.

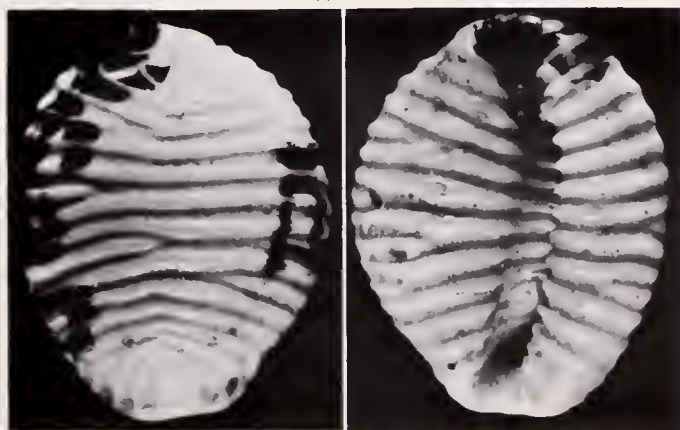


Fig. 26: *Trivia (Trivia) grateloupi*:
ZMB photo, [23], holotype: L—6.0 mm.

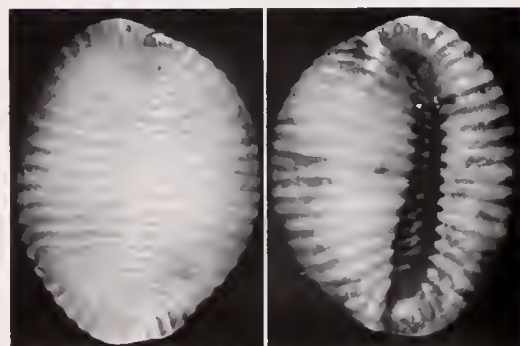


Fig. 27: *Trivia (Trivia) tortuga*:
DP, [24], holotype: L—10.8 mm.

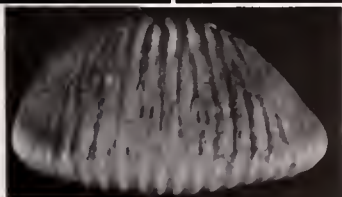
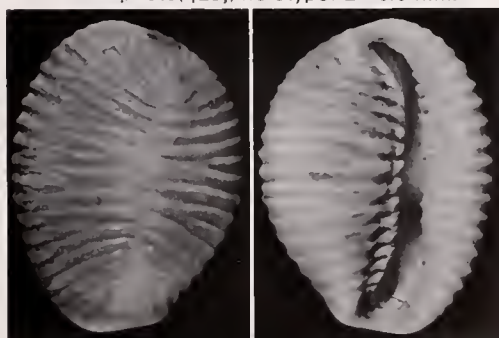


Fig. 28: *Trivia (Trivia) procella*:
DP, [25], holotype: L—11.2 mm.

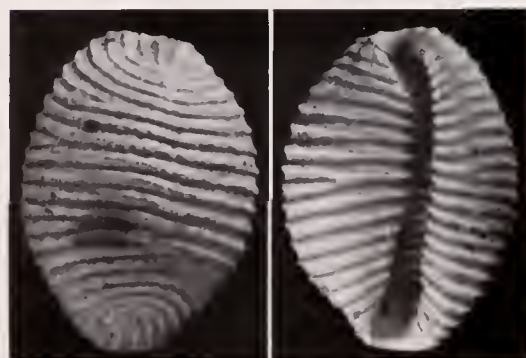


Fig. 29: *Trivia mollerati*:
MNHN photo, [27], holotype: L—5.0 mm.

Discussion.—In comparing the figured illustrations, herein, of this new species and that of *Trivia arctica* (Pulteney, 1799) (Fig. 24), one needs to look closely to separate them. However, when their shells are placed side by side, one can observe a number of distinct morphological differences. In *T. tortuga*, the shells are smaller in form; the coloring is different; shells are somewhat more narrowly elongate; the terminal processes and canal curve much less acutely in back, with less apertural constriction in front; the columella and fossula are far more simply formed. Living ranges are well separated.

Etymology.—The new name is a Spanish word, meaning turtle back: turtle, tortoise.

25. *Trivia (Trivia) procella* Cate, sp. nov.
(Fig. 28: holotype)

Description.—Shell fairly large, somewhat narrowly ovate. Terminals only barely produced, more so in front. Dorsum dull, centrally humped, tapering rather quickly to either end. Base convex, narrowly ovate. Aperture gently curving, fairly broad, more so anteriorly due to constriction of outer lip in front. Columella of medium breadth, only slightly concave; columella broadening slightly in front, forming a fossula. Outer lip somewhat narrow, convex, becoming inwardly flattened apically. Shell ribbing close over entire shell; with a weakly formed, shallow longitudinal medial dorsal furrow partially interrupting the transverse rib-striae: ribs somewhat coarsely, heavily formed, with broad interstices. From the left dorsum the ribs are continuous as they cross the side-margin, base, and columella, ending as weak denticles on inner edge of adaxial columellar ridge; on the right, the ribs cross side-margin of outer lip, where they terminate at the apertural edge as short, well defined denticles. Shell color light beige overall.

Measurements, holotype.—L – 11.2; W – 8.3; H – 6.9 mm.

Type locality.—Barbados, British West Indies (Windward Islands): 13° 15' N; 59° 30' W).

Holotype.—LACM No. 1815.

Discussion.—This new triviid species perhaps most closely resembles *Trivia (Trivia) arctica* (Pulteney, 1799) (cf. Fig. 24). *Trivia (T.) procella* Cate differs from that species by having a slightly smaller shell, with a greater constriction of the front outer lip; the shell is narrower, less globular in outline; there is less flaring of the rear terminal beak; the columella and the fossula and its inner wall are differently formed; and the presence of the dorsal furrow is distinctive.

Etymology.—The name for this species is the Latin noun, *procella*, meaning violent wind, hurricane.

26. *Trivia (Trivia) islahispaniolae petrela* (Olsson and Harbison, 1953)

(Fig. 165: holotype)

1953 *Trivia islahispaniolae petrela* Olsson and Harbison, Monogr. Acad. Nat. Sci. Philadelphia 8: 264; pl. 60, fig. 3.

Holotype.—ANSP No. 18264. Length 9.8 mm.

Type locality.—St. Petersburg, Florida.

Discussion.—With the type photographs of this fossil species at hand, it seems pertinent to list and illustrate it.

The species in the strict sense, *Trivia (Trivia) islahispaniolae islahispaniolae* Maury, 1917, is recorded in: Bull. Am. Paleo. 5/29: 117; pl. 19, fig. 14.

27. *Trivia (Trivia) mollerati* Locard, 1894
(Fig. 29: holotype)

1878 *Cypraea europaea* var. *minor* Monterosato, Giorn. Sci. Nat. Econ. 13: 49 [sep.] (name not established in a valid way; name preoccupied and its interpretation is questionable).

1878 *Cypraea europaea* var. *solida* Monterosato, Giorn. Sci. Nat. Econ. 13: 49 [sep.] (identification of this species is in doubt).

1894 *Trivia mollerati* Locard, L'Échange 10 (119): 131.

1897 *Trivia mollerati*, Locard, Exped. 'Travailleur et Talisman,' Moll. 1: 104; pl. 3, figs. 16–18.

Original description.—“*Trivia mollerati* . . . Coquille de très petite taille, enroulée, à spire cachée, d'un galbe général subsphérique, très court, très renflé, à peine atténué en haut et en bas, légèrement déprimé dans son ensemble sur la face aperturale. . . . Ouverture aussi haute que la coquille, très étroite, à bords presque parallèles et légèrement ondulés, canaliculée aux deux extrémités. . . . Bord columellaire bombé en avant, atténué en haut et en bas; bord externe muni d'un bourrelet saillant et continu tout le long de la région dorsal. . . . Test solide, épais, brillant, d'un roux-clair rosé dans la région dorsale, blanchâtre sur la face aperturale, orné sur tout sa surface de costulations ou cordons minces, saillants, continus, très réguliers et très régulièrement espacés, s'enfonçant jusque dans l'ouverture, un ou deux accidentellement bifides vers la face aperturale” (Locard, 1894: 131).

“Shell of very small size, coiled, spire hidden, of a generally subspherical outline, very short, very inflated, scarcely tapering above and below [at either end], lightly depressed on the entire base. Aperture as long as the shell, very straight, both sides almost parallel and slightly wavy; channeled at both ends. Columellar lip swollen in front, tapering at top and bottom; outer lip furnished with a striking ridge [thickening] which continues the entire length of the dorsal region. Shell solid, thick, glossy, of a clear rosy-reddish on the dorsum, whitish on the base, ornamented on the entire surface by slender, projecting, continuous ribs or cords, very regular and very regularly spaced, reaching almost into the aperture, 1 or 2 accidentally bifid on the base” (translation by Jean Cate).

Measurements, holotype.—“Hauteur totale, 4½ à 6 millimètres; largeur maximum 4 à 5 mill.; épaisseur, 3¾ à 4½ mill.”

Type locality.—“Dragué entre 40 et 70 mètres de profondeur dans la baie de St-Raphaël (var.)” (St Raphael, SE France [Riviera] 18 mi [≈30 km] SE of Cannes).

Distribution.—(Schilder [1941]: Catalonia, NE Spain; Spezia, Gulf of Genoa, NW Italy; W Italy, Sardinia and Corsica; Malaga-Valencia, E coast of Spain; Bône, NE Algeria; Oran, NW Algeria; Ceuta, NW Spanish Morocco; Western Mediterranean Sea).

Holotype.—MNHN without Cat. No. (Danrigal, *in litt.*).

Discussion.—Locard recorded: “*T. mollerati* cannot be compared, except with *Tr. pullicina* Soland. [err. = *Trivia pullicina* Mollerat, 1890 [nud.] = *Trivia (Sulcotrivia) lathyrus* (Blainville, 1826)], and *Tr. europaea* Montagu, but it is easily distinguished from these forms. *Trivia mollerati* Locard may be separated from *T. pullicina* Mollerat, 1890 (Bull. Soc. Mal. France 7: 103), by its much smaller size; by its being shorter, thicker, more globose, and its ‘non-ovate’ outline; by its much stronger ribs, which are more sharply defined and are never attenuated on any part of the shell.” Locard mentions its lighter color as well.

28. *Trivia (Trivia) multilirata* (Sowerby II, 1870)
(Fig. 30; Sowerby, 1870, figs. 521–522)

- 1826 *Cypraea europaea* Risso, Hist. Nat. Europ. Merid., 4: 239 (name preoccupied).
1829 *Cypraea umbilicalis* da Costa, Cat. Sist. Test. du Sicilie: 69, 71 (interpretation of this species is in doubt).
1848 *Cypraea europaea* var. *carnea* Requier, Cat. Coq. Corse: 86 (name not established in valid way; preoccupied by a primary homonym; the interpretation of this species is in doubt).
1870 *Cypraea multilirata* Sowerby II, Thes. Conchyl., 4, *Cypraea*: 50 (178); figs. 427–428 (Fig. 30a); figs. 521–522 (Fig. 30).
1870 *Cypraea formosa* syn. *crebricostata* Sowerby II, Thes. Conchyl., 4, *Cypraea*: 51 (name never validly established).
1878 *Cypraea europaea* var. *major-globosa* Monterosato, Giorn. Sci. Nat. Econ., 13: 49 (sep.) (name not validly established).
1883 *Cypraea europaea* var. *globosa* Bucquoy, Dautzenberg, and Dollfus, Moll. Mar. Roussillon 1: 129; pl. 16, fig. 21 (name preoccupied).
1887 *Trivia (Trivia) sphaerica* Paetel, Cat. Conch. Samml. (last ed.) 1: 323 (name not validly established; interpretation of species is in doubt).
1900 *Trivia globulosa* Locard and Caziot, Coq. Mar. Côtes Corse: 32.
1900 *Trivia europaea* var. *ventricosa* Locard and Caziot, Coq. Mar. Côtes Corse: 31 (name invalidly established; interpretation of species in doubt).
1900 *Trivia europaea* var. *albida* Locard and Caziot, Coq. Mar. Côtes Corse: 31 (name invalidly established; interpretation of species is in doubt).
1924 *Trivia mediterranea* var. *albula* Sullioti, Contr. stud. Cypraeidae 6: 11.
1933 *Trivia mediterranea* var. *pellucens* Coen, Comit. Talassogr. Ital., M. 192: 46.
1937 *Trivia dalmatica* Coen, Comit. Talassogr. Ital. M. 240: 150.

Original description.—“*Cypraea multilirata* . . . C. testa rosea, immaculata, quam C. *Europaea* magis globosa; costellis numerosis, acutis, haud tantum radiantibus; columellae varice postico parvo, acuto, conspicuo” (Sowerby II, 1870: 50).

Measurements, holotype.—Not recorded.

Type locality.—Adriatic Sea.

Distribution.—Schilder, 1941: Bari Province; Venedig; Dalmatia, Austrian Adriatic; Viona, SW Albania; Sicily; Malta.

Holotype.—Missing; possibly lost.

Discussion.—The triviid species of the central Mediterranean Sea seem not to be well understood at the present time. It is hoped that further fieldwork and research will put this species into better perspective.

(*Sulcotrivia*) Schilder, 1933

Bull. Mus. Nat. Hist. Belg. 9 (9): 18.

[See Schilder, 1939: 174 (35)]

Type species [SD: Schilder, 1971: 90]: *Cypraea dimidiata* Bronn, Italiens Tertiärbilder: 16.

29. *Trivia (Sulcotrivia) africana* (Schilder, 1931)
(Fig. 33; holotype)

1899 *Trivia pulex* var. *minor* Dautzenberg, Result. Camp. Monaco 1: 40 (secondary homonym) (Fig. 156; holotype).

1931 *Trivia pulex africana* Schilder, Zool. Anz. 96: 69.

Original description.—“*T. pulex* scheint im westlichen Mittelmeere ausschliesslich an den europäischen Küsten (einschl. Adria) und den Inseln vorzukommen, *africana* dagegen nur an der Nordküste Afrikas (Oran bis Tripolis): im Mus. Genova (coll. Sullioti) befinden sich eine Zwergform aus Algier (4–5 mm., AZ. besonders grob, nur 12–15) und eine relativ dünnchaligere Form von Sfax (7–8 mm., Rippen feiner, dorsal meist etwa 35, R.-Furche sehr scharf eingeschnitten)” (Schilder, 1931: 69).

“*T. pulex* appears in the western Mediterranean, except the European coasts (including the Adriatic) and the islands, *africana* on the other hand appears only on the north coast of Africa (Oran to Tripoli): in the Genoa Museum (Sullioti Collection) is a dwarf form from Algiers (4–5 mm., outer lip teeth especially coarse, only 12–15) and a relatively thin-shelled form from Sfax (7–8 mm., ribs finer, dorsally mostly about 25, dorsal sulcus very sharply incised)” (translation by George Hanselman).

Measurements, holotype.—L – 6.6 mm (Kilias, *in litt.*).

Measurements, hypotype.—L – 8.5; W – 5.9; H – 5.2 mm (C2461).

Measurements, hypotype.—L – 7.3; W – 6.1; H – 4.9 mm (C2463; Fig. 33a).

Type locality.—“von Oran [Algeria, NW Africa]; leg. Palmary.”

Distribution.—Balearic Islands; Palermo, Sicily; Malta; Barcelona, Malaga, Spain. Schilder, 1941: Gulf of Salum, NW Egypt [west of Alexandria]; coast of Tripoli, N Africa; Fezzan, SW Libya; Oran, Bône, NE Algeria; Ceuta, NW Spanish Morocco; Crete Island, E Mediterranean Sea; Isle of Rhodes, SE Aegean Sea; Antalya, SW Turkey; Cyprus Island, E Mediterranean Sea.

Holotype.—ZMB, Schilder collection No. 624 (Kilias, *in litt.*).

Discussion.—The holotype of *Trivia pulex* (Solander) var. *minor* Dautzenberg, 1899, is at IRSN, Catalogue



Fig. 30: *Cypraea multilirata*:
DP, [28], (Sowerby II, figs. 521–522).

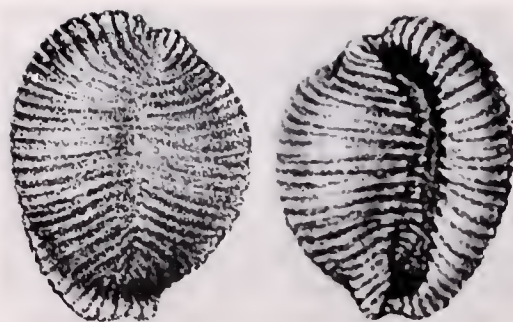


Fig. 30a: *Cypraea multilirata*:
DP, [28], (Sowerby II, figs. 427–428).

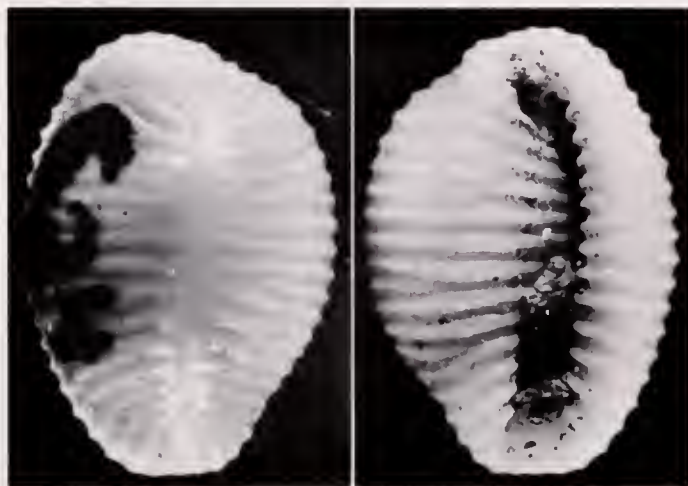


Fig. 33: *Trivia pulex africana*:
ZMB photo, [29], holotype: L—6.6 mm.

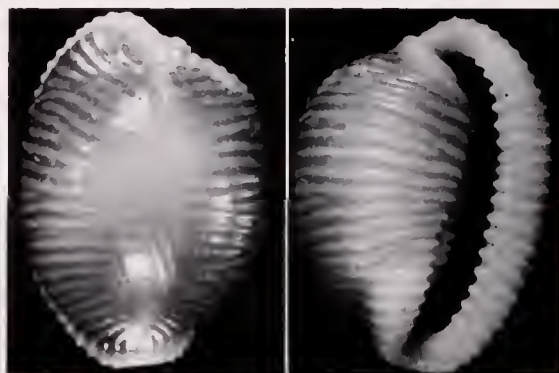
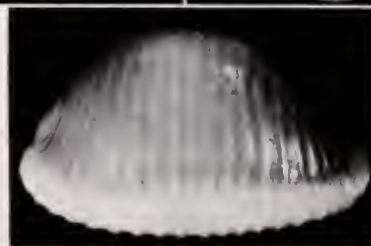


Fig. 33a: *Trivia (Sulcotrivia) africana*:
DP, [29], hypotype: L—7.3 mm.



Figures 31 and 32 are vacant.

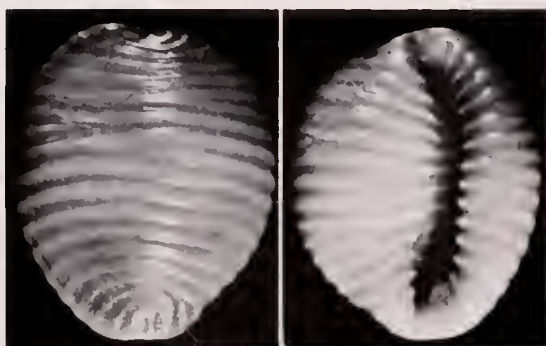


Fig. 34: *Trivia (Sulcotrivia) lathyrus*:
DP, [30], hypotype: L—6.4 mm.

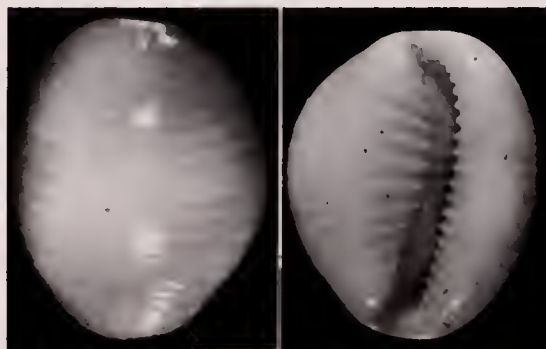


Fig. 34a: *Trivia (Sulcotrivia) lathyrus*:
DP, [30], hypotype: L—6.4 mm.

No. 10.591. Length of shell: 4.7 mm (Goethem, *in litt.*). According to Dautzenberg, the shell is from the Edouard Auguste Marie (1835–1888) collection, with a locality of San Miguel de la Palma, Canary Islands (WNW of Tenerife Island [province of Spain]).

30. *Trivia (Sulcotrivia) lathyrus* (Blainville, 1826)
(Fig. 34: hypotype)

- 1811 *Ovula triticea* Lamarck, Ann. Mus. Nat. Hist. (Paris) 16: 111 (species identification in question).
1817 *Cypraea sulcata* syn. *pulex* Dillwyn, Descr. Cat. Rec. Shells 1: 467 (name not established in a valid way; name preoccupied).
1826 *Cypraea lathyrus* Blainville, Faune Française Malacologie: 248; plt. 9A, fig. 3, 3a.
1826 *Cypraea mediterranea* Risso, Hist. Nat. Europe Mérid., 4: 239.
1827 *Cypraea pulex* Gray, Zool. Journ. 3: 368 (name preoccupied).
1828 *Cypraea lacrymalis* Menke, Synops. Meth. Moll. Mus. Menkeano (ed. 1): 49 (nom. nud.).
1830 *Cypraea lacrymalis* Menke, Synops. Meth. Moll. Mus. Menkeano (ed. 2): 83.
1843 *Cypraea lathyrus* "Dufresne". Kiener, spec. Gen. Coq. Viv., *Cypraea*: 146; plt. 22, fig. 4.
1848 *Cypraea pulex* var. *fusca* Requier, Cat. Coq. Corse: 86 (nom. nud.).
1878 *Cypraea pulex* var. *minor* Monterosato, Giorn. Sci. Nat. Econ. 13: 49 (sep.) (nom. nud.).
1883 *Cypraea pulex* var. *rosea* Bucquoy, Dautzenberg, and Dollfus, Moll. Mar. Roussillon 1: 131; (name preoccupied).
1890 *Trivia pullicina* Mollerat, Bull. Soc. Mal. France 7: 107.
1900 *Trivia pullicina* var. *pullucida* Locard and Caziot, Coq. Mar. Côtes Corse: 32.
1900 *Trivia pullicina* var. *violacea* Locard and Caziot, Coq. Mar. Côtes Corse: 32; (name not validly established).
1900 *Trivia pullicina* var. *brunnea* Locard and Caziot, Coq. Mar. Côtes Corse: 32; (name not validly established).
1900 *Trivia pullicina* var. *albida* Locard and Caziot, Coq. Mar. Côtes Corse: 32; (name not validly established; name preoccupied).
1900 *Trivia pullicina* var. *grisea* Locard and Caziot, Coq. Mar. Côtes Corse: 32; (name not established in a valid way).

Original description.—"Cypraea lathyrus . . . Coquille ovale, peu ventrue, lisse, luisante, finement côtelée; ouverture étroite, peu sinueuse, bordée à droite et à gauche de seize dents aiguës se prolongeant en costules transverses, fines, serrées, jusqu'au milieu du dos et se continuant avec celles du côté opposé sans sillon médio-dorsal; couleur blanche en dessous et d'un gris plus ou moins violacé, sans taches plus-foncées en dessus" (Blainville, 1826: 248).

"Shell oval, slightly swollen, smooth, polished, finely ribbed; aperture straight, slightly sinuous, bordered, on right and left by 16 sharp teeth which lengthen into transverse fine, serrated ribs as far as the middle of the dorsum and continuing with those of the opposite side without a mid-dorsal furrow, color white underneath, and a more or less violet-gray, without deeper spots on top" (translation by Jean Cate).

Measurements, holotype.—"Long. $4\frac{1}{2}$ lig., sur $2\frac{3}{4}$ de larg." [Ligne = $\frac{1}{2}$ of an inch; ≈ 2.3 mm].

Measurements, hypotype 1.—L = 6.4; W = 5.0; H = 4.4 mm (Fig. 34).

Measurements, hypotype 2.—L = 6.4; W = 5.1; H = 4.3 mm (Fig. 34a).

Type locality.—"De la Méditerranée sur les côtes de Provence [SE France] et sur celles de la Corse, où elle paraît être assez commune."

Distribution.—Palermo, Sicily; Valencia, Spain. Schilder (1941): Catalonien, S Frankr.-Spezia; W Italy, Corsica, Sardinia; Neapel, Sicily, Malta, Tarent; Malaga-Valencia; Balearic Islands.

Holotype.—Locality unknown: it may have been in collection "Prince Massena" or, the "Madame Dupont" collection, types from which have never been found, tracing continues" (Danrigal, *in litt.*).

Discussion.—Blainville: "La coquille de cette espèce a évidemment beaucoup de rapports avec celle de la précédente, mais elle en diffère sensiblement, d'abord par moins de grosseur, et ensuite parce que ses costules sont beaucoup moins prononcées; d'où il résulte qu'elle est lisse et luisante, surtout sur le dos, qui n'offre pas de sillon dorsal, pas plus que dans la *P. [Porcelaine] Coccinella*. Sa couleur est d'ailleurs constamment plus foncée sans aucune tache; ce qui est beaucoup plus rare dans la *Porcelaine Coccinelle*."

Blainville: "The shell of this species is evidently very similar to that of the preceding [*Cypraea europaea* Montagu, 1808], but it differs noticeably from it, first by its smaller size, and also because the riblets are much less pronounced; it is smooth and shining, especially on the dorsum; there is no dorsal furrow any more than in *P. Coccinella*. Moreover, its color is constantly darker, without spots; it is more rare than *Porcelaine Coccinella*" (translation by Jean Cate).

This triviid species is small-shelled, nearly spherical, and appears not to have any dorsal spotting (in 33 specimens examined).

Etymology.—The Latin noun, *lathyrus*, means bean.

Pusulini Schilder, 1936

Proc. Malac. Soc. London 22: 80.

Pseudotrivia Schilder, 1936

Ingen. Ned. Indie (ser. 4), Mijnbouw 3: 208. [see Schilder, 1939: 175 (337)]

Type species [OD]: *Trivia sibogae* Schepman, 1909

Siboga Exped. 49/2/2: 139; plt. 11, fig. 3.

31. *Pseudotrivia schepmani* Schilder, 1941

(Fig. 35: holotype)

1909 *Trivia sibogae* forma *minor* Schepman, Siboga Exped. 49 2/2: 140; plt. 11, fig. 4 (name preoccupied); (Fig. 35a).

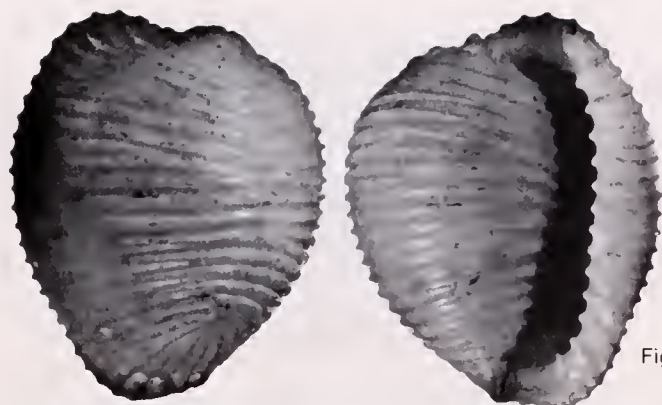


Fig. 35: *Pseudotrivia schepmani*:
ZMA photo, [31], holotype: L—7.6 mm.

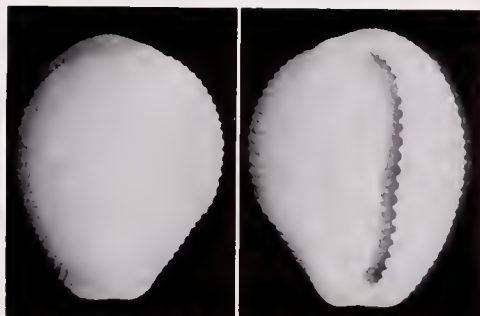


Fig. 36: *Cypraea formosa*:
MRAC photo, [32], possible type: L—10.1 mm.



Fig. 36b: *Cypraea formosa*:
DP, [32], (Sowerby II, fig. 518): $\times 4\frac{1}{2}$.

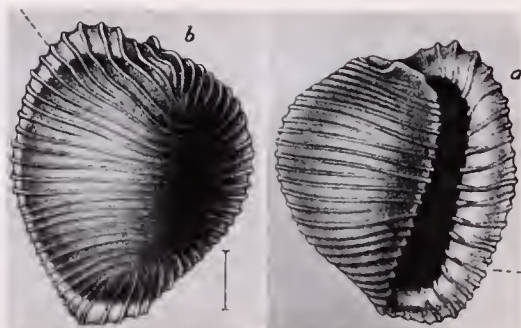


Fig. 35a *Trivia sibogae* forma minor [= *Pseudotrivia schepmani*]:
DP, [31], type fig.: $\times 7$.

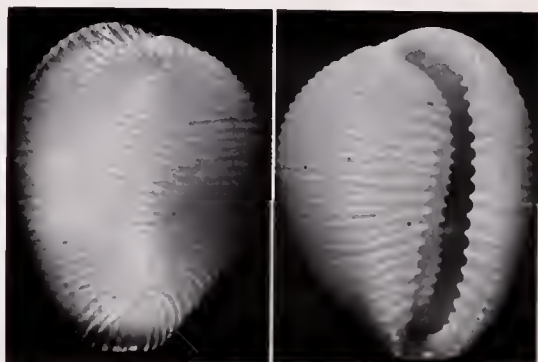


Fig. 36a: *Pseudotrivia suavis*:
DP, [32], hypotype: L—11.4 mm.

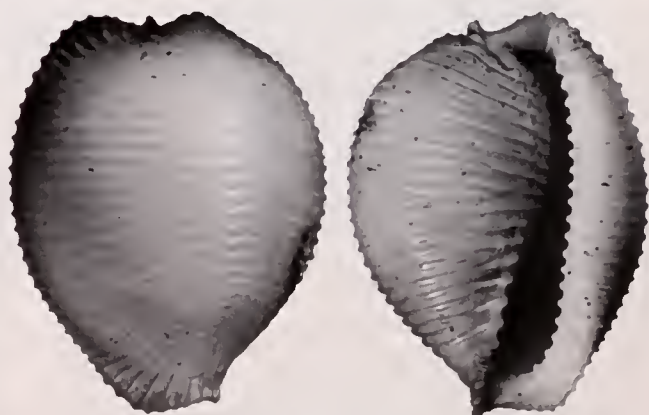


Fig. 37: *Trivia sibogae*:
ZMA photo, [33], lectotype: L—12.0 mm.

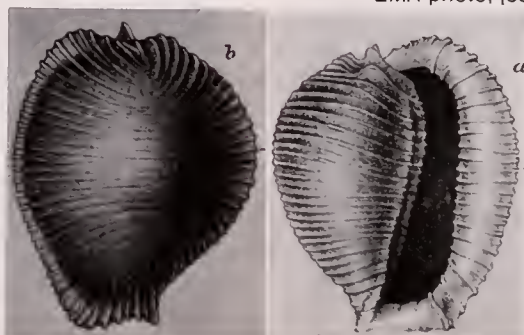


Fig. 37a: *Trivia sibogae*:
DP, [33], type fig.: $\times 4\frac{1}{2}$.

1941 *Pseudotrivia schepmani* Schilder, Arch. Mollusk. 73: 74.

Original description.—"Pseudotrivia schepmani (= *Trivia sibogae* forma minor) . . . Shell shortly ovate, globose, thin, light flesh-coloured, with numerous rather strong ribs and smooth interstices, which are but a little broader than the ribs, no dorsal impression; several of the ribs don't reach the centre, while others run from one side to the other. Aperture rather wide, slightly enlarged towards the front, placed at the right side of the ventral face. Right margin slightly involved, strongly thickened exteriorly, its inner margin with 19 or 20 teeth; columellar margin with about 21 teeth and a crenulated callosity at its upper part, bordering the posterior, rather wide sinus; anterior sinus slightly larger and produced, columellar margin excavated interiorly, towards the anterior sinus; margins of the aperture granulose in the interstices" (Schepman, 1909: 139-140).

Measurements, holotype.—"6 mill. in length." [L = 7.6; W = 6.0; H = 5.0 mm; Coomans, *in litt.*].

Type locality.—East of Sailus-Besar, Paternoster Islands [Netherlands East Indies]; in up to 36 metres of water; coral and Lithothamnion bottom (1 specimen).

Distribution.—Schilder (1941): NE Borneo; Sulu Sea; Zamboanga, Mindanao, Philippines; W Celebes, Tiger Island.

Holotype.—ZMA No. 2734.

Discussion.—Schepman commented: "Two specimens from Sta. 95 are still smaller, being only 7½ Mill. in length, but agree in most respects, in sculpture with the type, however the ribs are slightly coarser, the teeth of the right margin less numerous (15 and 17), the other specimens and that from Sta. 315 are a little doubtful, as they are still considerably smaller, length only 6 Mill., the aperture is not so large and the right margin thicker; as they are dead shells, I prefer to keep them under one name with the variety, instead of describing a new species on a few gradual differences. This species [*sibogae*] with its variety [*minor* = *schepmani* Schilder], differs from the former one, by its more numerous ribs with numerous intermediate ones, the larger number of teeth and inflated shape."

Comment.—It should be noted that Schilder established this new species using a brief reference, "*schepmani* nov. (*siboga* var. *minor* Schepman, 1909)" listing, which occurs under the Schepman (1909: 140) designation of *Trivia sibogae* Schepman.

See species No. 32, herein, for the basic detail concerning the "*sibogae-schepmani*" species separation. Schilder (1941: 74) neither described nor differentiated this new species from its immediate congener, seeming to rely wholly on his cross-reference designation. Because of seemingly scant morphological variation and lack of formal designation, this

species, *Pseudotrivia schepmani*, is listed herein on a provisional basis only.

32. *Pseudotrivia suavis* (Schilder, 1931)

(Fig. 36; possible type)

1836 *Cypraea formosa* Gaskoin, Proc. Zool. Soc. London 3: 198-199 (Fig. 36b = Sowerby II, 1870; figs. 518-519); (name preoccupied).

1931 *Trivia suavis* Schilder, Zool. Anz. 96: 69.

Original description.—"Cypraea formosa Gaskoin = (*Trivia suavis* Schilder) . . . Cypr. testā ovato-globulosa, tenui, sericeo-subnitente, pallidē roseā, subnebulosā, anticē saturatiore, basi albidā; costis numerosis, confertis, continuis, ad basin non interruptis; margine subincrassatā; aperturā latiusculā; lineā dorsali nullā" (Gaskoin, 1836: 198-199).

"Shell ovato-globose, posterior end rather obtuse and broad, of a delicate rose (almost white) colour, somewhat clouded with very light reddish brown, which is deeper over the anterior extremity. Base white, somewhat even. Aperture rather wide; teeth of the lip about twenty-one, almost every alternate rib (about fifteen in number) terminating between the denticulations just before arriving at the edge of the lip; teeth of the columella about twenty-five, and about seven terminate exterior to the aperture; columellar front grooved along its entire length, inner edge of the groove slightly serrated, forming a circular projection towards the anterior extremity, where it is deepest and widest. Ribs slightly prominent, numerous, close, extremely even and regular, extending continuously from the lip to the inner border of the columellar groove, very few terminating on the sides of the shell; false ribs few, and extending but little towards the back. Anterior beaks rather wide apart, slightly produced; beaks of the lip longer than those of the columella. Spire only traceable in the adult, and the younger state forming a fine small point or apex. Margin only on the lip side, and slightly thickened. No dorsal line" (Gaskoin, 1836: 199).

Measurements, holotype.—"Length .425 of an inch; breadth .350; height .325" [= 10.1; 9.0; 8.0 mm].

Measurements, hypotype.—L = 11.4; W = 9.2; H = 7.4 mm (C3778; Fig. 36a).

Measurements, hypotype 2.—L = 10.3; W = 9.0; H = 7.3 mm (C3775).

Type locality.—Cape of Good Hope.

Distribution.—East London, SE Africa (Schilder, 1941: Jeffrey's Bay; East London; Simonstown; Algoa; Port Alfred, SE Africa).

Possible type.—MRAC No. 793150 (Benoit, *in litt.*).

Discussion.—"From *Cypr. Europaea* it is distinguished by the following characters: greater convexity of the curvature of the inner edge of the columellar groove; ribs and teeth much more numerous and even, and on the lip almost every alternate rib terminates before arriving at its edge; shape more gibbous and obtuse posteriorly; mouth wider; spire scarcely visible in the adult, and forming a beautifully minute point in the younger individuals; texture and colour of the shell infinitely more delicate" (Gaskoin).

Etymology.—The Latin adjective, *suavis*, means sweet.

33. *Pseudotrivia sibogae* (Schepman, 1909)

(Fig. 37: lectotype herein)

1909 *Trivia sibogae* Schepman, Siboga Exped. 49/2/2: 139; pl. 11, fig. 3 (Fig. 37a).

Original description.—" *Trivia sibogae* . . . Shell shortly-ovate, globose, thin, light flesh-coloured, with numerous rather strong ribs and smooth interstices, which are but a little broader than the ribs, no dorsal impression; several of the ribs don't reach the centre, while others run from one side to the other. Aperture rather wide, slightly enlarged toward the front part, placed at the right side of the ventral face. Right margin slightly involved, strongly thickened exteriorly, its inner [apertural] margin with 19 or 20 teeth; columellar margin with about 21 teeth and a crenulated callosity [funiculum] at its upper part, bordering the posterior, rather wide sinus; anterior sinus [fossula] slightly larger and produced, columellar margin excavated interiorly, towards the anterior [fossular] sinus, margins of the aperture granulose in the interstices" (Schepman, 1909: 139–140).

Measurements, holotype.—"Long. 12, lat. 9, alt. $8\frac{1}{4}$ Mill."

Measurements, lectotype.—L – 12.0; W – 9.0; H – 8.2 mm (Coomans, in litt.).

Type locality.—"Stat. 95, E Sulu Sea, $05^{\circ} 43' 05''$ N; $119^{\circ} 40' 05''$ E; 522 M., Stony bottom. 4 spec."

Distribution.—Schilder, 1941: NE Borneo; Sulu Sea; Zamboanga, Mindanao, Philippines.

Holotype.—ZMA No. 2734a (1 of 4 syntypes) (Coomans, in litt.).

Discussion.—It should be noted that this description of the holotype was used in the preceding description of a so-called variant, *Pseudotrivia schepmani* Schilder, 1941. This seemed necessary, because Schilder used it in a cross-reference to describe *P. schepmani*.

34. *Pseudotrivia abyssicola* (Schepman, 1909)

(Fig. 38: lectotype herein)

1909 *Trivia abyssicola* Schepman, Siboga Exped. 49/2/2: 138; pl. 11, fig. 1 = (Fig. 38a).

Original description.—" *Trivia abyssicola* . . . Shell ovate, moderately inflated, white, pellucid, right margin thickened, extremities slightly produced, especially the anterior one, with rather numerous ribs, of which the majority runs from one side to the other and a few intermediate ones, no dorsal sulcus. Aperture rather wide, especially towards the front, slightly arcuate, its right margin but little inflected, thickened exteriorly, strongly crenulated by the ribs, which form from 18 to 21 teeth; anterior sinus wide, posterior one narrower by a crenulated callus, columellar margin not thickened, with about 20 teeth, the interstices of the ribs of both the right and columellar margin granulous, the interstices on the back smooth" (Schepman, 1909: 139).

Measurements, holotype.—"Long. 7, lat. 5, alt. 4 Mill."

Measurements, lectotype.—L – 7.0; W – 5.0; H – 4.0 mm (Coomans, in litt.).

Type locality.—Stat. 59, western entrance to Samau Strait; in 390 metres, coarse coral sand and small stones; (1 specimen).

Distribution.—Schepman: Stat. 98 ($06^{\circ} 09' N$; $120^{\circ} 21' E$); Sulu Sea, mud and sand (1 specimen); Stat. 105 ($06^{\circ} 08' N$; $121^{\circ} 19' E$). Sulu Sea, mud and coral sand bottom (3 specimens).

Lectotype.—ZMA No. 2734; 1 of 5 syntypes (Coomans, in litt.).

Discussion.—Schepman: "The species resembles amongst the white ones without dorsal impression, in some respects *T. pellucidula* Gaskoin [1846], which has however much more and finer ribs. One of the specimens from Stat. 105 contains the soft parts and may serve as a proof that the species lives at the recorded great depth."

Etymology.—The name is derived from the combination of Latin nouns, *abyssus*, deep sea, and *cola*, meaning dweller in.

35. *Pseudotrivia sagamiensis* Kuroda and Habe, 1971

(Fig. 39: paratype)

1971 *Pseudotrivia sagamiensis* Kuroda and Habe, Sea Shells of Sagami Bay: 94; pl. 108, figs. 18–19.

Original description.—" *Pseudotrivia sagamiensis* . . . Shell rather small, translucent white, ovoid in shape, slightly narrowing to the anterior restration [sic], and well rounded on the dorsal hump and rather flattened on the ventral side. Surface sculptured with 17–18 transverse ribs on the dorsal hump and about 26 on ventral side. They are not interrupted by the dorsal groove. Aperture narrow and long. Outer [lip] margin winged and thickened at the shoulder" (Kuroda and Habe, 1971: 94).

Measurements, paratype 1.—L – 8.3; W – 4.3; H – 5.1 mm (Habe, in litt.); (Fig. 39).

Measurements, paratype 2.—L – 6.2; W – 4.3; H – 3.6 mm (Habe, in litt.); (Fig. 39a).

Type locality.—Sagami Bay [SE Honshu, Japan].

Distribution.—Jogashima WSW 4 km (100 metres), W 5 km (100–110 metres), SW 4 km (83–97 metres), SSW 1 km (35 metres), SSW 2.5 km (80–90 metres), SSW 1.2 km (85–87 metres), WSW 2 km (97 metres-alive); Amadaiba-Kannontsukadashi (75–81 metres); Kamikisho WSW 2 km (55–80 metres); Sagami Bay generally, on sandy bottom, from 30 to 300 metres of water.

Holotype.—NSMT, collection His Majesty the Emperor of Japan (Habe, in litt.).

Discussion.—The authors make the following distinction: "This new species differs from *P. sibogae* Schepman by the ovate shell with coarser transverse ribs."

36. *Pseudotrivia problematica* (Schilder, 1931)

(Fig. 40: holotype)

1931 *Pusula* (*Niveria*) *problematica* Schilder, Zool. Anz. 96: 70; fig. 2.

Original description.—" *Pusula* (*Niveria*) *problematica* . . . Kugelig, E. vorgezogen, AR. schmal und scharf gerandet, Spira erkennbar, aber bedeckt, Rippen ziemlich kräftig,

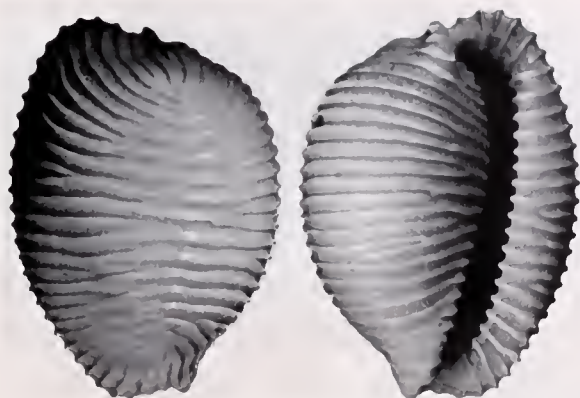


Fig. 38: *Trivia abyssicola*:
ZMA photo, [34], lectotype: L—7.0 mm.

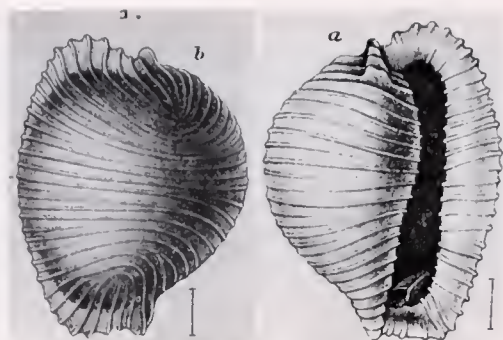


Fig. 38a: *Trivia abyssicola*:
DP, [34], type fig.: $\times 7$.

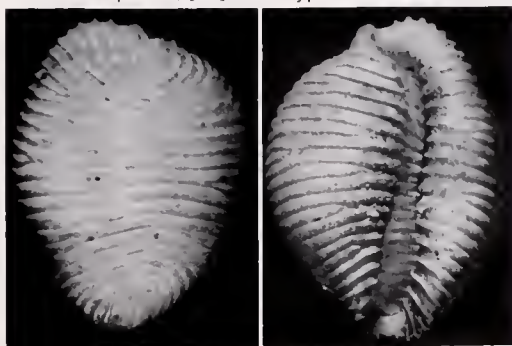


Fig. 39: *Pseudotrivia sagamiensis*:
DP, [35], paratype: L—8.3 mm.

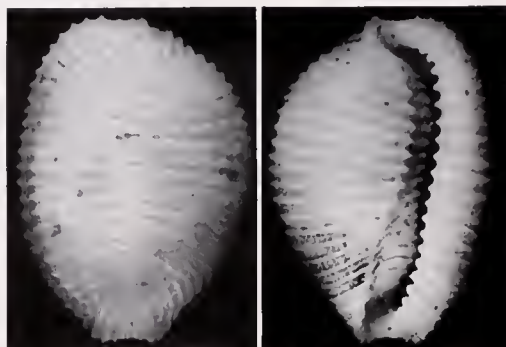


Fig. 39a: *Pseudotrivia sagamiensis*:
DP, [35], paratype: L—6.2 mm.

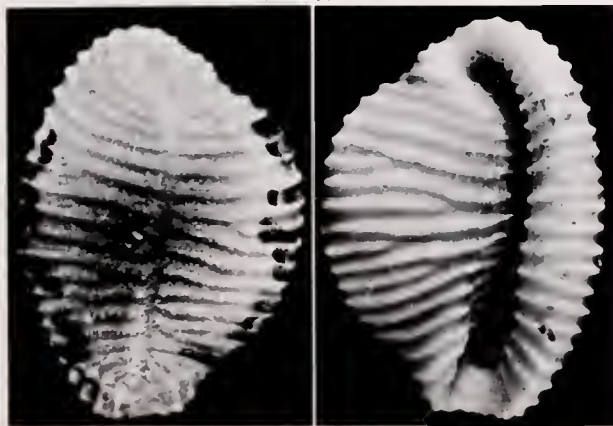


Fig. 40: *Pseudotrivia problematica*:
ZMB photo, [36], holotype: L—8.3 mm.

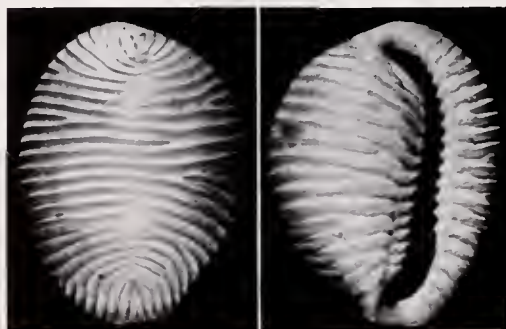


Fig. 41: *Pseudotrivia samarensis*:
DP, [37], holotype: L—11.8 mm.

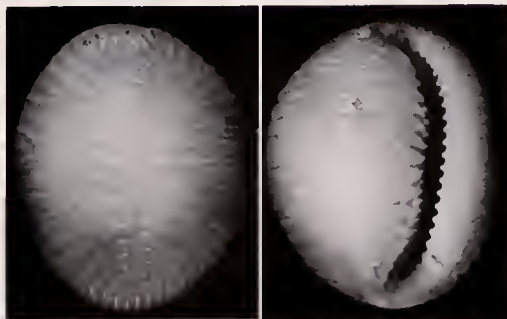


Fig. 42: *Pseudotrivia dumaliensis*:
DP, [38], holotype: L—10.2 mm.

ebenso breit wie die dicht und fein gekörnten Zwischenräume, R.-Furche lang, schmal, glatt, Rippen hier unterbrochen, zu winzigen Knöpfchen verstärkt, M. weit, seitlich, AL. hinten sehr vorgezogen, IL. vorn scharf zugespitzt, in der Mitte in die M. hineingerundet, hinten spitz, linksgebogen, etwas kragenförmig mit der IL. verbunden, Foss. breit und tief, Col.-Furche etwas schmaler, undeutlich, . . . R. bräunlich-rosa, an S. mehr gelblichrosa, E. und AR.-Furche grell-rosa, B. (mit Ausnahme des Randes) gelblichweiss (Abb. 2)" (Schilder, 1931: 70).

"*Pusula (Niveria) problematica* . . . Shell globose, terminal produced, exterior margin small and sharp-edged, spire discernible but obscured, ribs rather strong, as broad as the densely and finely granulated interstices, dorsal sulcus long, small, smooth, ribs here interrupted, strengthened into small tubercles, aperture wide, laterally, outer lip drawn out posteriorly, inner lip anteriorly sharply tapered, in the middle rounded into the aperture, pointed posteriorly, curved leftward, somewhat collared where connected with the inner lip, fossula broad and deep, columellar sulcus somewhat indistinct. . . . Dorsum brownish-rose, on the side more yellowish-rose, terminal and exterior margin strongly rose-colored, base (with the exception of the edges) yellowish-white (illustration 2)" (translation by George Hanselman).

Measurements, holotype.—"8.2; 75/65—18:16—53:32" (L = 8.3 mm, Kilias, *in litt.*).

Type locality.—"Sudkuste Vorderindiens" [south coast of India].

Distribution.—Schilder, 1941: Malabar: Mangalore-Tuticorin.

Holotype.—ZMB, Schilder collection No. 3362.

Etymology.—Probably from the Greek word, *problematikos*, a problem.

37. *Pseudotrivia samarensis* Cate, sp. nov.

(Fig. 41: holotype)

Description.—Shell large, subovate, inflated, subglobular, strong, though not heavily constructed. Terminals short, barely protruding. Base roundly, inflatedly ovate, convex, left side margin lacking. Columella broad, shallow, barely depressed, depression deepening to the front to form a shallow fossula. Aperture narrow, curving at either end. Outer lip ventrally convex, following the apertural curvature. Right side margin laterally molded, somewhat flattened, shouldered above, though not callously thickened. No longitudinal dorsal groove present, dorsal ribbing uninterrupted to either side margin; ribbing continuing over base and depressed columella, terminating as short denticles on inner adaxial ridge; ribbing continuing over shouldered right margin, terminating as sharp denticles on inner edge of lip; lip teeth absent on front third of outer lip edge, ribbing terminating just short of edge. Shell color: ribbing and thickening of terminal canal outlets very pale light brown, with the interstices of an even paler color; (C4146).

Measurements, holotype.—L = 11.8; W = 8.5; H = 7.8 mm.

Type locality.—Borongan, E Samar Island, Philippines (11° 36' N; 125° 27' E).

Holotype.—LACM No. 1795; ex F. G. Dayrit, Diliman, Rizal, Philippines (2 Nov 1966).

Discussion.—The illustration (Fig. 41) would seem

to contravene the separation of this species from *Trivia arctica* (Pulteney, 1799). However, the photographs are misleading: *Pseudotrivia samarensis* Cate is a much larger triviid species, more globular, a less pyriform shell; it has fewer teeth on the outer lip, with those on the abapical lip not developed, protruding; the lip angles at either end of this species are more lengthened, thus creating a shorter length of lip centrally; and the shell colors of the Pulteney species are of a deeper and slightly different hue.

Etymology.—The new name of this species is derived from the type locality, Samar Island.

38. *Pseudotrivia dumaliensis* Cate, sp. nov.

(Fig. 42: holotype)

Description.—Shell fairly large, swollen, almost globular, strong, though not heavily formed. Terminals not peripherally rounded, though not protruding, with canals opening similarly at either end. Base elongately oval, a convex continuation of the dorsal shell curvature. Aperture long, gently curving, evenly narrow throughout. Columella fairly broad, flatly depressed, elevating as a longitudinal ridge within. Outer lip convexly rounded with a longitudinal dorsal furrow, numerous upraised ribs radiating continuously away over left dorsum, base, and depressed columella to inner adaxial ridge. From the dorsal furrow the ribs are continuous over right dorsum to very weakly formed side margin, where ribbing almost disappears on smooth, convex lip surface (as compared with the normal ribbing) to emerge again on inward sloping plane of lip, terminating on the inner lip edge as numerous (24) strong, protruding, pointed teeth. Shell color is dull off-white overall (C4145).

Measurements, holotype.—L = 10.2; W = 8.7; H = 7.5 mm.

Type locality.—Collected by Moro divers off Dumali Point, E Mindoro Island, Central Philippines (13° 07' N; 121° 33' E); ex Fernando G. Dayrit, Diliman, Rizal, Philippines.

Holotype.—LACM No. 1796.

Discussion.—The author and his wife, Jean, spent a day visiting with the Dayrits (2 Nov 1966) at their home. The new species, unrecognized until the present work was under way, was acquired at this time, along with other shells.

Without the use of magnification, *Pseudotrivia dumaliensis* may appear to resemble *P. suavis* (Schilder, 1931), from SE Africa, both having shells of similar size and rotundity. However, this new species can easily be separated from the Schilder shell thus: the circumferential outline is more circular, less pyriform; the rear outer lip does not flare out, nor project beyond the elevation of the spire; the presence of the dorsal furrow is much more distinct; the color is white, and the ribbing is more bold, less numerous.

Etymology.—The new name is derived from the area where the specimen was collected.

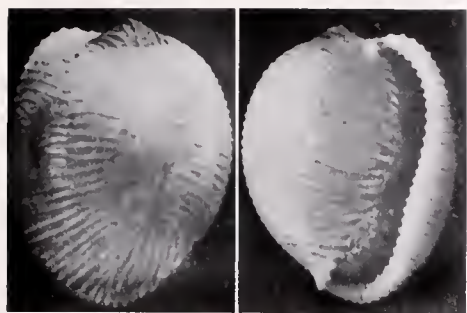


Fig. 43: *Trivia eos* Roberts:
DP, [39], type fig.: $\times 2\frac{1}{2}$ (holotype: L—25.7 mm.)

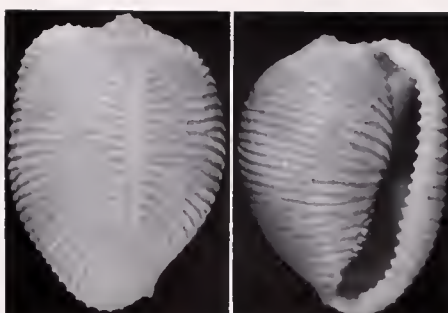


Fig. 43a: *Robertotrivia eos*:
DP, [39], hypotype: L—24.0 mm.

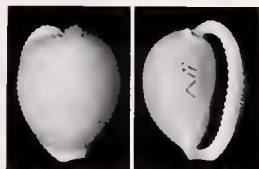
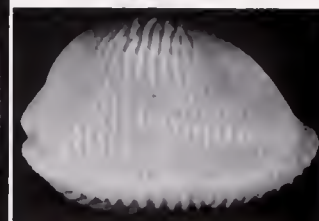


Fig. 44: *Robertotrivia kiiensis*:
Fumio Ishida photo, [40],
holotype: L—19.2 mm.

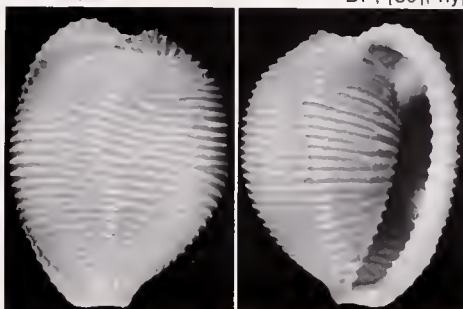


Fig. 44a: *Robertotrivia kiiensis*:
DP, [40], holotype: L—19.2 mm.

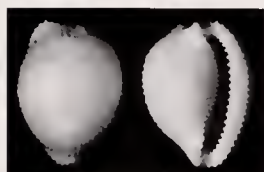
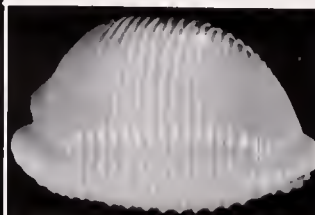


Fig. 45: *Robertotrivia speciosa*:
Fumio Ishida photo, [41],
holotype: L—20.1 mm.

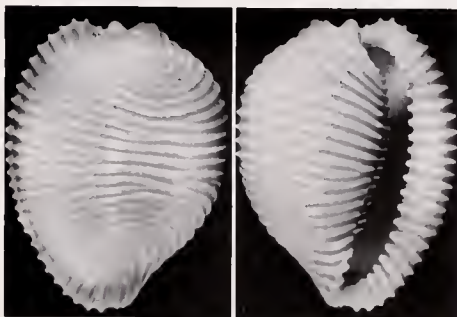


Fig. 45a: *Robertotrivia speciosa*:
DP, [41], holotype: L—20.1 mm.

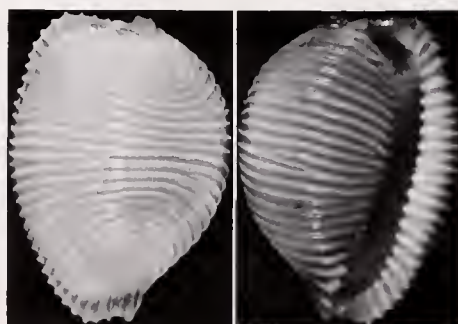


Fig. 45b: *Robertotrivia speciosa*:
DP, [41], paratype: L—20.7 mm.

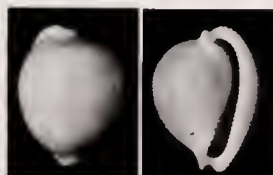
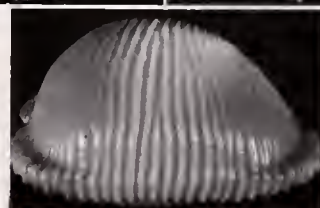
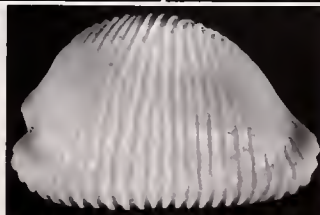


Fig. 46: *Robertotrivia opalina*:
Fumio Ishida photo, [42],
holotype: L—20.0 mm.

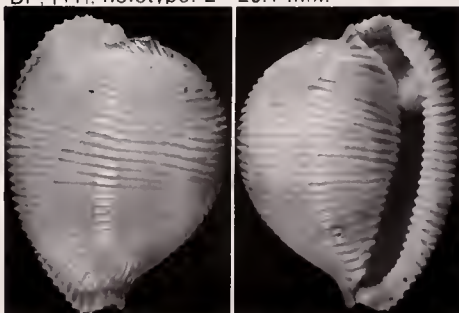
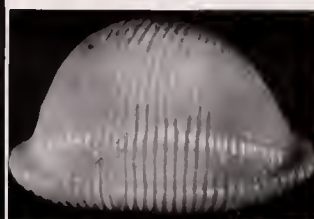


Fig. 46a: *Robertotrivia opalina*:
DP, [42], holotype: L—20.0 mm.



***Robertotrivia* Cate, gen. nov.**

Type species: *Trivia eos* Roberts, 1913.

The shells of this new triviid genus are unusually large, seemingly unlike any other members of the Triviinae Troschel, 1863, with a well-developed funicular projection on the posterior base.

Etymology.—This new generic name honors Sherwood Raymond Roberts (deceased, formerly of ANSP), who not only described the type species, but made many other important contributions to malacology.

39. *Robertotrivia eos eos* (Roberts, 1913)

(Fig. 43; holotype, from type fig.)

1913 *Trivia eos* Roberts, Nautilus 26: 99; pl. 7, figs. 10–11.

1932 *Pusula (Ellatrivia) eos*. Schilder, Cypr. Fossil. Cat. 1 Animalia (pars 55) Berlin: 94.

1941 *Pseudotrivia eos*. Schilder, Arch. für Moll. Bd. 73: 74.

1963 *Trivia (Pseudotrivia) eos*. Shikama and Hori-koshi, Select Shells of the World: 43.

Original description.—“*Trivia eos* . . . Shell globosely ovate with rounded base, white, rather finely ribbed. Dorsal line indicated by a narrow smooth area from which ribs diverge in every direction, a few being interposed on both sides; posteriorly they pass directly over the spire, which projects well, showing five whorls. On the ventral side spiral ribs have an oblique trend and extend well into the aperture, where they decrease in number and become coarser. The aperture is rather narrow, but slightly wider anteriorly, outer lip thickened outside, strongly ribbed transversely, with about 29 ridges forming teeth on the inner margin; retracted anteriorly. The inner lip bears a very small callous [funiculum] projection above, and near the base there is a rounded ridged lobe projecting inward” (Roberts, 1913: 99).

Measurements, holotype.—Length 25.7, diam. 20, alt. 17 mm.”

Measurements, hypotype.—L – 26.7; W – 20.9; H – 17.5 mm (Sagami Bay).

Measurements, hypotype.—L – 24.0; W – 16.5; H – 15.5 mm (Tosa Sea) (Fig. 43a): this hypotype shell is in the Kawamura coll., (Habe, *in litt.*).

Type locality.—“Habitat Boshu, Japan (Hirase).”

Distribution.—Awa [Boso Penin.], Chiba pref., Honshu, Japan [hypotype 1]; (Habe, *in litt.*). Japan, generally: Kasima, S coast of Honshu; Hachijo Islands; the species seems to range from the Boso Penin. waters in the north, to Shikoku in the south; living on a sandy bottom.

Holotype.—Formerly in the Hirase collection; however: “Hirase's collection was destroyed by the fire in World War II, therefore, no type specimens were retained . . .” (Habe, *in litt.*).

Discussion.—Roberts wrote: “This magnificent *Trivia* is named for the ‘Sunrise Kingdom’ [Japan]. In size it is approached only by *T. oniscus* Lam. of South Africa, which however differs by its pink color, larger smooth dorsal area, fewer ribs, shorter spire, and especially by its much wider aperture, as in other

members of the South African group of Trivias, to which *T. eos* has but little affinity. It should be noted that the irregularity on the left side of fig. 10 [Fig. 43] is wholly an effect of light in the photograph, as that slope of the shell is perfect and evenly curved.”

Although the holotype of this species has been destroyed by fire, as previously mentioned, it seems unnecessary at this time to designate a neotype.

There are 2 fossil subspecies: *Dolichupis (Trivellona) eos shimajiriensis* MacNeill, 1960; and *Pseudotrivia eos pleres* Hatai and Nisiyama, 1948.

Etymology.—The Greek noun, *eos*, means dawn, morning, early or east.

40. *Robertotrivia kiiensis* Kuroda and Cate, sp. nov.

(Figs. 44, 44a: holotype)

Description.—Shell large, broadly ovate, light weight in construction though strong, bulbously inflated. Terminals: protrude in front, flaringly so adapically. Apex prominent. Dorsum shiny, semicircular from one side-margin to the other, continuing over left side to columella without deviation; dorsum tapering rather abruptly to the apex, more gently so to the front. Base subovate, convex, a rounded continuation of the upper shell. Funiculum a small quarter circle, semi-cuplike protuberance, with a body-whorl base smooth and glossy. Aperture long, fairly evenly narrow, curving gently at either end. Columella only barely concave, narrow, well defined along columellar margin of base, becoming more pronouncedly elevated on front base toward, and terminating as the front terminal ridge. Fossula, an extension of the columella, broad, very deep, and only partially ribbed. Outer lip narrowly corded, roundly thickened, weakly shouldered above. Shell ribbing rather fine (for size of shell), numerous overall. There is no longitudinal dorsal line, except for a very minute indication of a line on the rear third of the dorsum (cf. Fig. 44a); body whorl ribbing is continuous from one side of aperture, over dorsum, to other side of aperture, including, on the left, the columella and the upper half of the fossula; longitudinal ribbing is on front terminal collar, but differs on the back enveloping the apex as well. Shell color is a pale ivory-white overall.

Measurements, holotype.—L – 19.2; W – 14.8; H – 12.6 mm (Fig. 44a).

Type locality.—Kii Channel, S Japan, in deep water (34° 00' N; 134° 48' E).

Holotype.—NSMT, presently without number, but bearing the author's working number (C4273).

Discussion.—This new triviid species may be compared with *Robertotrivia eos* (Roberts, 1913), from which it differs in a number of ways. *Robertotrivia kiiensis* Kuroda and Cate is a more narrowly ovate shell; the rear reflection of the outer lip is more longitudinally pronounced; the total area of the fossula is different, deeper, with sharper definition; the width of the outer lip cording is more evenly narrow, and there is no dorsal line.

This and the following new species (species 39 to

41) were sent to the author by Dr. Kuroda, for evaluation and description. The new names were suggested by him.

41. *Robertotrivia speciosa* Kuroda and Cate, sp. nov.

(Figs. 45, 45a: holotype)

1963 *Trivia* (*Pseudotrivia*) sp. Shikama and Hori-koshi, Select. Shells of the World; 43; fig. 66.

Description.—Shell large, roundly ovate, bulbously inflated, light-weight in form, though strong. Terminals produced, narrowly and acutely in front, with an unusual narrow, longitudinal flaring of the adapical outer lip. Apex prominently elevated. Dorsum evenly elevated, roundly inflated, with no indication of a medial dorsal line (as observed in *Robertotrivia kiiensis* Kuroda and Cate); dorsum tapering abruptly toward the apex, more gradually so to the front. Base somewhat narrowly ovate, convex, becoming gradually narrow abapically. Funiculum, on the rear base, prominently elevated, ribbed, providing the left adapical wall for canal outlet. Aperture somewhat broad for the genus, curving evenly throughout, with a flanged, ribbed terminal ridge anteriorly. Columella fairly broad, concave, evenly so from front to back longitudinally, widening restrictedly in front to form an unusual laterally situated pocket-like fossula. Outer lip comparatively broad, convex, exceedingly heavily, transversely ribbed. Shell ribbing numerous overall, coarse; ribbing transversely continuous from one side of the aperture, around the shell to the other, terminating as strong, sharp teeth at apertural edge of outer lip, crossing base and columella ribs terminating equally strongly and sharper on inner adaxial columellar ridge; ribs appearing laterally on front and rear terminal approaches. Shell color is pale ivory overall.

Measurements, holotype.—L – 20.1; W – 15.3; H – 12.9 mm.

Measurements, paratype.—L – 20.7; W – 14.8; H – 12.8 mm (Fig. 45b).

Type locality.—Kii Channel, S Japan (34° 00' N; 134° 48' E).

Holotype.—NSMT, without catalog number, but bearing the author's number (C4276); the paratype is No. C4275.

Discussion.—This new triviid species differs from *Robertotrivia kiiensis* Kuroda and Cate (herein), by having a slightly larger shell form; by having a more lengthened flaring of the posterior outer lip; by having a less curving, differently structured outer lip; the funiculum on the rear base is more massive, more elevated; it has a more deeply concave, differently formed columella, with an unusual lateral pocket-like fossula, and the shell ribbing is more coarse, especially noticeable on the outer lip.

Etymology.—The Latin adjective, *speciosus*, means beautiful, splendid, showy.

42. *Robertotrivia opalina* Kuroda and Cate, sp. nov.

(Figs. 46, 46a: holotype)

Description.—Shell large, shiny, roundly inflated, semi-pyriform. Terminals protruding, slightly arched, ventrally reflected anteriorly; narrowly, mostly unflaring, ventrally reflexed posteriorly. Base broad, convexly ovate, roundly inflated. Apex only barely protruding. Funiculum well developed, seemingly a continuation of adapical outer lip as it circles onto rear base; funiculum externally ribbed, sharply dentate on its edge, inner surface smooth, polished; funiculum also serving as rear wall of posterior canal. Aperture long, narrow, widening somewhat toward the front, curving at the back. Columella undulating front to back, concave. Fossula a continuation of the columella, which becomes broader, deeper, with an elevated, arched interior carinal wall. Outer lip curving, narrow, cordlike, broadest centrally, shouldered above. Shell numerous ribbed overall, without a longitudinal dorsal medial line; external edges of inner and outer fossular walls, front and rear terminal edges, adaxial columella ridge, and apertural edge of outer lip, conspicuously sharply dentate; otherwise columella, side-margins, dorsum, base and ventral surface of outer lip very finely, numerous striated with fine ribbing. Shell color is pale ivory overall.

Measurements, holotype.—L – 20.0; W – 15.0; H – 13.0 mm.

Type locality.—Tosa Sea, in 185 metres of water, S Japan (33° 20' N; 133° 45' E).

Holotype.—NSMT, without catalog number; however, the type bears the author's number C4274.

Discussion.—This new triviid species may be compared with *Robertotrivia kiiensis* Kuroda and Cate (herein), from which it differs in having a slightly larger, more pyriform shell form; by having a more restricted, less flaring adapical outer lip process; by having a less elevated spire, and a longer protruding adapical terminal beak; in having a straighter, narrower aperture with a more mature, ribbed, dentate funicular process, and having a more numerous display of finer ribs and teeth on the outer lip.

Etymology.—The new name is an adjective derived from the Latin noun, *opalus*, precious.

Niveria Jousseaume, 1884

Naturaliste 1884: 415

Type species [OD]: *Cypraea nivea* Gray, 1824, Zool. J., 1824, 1: 420.

Niveria Jousseaume, 1884

Bull. Soc. Zool. France 9: 100.

Type species [OD]: *Cypraea nivea* Gray, 1824 (preoccupied).

Trivia nix Schilder, 1922 (nom. nov.).

“Genre *Niveria* . . . Coquille globuleuse cerclée de stries irrégulières, très peu déprimée [sic] en dessous; ouverture subcentrale, courbée, étroite; bord columellaire large et déprimé par un sillon longitudinal concave, plissé près du canal, où il forme comme dans la *C. childreni*, une petite lamelle assez saillante” (Jousseaume, 1884: 20).

“Genus *Niveria* . . . Shell globose, circled with

irregular striae, very lightly depressed underneath; aperture subcentral, curved, straight; columella lip broad and depressed by a concave longitudinal furrow, folded near the canal, where it forms, as in *Cypraea childreni*, a small rather projecting lamella" (translation by Jean Cate). (See Schilder, 1939: 173 [27].)

43. *Niveria (Niveria) quadripunctata quadripunctata* (Gray, 1827)

(Fig. 47: lectotype herein)

- 1826 *Cypraea rosea* Blainville, Dict. Sci. Hist. Nat. 43: 33 (name preoccupied by a primary homonym).
 1827 *Cypraea 4-punctata* Gray, Zool. Journ. 3: 368.
 1827 *Cypraea quadripunctata* var. *immaculata* Gray, Zool. Journ. 3: 368 (preoccupied).
 1843 *Cypraea rotunda* Kiener, Spec. Icon. Coq., *Cypraea*: 141 (128); plt. 53, fig. 2 (Fig. 48: type fig.).
 1928 *Trivia quadripunctata*. Faustino, Phil. Mar. Moll.: 220 (cited with a "?").

Original description.—"Cypraea 4-punctata . . . Testâ ovatâ, ventricosâ, roseâ, punctis quatuor fuscis notatâ; striis longitudinalibus confertis, laevibus; lineâ dorsali angustâ, impressâ; basi convexâ; aperturâ lineari arcuatâ; dentibus aequalibus."

"Shell ovate, ventricose, rose-coloured, with 4 small brown dots, one of which is at each end of the dorsal line, and one on each side, the front one being on the right side, and the hinder on that next to the spire, or the left; the longitudinal striae are narrow, smooth, and very close together; the dorsal line is deep and narrow; the base is convex; the mouth is linear, curved at both ends, as long as the shell and the covered rather convex spire; the outer lip is thickened on the outside, and margined; the teeth are very small, and close together" (Gray, 1827: 368-369).

Measurements, holotype.—"Length $\frac{3}{10}$, breadth $\frac{2}{10}$ of an inch" [8.0, 5.0 mm].

Measurements, lectotype.—L = 8.1 mm (Way, *in litt.*).

Measurements, hypotype 1.—L = 6.8; W = 5.2; H = 4.4 mm (C3763; Fig. 47a).

Measurements, hypotype 2.—L = 7.4; W = 5.3; H = 4.4 mm (C3659).

Type locality.—Not recorded; designated herein as Lower Matecumbe Key, Florida Keys (approx. 24° 40' N; 81° 10' W); leg. Humbert Porreca, 24 March 1969 (C3659).

Distribution.—Cardenas, Cuba; Matecumbe Bay, Florida; Yucatan, Central America (Schilder, 1941); Gulf of Mexico; Galveston, Texas; Tampico; Florida east coast; Bermuda; West Indies.

Lectotype herein.—BM(NH) Register No. 197630; it is one of 15 possible syntypes (Way, *in litt.*): designated herein to stabilize this species.

Discussion.—Gray commented: "This shell is very rarely destitute of the four small dorsal spots. When young it is of a most beautiful purplish rose colour,

quite smooth, and polished, with a very few obscure concentric wrinkles." There is also a fossil species: *Trivia suffusa* var. *sancti-dominici* Maury, 1917.

44. *Niveria (Niveria) hybrida* (Schilder, 1931)

(Fig. 49: holotype)

1931 *Trivia (Niveria) hybrida* Schilder, Arch. Mollusk. 63: 42; plt. 3, fig. 2.

Original description.—"Trivia (*Niveria*) *hybrida* . . . Schale oblong, E. wenig vorgezogen, wie AR. gerandet, B. konvex, Rippen distant, scharf, etwas uneben, an der langen, mässig tiefen R.-Furche zwar ein wenig verdickt, aber meist nicht unterbrochen, Zwischenräume überall fein gekörnt; M. ziemlich weit, beiderends erweitert, VE. der AL. decliv-ausgebogen, AZ. dicht, IZ. distant, in M. hineingerundet, Foss. und Col.-Furche beim Typus abgebrochen, aber zweifellos breit gewesen, R. etwas durchscheinend, weisslich, mit 3 kleinen hellroten Flecken an der R.-Furche (rechts vor der Mitte, links knapp hinter der Mitte und am Hinterende der Furche), S. und B. blass lilarosa angehocht" (Schilder, 1931: 43).

Description.—Shell of medium size, evenly oblong-ovate (type specimen appears to be slightly worn dorsally), lightly formed. Terminals large, inconspicuous, dorsally ribbed, not protruding beyond peripheral outline of shell. Dorsum subglossy, with a shallow, longitudinally impressed median dorsal furrow; dorsum is numerous (17) rather smoothly ribbed; ribs do not cross dorsal furrow but traverse both sides of dorsum to either side-margin, where ribs, in an unbroken continuation, cross both base and outer lip, terminating on the inner of both as distinct teeth; short ribs extend out over both terminal areas. Base convex, narrowly ovate, subglossy, with very large, heavy, widely spaced ribs (10). Aperture very broad, almost straight; canals are open anteriorly, semiclosed in back. Columella wide, barely deepened, mostly without ribs. Outer lip is fairly wide, convex, strongly formed, with numerous (20) ribbed teeth. Shell color: base and sides rosy-lilac; there only three pale dorsal spots, one on either side of dorsal furrow, the other on the posterior end of furrow; otherwise, off-white dorsally.

Measurements, holotype.—"8.2—66/60—19.12—43:27" (this Schilder dimensional formula is explained in 'Senckenbergiana,' Band 10: 265 [1928]).

Measurements, holotype.—L = 8.3 mm (Kiliass, *in litt.*).

Type locality.—"Unikum (Vaterland?)."

Distribution.—According to Schilder (1941: 75): West Indies and the shores of Yucatan [SE Mexico; British Honduras; and N coast of Guatemala].

Holotype.—ZMB, Schilder collection, No. 158 (Kiliass, *in litt.*).

Discussion.—Schilder: "Verbindet *T. (N.) pediculus* (Linn.), mit *quadripunctata* (Gray): mit ersterer hat *hybrida* die distanten [inner (columella) teeth], [dorsal side] und [dorsal edge] gemein, mit letzterer die dichten [exterior (outer lip) teeth], die [dorsal sulcus] Zeichnung."

Etymology.—Latin noun, *hybrida*, means mongrel.

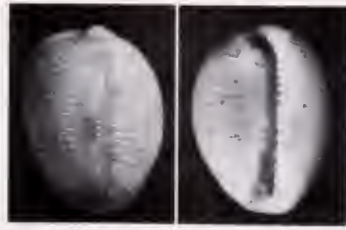


Fig. 47: *Cypraea 4-punctata*:
BM(NH) photo, [43], lectotype: L—8.0 mm.

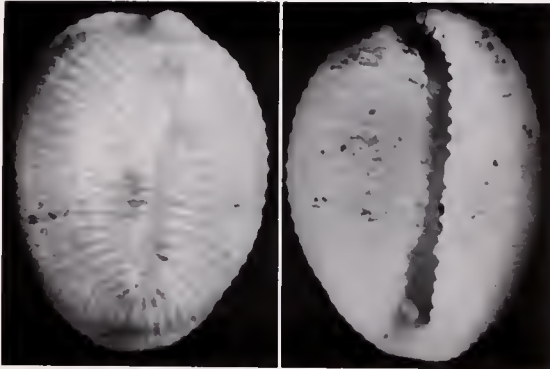


Fig. 47 (enlarged $\times 8$)
[43], DP.

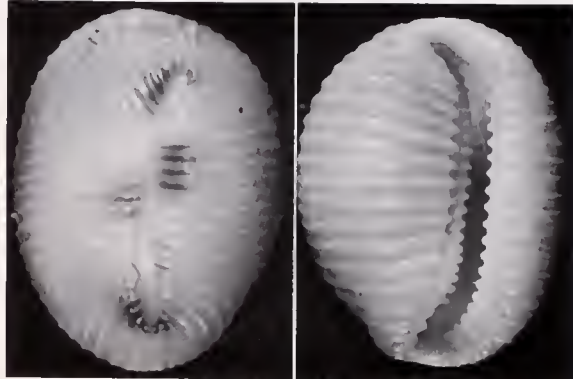


Fig. 47a: *Niveria (Niveria) quadripunctata quadripunctata*:
DP, [43], hypotype: L—6.8 mm.

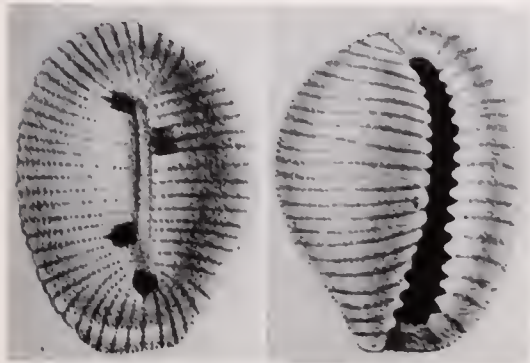


Fig. 48: *Cypraea rotunda*:
DP, [43], type fig.: $\times 4$.

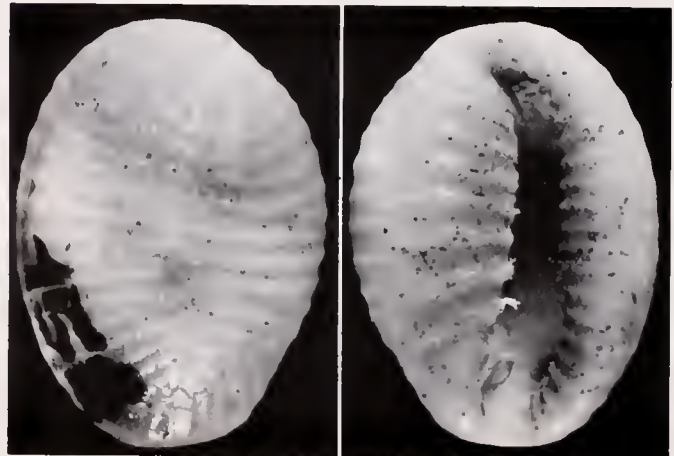


Fig. 49: *Trivia (Niveria) hybrida*:
ZMB photo, [44], holotype: L—8.3 mm.

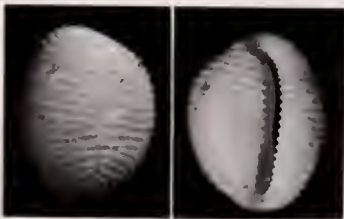


Fig. 50: *Cypraea nivea*:
BM(NH) photo, [45], holotype: L—10.1 mm.

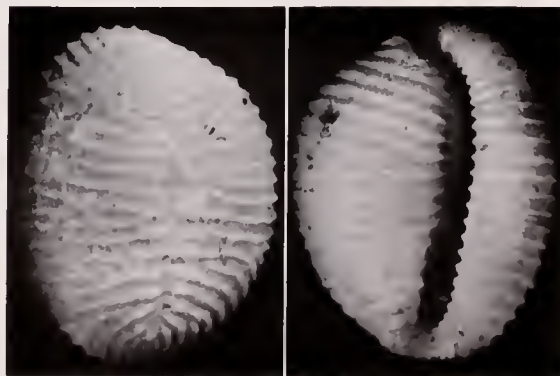


Fig. 50a: *Niveria (Niveria) nix*:
BM(NH) photo, [45], holotype: L—10.1 mm.

45. *Niveria (Niveria) nix nix* (Schilder, 1922)

(Figs. 50, 50a: lectotype herein)

1832 *Tri. Nivea* Gray, Descr. Cat. Shells, *Trivia*: 15 (invalid: proofs only, not published) [June, 1832].1832 *Cypraea nivea* Sowerby II, Conch. Illustr., Cypraeidae: 13 (122); fig. 38* (Fig. 50: possible syntype) [Probably it means he had 2 species numbered 38, so he used an asterisk for 1: Keen] (name preoccupied).1838 ? *Cypraea grando* Potiez and Michaud, Galer. Moll. Mus. Douai 1: 481 (interpretation of this species is in doubt).1922 *Trivia nix* Schilder (nom. nov.), Proc. Malac. Soc. London 15: 103, 111.

Original description.—"Tri. Nivea . . . Shell sub-globose, thin, pellucid white, with high sharp ribs; interspaces rugulose; dorsal groove narrow; extremities rounded" (Gray, 1832: 15).

Description.—Shell fairly large, thickly formed, somewhat roundly ovate. Terminals only just projecting, mostly so posteriorly, off-center to the left. Dorsum is convexly elevated. Base long, though fairly broad centrally, convex, ovate. Aperture straight, narrow, with an abrupt curving left adapically. Columella straight, deeply concave, becoming even deeper and broader as a fossula in front. Outer lip fairly wide, convex. Shell ribbing comparatively coarse, numerous overall, with a weak dorsal longitudinal median furrow; dorsal ribbing, from either side-margin, terminating at medial furrow as thickened, flattened pustules; ribs continuing from either side: to the left over base, crossing columella as weak to nearly obsolete lines to inner adaxial edge; to the right over ventral surface of lip, terminating as bold, sharp denticles at apertural edge. Shell color a pellucid off-white.

Measurements, possible (nivea) syntype.—L = 10.1 mm (Way, in litt.).

Type locality.—"India."

Distribution.—(Schilder, 1941: Cuba; Grand Cayman; Jamaica; Barbados, Trinidad (Gulf of Paria); Curaçao (Margarita Island, Venezuela); Bahama Islands; Florida (east coast, Tampa).

Lectotype.—(*nivea* Sowerby II): BM(NH), Register No. 1975636; 1 of 4 possible syntypes (Way, in litt.).

Discussion.—According to Schilder, 1922: 110: "The name of this species, described as a *Cypraea*, is preoccupied by *Cypraea nivea* Bolten (1798, =?), *nivea*, Dill. (1817, = *Trivia oryza*, Lam., var.), *nivea*, Gray (1824, = *Cypraea eburnea*, Barn., or *turdus*, Lam., var.), *nivea*, Sow. (1825, = *Trivia oryza*, Lam.), and *nivea*, Wood (1828, = *C. lutea*, Gron., var.). Therefore it must be changed; the species having only one synonym, *scabriuscula*, Kien. (1845) nec Gray (1827), I propose *Trivia nix*, m. nov. nom."

Etymology.—*Nivea*, from the Latin adjective, *niveus*, meaning of snow; *nix* is the Latin noun, meaning snow.

There is a fossil subspecies: *Niveria (Niveria) nix apenninica* Schilder, 1941.

46. *Niveria (Niveria) pacifica* (Sowerby II, 1832)

(Fig. 51: Sowerby type fig.)

1832 *Cypraea pacifica* Sowerby II, Conch. Illustr., Cypraeidae: 13 (125): 13; fig. 39.1971 *Trivia (Niveria) pacifica* (Sowerby, 1832, ex Gray MS) Keen, Sea Shells of Tropical West America: 486; fig. 903.

Original description.—"Shell ovato-oblong, brown, with minute dots and four squarish darker brown alternating spots on the sides of the narrow dorsal groove [sic.]; ribs narrow, rather close set; sides rather thickened, rose coloured, base and teeth white" (Sowerby II, 1832: 13).

Measurements, holotype.—"Length 0.4, breadth 0.25."

Measurements, hypotype.—L = 8.0; W = 5.0; H = 4.1 mm (C2454); (Fig. 51a).

Type locality.—Not recorded (Sowerby II, 1870; pl. 34, figs. 441–443, records the Galápagos Islands).

Distribution.—San Juan del Sur, Nicaragua (C2454): 35–45 feet [11–14 metres] N Seymour Island, Galápagos Islands; 21 March 1971, Ameripagos Exped. (The Festivus [Nov. 1976], Vol. 7: 61; fig., *Pseudocypraea adamsonii* (Sowerby II, 1832) [identification error], should have been: *Niveria (Niveria) pacifica* (Sowerby II, 1832)). Schilder, 1941: Payta [Peru]; Sechura Bay, Ecuador; Panama Bay [Pacific Panama]; Esmeraldas, NW Ecuador; Buenaventura, W Colombia; Galápagos Islands; Magdalena Bay, W Baja, and Cape San Lucas, La Paz, SE Baja California Sur.

Holotype.—Location unknown.

Discussion.—Kiener (1843: 148), in reference to this species commented: "Jolie espèce qui a quelque ressemblance avec la *Cypraea australis* et la *Cypraea armandina*; cependant elle en est distincte, principalement par la forme de son échancrure supérieure qui est subitement relevée vers la spire."

"Pretty species which has some resemblance to *Cypraea australis* and *Cypraea armandina*; however, it is distinct from those, principally by the upper furrow which is suddenly turned up against the spire" (translation by Jean Cate).

Sowerby II, 1870; *Cypraea*: 45, compares *Cypraea pacifica* Sowerby II, 1832, with *C. suffusa* Gray, 1827. Although this triviid species is somewhat uncommonly found in the field, it really poses little difficulty in its identification (cf. Fig. 51a).

47. *Niveria (Niveria) suffusa suffusa* (Gray, 1827)

(Fig. 52: lectotype herein)

1827 *Cypraea pediculus* var. *suffusa* Gray, Zool. Journ. 3: 370.1838 *Cypraea armandina* Potiez and Michaud ex Duclos MS, Galer. Moll. Mus. Douai 1: 475, 502.1843 *Cypraea armandiana* "Duclos". Kiener, Spec. Icon. Coq. Viv. *Cypraea*: 140 (127); pl. 46, figs. 2–2a; (Fig. 157).



Fig. 51: *Cypraea pacifica*:
DP, [46], type fig.: $\times 5\frac{1}{2}$.

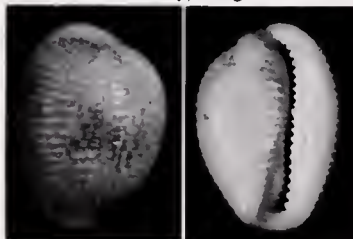


Fig. 52: *Cypraea pediculus* var. *suffusa*:
BM(NH) photo, [47], lectotype: L—11.1 mm.

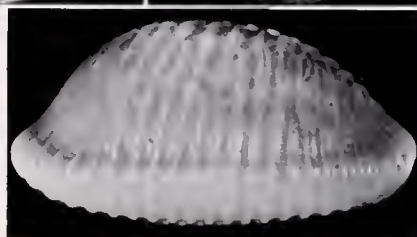
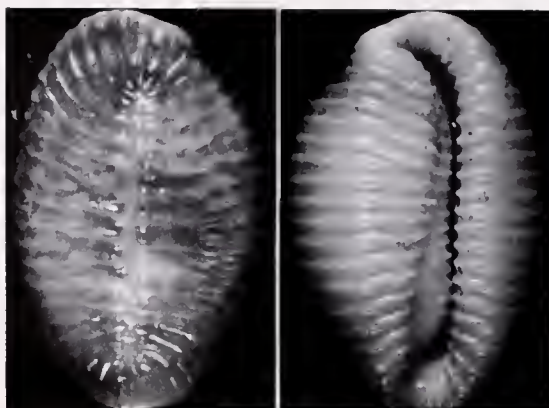


Fig. 51a: *Niveria (Niveria) pacifica*:
DP, [46], hypotype: L—8.0 mm.

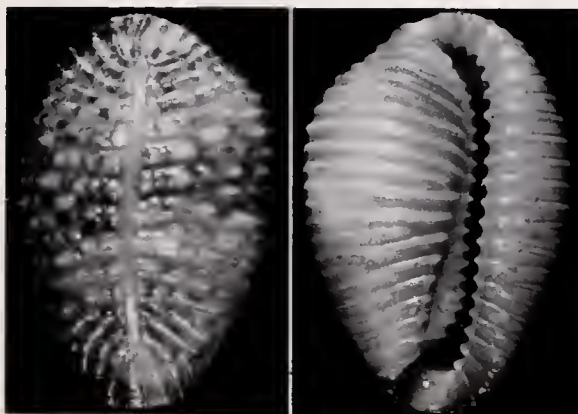


Fig. 52a: *Niveria (Niveria) suffusa*:
DP, [47], hypotype: L—7.5 mm.

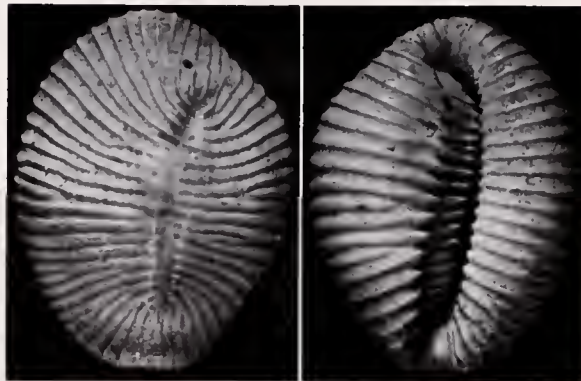


Fig. 53: *Trivia floridana*:
DP, [47], holotype: L—11.1 mm.

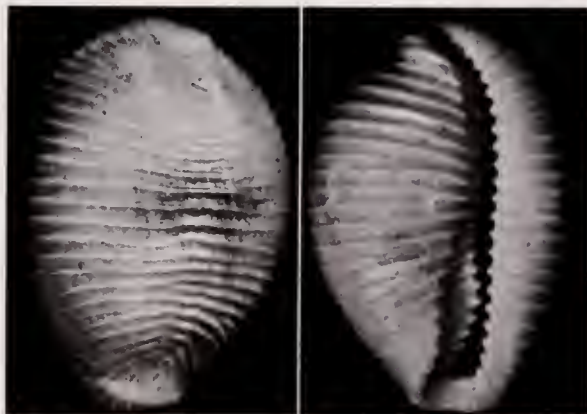


Fig. 54: *Cypraea maugeriae*:
BM(NH) photo, [48], lectotype: L—12.7 mm.

- 1870 *Cypraea suffusa* var. *pullata* Sowerby II, Thes. Conchyl. 4, *Cypraea*: 45; figs. 446–447.
 1974 *Trivia suffusa*. Abbott, Am. Sea Shells (ed. 2): 148; fig. 1625 [= *Cypraea pediculus* Linnaeus, 1758].

Original description.—"Cypraea pediculus var. *suffusa* . . . Testá ovatá, ventricosá, albido-rubellá, punctis sex fuscis maculatá; striis longitudinalibus, confertis, subgranosis; lineá dorsali angustá, impressá; basi carnescente, planiusculá; aperturá lineari, posticé subproductá; dentibus aequalibus. Var. Maculis dorsalibus suffusis, confluentibus" (Gray, 1827: 370).

Description, hypotype.—Shell somewhat elongate, varying in size from small to medium large, and evenly, regularly ovate. Terminals only barely produced: broad, shovel-like adapically, somewhat squared in front. Base narrowly ovate, convex. Columella comparatively wide, shallow, becoming broader, deeper in front to form a substantial fossula; fossular adaxial wall noticeably elevated, arched. Aperture fairly wide, especially in front; longer and broader centrally. Shell ribbing numerous overall, rather coarse, with a longitudinal dorsal median furrow; interrupted dorsal ribs granulate, almost pustulate, and numerous over side-margins on the left, over base, columella to inner adaxial ridge; on the right traversing outer lip to apertural edge, and terminating as sharp, projecting teeth. Shell color varies: basic shell color is a rich rosy-beige; on either side of the dorsal furrow there are 2 very large, uneven pale brown blotches of color; additionally the dorsum is numerously dotted with variously sized smaller brown spots; the dorsal pseudopustules are white, the base is off-white (C3762: Fig. 52a).

Measurements, holotype.—"Length $\frac{5}{10}$, diameter $\frac{4}{10}$ of an inch"; [= L – 12.5; W – 10.1 mm].

Measurements, lectotype.—L – 11.1 mm; 1 of 10 syntypes (Way, in litt.).

Measurements, hypotype 1.—L – 7.5; W – 4.9; H – 4.3 mm (C3762).

Measurements, hypotype 2.—L – 9.1; W – 6.3; H – 5.2 mm (C3762 lot).

Type locality.—"Inhabits West Indian Ocean. Jamaica, Barbados . . ."

Distribution.—Barbados, West Indies (C3762). Schilder, 1941: All Saints Bay, Bahía, and Aracaju, E Brazil; Abrolhos Islands, off Caravelas, S Bahia, Brazil; and on both coasts of Florida; Tampico, E. Mexico; Galveston, Texas.

Lectotype.—BM(NH) Register No. 1975638; 1 of 10 syntypes (Way, in litt.).

Holotype, floridana.—ANSP No. 18611 (L – 11.1 mm); loc. St. Petersburg, Florida.

Discussion.—Gray referred to *Cypraea suffusa* simply as a variety of *C. pediculus* Linnaeus, 1758, saying: "The variety is smaller and less ventricose; the ribs are rugose and in a slight bend near the dorsal line, which is narrow and deep. The back of the shell is mottled with reddish-brown dots, which in some specimens are more crowded, where the spots are placed in the other variety [pediculus]. It may probably prove a species."

Etymology.—The verb *suffuse* means over-spread [in this case, with pale, uneven brown blotches].

There are 2 fossil species: *Pusula (Niveria) jamaicensis* Schilder, 1932; *Trivia floridana* Olsson and Harbison, 1953 (Fig. 53: holotype).

48. *Niveria (Niveria) maugeriae* (Sowerby II, 1832) (Fig. 54: lectotype herein)

1832 *Trivia maugeri* Gray, Descr. Cat. Shells: 13; (nom. nud.: proof sheets only).

1832 *Cypraea maugeriae* Sowerby II, Conch. Illustr., Cypraeidae: 12 (111); fig. 30 [an emendation].

1833 *Cypraea maugeri*. Gray, Proc. Zool. Soc. London 2 (1832): 185.

1971 *Trivia (Niveria) maugeriae* (Sowerby, 1832, ex Gray MS). Keen, Sea Shells of Tropical West America: 486; fig. 902.

Original description.—"Tri. *Maugeri* . . . Shell oblong, thin, pellucid, rosy, with three darker bands; ribs thin, continued, rather distant; lips white. Varies: dorsal groove distinct" (Gray, 1832: 13 [not published]).

"*Cypraea maugeriae* . . . Shell oval, thin, pellucid, rose coloured, with darker ends and a central dorsal blotch; ribs thin, numerous, rather close; under side white, outer lip rather narrow; lips whitish, teeth sharp" (Sowerby II, 1832: 12).

"*Cypraea maugeriae* . . . C. testá subpyriformi, ovatá, fulvo-rosaceá; dorso rotundo, maculis grandibus tribus medianis obscurè tincto; costellis tenuibus, subflexuosis, ad sulcum nodosis; sulco angusto; margine dextro reflexo, roseo; basi convexá; columellá anticé et posticé varicosá; sulco columellari lato, dentato anticé expanso; aperturá latá" (Sowerby II, 1870: 43–44).

Measurements, holotype.—"Length 0.5, breadth 0.35 [probably of an inch = 12.7; 9.0 mm].

Measurements, lectotype.—L – 16.6 mm (Way, in litt.).

Type locality.—Not recorded by Sowerby II, 1832; however, Sowerby II, 1870 records: Galapagos [Is.]; and figures the species, figs. 450–451.

Distribution.—Schilder, 1941, records Galapagos Islands (possibly from the Sowerby II, 1870 record). The author has not seen this species; there may be some question as to the true locality.

Lectotype.—BM(NH) Register No. 1875641; the figured specimen is 1 of 4 syntypes (Way, in litt.).

Discussion.—In 1870: 43–44, Sowerby II commented: "The specimen here figured [figs. 450–451] from the collection of Miss Saul [Miss Jane Saul (1807–1895), Limehouse, collection now in University Museum of Zoology, Cambridge, England] is the finest known. It is described by Mr. Gray as intermediate between *australis* and *rosea*."

49. *Niveria (Niveria) pediculus pediculus* (Linnaeus, 1758)

(Fig. 55: lectotype herein)

1758 *Cypraea pediculus* Linnaeus, Systema Naturae (ed. 10): 724.

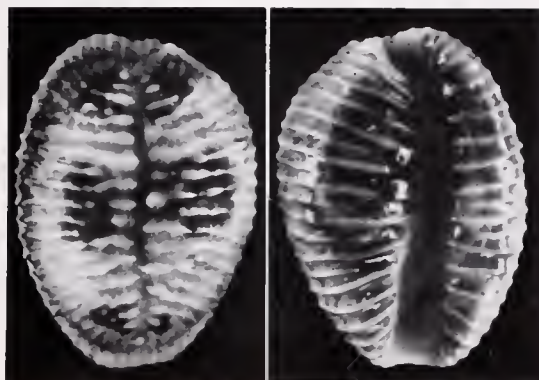


Fig. 55: *Cypraea pediculus*:
Heppell photo, [49], lectotype: L—12.1 mm.

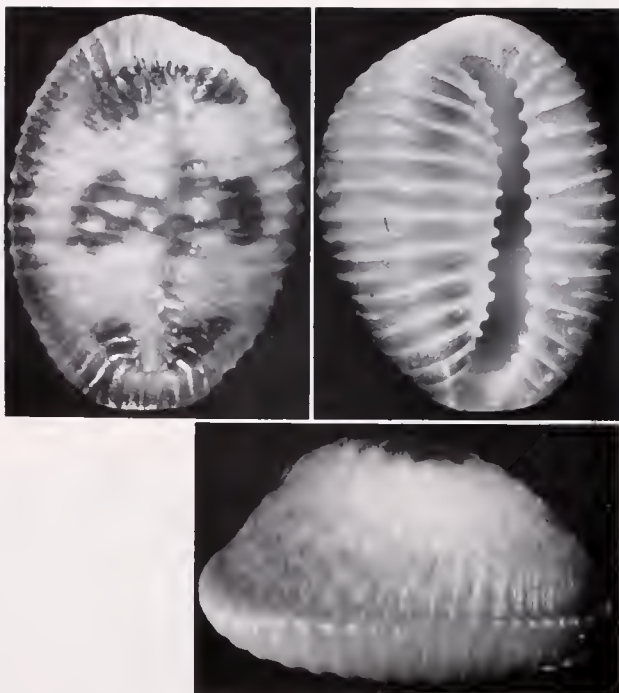


Fig. 55a: *Niveria (Niveria) pediculus*:
DP, [49], hypotype: L—13.1 mm.

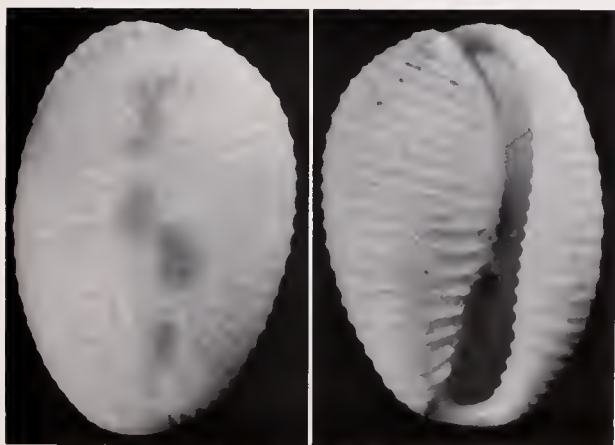


Fig. 56: *Triviella merces*:
AM photo, [50], holotype: L—14.0 mm.

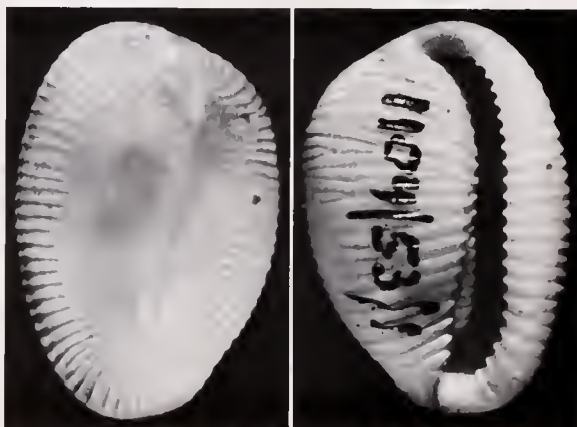


Fig. 57: *Cypraea australis*:
MHNG photo, [50], holotype: L—14.0 mm.

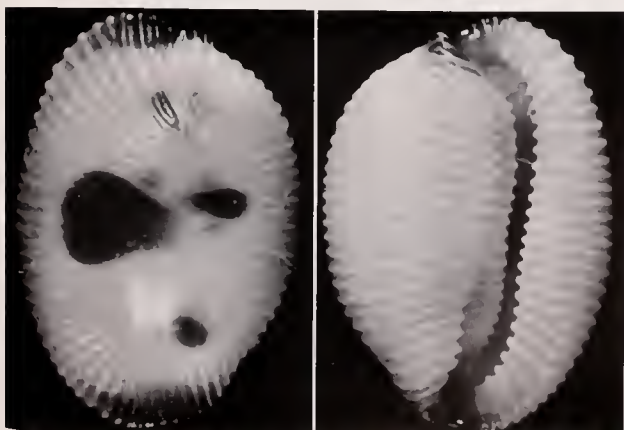


Fig. 58: *Niveria (Ellatrivia) memorata*:
DP, [51], hypotype: L—12.5 mm (SE Australian form).

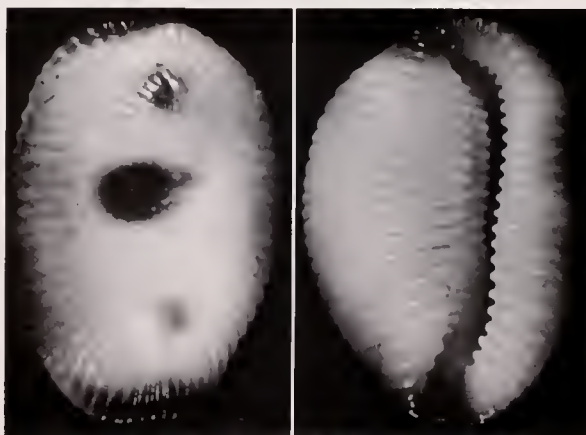


Fig. 58a: *Niveria (Ellatrivia) memorata*:
DP, [51], hypotype: L—10.8 mm (W Australian form).

- 1767 *Cypraea pediculus* forma *indica* Linnaeus, Systema Naturae (ed. 12): 1180; (name not established in a valid way).
 1778 *Cypraea pisum* Meuschen, Index Mus. Gronoviani: 108; (nonbinomial).
 1781 *Cypraea pisum*. Meuschen, in Gronow, Zoophyl. Gronov. 3, Index: 13; (nonbinomial).
 1798 *Cypraea oniscus* Röding, in: Bolten, Mus. Boltinianum: 24.
 1798 *Cypraea pulex* Röding, in: Bolten, Mus. Boltinianum: 24; (nom. nud.) (Fig. 166).
 1807 *Cypraea pulex*. Link. Besch. Nat. Samml. Rosstock 2: 92.
 1817 *Cypraea sulcata* Dillwyn, Descr. Cat. Shells 1: 466.
 1838 *Cypraea pediculus* var. *minor* Schluter, Kurzgef. Syst. Verz. Conch. Samml.: 25; (invalid, homonym, fide Schilder, 1971).
 1877 *Trivia pediculus* var. *picturata* Mörch, Malak. Blatt 24: 49; (name invalid, fide Schilder, 1971).
 1922 *Cypraea restituta* Sullioti, Commun. Malac. 5: 14.
 1927 *Triviella gamma* Mestayer, Proc. Malac. Soc. London 17: 188; fig. 5 (Fig. 172: holotype); (interpretation of name in doubt).
 1953 *Trivia (Trivia) pediculus* (Linné), Olsson and Harbison, Plioc. Moll. S. Florida, Acad. Nat. Sci. Phila. Monogr. 8: 365; pl. 60, figs. 1, 1a; (Fig. 169).

Original description.—"Cypraea pediculus . . . C. testa transversim sulcata" (Linnaeus, 1758: 724).

Gray, 1832: 15: "*Trivia pediculus* . . . Shell ovate, pale reddish, with six square black dorsal spots; ribs rather thick, sub-rugose, crowded; dorsal line narrow; base reddish. . . West Indies."

Measurements, holotype.—Not recorded.

Measurements, lectotype.—L – 12.1; W – 8.7 mm (Heppell, *in litt.*).

Measurements, hypotype.—L – 13.1; W – 9.9; H – 7.8 mm (C3672; Fig. 55a).

Type locality.—"Habitat in Jamaica, Europa." Subsequent research has shown this species restricted to the Caribbean Sea, Gulf of Mexico, and both coasts of Florida.

Distribution.—West Indies to Yucatan; SE Mexico; E and W Florida; Bermuda; Puerto Rico (C3672).

Lectotype.—LSL, syntype No. 14 Linnaeus collection (Heppell, *in litt.*); Fig. 91: type 'Lot.'

Discussion.—The characteristic dorsal color blotches, while seemingly constant in position longitudinally often vary laterally, and are of various shapes and sizes (cf. Abbott, 1974; figs. 1623, 1625).

Etymology.—Name is derived from the Latin noun, *pediculus*, diminutive of *pedis*, meaning louse.

There is a fossil species: *Trivia pediculus* var. *per magna* Johnson, 1910.

(*Ellatrivia*) Iredale, 1931

Rec. Austral. Mus. Sydney 18/4: 221.

[see Schilder, 1939: 173 (26)]

Type species [OD]: *Triviella merces* Iredale, 1924, Proc. Linn. Soc. New South Wales, 49: 257; pl. 35, figs. 16–17.

"As no generic name exists for the *merces* series I propose *Ellatrivia* [nom. nov.], and name [in addition] the deep-water form *Ellatrivia (merces) addenda* nov. [nud.] = [*Niveria (Ellatrivia) memorata* (Finlay, 1927)]."

50. *Niveria (Ellatrivia) merces* (Iredale, 1924)

(Fig. 56: holotype)

1822 *Cypraea australis* Lamarck, Hist. Nat. Anim. sans Vert., 10: 545 (Figs. 57, 158: holotype); (preoccupied, not Schröter, 1804).

1838 *Cypraea rosea* Potiez and Michaud, Galer. Moll. Mus. Douai 1: 477 (invalid and preoccupied, fide Schilder, 1971).

1924 *Triviella merces* Iredale, Proc. Linn. Soc. New South Wales 49: 257; pl. 35, figs. 16–17.

1963 *Trivia (Ellatrivia) merces merces*. Shikama and Horikoshi, Selected Shells of the World: 43.

Original description.—"Triviella merces . . . Well known under the name *Trivia australis* (Lamarck). Shell of medium size for the genus, mouth fairly wide, aperture longer than the spire and body whorl; spire noticeable as an obsolete bump overlaid by the spiral body sculpture which consists of narrow ridges about one-third the width of the interspaces, which are smooth and only slightly transversely scratched; a smooth patch exists on the back until senile. Twenty four ribs denticulate the outer lip and about sixteen the inner lip" (Iredale, 1924: 257).

Measurements, holotype.—"Length 14 mm.; breadth 9.5 mm.; height 8 mm."

Type locality.—"Common on the littoral of New South Wales." Locality restricted herein to Port Jackson, New South Wales (33° 49' S; 151° 14' E).

Distribution.—Schilder, 1941: Victoria: Portland-Montague Island; Tasmania, Flinders, King Island; Geographie Bay, Fremantle; Port Macquarie, Sydney, Ulladulla, Australia. [Actually, it would seem many of the Schilder localities for this species may be in question, due to the confusion existing in its misidentification with *Niveria (Ellatrivia) memorata* (Finlay, 1927).]

Holotype.—AM No. C.73521 (Ponder, *in litt.*). (*Cypraea australis* Lamarck, 1811) (type lot); (Fig. 158); (Danrigal, *in litt.*).

Discussion.—The holotype of *Cypraea rosea* Potiez and Michaud, 1838, appears originally to have been placed in the "Galerie Douai," Northern France. The Museum was damaged during World War I, and was subsequently completely destroyed in World War II; therefore, the type of *Cypraea rosea* is presumed to be lost (Danrigal, *in litt.*).

Etymology.—The Latin noun, *merces*, means pay, wages, salary [one has to wonder at the Iredale choice of this name].

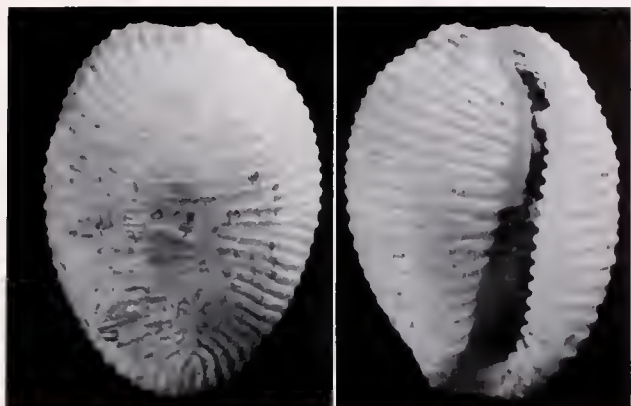


Fig. 59: *Ellatrivia merces addenda*:
AM photo, [51], holotype: L—10.2 mm.

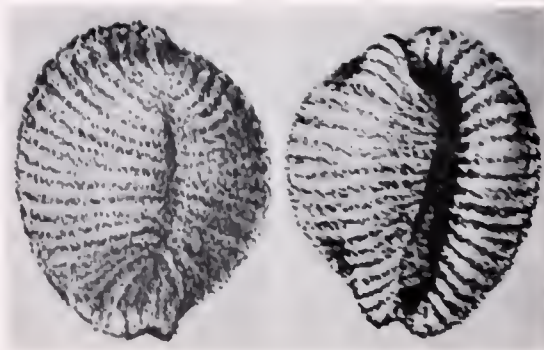


Fig. 60: *Cypraea vitrea*:
DP, [52], (Sowerby 1870, figs. 456–457): $\times 7$.

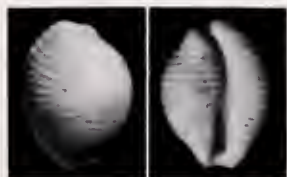


Fig. 61: *Cypraea candidula*:
BM(NH) photo, [53], lecto-
type: L—8.3 mm.

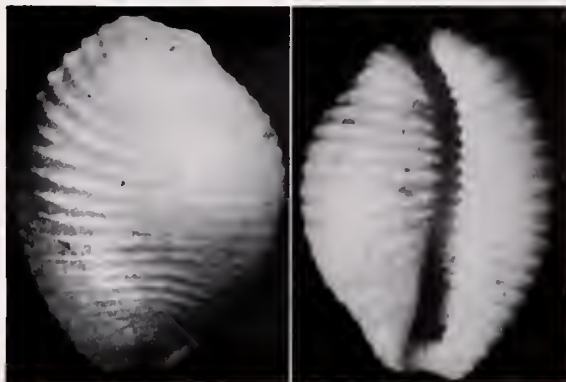


Fig. 61a: *Niveria (Cleotrivia) candidula*:
BM(NH):DP, [53], lectotype: L—8.3 mm.

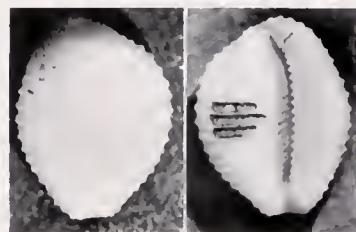


Fig. 62: *Pusula (Cleotrivia) leucosphaera*: ZMB photo, [54],
holotype: L—5.5 mm.

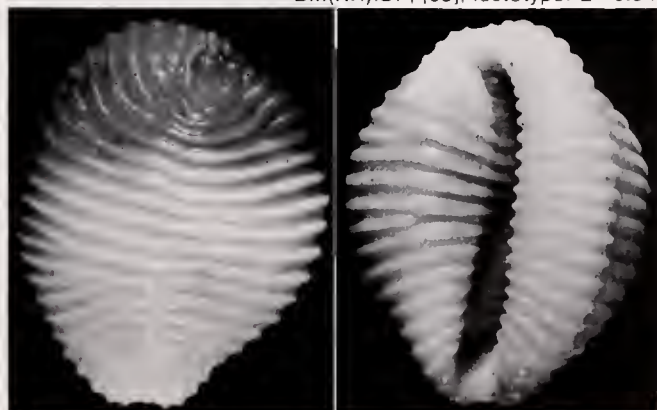


Fig. 62a: *Niveria (Cleotrivia) leucosphaera*:
ZMB:DP photo, [54], holotype: L—5.5 mm.

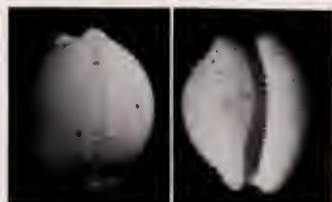


Fig. 63: *Cypraea globosa*:
BM(NH) photo, [55], lectotype: L—5.6 mm.

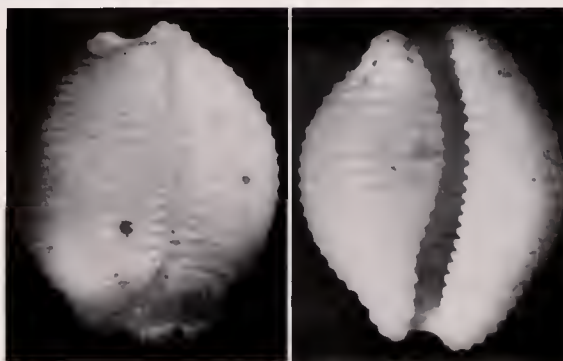


Fig. 63a: *Niveria (Cleotrivia) globosa*:
BM(NH):DP photo, [55], lectotype: L—5.6 mm.

51. *Niveria* (*Ellatrivia*) *memorata* (Finlay, 1927)

(Fig. 58: hypotype 1)

- 1927 *Triviella memorata* Finlay, Trans. New Zealand Inst., 37: 395; pl. 21, fig. 73 (March 1927).
 1927 *Triviella maoriensis* Mestayer, Proc. Malac. Soc. London 17: 186; figs. 3–4 (December 1927); (Fig. 171: type fig.).
 1931 *Ellatrivia* (*merces*) *addenda* Iredale, Rec. Austral. Mus., Sydney 18 (4): 221 (Fig. 59: holotype); (nom. nud.).
 1956 *Ellatrivia merces* Allan, Cowry Shells of World Seas: 153; pl. 15; figs. 17–18.
 1971 *Niveria* (*Ellatrivia*) *merces addenda*. Schilder and Schilder, Institut. Roy. Soc. Nat. Belgium: 19.

Original description.—"Triviella memorata . . . Shell globose and inflated, high but not elongate. Milk white, with two central large red-brown patches meeting across dorsal groove, a small anterior and one or two posterior patches, ends of outer lip same color. Whole surface with weak transverse ribs, meeting at more or less dorsal groove, continued everywhere into interior except for a small smooth space at anterior canal. Sides curved, not even approximately parallel. Outer lip not much projecting beyond spire. Other details as in *T. merces* Iredale" (Finlay, 1927: 396).

Measurements, holotype.—"Length 13.5 mm.; height 8.5 mm.; width 9.5 mm."

Measurements, hypotype 1.—L = 12.5; W = 8.4; H = 7.9 mm (C3766; Fig. 58).

Measurements, hypotype 2.—L = 10.9; W = 7.5; H = 5.8 mm (C3640).

Type locality.—"Ahipara Bay" [near Auckland, New Zealand].

Distribution.—This species has a wide living range that includes New Zealand and the SE coast, S coast, and west coast of Australia north to Roebuck Bay (Broome): W Australia, Rottnest Island (C4130); Roebuck Bay (C4126); Pelsart Island, Abrolhos Islands (C3634; Fig. 58a); Yallingup, SW Australia (C3624); Albany, S Australia (C3670); Port Jackson, E Australia (C3766; Fig. 58); Burrell, Tasmania (C3761). Schilder, 1941: Victoria, Portland-Montague Island; Tasmania, Flinders [Island, NE Tasmania], King Island; Geographe Bay, Fremantle, Swan [River]; Port Macquarie, Sydney, Ulladulla.

Holotype.—Locality unknown; however, the hypotypes figured herein will rather reliably illustrate this species.

Discussion.—Finlay: "Upon examination it is found that Neozelanic specimens differ, so also require description as a distinct form. Close to *T. merces*, but shorter, higher, and more globose, with larger colour patches, and less produced outer lip. Not very close to any of the three Tertiary Neozelanic species, *zelandica* Kirk (Trans. N.Z. Inst., Vol. 14, p. 409, 1882), *pinguior* Marwick (l.c. vol. 56, p. 314, 1920), or "*avellanoides* Tate" (vide Marshall, Trans. N.Z. Inst., Vol. 49, p. 461, 1917); the latter is of the same generic style, but the two former would be better referred at present to *Trivia*."

Ellatrivia memorata (Finlay, 1927), has often

been mistakenly accepted as being *E. merces* Iredale, 1924; Iredale, himself, referred to these shells as being only "the deep water form" of his Port Jackson triviid species.

(*Cleotrivia*) Iredale, 1930

Mem. Queensland Mus., Sydney 10 (1): 83.

[see Schilder, 1939: 173 (30)]

Type species [OD]: *Cypraea pilula* Kiener, 1843 Spec. Icon. Coq. Viv., *Cypraea*: 151; pl. 54, fig. 2.

52. *Niveria* (*Cleotrivia*) *vitrea vitrea* (Gaskoin, 1849)

(Fig. 60: Sowerby II, 1870; figs. 456–457)

1849 *Cypraea vitrea* Gaskoin, Proc. Zool. Soc. London 1848: 95.

1928 *Trivia vitrea* Faustino, Philipp. Mar. Moll.: 221.

Original description.—"7. *Cypraea vitrea* (Glass-like cowry) . . . Cyp. testâ ovato-globosâ, albâ, nitidâ, semivitrâ; basi rotundatâ, aperturâ angustiori paululûm incurvâ, marginibus crassis; dentibus aequalibus, numerosis, prominentibus, labii externi circa triginta, columellaris viginti supra sulcum columellarem continuus; sulco columellari lato, longitudinem aperturæ aequante, margine interno subrecto, serrato; costis magnis, aequalibus, prominentibus, cum dentibus continuus ad dorsum terminantibus; lineâ dorsali impressâ; extremitatibus obtusis, crassis brevibus; margine externo crasso; spirâ inconspicuâ" (Gaskoin, [1849] 1848: 95).

"Shell ovato-globose, almost round, of an uniform, semivitreous, shining, white appearance; base convex, aperture rather narrow, slightly curved inwards its whole length, edges thick; teeth even, rather thick, prominent, about thirty on the lip and twenty on the columellar side, where they traverse the columellar groove and serrate its nearly straight inner edge; the groove is broad and very shallow, and nearly equal in width and depth the whole length of the aperture; the teeth continue to form the ribs, which are large, even and prominent, and terminate at the dorsal impression, with the exception of two or three on each side; the false ribs all form denticulations; dorsal line impressed, extending from the apices formed by the joining of the false ribs; extremities obtuse, thick and short; margin very thick, none on the inner side; spire not perceptible in the adult shell, being thickly covered by the false ribs."

Measurements, holotype.—"Length, $\frac{25}{100}$ ths of an inch; width, $\frac{21}{100}$ ths" [about 6.5; 5.2 mm].

Type locality.—"Hab. Philippines."

Distribution.—Schilder, 1941: Central Philippines; Luzon S to Mindanao.

Holotype.—Not in BM(NH); (Way, in litt.).

Discussion.—"Differs from *Cypraea globosa* Gray in the anterior extremities being of an equal length, aperture much narrower and less curved, base rounder, its semivitreous shining appearance, etc."

Etymology.—The name of this species appears to have been derived from the Latin adjective, *vitreus*, meaning glassy.

There is a fossil subspecies: *Niveria (Cleotrivia) berauensis* Schilder, 1941.

53. *Niveria (Cleotrivia) candidula* (Gaskoin, 1836)
(Figs. 61, 61a: lectotype herein)

- 1757 *Cypraea bitou* Adanson, Hist. Nat. Sénégal Coq. (Paris): 73; pl. 5, G. xi, Fig. 3 (nom. dub.; pre-Linnaean).
1836 *Cypraea candidula* Gaskoin, Proc. Zool. Soc. London, for 1835 3: 201.
1836 *Cypraea approximans* Gaskoin ex Beck MS, Proc. Zool. Soc. London 3: 201; (invalid, published only in synonymy).
1836 *Cypraea olorina* Gaskoin ex Ducloux MS, Proc. Zool. Soc. London 3: 201 (invalid, published in synonymy [only]).
1885 *Trivia subrostrata* var. *alba* "Krebs" of Roberts, in: Tryon, Man. Conch. 7: 201 (homonym; nom. nud.).
1903 *Trivia candidula*. Dall, U.S. Natl. Mus. Bull. 37: 136.
1912 *Cypraea arctica* var. *alba* Dautzenberg and Fischer, Résult. Camp. Monaco 37: 167; (pre-occupied; nom. dub.).
1920 *Trivia bitou*. Pallary ex Adanson, Emp. Cherif., Arch. Sci. Protect., France, Rabat 1920: 44; (Fig. 159: holotype: nom. dub.; Danrigal, in litt.).

Original description.—"Cypraea candidula . . . Cypr. testá ovato-globulosa, latere columellari subventricosó, niveá; extremitatibus columellaribus subcompressis; margine subincrassatá; aperturá subangustatá, posticé recurvá; labri dentibus numerosis confertis; costis ex aperturá divergentibus; lineá dorsali nullá" (Gaskoin, 1836: 200–201).

"Shell ovato-globose, the columellar side rather ventricose, entirely of a snow-white colour. Base somewhat flat. Aperture rather narrow, curved posteriorly. Columellar groove extending from one end of the shell to the other, rather broad, most so at the anterior extremity, not deep. Teeth even, somewhat numerous, small on the edge of the lip, on which there are about twenty-two; on the columella about thirteen, which converge towards the center. Ribs rather prominent; some few terminate on each side of the shell, the rest pass continuously across it from the edge of the lip, and terminate in minute denticulations at the inner edge of the frontal groove; false ribs a few. Anterior and posterior beaks of the columella divergent, and slightly projecting; extremities produced, and obtuse: marked denticulations between the anterior beaks. Spire scarcely visible, or forming a small blunt protuberance. No impressed dorsal line. Margin on the lip only and rather thick."

Measurements, holotype.—"Length .312 of an inch; breadth .250; height .212" [= 8.0; 6.4; 5.4 mm].

Type locality.—"Mexico."

Distribution.—Schilder, 1941: Veracruz to Guatemala; Cuba; Grand Cayman Islands; Jamaica; British Guiana to the Amazon River; Cape Hatteras, N Carolina; Georgia coast; E Florida to Tampa, W Florida.

Lectotype, herein.—BM(NH) Register No. 1874.12.11.55 (1 of 2 syntypes; Way, in litt.).

Discussion.—"Distinguishable from *Cypraea scabriuscula* [Gray, 1827] by the shell being much wider and shorter; aperture more curved; teeth and ribs

much fewer; the extremities more obtusely produced, thicker and wider; columellar beaks more divergent and prominent; body of the shell more ventricose; anterior part of the columellar groove not so broad; no impression of a dorsal line."

The pre-Linnaean, nonbinomial, *Cypraea le Bitou* of Adanson, [Loc. Senegal, W Africa] 1757, appears to have first been cited binomially by Pallary (P.), 1900. Fischer-Piette (1942: 174) recorded the details of Adanson's species of Mollusca, which are located at MNHN (Danrigal, in litt.). (See Pallary, 1920: 44, *Trivia bitou* Pallary, 1900 = *T. candidula* auctt., non Gaskoin). (Cf. *T. candidula* Nicklès, 1950 = species 18 herein).

Etymology.—The Latin adjective, *candidus*, diminutive, *candidula*, means shining white or bright.

54. *Niveria (Cleotrivia) leucosphaera* (Schilder, 1931)

(Figs. 62, 62a: holotype)

- 1931 *Pusula (Cleotrivia) leucosphaera* Schilder, Zool. Anz. 96: 71; fig. 4.
1971. *Niveria (Cleotrivia) leucosphaera*. Schilder, Inst. Roy. Sci. Nat. Belg., pt. 2, fasc. 85: 19.

Original description.—"Pusula (*Cleotrivia*) *leucosphaera* nov. nom. pro *globosa* aut. pars (Dall, Maury usw.) nec Sow.; syn.: *subrostrata* var. *alba* (Krebs) Roberts. . . Die oft verwechselten hellfarbigen *Cleotrivia*-Formen sind folgendermassen zu gruppieren:

a) Die R.-Furche reicht bis fast an die E. heran (Abb. 3), die Foss. ist sehr tief und sehr breit. Hierher gehört die grosse, fleischfarbene oder gelbliche *pisum* Gask. (Vorderindien, Ceylon) und die kleinere *globosa* Sow. mit ihren 3 Unterarten: *globosa* Sow. s.str. (= *brevissima* Sow. = *acutisulcata* Ken.: vorwiegend im Indik) und *cosmoi* Dautz. (Indik) sind noch relativ grösser, erstere am R. oft blassgelb oder -rosa, letztere hat die S. rosa umringt und anscheinend zahlreichere Rückenrippen; *pilula* Kien. (= *sphaerula* Migh.: vorwiegend im Pazifik) ist winzig und stets weiss, auch ist sie etwas breiter als die anderen beiden Rassen (BL. = etwa 90 statt etwa 80) und hat — besonders vorn — engere M.

b) Die R.-Furche ist kürzer, reicht weniger nahe an die E. heran (Abb. 4), die Fossula ist seicht, steil und kaum breiter als die Col.-Furche. Hierher gehört *vitrea* Gask. (Indopazifik) und *leucosphaera* (Florida bis Barbados), beide weiss, oft durchscheinend, letztere durchschnittlich etwas kleiner und mit weniger dichten, weniger dicken Rippen."

"*Pusula (Cleotrivia) leucosphaera* nov. nom. pro *globosa* (Dall, Maury, etc.) pars, not Sowerby; synonym *subrostrata* var. *alba* (Krebs) Roberts. . . The oft-confused light-colored *Cleotrivia*-forms group as follows:

a) The dorsal sulcus reaches almost to the terminal, the fossula is very deep and very broad. To this [group] belongs the large flesh-colored or yellowish *pisum* Gask. (vorderindien, Ceylon) and the smaller *globosa* Sow. with its three subspecies: *globosa* Sow. s.str. (= *brevissima* Sow. = *acutisulcata* Ken.: principally in India) and *cosmoi* Dautz. (Indik) are relatively still larger, the former frequently pale yellow or rose on the ribs, the latter has the sides ringed with rose and seemingly numerous dorsal ribs; *pilula* Kien. (= *sphaerula* Migh.: principally in the Pacific) is tiny and al-

TABLE 2. The following represent the normal number and parabola-designation of AZ. = outer teeth; IZ. = inner teeth; RS. = dorsal side; RR. = dorsal margin:

Species	Most common length (mm)	Most common number and parabola-designation of:			
		AZ.*	IZ.	RS.	RR.
		Outer teeth	Inner teeth	Dorsal side	Dorsal margin
<i>N. pisum</i>	9–11	21 L	21 L	?	45 Q
<i>N. globosa</i>	6–7	20–21 N	19–21 N	56–61 M	38–41 Q
<i>N. cosmoi</i>	6–7	21–22 P	20–21 O	57–61 N	40–43 S
<i>N. pilula</i>	3–4	21–22 U	18–19 Q	49–53 Q	31–34 R
<i>N. vitrea</i>	5½–6½	24–26 S	19–21 N	52–56 L	28–30 K
<i>N. leucosphaera</i>	5–6	21–23 Q	18–20 M	49–51 K	24–26 H

* See species no. 10 for explanation of the Schilder abbreviations.

ways white, also it is somewhat broader than both the other races (base length = about 90 *versus* about 80) and has — especially anteriorly — a narrower aperture.

b) The dorsal sulcus is shorter, extends less closely to the terminal (illustration 4), the fossula is shallower, steep and hardly broader than the columella sulcus. Here belong *vitrea* Gask. (Indo-Pacific) and *leucosphaera* (Florida to Barbados), both white, frequently translucent, the latter on average somewhat smaller and with less dense, less thick ribs." See Table 2 for a distinction between species based on various characteristics.

Measurements, holotype.—L – 5.5 mm (Andersson, *in litt.*).

Measurements, hypotype.— L – 5.5; W – 4.3; H – 3.7 mm (C4131; Fig. 62a).

Type locality.—"West Indies": herein restricted to the Gulf of Mexico side of Sanibel Island, Florida (26° 27' N; 85° 05' W).

Distribution.—Beach, Sanibel Island (C4131). Schilder, 1941: West coast of Florida, N to Tampa; Veracruz, Mexico.

Holotype.—NRS, No. 3031 (Andersson, *in litt.*).

Discussion.—This species is probably only an ecological variant of *Niveria* (*Cleotrivia*) *candidula* (Gaskoin, 1836). However, the presence of the dorsal line seems quite effectively to separate the 2 species.

Etymology.—The name of this species appears to have been derived from the Greek adjective, *leucos*, white, and the Latin noun, *sphaera*, ball.

55. *Niveria* (*Cleotrivia*) *globosa* (Sowerby II, 1832)
(Figs. 63, 63a: lectotype)

- 1832 *Trivria globosa* Gray, Descriptive Cat. of Shells, (Part I.—June 1832); (invalid, never published, proof only).
- 1832 *Cypraea globosa* Sowerby II, Conch. Illustr., Cypraeidae: 12 (117); fig. 34.
- 1870 *Cypraea brevissima* Sowerby II, Thes. Conch., 4 *Cypraea*: 47; figs. 523–524 (Fig. 65: type illustr.).
- 1900 *Trivria acuti-sulcata* Kenyon, Proc. Malac. Soc. London 4: 69; fig. 2 (Fig. 66: type fig.).

- 1906 *Cypraea fibula* Standen and Leicester, Gov. Ceylon Pearl Fish. Manaar 5 Suppl. Rep. 31: 276; (spelling error).
- 1921 *Trivria cosmoi* Dautzenberg, J. de Conchyl., 65: 330; pl. 6; figs. 3–5 (Fig. 67: holotype).
- 1928 *Trivria globosa* "Gray". Faustino, Philippine Mar. Moll.: 220.

Original description.—"Cypraea globosa . . . Shell globular, reddish, closely and acutely ribbed; dorsal line narrow, distinct, running from the posterior to the anterior extremity; margin thickened; underside rounded, white; teeth small, sharp" (Sowerby II, 1832: 12).

Measurements, holotype.—"length 0.3, breadth 0.25."
Measurements, lectotype.—L – 5.6 mm (Way, *in litt.*).

Type locality, holotype.—Not recorded.
Type locality, lectotype.—Not recorded (possibly Manila, Luzon, Philippine Islands).

56. *Niveria* (*Cleotrivia*) *meridionalis* Cate, sp. nov.
(Fig. 68)

Description.—Shell small, subglobose, humped, with an almost circular periphery. Terminals only barely protruding, broadly rounded. Dorsum highly, somewhat flatly elevated, shiny, steeply tapering to sides and terminal beaks. Base and outer lip shiny, of almost equal breadth, convex, both tapering inwardly to aperture. Aperture narrow, nearly straight posteriorly; broadening openly to the front due to the unusual constriction of base (it usually is the outer lip that constricts to open up the front aperture); the apertural edge of the outer lip straight throughout. Columella fairly wide, concave. Fossula, a continuation of columella, large, deep, conspicuous. Shell ribbing covering entire shell and terminal beaks, comparatively strong, bold, numerous. There is a slightly impressed longitudinal medial dorsal line. The ribs over the dorsum from either side margin are interrupted, terminating in such a way (because of ending in a diagonally sloped manner) that they give the visual impression of a median groove; the dorsal ribbing is continuous over the left side-margin, base and columella-fossula, ending therein as distinct denticles; the ribs extend over the right side-margin and convex base to inner edge of apertural lip, where they terminate as sharp teeth. Shell color is glossy white overall.

Measurements, holotype.—L – 5.7; W – 4.8; H – 3.7 mm.

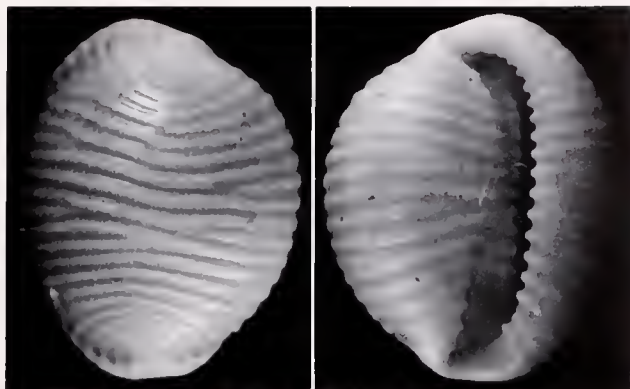


Fig. 64: *Trivia pullicina* var. *globosa*:
MNHN photo, [22], holotype: L—11.0 mm = *Trivia (Trivia) hispania* Cate.

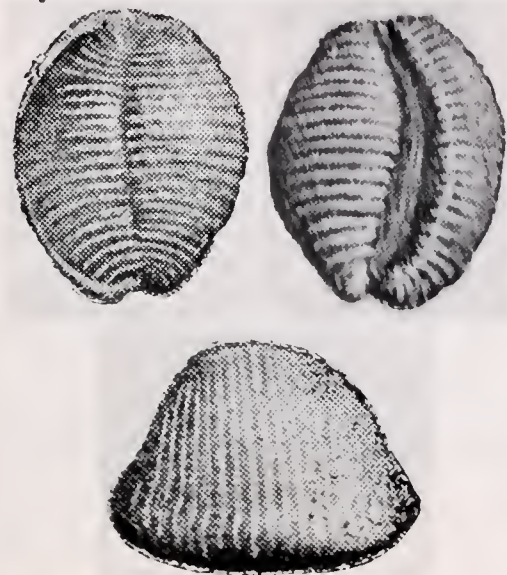


Fig. 66: *Trivia acuti-sulcata*:
DP, [55], type fig.: $\times 6$.

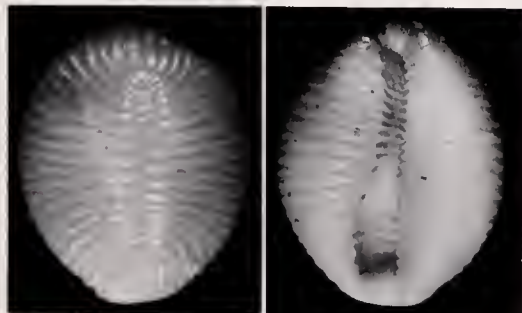


Fig. 68: *Niveria (Cleotrivina) meridionalis*:
DP, [56], holotype: L—5.7 mm.

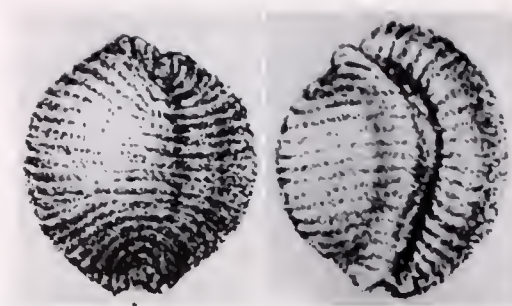


Fig. 65: *Cypraea brevissima*:
DP, [55], (Sowerby II, 1870 figs. 523–524): $\times 7$.

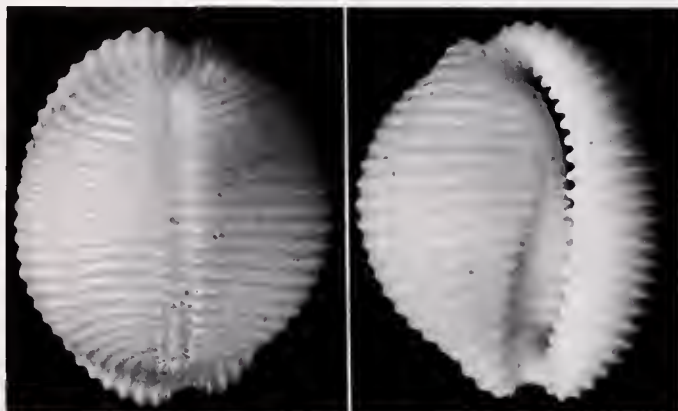


Fig. 67: *Trivia cosmoi*:
MNHN photo, [55], holotype: L—7.6 mm.

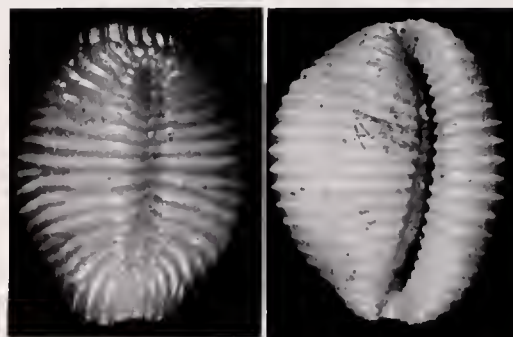
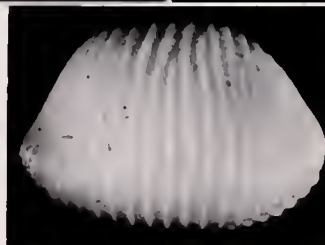


Fig. 69: *Niveria (Cleotrivina) dorsennus*:
DP, [57], holotype: L—6.3 mm.



Type locality.—Not known, but thought to be from the south Australian coast.

Holotype.—SAM, Agnes Kenyon collection, No. 4095-A (Zeidler, *in litt.*).

Discussion.—Many of the Kenyon shells, unfortunately, from various local areas around Adelaide, are without locality. Subsequent fieldwork will be needed to establish living areas for many South Australian molluscan species.

This new triviid species seems most closely to resemble *Niveria (Cleotrivia) globosa* (Sowerby II, 1832). It differs from the Sowerby species by being larger; by having a straighter aperture, with a curious constriction of the front base; by having little or no leftward reflection of the adapical and terminal beaks; and by not having the openly arched terminal beak endings.

Etymology.—The Latin adjective, *meridionalis*, means southern.

57. *Niveria (Cleotrivia) dorsemmus* Cate, sp. nov.
(Fig. 69)

Description.—Shell of medium size, shiny, sub-globose. Terminals only barely produced, roundly so adapically, less so abapically. Base broadly convex, shiny, somewhat pointedly ovate. Aperture narrow, evenly curving throughout. Columella narrow, fairly concave. Fossula a continuation of columella, only slightly depressed. Outer lip fairly broad, convex, shiny, wide centrally, becoming narrower at either end. Both lip and base curving downward, inward to aperture. Shell ribbing entire shell, including terminal collars; with a deep longitudinal medial groove on the central dorsum, transverse ribbing only barely interrupted; ribs becoming longitudinal on terminal beaks; from medial line on the left the ribs crossing side-margin and base to columella, where they become weak and terminate on inner carinal edge of columella; on the right, dorsal ribs continuing over side-margin and outer lip to apertural edge, where they terminate as sharp denticles. Shell color is shiny white overall.

Measurements, holotype.—L – 6.3; W – 5.3; H – 5.2 mm.

Type locality.—Unknown; thought to be South Australia.

Holotype.—SAM, Agnes Kenyon collection, No. D4095-B; (Zeidler, *in litt.*).

Discussion.—Many of the Kenyon shells, including those from South Australia, are without locality labels. This new species, from the Kenyon collection, may be compared with *Niveria (Cleotrivia) meridionalis* Cate (herein); it differs by having a larger shell and a narrow, evenly curving aperture; by lacking a constricted base; by possessing a more moderate columella and fossula; and in having a more distinct and deeper dorsal medial groove.

Etymology.—The new name is a Latin noun, *dorsenmus*, meaning humpback.

58. *Niveria (Cleotrivia) corallina* Cate, sp. nov.
(Fig. 70)

Description.—Shell somewhat small, subglobose, roundly ovate. Terminals only barely produced, with a slight flaring to the left adapically; somewhat straight and square in front. Dorsum humped, roundly elevated, tapering steeply to either side and terminals. Base broadly convex, narrowing to front and rear. Aperture almost straight, gently curving left at either end. Columella narrow, concave, with the inner front wall elevating in an arch-like manner, forming a fairly deep fossula. Outer lip centrally broad, becoming narrower at either end. Shell with numerous transverse ribs that are longitudinally directed on terminal collars, with a long, shallow, longitudinal median dorsal line interrupting rib-striae at either side-margin: ribs on the left continuous over side-margin, base, and columella, terminating as sharp denticles on inner edge of adaxial carinal ridge; on the right side ribs traversing side-margin and outer lip, becoming strong, sharp teeth at the aperture. Shell color white overall.

Measurements, holotype.—L – 5.5; W – 4.3; H – 3.8 mm.

Type locality.—Unknown: thought to be from South Australia.

Holotype.—SAM, Agnes Kenyon collection, No. D4095-C; (Zeidler, *in litt.*).

Discussion.—This new triviid species may be compared with *Niveria (Cleotrivia) dorsemmus* Cate (herein), from which it differs in being a somewhat larger-shelled species with a rounder basal periphery, weaker, more numerous shell ribbing; by having a narrower outer lip; by having a longer, more shallow median dorsal line; and the fossular area is of a different dimension and design.

Etymology.—The new name is an adjective derived from the Latin word, *corallium*, meaning coralloid, coralline.

59. *Niveria (Cleotrivia) pisum* (Gaskoin, 1846)
(Figs. 71, 71a: holotype)

1846 *Cypraea pisum* Gaskoin, Proc. Zool. Soc. London 1846: 24.

1885 *Trivia pisum*. Tryon, Man. Conch. 7: 203; pl. 22, figs. 29–30.

1932 *Pusula (Cleotrivia) globosa pisulum* Schilder, in: Quenst., Fossil. Cat. 1/55: 96.

Original description.—"Cypraea pisum . . . Cyp. testâ spheroidali, pallescente; costellis prominentibus, ex aperturâ ad lineam dorsalem decurrentibus, et in lineam attenuatam terminantibus; dentibus prominentibus; sulco columellari lato; aperturâ latiusculâ posticè flexuosâ; basi rotundatâ; margine externo incrassato, supra extremitates extenso; extremitates crassis; lineâ dorsali profundâ, ex extremitatibus posticis ad anticum testae partem continuâ" (Gaskoin, 1846: 24).

"Pea Cowry . . . Shell spheroidal, of a very light fawn colour; ribs large and prominent; nearly every rib extends from the aperture and terminates generally, tapering to a point, at the dorsal depression [sulcus]; mostly the terminations on one side pass between those of the other, especially on the anterior half of the shell; each third or fourth rib, amounting to about seven, ends on the lip at the base of the shell; all the other ribs on both sides form, by continuance,

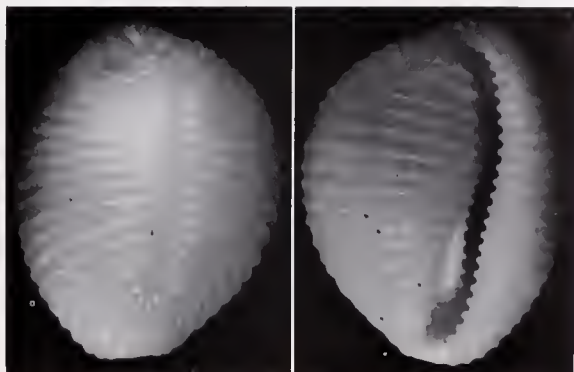


Fig. 70. *Niveria (Cleotrivia) corallina*:
DP, [58], holotype: L—5.5 mm.

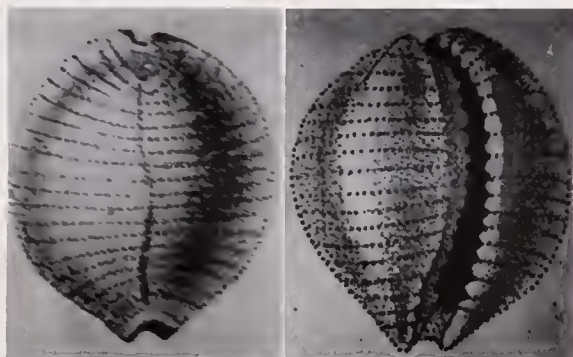


Fig. 72: *Cypraea pilula*:
DP, [60], type fig.: $\times 4$.

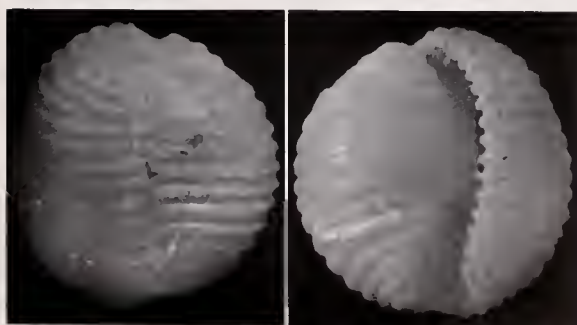


Fig. 73: *Cleotrivia bathypilula*:
DP, [61], paratype: L—3.3 mm = *Niveria (Cleotrivia)*
pilula euclaensis Cate.

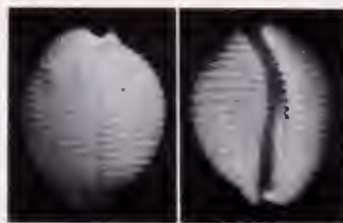


Fig. 71. *Cypraea pisum*:
BM(NH) photo, [59], holotype: L—9.8 mm.

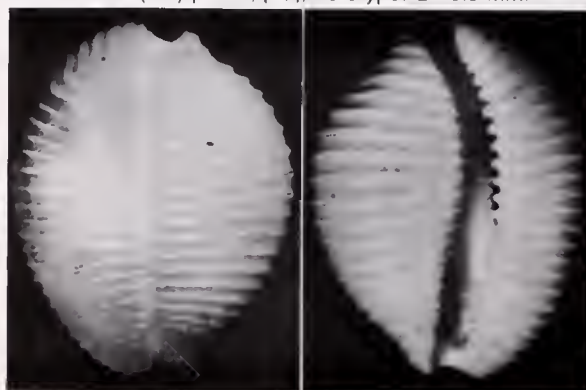


Fig. 71a: *Niveria (Cleotrivia) pisum*:
BM(NH):DP, [59], holotype: L—9.8 mm.

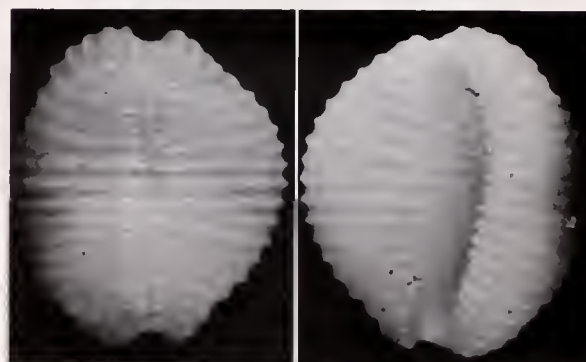


Fig. 72a *Niveria (Cleotrivia) pilula*:
DP, [60], hypotype: L—4.0 mm.

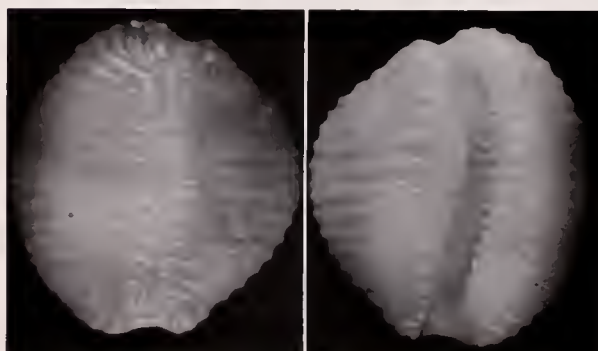
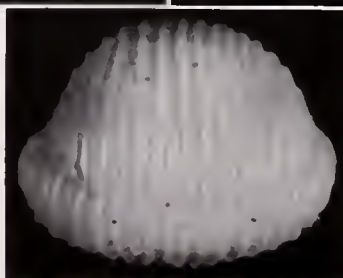


Fig. 73a: *Niveria (Cleotrivia) pilula euclaensis*:
DP, [61], hypotype: L—3.1 mm (NW Australian form).

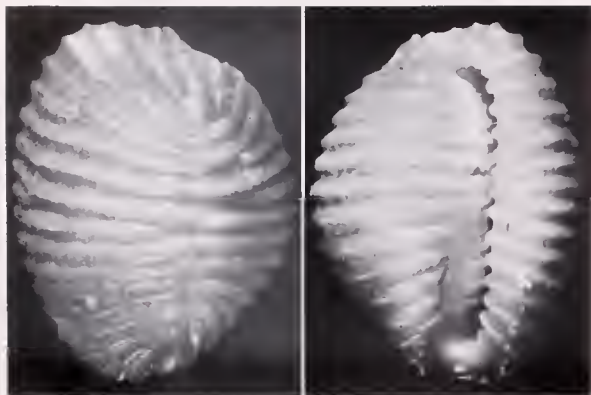


Fig. 74: *Trivia atomaria*.
DP, [62], holotype: L—3.2 mm.

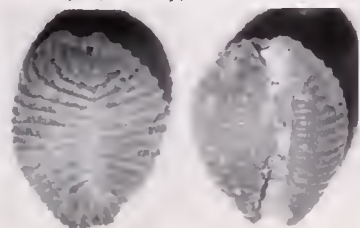


Fig. 75: *Pusula (Cleotrivia) pygmaea*:
NRS photo, [63], holotype: L—8.2 mm.

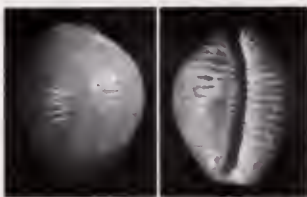


Fig. 77: *Cypraea sub-rostrata*:
BM(NH) photo, [64], lectotype: L—5.0 mm.

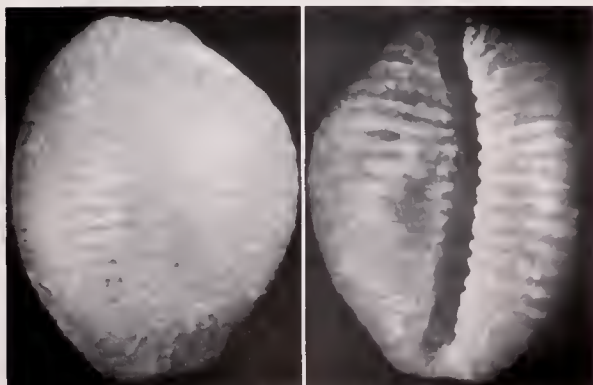


Fig. 77a: *Niveria (Cleotrivia) occidentalis*:
BM(NH):DP, [64], lectotype: L—5.0 mm.

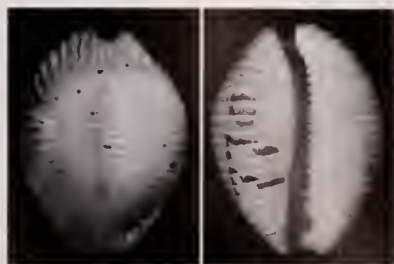


Fig. 79: *Cypraea producta*:
BM(NH) photo, [127], holotype: L—12.2 mm.

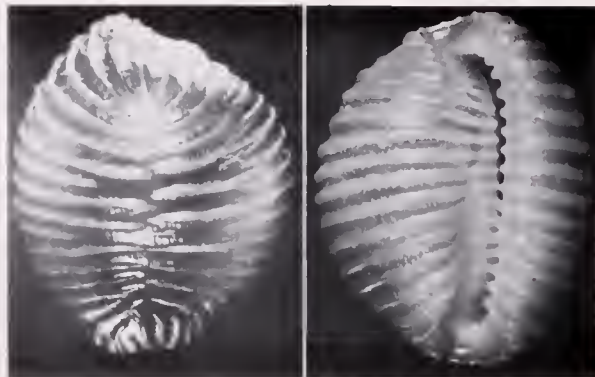


Fig. 74a: *Niveria (Cleotrivia) atomaria atomaria*:
DP, [62], hypotype: L—2.9 mm.



Fig. 76: *Cypraea pulla*:
DP, [64], (Sowerby II, 1870, figs. 490–491)
= *Trivia occidentalis* Schilder, 1922.

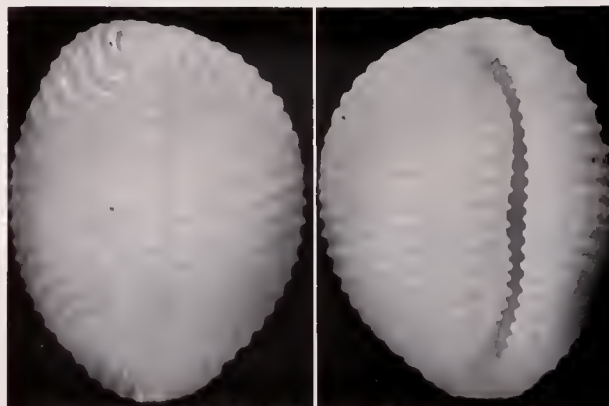


Fig. 78: *Niveria (Cleotrivia) aquatunica*:
DP, [65], holotype: L—11.2 mm.

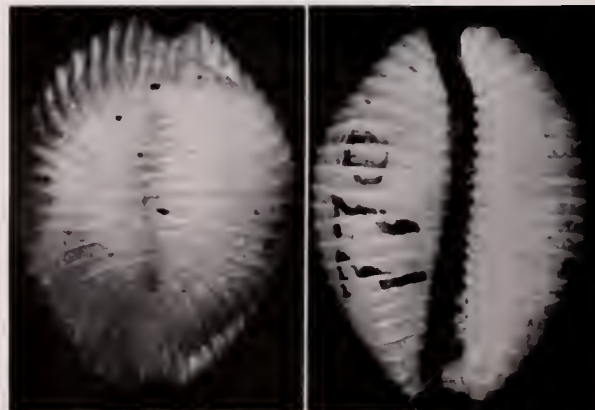


Fig. 79a: *Pusula (Dolichupis) producta*:
BM(NH):DP, [127], holotype: L—12.2 mm.

the teeth, which are strong and prominent; about twenty-three on the columellar side of the aperture, which extend across the columellar groove and serrate its inner edge; those on the outer side or lip about twenty-one in number; columellar groove broad and deep; aperture rather wide, curved, particularly at the posterior portion; base round; margin on the outer side very thick, extending over the beaks; none on the columellar side; extremities or beaks obtuse, thick, and slightly produced; dorsal depression deep, extending from between the posterior extremities to the anterior end of the shell, being more deeply impressed beside the apex" (Gaskoin, 1846: 24).

Measurements, holotype.—"45 100ths of an inch" (L = 9.8 mm [Way, *in litt.*]).

Type locality.—"Hab. East Indies."

Distribution.—Ceylon, Palk Strait, between Ceylon and India; south India S of Narbada River.

Holotype.—BM(NH), Reg. No. 1875.2.26.185 (Way, *in litt.*).

Discussion.—Gaskoin mentions that the type specimen is unique, and in his Cabinet. Additionally, he says: "The characters of this shell are so distinctive that it bears no resemblance to any yet described *Cypraea*; it is nearest in form to *Cypraea formosa* of Gaskoin."

Etymology.—The Latin noun, *pisum*, means pea.

60. *Niveria (Cleotrivia) pilula pilula* (Kiener, 1843)
(Fig. 72: type fig.)

1843 *Cypraea pilula* Kiener, Spec. Icon. Coq. Viv., *Cypraea*: 151 (137); pl. 54, figs. 2–2a.

1845 *Cypraea sphaerula* Mighels, Proc. Bost. Soc., 2: 24.

1935 *Cleotrivia pilula*. Iredale, Austral. Zoologist 8: 100.

Original description.—"Cypraea pilula . . . C. testâ globulo-rotundâ, lacteâ; dorso dilatato, convexo; aperturâ perangustâ; labro extûs prominulo, tenuissimè denticulato; costis subrugosis; lineâ dorsali impressâ."

"Coquille globuleuse, arrondie; l'extrémité des échan-
cures, quoique profonde, ne forme qu'une saillie très-légère
sur le contour; la face dorsale est large, régulièrement con-
vexe, l'ouverture très-étroite et sinueuse, le bord droit épais,
arrondi, un peu saillant à sa partie externe, muni d'une série
de denticulations extrêmement fines; la columelle est flexu-
euse, profondément marquée d'un sillon longitudinal; elle est
également pourvue d'une série de petites denticulations qui,
comme celles du bord droit, se continuent en forme de côtes
très-fines et un peu rugueuses; elles couvrent toute la face
dorsale en se réunissant dans le sillon longitudinal qui est
assez profond, étendu d'une échancre à l'autre de manière
à partager la face supérieure en deux parties assez égales. La
coquille est entièrement d'un blanc de lait" (Kiener, 1843:
151).

"Shell globose, rounded; the extremities of the slopes,
while deep, form only a very slight projection on the surface;
the dorsum is broad, regularly convex, the aperture very
straight and sinuous, the right edge is thick, rounded, project-
ing a little on the outer part, furnished with a series of ex-
tremely fine teeth; the columella is flexuous, deeply marked
with a longitudinal furrow; it is also provided with a series of
small teeth which, like those of the outer lip, continue in the

form of very fine and slightly rough ribs; these cover all the
dorsum and reunite in the longitudinal furrow which is quite
deep, extending from one extremity to the other in such a
way as to separate the upper side into two equal parts. The
shell is entirely milk white" (translation by Jean Cate).

Measurements, holotype.—"Long. 4 millim."

Measurements, hypotype 1.—L = 4.0; W = 3.5; H = 3.1 mm
(C3776; Fig. 72a).

Measurements, hypotype 2.—L = 3.1; W = 2.8; H = 2.5 mm
(LACM: 75-61).

Type locality.—Not recorded: designated herein as Puna-
luu, Oahu, Hawaii (19° 38' N; 155° 59' W).

Distribution.—Waikiki, (73 metres of water) leg. C. Weaver;
Punaluu, (beach) leg. R. Gage; Keehi Lagoon, leg. T.
Bratcher (45 to 213 metres of water); all Oahu, Hawaii.
(Schilder, 1941: Melanesia; New Guinea; E Australia; S
Philippines; to Japan?).

Holotype.—MNHN: type has been lost (Danrigal, *in litt.*).

Discussion.—This species may be distinguished from
Niveria (Cleotrivia) globosa (Sowerby II, 1832): it
differs in having a much smaller shell-form; in having
only a very weakly impressed or obsolete longitudinal
dorsal furrow; by being white in color rather than red-
dish; by having noticeably less projecting terminal
beaks; and by having a narrower, more evenly curv-
ing aperture.

Etymology.—The Latin noun, *pilula*, is a diminutive
of *pila*, meaning a little ball.

61. *Niveria (Cleotrivia) pilula euclaensis* Cate,
subsp. nov.

(Fig. 73: holotype)

1918 *Trivia globosa* (Sowerby II) of Verco, Trans.
Roy. Soc. S. Australia Vol. xlii, p. 150.

1935 *Cleotrivia bathypilula* Iredale, Australian Zoolo-
gist 8: 100 (Fig. 73.) (Name not established
in valid way).

1971 *Niveria (Cleotrivia) pilula bathypilula*. (Iredale)
Schilder, Cat. of Living and Fossil Cowries.
Mem. Inst. Roy. Sci. Belg. (2) 85: 19 (233).

Description.—Shell small, peripherally circular, globose.
Terminals generally not extending beyond the peripheral
outline of shell; terminal canals fairly wide, open at either
end, rather acutely recurved apically. Dorsum globosely,
convexly elevated, with shiny interstices. Base convex, very
wide, subovately short. Aperture wide, very gently curving.
Columella broad, shallow, widening to the front as a shallow
fossula, both columella and fossula only faintly transversely
ribbed. Outer lip almost half as wide as the base, and con-
vex. Shell ribs are fairly heavy in form, though somewhat
indistinctly developed, numerous overall; there is a poorly
defined longitudinal medial dorsal furrow which interrupts
upper ribbing, the rib-ends at furrow seeming staggered;
otherwise, ribs continue over side margins, base, outer lip,
terminating as strong sharp teeth at the apertural edge; at
the columella-base margin the ribs weaken, becoming very
fine to almost obsolete as they cross the columella-fossula.
Shell color is white overall.

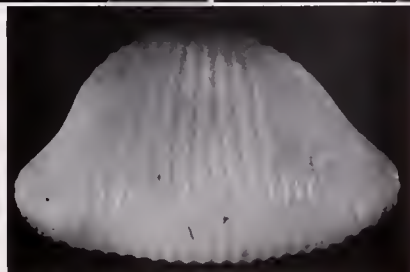
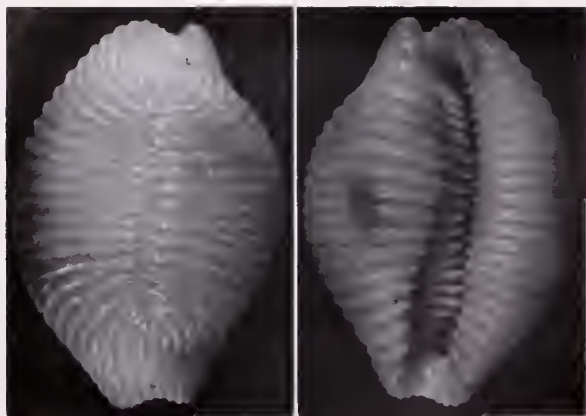


Fig. 80 *Pusula (Dolichupis) akroterion*:
DP, [128], holotype: L—12.1 mm.

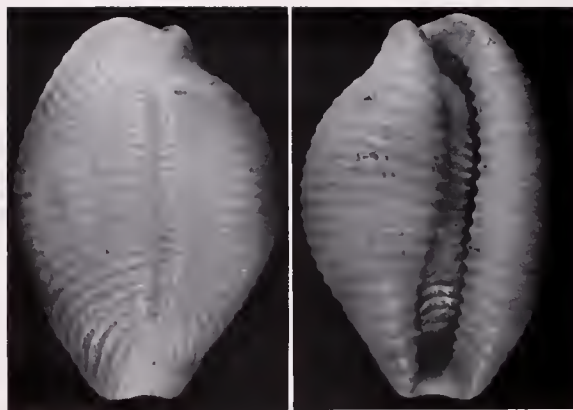


Fig. 80a *Pusula (Dolichupis) akroterion*:
DP, [128], paratype: L—11.6 mm.

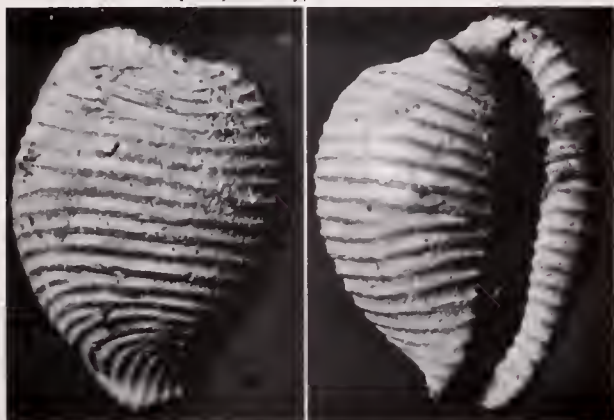


Fig. 81 *Trivellona excelsa*:
AM photo, [129], holotype: L—18.0 mm.



Fig. 82 *Cypraea rubinicolor*:
DP, [130], (Sowerby II, 1870; figs. 500–501): $\times 5$.

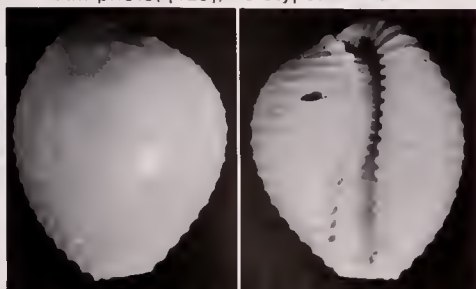


Fig. 83 *Trivia acutidentata*:
BM(NH) photo, [131], holotype: L—7.0 mm.

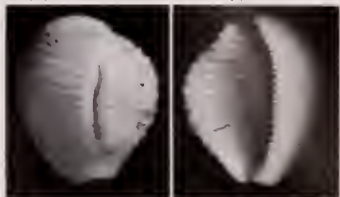


Fig. 84 *Cypraea cicatrosa*:
BM(NH) photo, [132], holotype: L—6.9 mm.

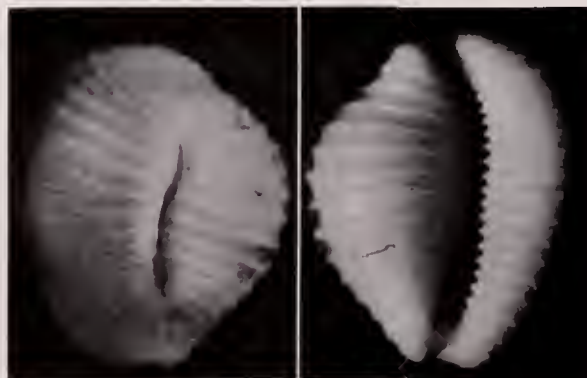


Fig. 84a *Pusula (Dolichupis) cicatrosa*:
BM(NH):DP, [132], holotype: L—6.9 mm.

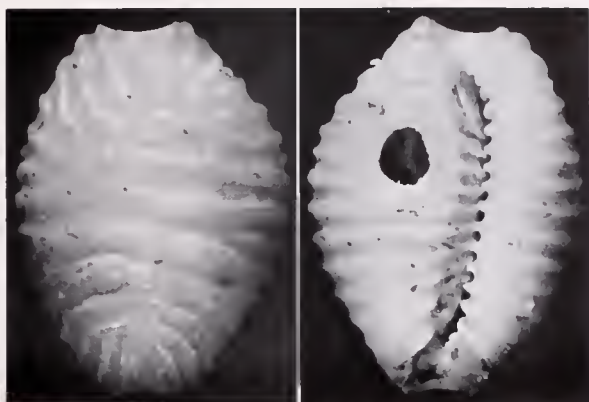


Fig. 85. *Trivia panamensis*:
DP, [110], holotype: L—4.2 mm.

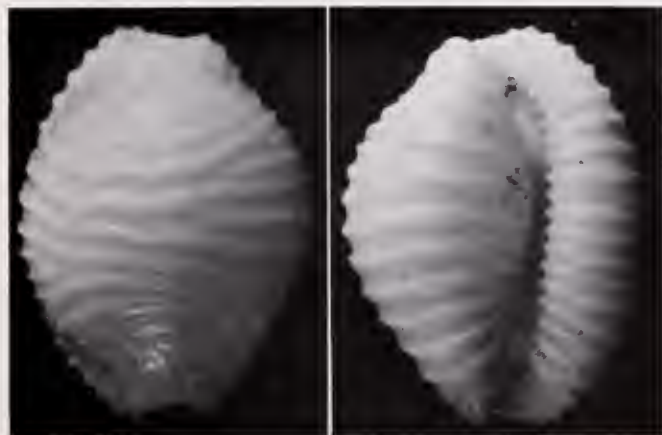


Fig. 86. *Cypraea paucilirata*:
BM(NH) photo, [101], holotype: L—7.3 mm.

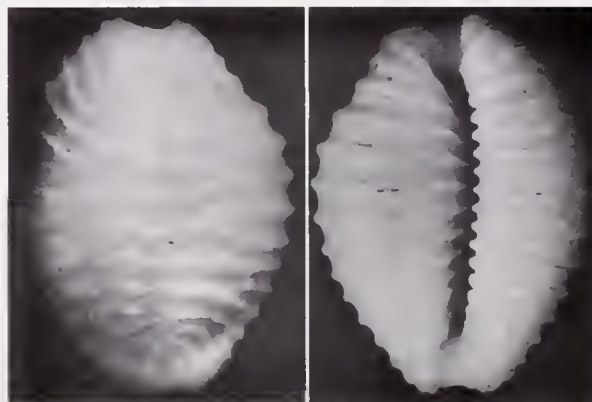


Fig. 86a: *Decoriatrivia paucilirata*:
BM(NH):DP, [101], holotype: L—7.3 mm.

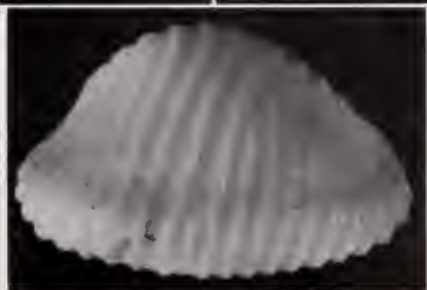


Fig. 87: *Dolichupis acutidentata* (Schilder):
NMW photo, [101], holotype: L—6.5 mm
=*Decoriatrivia paucilirata* (Sowerby II, 1870).

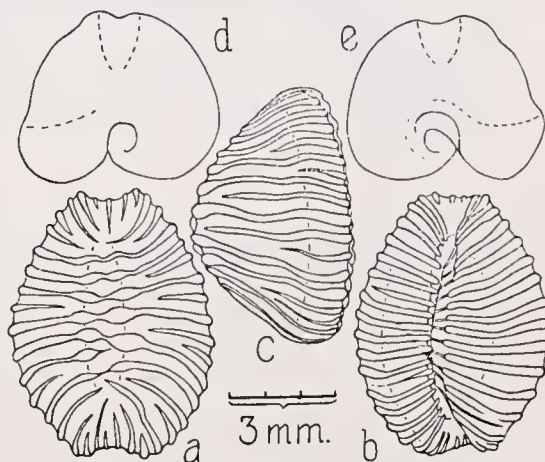


Fig. 87a: *Decoriatrivia (Dolichupis) acutidentata* (Schilder):
PMSL:DP, [101], L—6.5 mm Type fig.; xi = *Decoriatrivia*
paucilirata (Sowerby II, 1870).

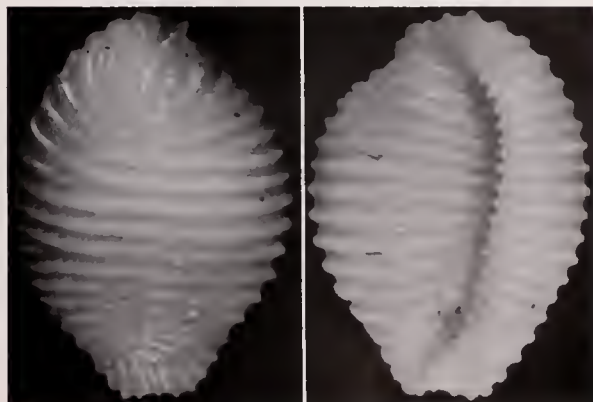


Fig. 88: *Decoriatrivia artema*:
DP, [102], holotype: L—4.8 mm.

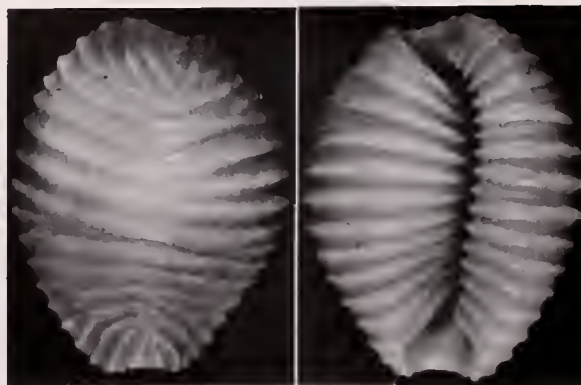


Fig. 89: *Decoriatrivia halians*:
DP, [103], holotype: L—7.3 mm.

Measurements, holotype.—“L – 4.0; W – 3.0; H – 2.5 mm” (SAM D-909); L – 3.1; W – 2.9; H – 2.4 mm; (Zeidler, *in litt.*).

Measurements, paratype.—L – 3.3; W – 2.9; H – 2.4 mm (SAM D-910).

Measurements, hypotype.—L – 3.3; W – 2.8; H – 2.5 mm (C3698; Fig. 73a).

Type locality.—80 miles [≈140 km] W of Eucla, South Australia (Great Australian Bight), in 81 fathoms [150 metres] of water (31° 40' S; 128° 40' E).

Distribution.—40 miles [≈70 km] W of Eucla, South Australia, in 72 fathoms [132 metres] of water. Type and paratype, leg. Verco, from the Federal trawler Endeavour; King George Sound (35° 00' S; 118° 00' W) in 12 to 14 fathoms [22 to 26 metres] “three were dead, but in perfect condition.”

Holotype.—SAM No. D-909. Paratype D-910.

Discussion.—This new subspecies differs quite distinctly from the species *Niveria* (*Cleotrivia*) *globosa* (Sowerby II, 1832) in its overall morphological aspects (cf. Fig. 63). However, *N. (C.) euclaensis* seems somewhat more closely related to the *N. (C.) pilula* (Kiener, 1843) (Fig. 72a) from which it differs in several ways. The peripheral outline of the South Australian shell is more circular generally, with an absence of terminal projection, both in front and in back; the dorsal furrow is much more weakly impressed; the aperture is almost straight, less curving; the shell ribbing is fairly heavy, but not so well defined, and the shell is a bit narrower, with somewhat less dorsal elevation.

Etymology.—The new name reflects the geographical area of its presently known living range.

62. *Niveria* (*Cleotrivia*) *atomaria atomaria* (Dall, 1902)

(Fig. 74: holotype)

1902 *Trivia atomaria* Dall, Nautilus 16: 43.

1907 *Cypraea atomaria* (Dall) Hidalgo. Mem. Real. Acad. Cienc., Madrid: 274.

1908 *Trivia atomaria*. Dall, Bull. Mus. Comp. Zool., 43 (6): 323; pl. 12, figs. 8, 10, 11.

1971 *Trivia* (*Pusula*) *atomaria* (Dall, 1908). Keen, Sea Shells Tropical West America: 486; fig. 904.

Original description.—“*Trivia atomaria* . . . Shell minute, of a livid pink, with a substratum of olivaceous cast, the whole giving a pinkish brown effect: form subglobular, with a feeble dorsal sulcus, across which the ribs usually pass without interruption; in all there are about 18 ribs, with about equal interspaces, which are slightly saggrinate or minutely irregularly rugose, though the ribs are smooth; these ribs form an equal number of fine denticulations on the inside of the outer lip and over the pillar-lip and internal lobe; the extremities are very slightly or not at all produced; the spire is completely obscured” (Dall, 1902: 43).

Measurements, holotype.—“Length 3.2, breadth 2.6, height 2.2 mm.”

Measurements, hypotype.—L – 2.9 mm (LACM 72-64) (Fig. 74a).

Type locality.—Panama Bay, in 18 fathoms [33 metres] of water; dredged by U.S. Steamer Albatross (Stn. 27-98).

Distribution.—Panama Bay; Galápagos Islands.

Holotype.—USNM No. 109206.

Discussion.—Dall: “Half a dozen specimens of uniform size were dredged in 18 fathoms, Panama Bay . . . This is the smallest species I have ever seen; even the dwarfs of the allied *T. subrostrata* Gray of the West Indian fauna are larger.”

Etymology.—The name *atomaria* is derived from the Latin noun, *atomus*, meaning a small particle.

There are 2 fossil subspecies: *Trivia vaughani* Gardner, 1947; *Pusula* (*Cleotrivia*) *mauryae* Schilder, 1932.

63. *Niveria* (*Cleotrivia*) *atomaria pygmaea* (Schilder, 1931)

(Fig. 75: holotype)

1931 *Pusula* (*Cleotrivia*) *pygmaea* Schilder, Zool. Anz. 96: 71; fig. 5.

Original description.—“*Pusula* (*Cleotrivia*) *pygmaea* . . . Kugelig, Rippen scharf, Zwischenräume breit, mit feinen, in Längsreihen angeordneten Körnchen, R.-Furche kurz, breit, sehr seicht, quergerippt (seltener Rippen alternierend endigend), E. kaum vorgezogen, nicht abgesetzt, AR. schwach gerandet, M. ziemlich zentral, eng, leicht gebogen, Z. dicht, IL hinten zugespitzt, Foss. breit und tief, Col.-Furche breit. . . . Rosabraun, Rippen nicht heller, Columella innen blass (Abb. 5)” (Schilder, 1931: 71–72).

“*Pusula* (*Cleotrivia*) *pygmaea* . . . Globose, ribs sharp, interstices broad, with fine longitudinally arranged tubercles, dorsal sulcus short, broad, shallow, transversely ribbed (infrequently the ribs terminate alternately), ends scarcely produced, not set off, exterior margin weakly edged, aperture quite central, narrow, slightly curved, teeth close, inner lip tapered posteriorly, fossula broad and deep, columellar sulcus broad. . . . Rose-brown, ribs not lighter, columella light inwardly (illustration 5)” (translation by George Hanselman).

Holotype.—“Type: 3, 9: 81 71 17–49 from Anguilla [St. Kitts-Nevis, Leeward Islands], 30–100 fathoms [55 to 182 metres] (shell somewhat calcified).

Measurements, holotype.—L – 8.2 mm (Kiliass, *in litt.*).

Distribution.—“paratype: 4, 2, 82 69-15: 16–44: 20 from the Virgin Islands, 200–300 fathoms [364 to 546 metres] (dead, in coral debris): both [type] leg. Goes, Stockholm Museum.”

Type locality.—Anguilla Cay, N of Cuba, belonging to the Bahamas.

Distribution.—Schilder, 1941: Antilles: St. Thomas, Virgin Islands; Granada, Brit. West Indies; Barbados; Trinidad; Gulf of Paria [water between W coast of Trinidad Island and Venezuelan mainland]; Cuba; Grand Cayman Island; Jamaica; both coasts of Florida.

Holotype.—NRS, No. 3030 (Andersson, *in litt.*).

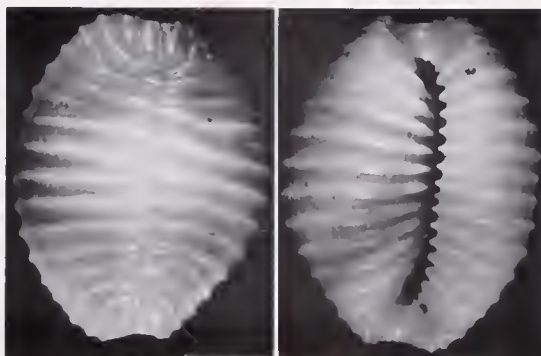


Fig. 90: *Decoriatrivia burius*:
DP. [1104], holotype: L—6.4 mm.

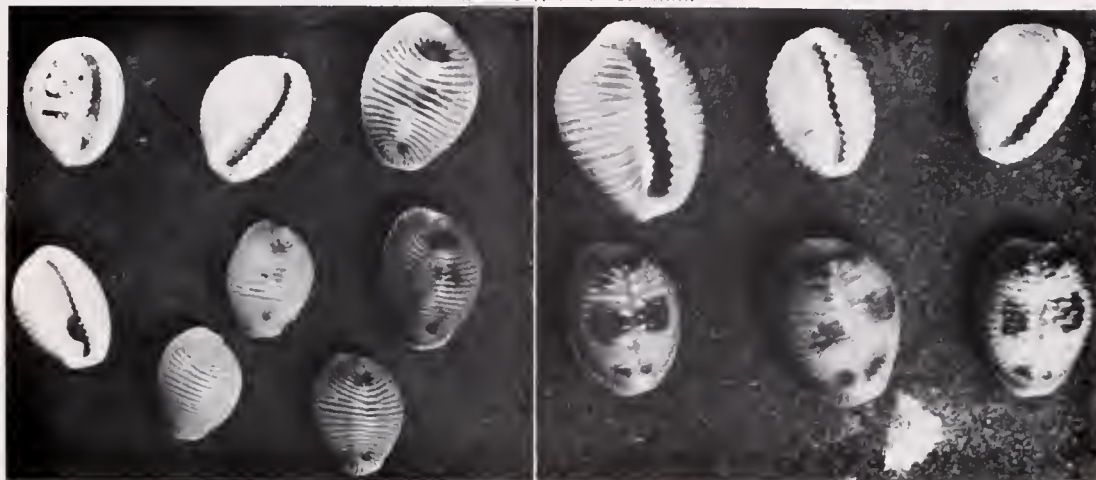


Fig. 91: *Cypraea pediculus* Linnaeus, 1758
Heppell photo, [49], type lot: L—12.1 mm.

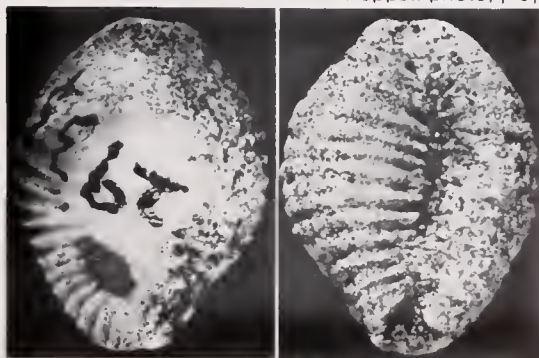


Fig. 92: *Trivia pulloidea*.
DP. [1106], holotype: L—8.1 mm.

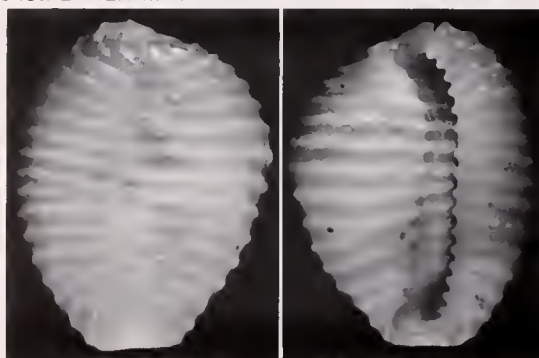


Fig. 93: *Decoriatrivia citeria*:
DP. [1107], holotype: L—2.9 mm.

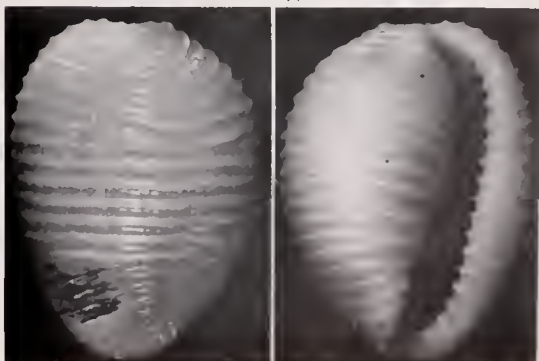


Fig. 94: *Trivia ritteri*:
DP. [1108], lectotype: L—11.2 mm.

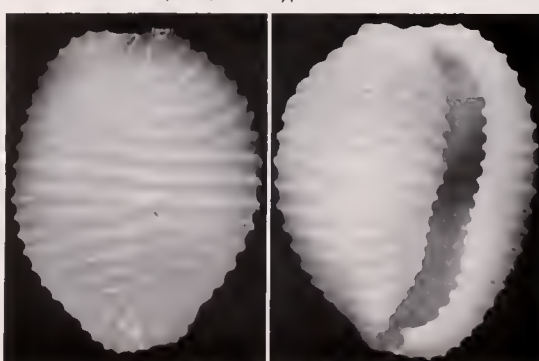


Fig. 94a. *Decoriatrivia ritteri*:
DP. [1108], hypotype: L—10.4 mm.



Fig. 96: *Cypraea rubescens*:
BM(NH) photo, [111], lectotype:
L—8.6 mm.

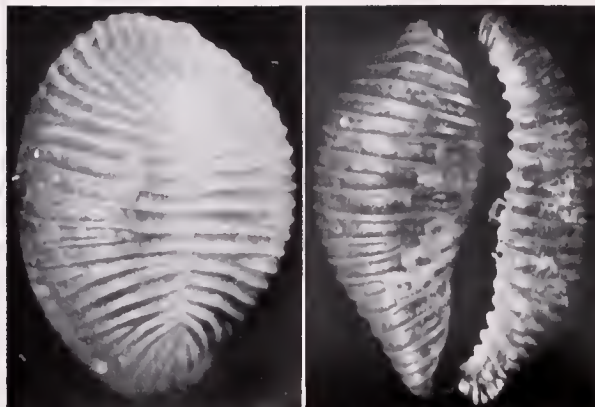


Fig. 96a: *Pusula (Pusula) rubescens*:
DP, [111], $\times 6\frac{1}{2}$.

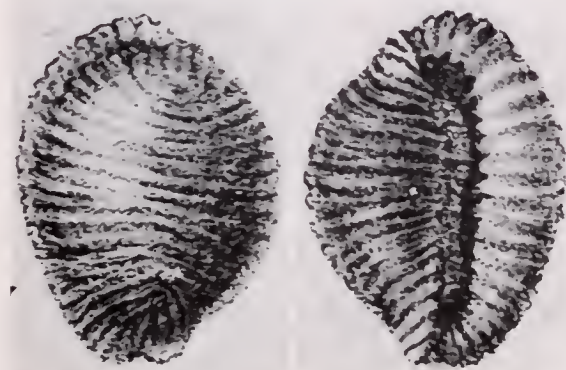


Fig. 96b: *Cypraea rubescens*:
DP, [111], (Sowerby II, 1870: figs. 507–508): $\times 6$.

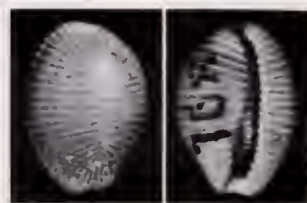


Fig. 97: *Cypraea fusca*:
BM(NH)photo, [112], lectotype: L—9.3 mm.

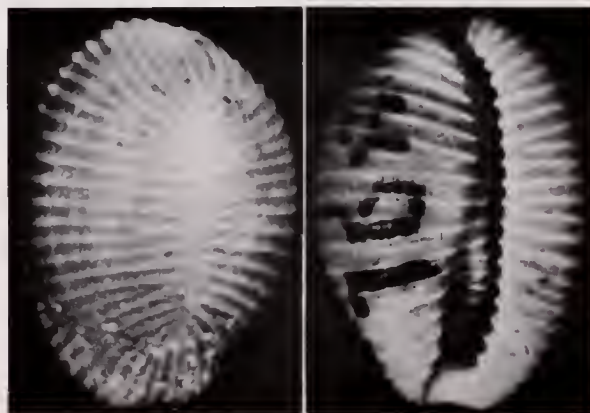


Fig. 97a: *Pusula (Pusula) fusca*:
BM(NH):DP, [112], lectotype: L—9.3 mm.



Fig. 98: *Cypraea (Trivia) galapagensis*:
FMNH:DP, [113], paratype: L—8.0 mm.



Fig. 99: *Pusula (Pusula) carabus*:
DP, [114], holotype: L—8.3 mm.

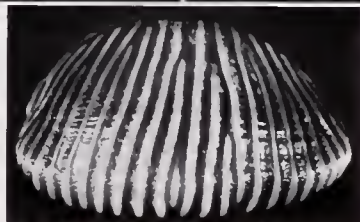
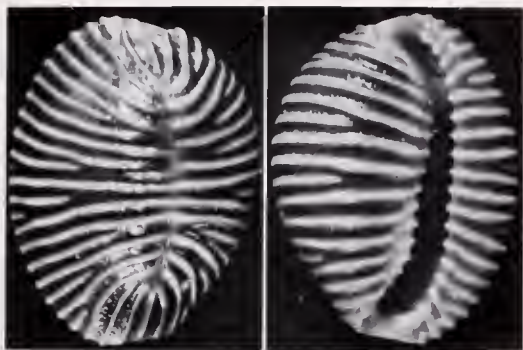


Fig. 99a. *Pusula (Pusula) carabus*:
DP, [114], paratype: L—8.0 mm.

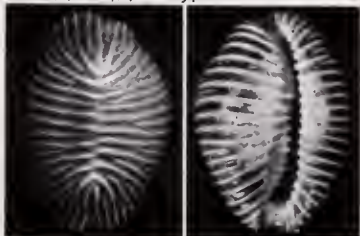


Fig. 102. *Cypraea sanguinea*:
BM(NH)photo, [117], lectotype: L—13.7 mm.

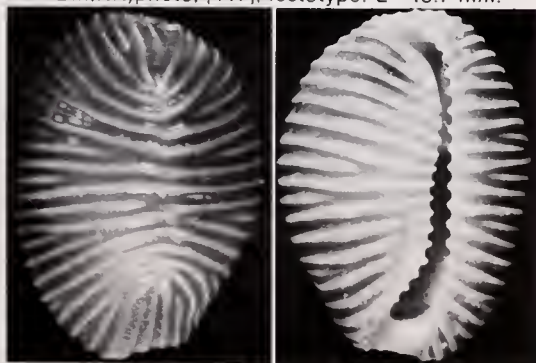


Fig. 102a. *Pusula (Pusula) sanguinea*:
DP, [117], hypotype: L—9.8 mm.

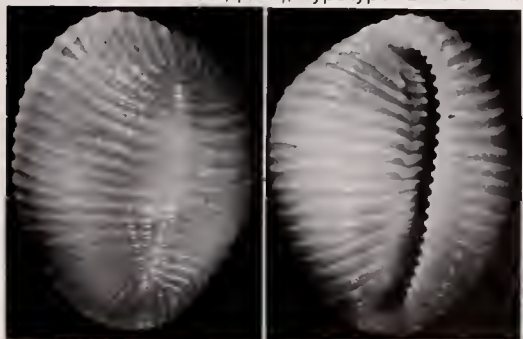


Fig. 103. *Trivia maltbiana*:
DP, [118], lectotype: L—12.6 mm.

Figure 104 is vacant.

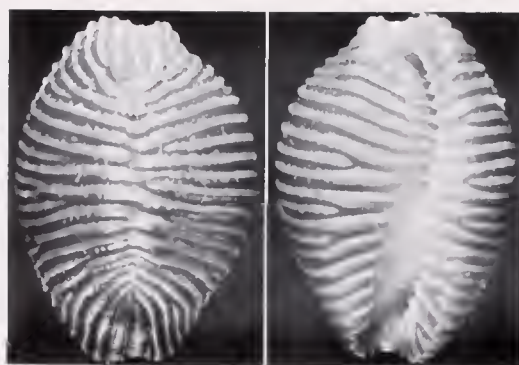


Fig. 100. *Pusula (Pusula) cherobia*:
DP, [115], holotype: L—6.3 mm.

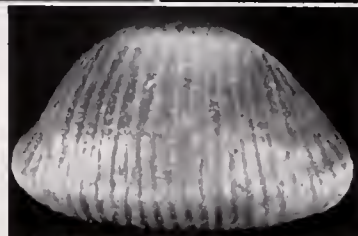
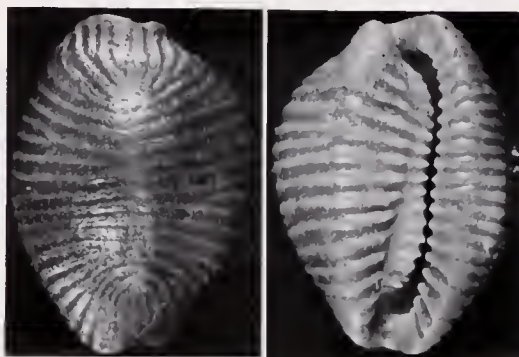


Fig. 101. *Pusula (Pusula) campus*:
DP, [116], holotype: L—7.4 mm.

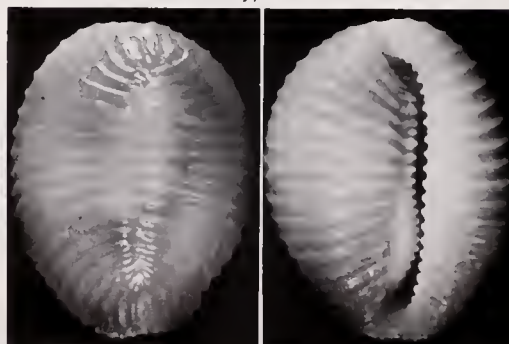
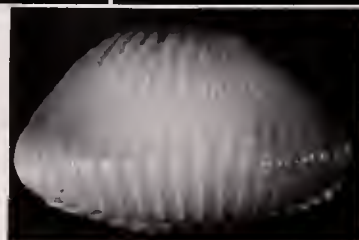


Fig. 103a. *Pusula (Pusula) maltbiana*:
DP, [118], paralectotype: L—11.4 mm.



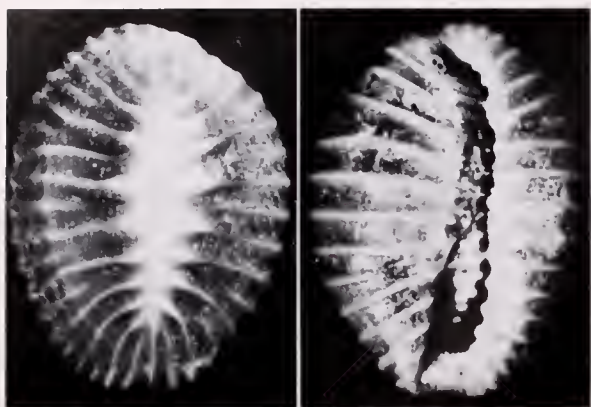


Fig. 105. *Cypraea californiana*:
BM(NH) photo. [119], lectotype: L—11.0 mm.

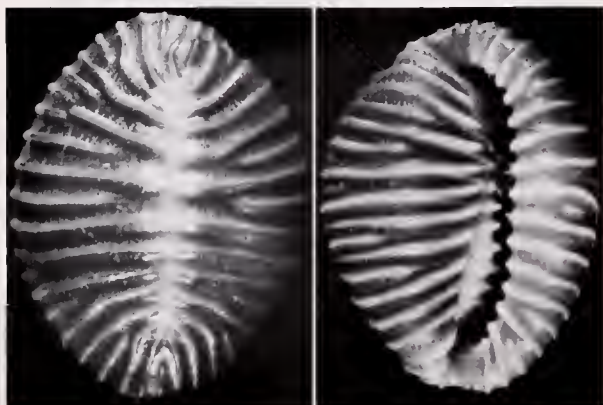


Fig. 105b. *Pusula (Pusula) californiana*:
DP, [119], hypotype: L—9.7 mm.

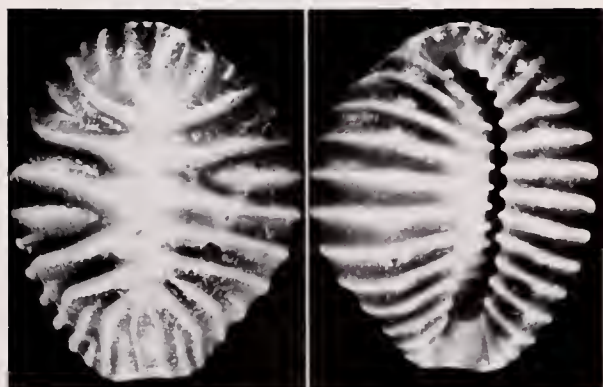


Fig. 106a. *Pusula (Pusula) californica californica*:
DP, [120], hypotype: L—10.6 mm.

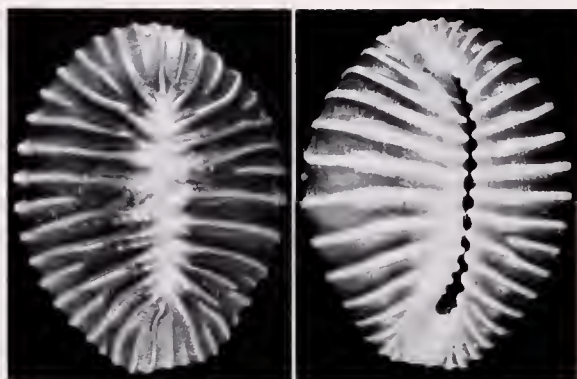
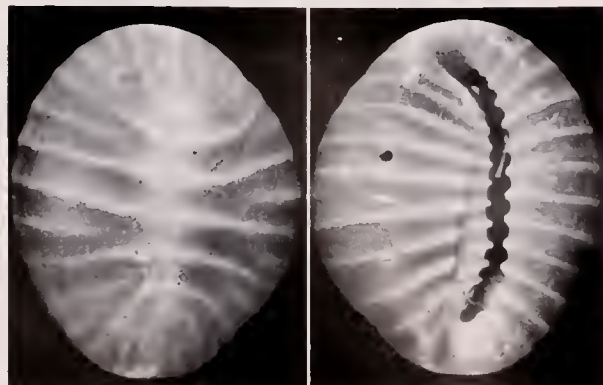


Fig. 105a. *Pusula (Pusula) californiana*:
DP, [119], hypotype: L—11.9 mm.

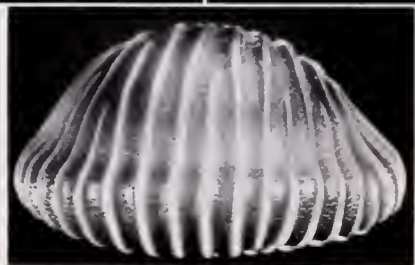


Fig. 106. *Cypraea californica*:
DP, [120], type fig.: L—10.6 mm.
[Sowerby II, 1832: fig. 42; 1870: figs. 425–26].

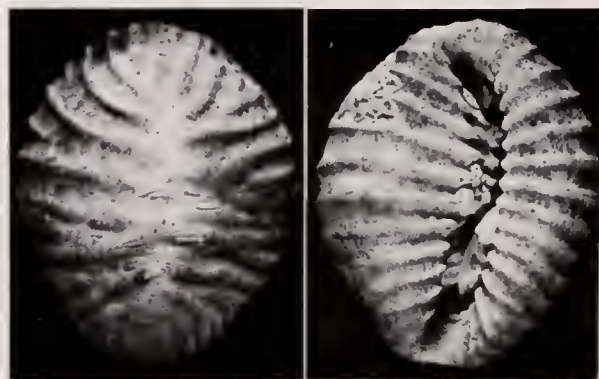


Fig. 106b. *Pusula (Pusula) californica californica*:
DP, [120], hypotype: L—6.3 mm.

← Fig. 106c. *Pusula (Pusula) californica loochooensis*:
DP, [121], holotype: L—10.8 mm.

Etymology.—The name, *pygmaea*, is derived from the Latin noun, *pygmaeus*, meaning dwarf.

64. *Niveria (Cleotrivia) occidentalis* (Schilder, 1922)
(Fig. 76: Sowerby II, 1870 illustr., figs. 490–491)

- 1827 *Cypraea sub-rostrata* Gray, Zool. Journ. 3: 363: (Figs. 77, 77a: lectotype herein); (name preoccupied) (not Gray 1824, a fossil species.).
1846 *Cypraea pulla* Gaskoin, Proc. Zool. Soc. London 1846: 24 (Sowerby II, 1870; figs. 490–491) (name preoccupied).
1922 *Trivia occidentalis* Schilder, nom. nov., pro *C. subrostrata* Proc. Malac. Soc. London 15: 103, 111.
1922 *Trivia antillarum* Schilder, nom. nov., pro *C. subrostrata* Gray, 1827, Proc. Malac. Soc. London 15: 103, 111.

Original description.—"Cypraea pulla Gaskoin, 1846 [= *Trivia occidentalis* Schilder] . . . Cypr. testâ ovatâ, nitidâ, fusco-rubescens, costellis dentibusque concoloribus; costellis usque ad lineam dorsalem ut plurimum continuis, et ad margines aperturæ terminantibus; sulco columellari albedo, margine interno dentibus serrato; aperturâ angustâ; labio externo extus incrassato; extremitatibus paululum productis."

"Reddish-brown cowry . . . Shell ovate, shining, of a dark reddish-brown colour; ribs the colour of the shell, mostly terminate at the dorsal depression; a very few on the sides of the shell, thence extending to form teeth on both sides of the aperture; on the outer side or lip about eighteen, and about sixteen on the columellar side; columellar groove whitish, the teeth traverse it and serrate its entire inner edge; aperture narrow, very slightly spiral; base round; margin thick, none on the columellar side; extremities slightly produced" (Gaskoin, 1846: 24).

Measurements, holotype.—"25/100ths of an inch" [6.5 mm].

Type locality.—Not recorded.

Distribution.—Sowerby II, 1870: Galapagos Islands. Schilder, 1941: Galapagos Islands; Ecuador: Payta, Sechura Bay; Panama Pacific; Buenaventura, W Colombia; Esmeraldas, NW Ecuador; Gulf of California.

Holotype, pulla.—Location unknown.

Lectotype (herein), subrostrata.—BM(NH) Register No. 1975642 (1 of 3 syntypes).

Discussion.—Gaskoin: "Differs from *fusca* of Gray [err.: Sowerby II, 1832: 13; fig. 37], in the ribs and base, and the teeth not being white, but of the same color as the shell; in the ribs being much finer, in having a dorsal line or impression, and in being a deeper and redder color."

Schilder's new name (1922: 111): "This species, which has no synonyms or named varieties, is described by Gaskoin as *Cypraea*. Therefore its name is preoccupied by Gmelin (1790 [err., Gmelin, 1791: 3412] = *onyx*, Linn. var.) and must be changed. I propose *Trivia occidentalis*, m. nov. nom."

Schilder (1922: 111), on the same page renamed Gray's homonymous *Cypraea subrostrata*. Gray used this name for the first time (1824: 369) for a fossil;

he used it for the second time (1827: 363) for a recent form (Fig. 77). Schilder (1971: 20), acting as first revisor, subsequently placed his *Trivia antillarum* into the synonymy of *T. occidentalis* (which position this author has retained herein).

Etymology.—This name derives from the Latin adjective, *occidentalis*, meaning of the west.

65. *Niveria (Cleotrivia) aquatanica* Cate, sp. nov.
(Fig. 78)

Description.—Shell fairly large, subglobose, slightly elongate. Terminals just barely produced, peripherally rounded. Dorsum subglossy, with a short, shallow, longitudinal dorsal furrow. Dorsal triviid ribbing numerous overall, transversely continuous from side margins without interruption at dorsal furrow; ribbing becoming lateral over the terminal areas. Base at least twice as wide as ventral outer lip, convexly rounded, with side margins barely defined; ventral base ribbing continuous from dorsum, extending over inner apertural margin and slightly concave columella to the adaxial longitudinal carinal ridge, where ribbing terminates as sharp teeth. Aperture noticeably narrow, centrally straight, curving at either end. Fossula broader than columella, with inner fossular ridge larger, semicircular, dentate. Outer lip narrow, convex, with numerous ribs in continuation of dorsal sculpture, terminating on inner lip edge as sharp distinct denticles. Shell color off-white overall.

Measurements, holotype.—L – 11.2; W – 8.6; H – 7.6 mm.

Type locality.—Bulalacao, Mindoro, Philippines, taken by Moro divers (12° 31' N lat.; 121° 26' E. long.).

Distribution.—Unknown.

Holotype.—LACM No. 1797.

Discussion.—This new species seems most closely to resemble *Cleotrivia leucosphaera* (Schilder, 1931); however, *C. aquatanica* is twice as large and is more globose. It also differs in having a broader outer lip; by having the aperture broadened anteriorly through base and lip constriction; by having a peculiar flaring of the interior fossular carinal ridge, and the terminal processes are more broadly rounded.

Etymology.—The new name is derived from the Latin adjective, *aquatilis*, living in the water.

Trivirostra Jousseaume, 1884

Naturaliste 1884: 415 (name not established in valid way).

Trivirostra Jousseaume, 1884

Bull. Soc. Zool. France 9: 20

(see Schilder, 1939: 173 [28]).

Type species [SD, Roberts, 1885: 7: 161]:
(*Trivia*) *scabriuscula* Gray = *T. oryza* Lam.: [SD: Schilder, 1971: 90]: *Cypraea oryza* Lamarck, 1811.

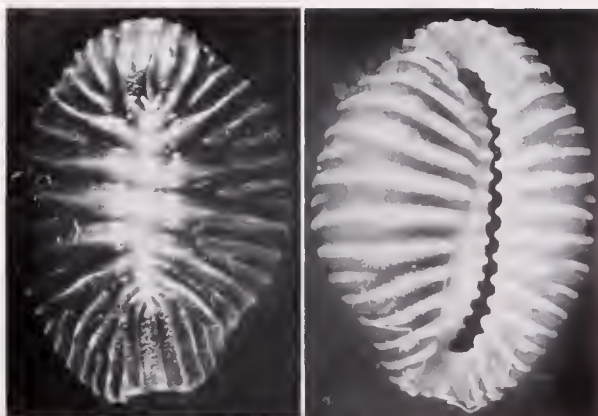


Fig. 106d: *Pusula (Pusula) californica californica*:
DP, [120], hypotype: L—12.8 mm.

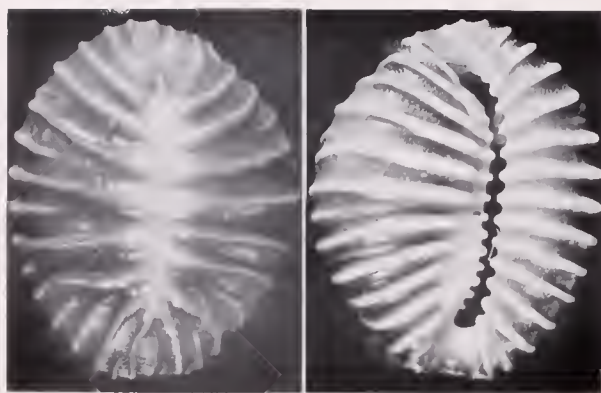


Fig. 106e: *Pusula (Pusula) californica californica*:
DP, [120], hypotype: L—10.6 mm.

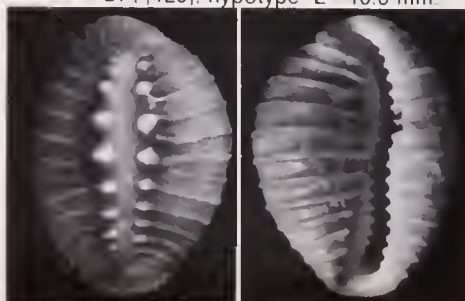


Fig. 107 *Cypraea solandri*:
BM(NH) photo, [123], lectotype: L—15.3 mm.

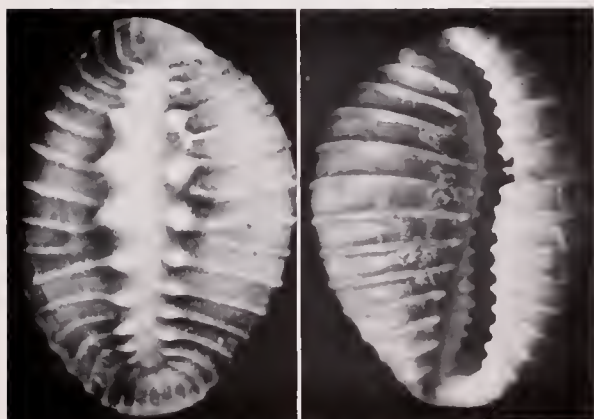


Fig. 107a: *Pusula (Pusula) solandri*:
BM(NH):DP, [123], lectotype: L—15.3 mm.

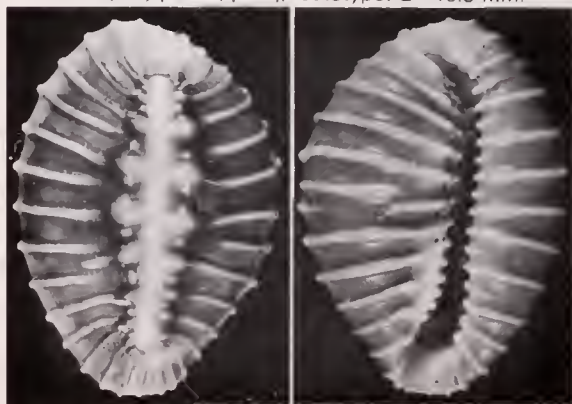


Fig. 107b: *Pusula (Pusula) solandri*:
DP, [123], hypotype: L—16.3 mm.

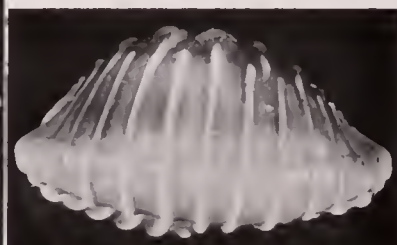
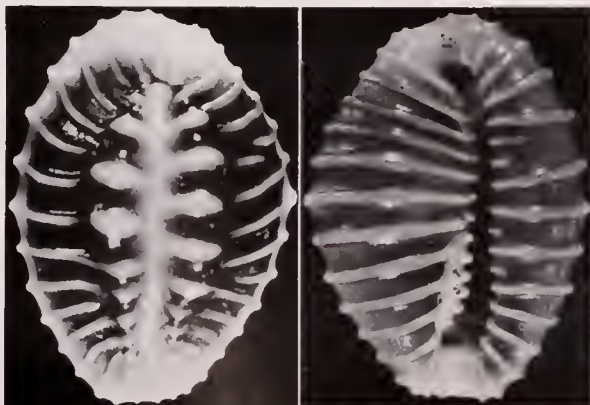


Fig. 107c: *Pusula (Pusula) solandri*: DP, [123], hypotype: L—12.2 mm.

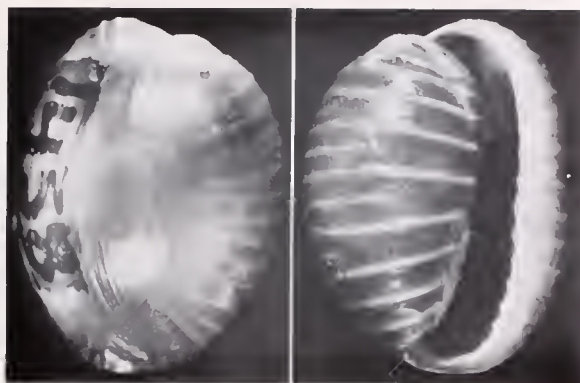


Fig. 108. *Trivia (Pusula) elsiae*:
Keen photo, [122], holotype: L—7.0 mm.

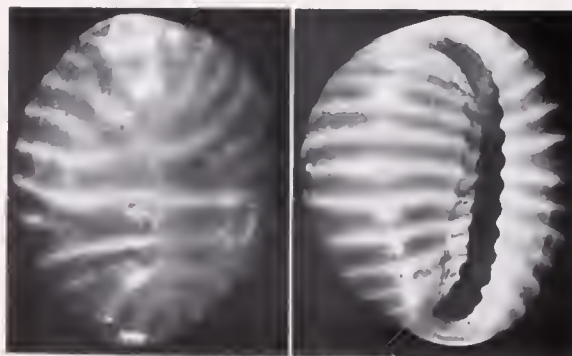


Fig. 108a. *Pusula (Pusula) elsiae*:
DP, [122], hypotype: L—5.5 mm.

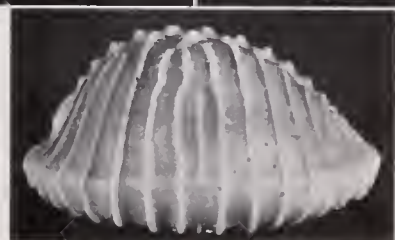
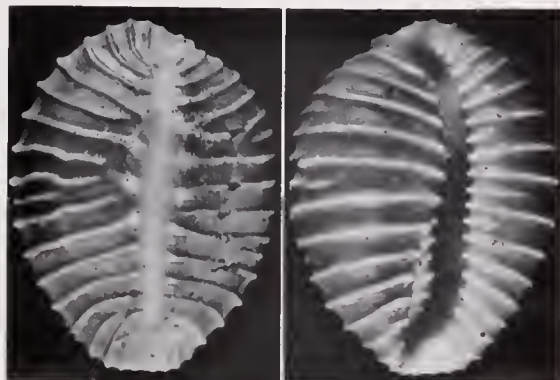


Fig. 109. *Pusula (Pusula) padreserrai*:
DP, [124], holotype: L—21.0 mm.

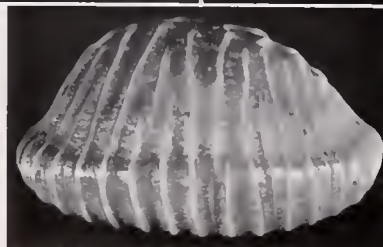
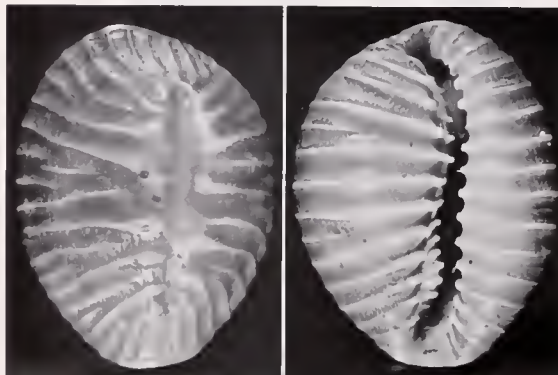


Fig. 109a. *Pusula (Pusula) padreserrai*:
DP, [124], paratype: L—19.1 mm.

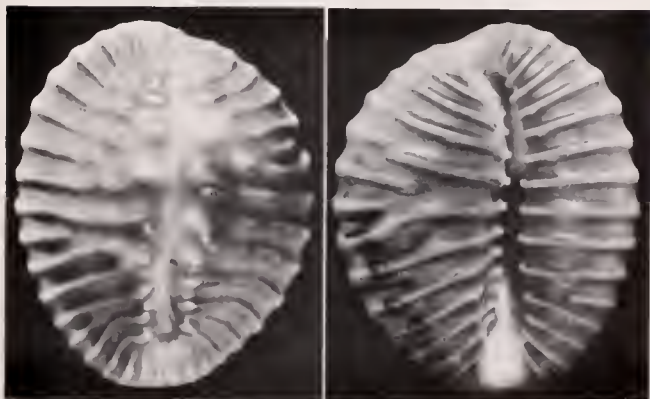


Fig. 110. *Cypraea radians*:
MHNG photo, [125], holotype: L—20.2 mm.

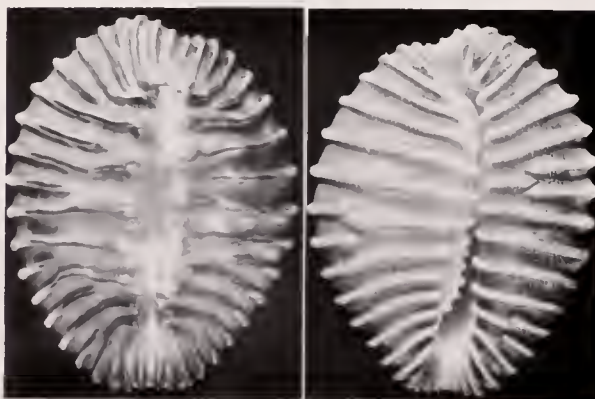


Fig. 110a. *Pusula (Pusula) radians*:
DP, [125], hypotype: L—23.4 mm.

Original description.—"Genre *Trivirostra* . . . Ce genre se distingue du G. [genus] *Trivia* par la présence d'un sillon dorsal, la spire cachée, son ouverture plus étroite, à bords plus anguleux et la saillie prononcée de ses extrémités" (Jousseaume, 1884: 20).

"This genus is distinguished from the genus *Trivia* by the presence of a dorsal furrow, the hidden spire, its straighter aperture, more angular at the edge [margin], and the pronounced protrusion of its extremities" (translation by Jean Cate).

66. *Trivirostra corinneae* (Shaw, 1909)

(Fig. 112: Sowerby II, 1870: figs. 464–465)

- 1867 *Trivia affinis* Marrat, Ann. Mag. Nat. Hist. (3) 20: 215 (primary homonym).
- 1909 *Trivia corinneae* Shaw (nom. nov. pro *affinis*). Proc. Malac. Soc. London 8: 308.
- 1920 *Trivia hidalgoi* Vredenburg, Rec. Geol. Survey Ind. 51/2: 134. [= *hidalgi* Vredenburg, 1920 em.]
- 1932 *Trivirostra corinneae* (Shaw). Schilder, Bull. Soc. France 57: 399; figs. 1–4 (Fig. 112a: Schilder drawing).
- 1932 *Trivirostra corinneae puellula* Schilder, Bull. Soc. Zool. France 57: 399 (in synonymy only; invalid).

Original description.—*Trivia corinneae* = "*Trivia affinis* Marrat . . . *Trivia affinis* . . . Shell oblong-ovate, transversely coarsely ribbed; beaks projecting, broad; teeth acute, dorsal groove obsolete; very pale, but indications of color in one of the specimens" (Marrat, 1867: 215).

Measurements, holotype.—L = 5.1; W = 3.4; H = 2.8 mm.

Type locality.—Not established. "Obtained from a dealer's stock among West-Indian species."

Distribution.—(Schilder, 1941: W Tuamotu Islands; Marshall Islands?).

Holotype.—Location unknown. "I am sorry I could not find the specimen type of *Trivia corinneae* (Shaw, 1909) described and depicted by Schilder (1932) as the neotype of Shaw's species. This species could be in the Bavay collection, which, as you know, was bought by J. R. le B. Tomlin. However, since *T. corinneae* was only a new name for *T. affinis* Marrat the type of *affinis* must be considered the type of *corinneae*. The Marrat collection is kept in the Liverpool Museum and the type of *corinneae* should be there" (Bouchet, *in litt.*).

Discussion.—Marrat observed: "Resembles a large *T. insecta* Mighels, but may at once be known by its coarse ribs and obsolete dorsal groove." In changing the name of this species, Shaw stated: "This name [*Cypraea affinis* Marrat, 1867], being preoccupied for a fossil by Dujardin (Mém. Soc. Géol. France, 1837 [*Cypraea affinis*], Vol. ii, p. 304, pl. xix, fig. 12), I propose to substitute that of *Trivia corinneae*. This species appears to be closely related to *T. pacifica*, Gray [= Sowerby II, 1832], but it is slightly more elongate and has no dorsal sulcus" (Shaw, 1909: 308). Additional information concerning the con-

fusion of this original Marrat species may be found in Schilder (1922: 109)

67. *Trivirostra thaani* Cate, sp. nov.

(Fig. 113)

Description.—Shell small, elongately ovate, convex, elevatedly humped, tapering abruptly to the rear, less so to the front. Terminals barely produced, evenly arched abapically, pseudo spatulately to the left adapically. Base long, convex, narrowly ovate. Aperture long, narrow, almost straight; acutely, abruptly reflexed to the left in the back; broadened somewhat openly in front due to a mild constriction of the outer lip. Columella wide, fairly deeply concave, with less bold transverse ribs crossing it; fossula, a continuation of the columella, wider, though hardly deeper, with a very highly arched adaxial wall within. Outer lip long, comparatively broad centrally, narrowing to the front and back, convex. Shell ribbing numerous overall, with a shallow, weakly impressed longitudinal median dorsal furrow; ribs continuous from the outer lip edge of the aperture to the columellar-base side, barely interrupted at the dorsal furrow. Shell is off-white overall.

Measurements, holotype.—L = 4.5; W = 3.0; H = 2.5 mm; 11 paratypes (C2640).

Type locality.—Lihue, Kauai, Hawaii (21° 59' N; 159° 24' W) (leg. Ditlev Thaanum, Honolulu, 1921).

Holotype.—LACM No. 1826.

Discussion.—This new species, long in the author's collection, has heretofore been regarded as *Trivirostra hordacea* (Kiener, 1843). However, on close inspection it can rather easily be separated from the Kiener species by having a somewhat broader shell; in having a different shape to the adapical terminal process, and an acutely reflexed posterior canal. There is also a resemblance between this new species and that of *T. corinneae* (Shaw, 1909): *T. thaani* Cate differs from the Shaw species by having a median dorsal furrow, and by lacking the dorsal color spotting mentioned by Shaw and Schilder, 1932: 399.

This new triviid species is named for the late Ditlev Thaanum, Honolulu, Hawaii, in recognition of his many contributions to our understanding of the cypraeid fauna of Hawaii.

68. *Trivirostra hordacea* (Kiener, 1843)

(Fig. 114: Kiener, type illustration)

- 1843 *Cypraea hordacea* Kiener, Spec. Icon. Coq. Viv. *Cypraea*: 149; plt. 54, fig. 5.
- 1845 *Cypraea insecta* Mighels, Proc. Bost. Soc. 2: 24 (Fig. 115: Sowerby, 1870: figs. 477–479).
- 1928 *Trivia insecta*. Faustino, Phil. Mar. Moll.: 220.
- 1934 *Trivia koroensis* Ladd, B. P. Bishop Mus., Hawaii 119: 220; plt. 39 (name given to a fossil species).

Original description.—"Cypraea hordacea . . . C. testâ ovato-elongatâ, albâ; aperturâ angustissimâ; labro convexo, tenui, confertissimè denticulato; costulis eminentioribus, rugosis: lineâ dorsali indistinctâ" (Kiener, 1843: 149).



Fig. 111: *Cypraea costis-punctata*:
DP, [126], (Sowerby II, 1870; figs. 452–453 (type fig.)): $\times 3$.

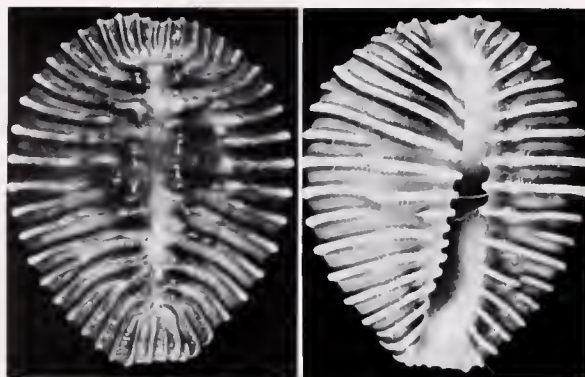


Fig. 111a: *Pusula (Pusula) costispunctata*:
DP, [126], hypotype: L—21.0 mm (typical form).

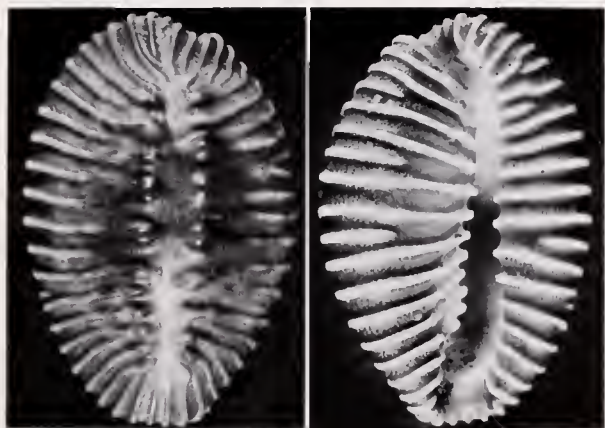


Fig. 111b: *Pusula (Pusula) costispunctata*:
DP, [126], hypotype: L—19.0 mm (elongate form).



Fig. 112: *Trivia affinis*:
DP, [66], (Sowerby II, 1870; figs. 464–465: type): $\times 7$.
=*Trivia corinneae* Shaw, 1909.

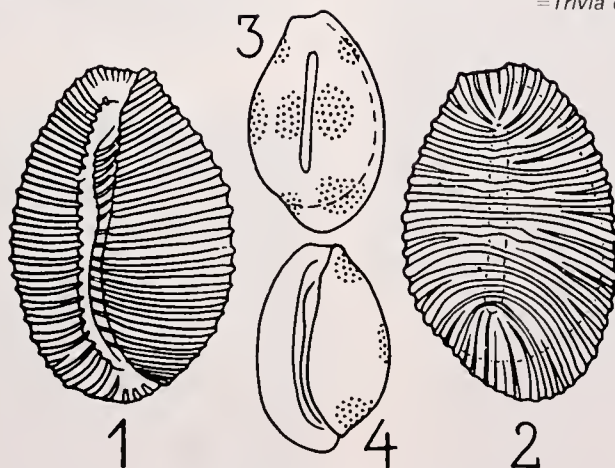


Fig. 112a: *Trivirostra corinneae*:
BSF-DP, [66], figure: $\times 2$.

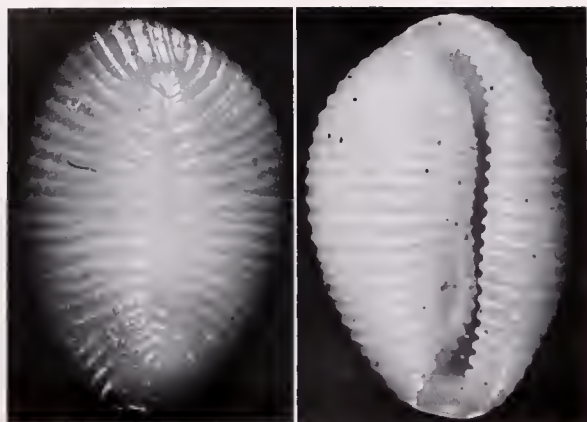


Fig. 113: *Trivirostra thaanumi*:
DP, [67], holotype: L—4.5 mm.

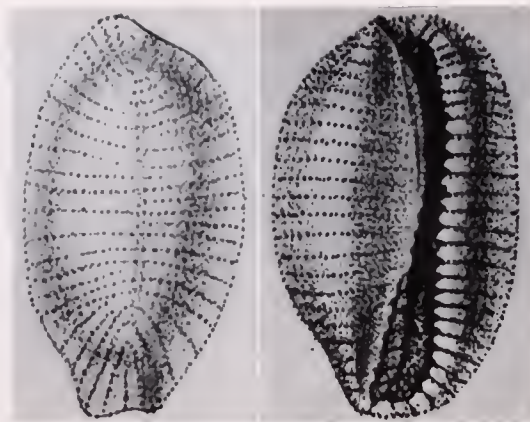


Fig. 114: *Cypraea hordacea*.
DP, [68], type fig.: $\times 4\frac{1}{2}$.

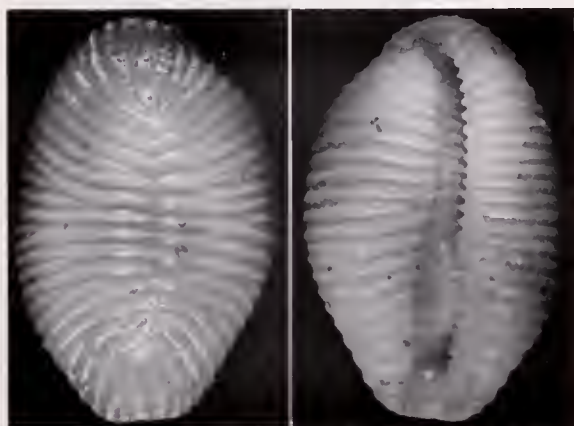


Fig. 114a: *Trivirostra hordacea*.
DP, [68], hypotype: L—4.7 mm.

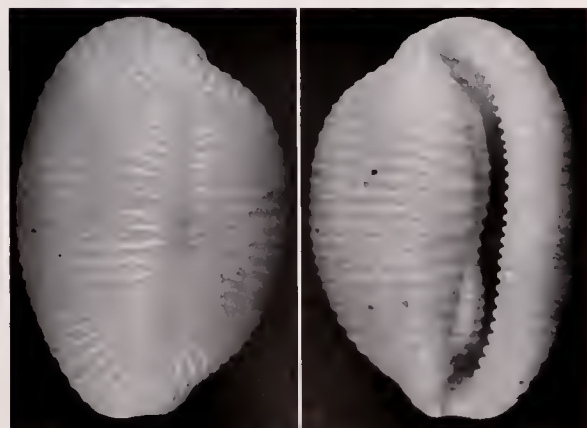


Fig. 116: *Trivirostra boswellae*:
DP, [69], holotype: L—8.8 mm.



Fig. 117: *Trivirostra oshimaensis*:
DP, [70], holotype: L—5.0 mm.

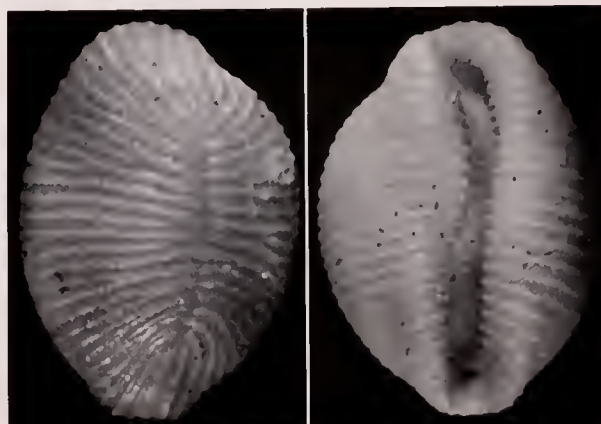


Fig. 115: *Cypraea insecta*:
DP, [68], (Sowerby II, figs. 478–479): $\times 11$.

"Shell oval, elongate, convex on top, slightly flattened underneath. The aperture is very straight, a little dilated at the lower part; the right margin is convex, rounded, not thickened exteriorly in a rim; it is provided with numerous fine teeth which continue to form ribs over the entire dorsal surface; the columella is similar. These rather striking ribs, finely rugose, sharp-edged, return on the median line in a very superficial and rather flattened furrow. The shell is all white" (translation by Jean Cate).

Measurements, holotype.—"Long. 6 millim."

Measurements, hypotype 1.—L = 4.8; W = 3.1; H = 2.6 mm (C3759).

Measurements, hypotype 2.—L = 4.7 mm (LACM 75-61) (Fig. 114a).

Type locality.—"Hab. la mer de l'Inde, les côtes de l'île Bourbon. [error]. [= Réunion, an island in the Mascarene Island Group, Indian Ocean]."

New type locality herein.—Kaneohe Bay, Oahu, Hawaii (21° 27' N; 157° 47' W).

Distribution.—Kaneohe Bay, Kailua, Kaawa, Punaluu (Beach, leg. R. Gage), Kēahi Lagoon (45 to 213 metres, leg. T. Bratcher), Waikiki, Oahu, Hawaii (leg. C. S. Weaver), Kauai, Hawaii (leg. C. S. Weaver), Niue Island, S Pacific (Connolly). (Schilder, 1941: Tahiti; Tonga-Gilbert Islands; Hawaii; New Guinea; possibly Timor-Philippines).

Holotype.—MNHN, appears to be lost (Danrigal, *in litt.*).

Discussion.—Kiener: "This species has often been confused with *Cypraea oryza*; we believe it is distinct. It possesses constant differences in its form which is straighter and more elongate, and in the margins of its aperture." Although the Kiener type appears to be lost, his published illustration is excellent, and seemingly accurate enough for species identification. The hypotypes (C3759, LACM 75-61) (Figs. 114 and 114a) seem adequately to illustrate this species.

Etymology.—The species name seems to have been taken from the Latin noun, *hordeum*, meaning of barley.

69. *Trivirostra boswellae* Cate, sp. nov.

(Fig. 116)

Description.—Shell small, ovate, elongate, somewhat narrow, evenly though somewhat flatly humped. Terminals broad, evenly extended. Dorsum broad, somewhat flatly elevated, tapering quickly to either side and terminal. Base convex, narrowly ovate, elongate. Columella relatively narrow, undulating, concave, with an upraised interior longitudinal adaxial ridge along its inner edge. Fossula very large, broad, deeply concave, occupying half the length of front columella, and having a noticeable elevated adaxial wall in continuation of inner columellar ridge. Aperture centrally straight, narrow, curving semiacutely left posteriorly, very broad in front due to constriction of inner edge of front outer lip. Outer lip fairly broad, convex, with a slightly undulating apertural edge. Shell ribs, with deeply incised interstices, numerous overall; with a scarcely depressed longitudinal dorsal median line (ribs from either side, and terminals, meet just short of each other medially, thus forming the central line); ribs continuous over either

side-margin: to the left over base and columella to its inner edge; to the right over outer lip to its apertural edge, where they terminate as sharp, bold teeth. Shell color white overall.

Measurements, holotype.—L = 8.8; W = 5.9; H = 5.0 mm.

Measurements, paratype.—L = 7.8; W = 5.6; H = 5.0 mm (C4278B).

Type locality.—Port Shepstone, Natal, SE Africa; leg. Helen Boswell; (30° 46' S; 30° 25' E).

Distribution.—Natal coast: Port Shepstone to Durban, SE Africa.

Holotype.—LACM No. 1805; (C4278A).

Discussion.—This new triviid species seems most closely to resemble *Trivirostra hordacea* (Kiener, 1843). It differs, however, by having a slightly smaller shell and by the differences of great geographical separation. It also differs by having more rounded, less narrowly projecting terminal beaks and by having a more acutely leftward curving adapical canal. The aperture is undulating, less straight; the fossula is shorter and broader. The Kiener shell is also narrower, with a narrower, straighter aperture, without the constriction of the front inner lip edge, as seen in *T. boswellae* Cate.

Etymology.—This new name is proposed in honor of Helen Boswell, Valhalla, Transvaal, South Africa, well known for her knowledge of the southwestern Indian Ocean molluscan fauna.

70. *Trivirostra oshimaensis* Cate, sp. nov.

(Fig. 117: holotype)

Description.—Shell small, narrowly ovate, dorsally elevated, somewhat flatly humped centrally. Terminals projecting, somewhat squarely in back, more so anteriorly. Dorsum dull, with shiny interstices. Base unevenly broad, narrowly ovate, convex, with an indistinct longitudinal ridge separating the columellar lip from the base, more apparent at left front and back canal walls. Aperture fairly wide, sinuous, with rather steep apertural sides. Columella broadly undulating, only faintly transversely ribbed. Fossula wide, deeply excavated, with only a faint continuation of the columella ribbing; shell closely ribbed, the striae continuous from outer lip side of aperture, over shell surface, to base side of aperture; the longitudinal medial dorsal furrow very weakly depressed, shallow, failing to alter continuity of transverse dorsal ribs; both terminal beaks ribbed, terminating as sharp denticles at the edges. Shell color snowy-white overall.

Measurements, holotype.—L = 5.0; W = 3.5; H = 3.0 mm.

Type locality.—Oshima Island, Amami Gunto Group, Ryukyu Islands (28° 15' N; 129° 15' E).

Holotype.—LACM No. 1819; from Tadashige Habe, NSMT.

Discussion.—This new species may be compared with the SE African species *Trivirostra boswellae* Cate, herein. It differs from that species, however, in several distinct morphological respects. *Trivirostra oshi-*

maensis Cate has a slightly more roundly formed shell; the rear terminal beak and canal are more intricately formed and reflected (due to the adapical termination of columella lip-ridge); the aperture is less straight, fossula is narrower, and it does not have the highly elevated, arched adaxial wall within.

Etymology.—The new name is that of the Ryukyuan Island, *Oshima*, its type locality, with the geographic ending *-ensis*.

71. *Trivirostra desirabilis* (Iredale, 1912)

(Fig. 118: holotype)

1912 *Trivia desirabilis* Iredale, Proc. Malac. Soc. London 10: 226; pl. 9, figs. 8–9.

Original description.—"Trivia desirabilis . . . Shell small, sub-oval, extremities slightly produced; white, strongly sculptured. Sculpture consisting of about thirty major ridges, a few intercalatory ribs sometimes present; all are continuous, a very slight depression only being noticeable in the middle of the back. The interstices appear smooth. Aperture narrow; the teething agreeing with the ribbing present" (Iredale, 1912: 226–227).

Measurements, holotype.—"Length 7, breadth 5, height 4 mm."

Type locality.—Sunday Island, Kermadec Group [1100 km NNW of New Zealand].

Holotype.—CM, Christchurch, New Zealand (Tunnicliffe, *in litt.*).

72. *Trivirostra clariceae* Cate, sp. nov.

(Fig. 119: holotype)

Description.—Shell of medium size, ovate, solidly formed. Terminals restrictedly, roundly produced. Dorsum elevated, bulbously humped, shiny. Side margins rounded, without shouldering above. Base roundly convex, somewhat narrowly ovate. Aperture fairly wide, almost straight, with a reflection to the left adapically. Columella somewhat narrow, concave, heavily ribbed transversely. Fossula broad though shallow and heavily ribbed. Outer lip somewhat narrow, roundly convex. Shell ribs numerous overall, with no longitudinal medial dorsal line; ribbing continuous over dorsum to either side, over side margins, base and outer lip, to columellar and apertural edge respectively. Shell color is a deep, rich coffee-brown.

Measurements, holotype.—L – 6.8; W – 5.0; H – 4.0 mm.

Type locality.—Jeffrey's Bay, SE Africa (34° 01' S; 24° 55' E).

Holotype.—LACM No. 1820.

Discussion.—The triviid species whose shell coloring ranges from dark brown to many lighter shades of brown have usually been found to live only in the Eastern Pacific and the Eastern Atlantic coastal regions. It is an interesting variation from this rule to find a shell of this color in the SE African habitat.

This new species may perhaps best be compared

with the *Trivirostra desirabilis* (Iredale, 1912). *Trivirostra clariceae* Cate is a somewhat smaller-shelled species; is more solidly, heavily formed, and the shell is more ovate in outline; the shell ribbing is heavier, more coarsely formed; the aperture is more curving, with the posterior canal terminating in a more closed fashion. The fossula construction is also different, and the shell color is brown.

Etymology.—Clarice Elizabeth Mary Connolly, Kenwyn, S Africa, has not only contributed many shells to the Natal Museum, but has also sent the author much material for this study; she also collected the shell of this new species, which I take pleasure in dedicating to her.

73. *Trivirostra sphaeroides* Schilder, 1933

(Fig. 120: holotype)

1933 *Trivirostra sphaeroides* Schilder, Zool. Anz. 102: 290, 297; figs. 2, 8.

Description, holotype.—*Trivirostra sphaeroides* . . . "klein, Z. feiner, aber RR. weniger zahlreich als sonst; RF. meist schwach eingedrückt oder Rippen in schmäler Mittellinie verlöschend" (Schilder, 1931: 297).

Redescription.—Shell of medium size, subglobularly ovate, well formed. Front terminal broadly open, somewhat squared, and only barely protruding; rear terminal beak moderately produced, roundly reflexed to the left. Dorsum shiny, with a well defined longitudinal dorsal furrow; numerous (18) ribs (counting from one end of the furrow to the other) traversing right and left dorsum: the left ribs across margin, base, concave columella, terminating distinctly, sharply at adaxial carinal ridge; ribs crossing right dorsum, side margin, and convex outer lip, terminating as sharp denticles on inner edge of outer lip; ribs not traversing median dorsal furrow. Base fairly broad, shiny, with 21 ribs. Aperture curving gently, at its narrowest centrally, becoming moderately wider at either end. Columella broad, laterally ribbed, widening to the front in fossular area. Outer lip fairly wide, ribbed (23), convex, widest centrally, narrowing adapically. Shell color off-white overall.

Measurements, holotype.—L – 6.1 mm (Kilias, *in litt.*).

Measurements, hypotype 1.—L – 5.3; W – 4.0; H – 3.5 mm (C4269) (Fig. 120a).

Measurements, hypotype 2.—L – 5.5; W – 4.0; H – 3.4 mm (C4246) (Fig. 120b).

Type locality.—"New Caledonia."

Distribution.—Oshima Island, Amami Gunto, Ryukyu Islands (C4269); South Australia (C4246) (Schilder, 1941: Purdy Island, Bismarck Archipelago).

Holotype.—ZMB No. 78590 (Kilias, *in litt.*).

Discussion.—One should refer to the original Schilder proposal, with the accompanying Key and detailed statistics, but Schilder did comment briefly: "6 (*sphaeroides*): small, teeth finer, but dorsal ribbing less numerous than usual; dorsal sulcus mostly weakly

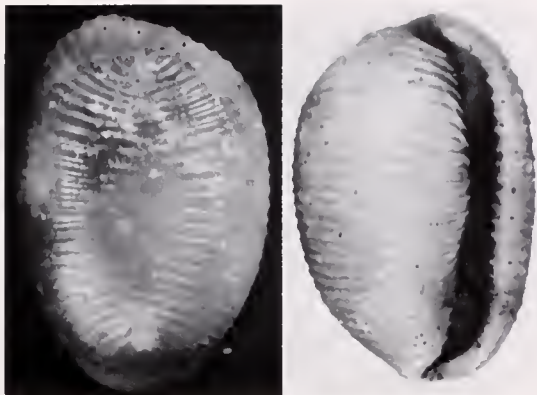


Fig. 118. *Trivirostra desirabilis*:
CM photo, [71], holotype: L—7.0 mm.



Fig. 119. *Trivirostra clariceae*:
DP, [72], holotype: L—6.8 mm.

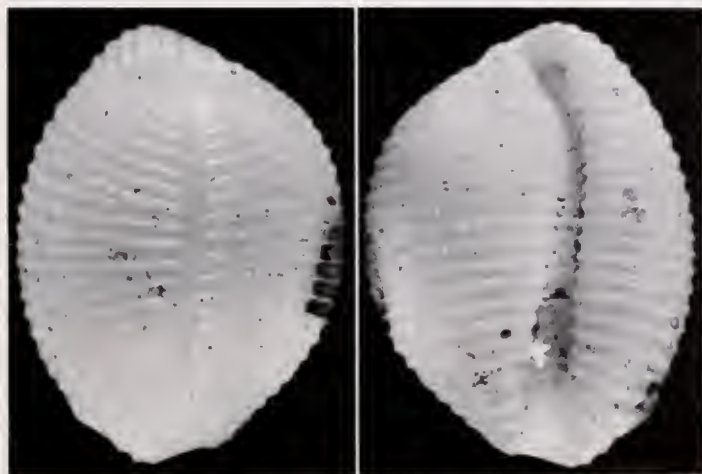


Fig. 120. *Trivirostra sphaeroides*:
ZMB photo, [73], holotype: L—6.1 mm.

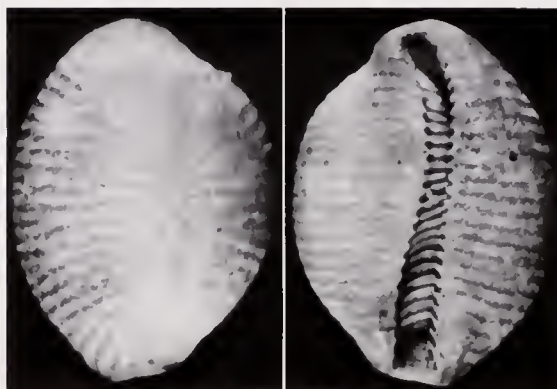


Fig. 120a. *Trivirostra sphaeroides*:
DP, [73], hypotype: L—5.3 mm.

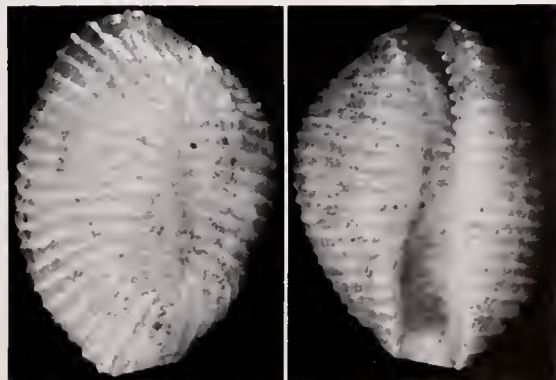


Fig. 120b. *Trivirostra sphaeroides*:
DP, [73], hypotype: L—5.5 mm.

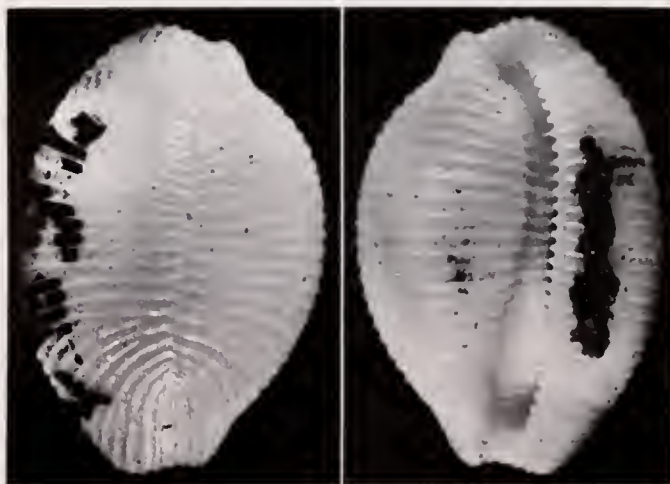


Fig. 121. *Trivirostra edgari insularum*:
ZMB photo, [74], holotype: L—8.9 mm.

impressed or the ribs limited to a narrower central line”

Etymology.—The suffix, *oides* (likeness), is added to the Latin noun, *sphaera*, meaning like a ball.

74. *Trivirostra insularum* Schilder, 1944

(Fig. 121: holotype)

1944 *Trivirostra edgari insularum* Schilder, Arkiv för Zoologi, Band 36A (2): 5, 14.

Description.—Shell small, ovate, shiny, roundly humped dorsally. Terminals broadly produced, reflected left adapically, straight, open at the front. Base convex, elongately ovate, narrowing almost pointedly at either end. Aperture nearly central, fairly narrow, almost straight, curving gently in back, broadening in front. Columella concave, becoming deeper anteriorly as a fossula; adaxial columellar ridge broadening and elevating at fossular area. Outer lip nearly as broad as base, convex, not shouldered at side margin. Shell ribbing numerous overall, interrupted at dorsal furrow by alternating, terminating ribs from either side margin; ribbing on left continuous from dorsal medial line, over side margin, base, and columella, terminating as dull teeth on adaxial carinal edge within. Ribs on right dorsum continuous over side margin and outer lip, ending as sharp teeth on inner (apertural) edge of lip; the longitudinal ribs on the terminal beaks protruding beyond arched edge of canal openings as pointed teeth. Shell color is off-white overall; (C4241).

Measurements, holotype.—L – 8.9 mm (Kilius, in litt.).

Measurements, hypotype.—L – 7.0; W – 4.8; H – 4.0 mm (C4241) (Fig. 121a).

Type locality.—“Gilbert and Fiji Islands.”

Distribution.—Central Pacific to Hawaii (Waikiki, Oahu, Hawaii; leg. C. S. Weaver, Lanikai, Oahu); Jogashima, Japan (Fig. 121a).

Holotype.—ZMB, Schilder collection No. 7681.

Discussion.—Schilder’s original description for this species is tabular in form, with added formulae and comparative references to other species (*T. shawi*, *T. edgari*, *T. oryzoidea*, etc.) in sentence form. For an in-depth study of the details of this species one should consult the original Schilder reference, which is in German and too complicated to reproduce here.

Etymology.—The suffix, *-arum* (belonging to), is added to the Latin noun, *insula*, belonging to the islands.

75. *Trivirostra edgari edgari* (Shaw, 1909)

(Fig. 122: Sowerby II, 1870; figs. 470–471)

1827 *Cypraea scabriuscula* var. *minor* Gray, Zool. Journ. 3: 364 (name preoccupied).

1849 *Cypraea grando* Gaskoin, Proc. Zool. Soc. London for 1848: 96 (name preoccupied).

1870 *Cypraea grando* (Gaskoin, 1849). Sowerby II, *Cypraea*, 4: 46; pl. 35, figs. 470–471 (Fig. 122).

1909 *Trivia oryza* forma *minor* Schepman, Siboga Exped. 49/2: 137 (name preoccupied).

1909 *Trivia edgari* Shaw, nom. nov. pro *Cypraea grando* Gaskoin. Proc. Malac. Soc. London 8: 310.

Original description.—*Cypraea grando* Gaskoin . . . Cyp. testâ ovato-globosâ nitidâ, niveâ: basi rotundatâ, sine varice; aperturâ latiusculâ anticè latiori, subspirali; sulco columellari longitudinem columellae aequante, lato et profundo; dentibus minimis; aequalibus, labii circa quadraginta-octo, columellae circa trigintaquatuor; costellis tenuibus et aequalibus, e dentibus continuis; interstitiis longitudinaliter tenuiterque crenulatis; lineâ dorsali impressâ; extremitate posticâ valdè productâ; spirâ prominente et flavescente.”

“Shell ovato-globose, shining, of a clear snow-white colour; base round, being a continued convexity with the body of the shell, there being no margin on either side; aperture widest at its anterior half, rather wide generally; the columellar side spiral, edge of the lip but very slightly so; the columellar groove extends the entire length of the columella, and is continuous at both ends with the channels; it is broad and deep, particularly at the anterior half; its outer and inner edges spiral, the outer edge angular and somewhat projecting; teeth very minute, numerous and even, about forty-eight on the lip, and about thirty-four on the columellar side, which traverse the columellar groove to notch its inner edge; the ribs delicate and even, and are continuations from the teeth; many terminate on the sides of the shell (the teeth being so numerous, the outer portion could not contain their prolongation), the rest end mostly in fine points at the dorsal impression, alternately from either side; a few are united with those of the opposite side; interstices between the ribs finely crenulated longitudinally; dorsal line impressed; extremities, the anterior very slightly, the posterior much produced; spire prominent and tinged with a light yellow colour; margins none” (Gaskoin, 1849: 96).

Measurements, holotype.—“Length, $\frac{26}{100}$ ths of an inch; width, $\frac{20}{100}$ ths; height, $\frac{19}{100}$ ths [= L – 6.6; W – 5.0; H – 4.8 mm].

Measurements, hypotype.—L – 6.0; W – 4.4; H – 3.9 mm (C4266; Fig. 122a).

Type locality.—“Manila” [Philippine Islands].

Distribution.—Oshima Island, Amami Gunto, N Ryukyu Islands; ex Habe, NSMT.

Type.—Disposition unknown; Sowerby, 1870 figs. (470–471) are used as a guideline to the species.

Discussion.—Gaskoin gives the impression, by mentioning the very fine teeth and the prominent apex, that he may have had a subadult shell to work with. He made the following comment: “This shell differs from the *Cypraea vitrea* [Gaskoin, 1849], just described, in the minuteness and number of the teeth and delicacy of the ribs; in the unequal width of the aperture, and the spiral form of its inner side [of the aperture]; in the broad, deep and unequally wide columellar groove, prominent apex, absence of margin, etc.”

Shaw, 1909: “*Trivia edgari*, n. n. for *T. grando*, Gaskoin. Potiez first employed the specific name *grando* to designate a fossil species (*Cypraea grando* Potiez & Michaud, 1838, Galer. Moll. Mus. Douai 1:

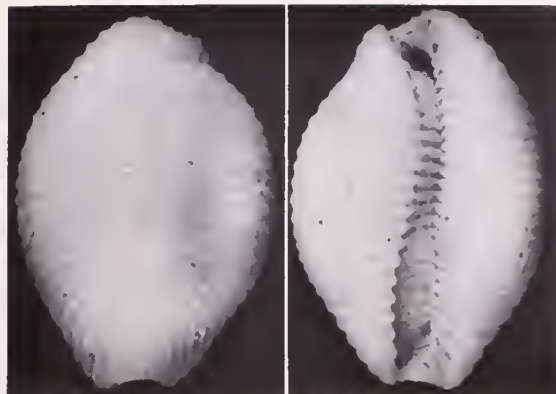


Fig. 121a *Trivirostra insularum*.
DP, [74], hypotype: L—7.0 mm.



Fig. 122: *Cypraea grando*:
DP, [75], (Sowerby II: figs. 470–471): $\times 7$. = *Trivia edgari* Shaw, 1909.

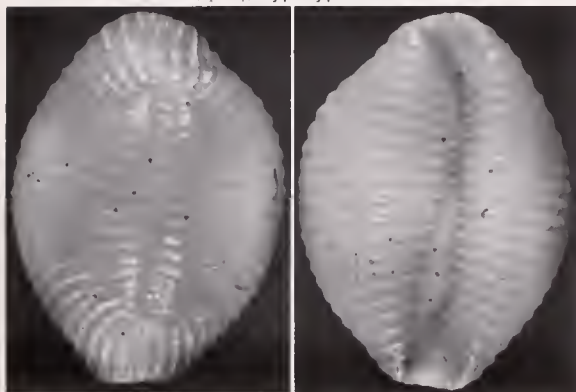


Fig. 122a *Trivirostra edgari*:
DP, [75], hypotype: L—6.0 mm.

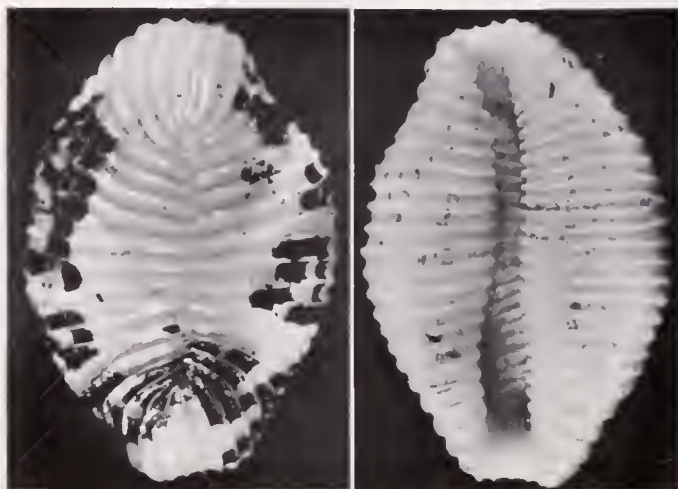


Fig. 124 *Trivirostra edgari tomlini*:
ZMB photo, [76], paratype: L—6.3 mm.

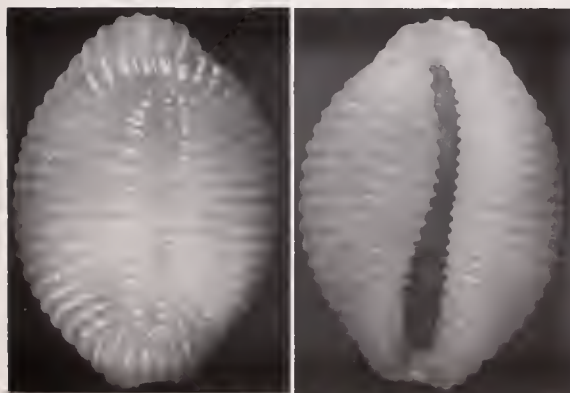


Fig. 124a *Trivirostra edgari tomlini*:
DP, [76], hypotype: L—6.0 mm.

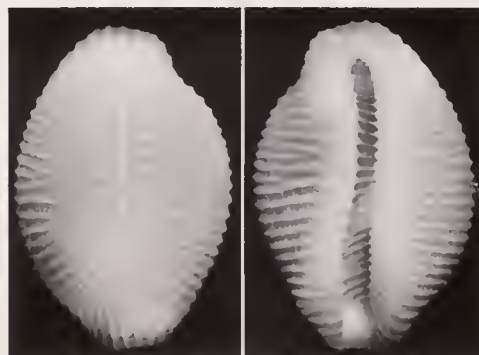


Fig. 125: *Trivia oryza* (Odhner) = *Trivirostra oryzoidea* Iredale:
NRS photo, [77], lectotype: L—9.5 mm.

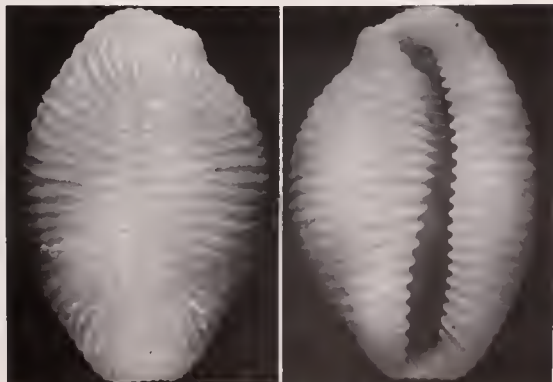


Fig. 125a *Trivirostra oryzoidea*:
DP, [77], hypotype: L—10.6 mm.



Fig. 125b: *Trivia oryza* (Odhner) = *T. oryzoidea* Iredale:
NRS:DP, [77], radula: $\times 1\frac{1}{2}$.

Figure 123 is vacant.

481). His description, however, is so short and inadequate that it is useless for the purpose of identification, and this being so, one cannot unite with it the *T. grando* of Gaskoin as some writers have suggested. Gaskoin's species therefore must be re-designated, and in proposing the name of *Trivia Edgari* I have much pleasure in associating with it Mr. E. A. Smith's christian name, the term *smithi* having already been used for a fossil form" [*Dolichupis Smithi* (Martin, 1887) Schilder, nom. nov., 1971: 21].

76. *Trivirostra edgari tomlini* Schilder, 1944

(Fig. 124: paratype)

1944 *Trivirostra edgari tomlini* Schilder, Arkiv. Zool. 36A (2): 14.

Original description.—"Bei meiner ersten Bearbeitung [Schilder, 1933: 288] dieses schwierigen Genus Habe ich im Formenkreise von *edgari* (= *grando* Gaskoin) nur 2 Formen unterschieden: *shawi* ist durch die mehr zylindrische statt bauchige Gestalt, die viel weniger vorgezogenen [terminal] und durch die gröberen [teeth] relativ leicht von *edgari* zu trennen, auch ist bei *shawi* die [dorsal sulcus] im allgemeinen tiefer und die [rib] sind dort eher unterbrochen und am Furchenrande eher etwas verdickt; heute betrachte ich beide Formen in Parallele zu *insecta* Mighels und *hordacea* Kiener als getrennte Arten. Später habe ich [Schilder, 1941: 76] dann die Abtrennbarkeit der pazifischen "cf. *edgari*" und der nordaustralischen *oryzoidea* Iredale (= *oryza* Odhner nec Lamarck) vom malayischostasiatischen Typus von *edgari* angedeutet. Das Material der Expedition Sixten Bock sowie weitere mir inzwischen vorgelegene Ex. erlauben eine weitere Unterteilung: die rezente *edgari* zerfällt in mindestens 3 und *shawi* in 2 Unterarten (geographische Rassen). Zunächst seien die Mittelwerte der individuell allerdings z. T. [terminal teeth?] beträchtlich schwankenden Zahn- und [dorsal] Rippenzahlen mitgeteilt".

Schilder next gives a table which compares the species *T. edgari* and *T. shawi*, listing their races (*edgari*, *oryzoidea*, *insularum*, *tomlini*, *shawi*, and *bocki*); their living ranges; their shell formulae; their dorsal ribs (Rücken-Rippen); and their relative number of teeth. Then he continues:

"Unter den *edgari*-[form] sind die malayischen und die ostasiatischen Ex. wohl identisch, auch die zwerghafte Form des Bismarck-Archipels (Karlei) dürfte noch ninzuzurechnen sein; die nordaustralische *oryzoidea* möge einstweilen als gestreckte Rasse mit besonders feinen [inside teeth] abgetrennt bleiben, weitere Funde könnten aber ihre Zugehörigkeit zur malayischen *edgari* erweisen. Dagegen sind die pazifische *insularum* nov. [= *edgari edgari* (Shaw, 1909)], die mir ausser von den Gilbert-Inseln und von Fiji auch von den Carolinen (Mortlock) vorliegt, durch die groben [inside teeth], aber zahlreicheren [dorsal ribs] sowie die ostafrikanische *tomlini* nov. von Mombasa (coll. Tomlin) und Südafrika mit besonders groben [teeth] und Rippen zweifellos als geographische Rassen abzutrennen, zumal die Verbreitungsgebiete der Art diskontinuierlich zu sein scheinen (Fehlen von *edgari* in Neu-Caledonien und im zentralen Indik).

Die von Sixten Bock auf den Gilbert-Inseln gefundene *shawi*-Rasse, die ich dem Entdecker zu Ehren *bocki* nennen möchte, ist grösser als die ost-polynesische *shawi* s.str. und hat vor allem viel gröbere Zähne auf beiden Lippen, trotzdem aber die gleiche [marginal thickness]. Als Holotypen seien bezeichnet: *insularum* = 6,8(69)27: 18(36 [dorsal ribs]) von Fundort Gil. Mb, *bocki* = 6,9(67)22: 20(29 [dorsal

ribs]) von Fundort Gil. L, *tomlini* = 5,5 (75)22: 19 (26 [dorsal ribs]) von Mombasa (coll. Tomlin)."

There is more to the Schilder text: however, it seems to deal only with the species *T. edgari* and *T. shawi*.

Measurements, paratype.—L = 6.3 mm (Kiliass, in litt.).

Measurements, hypotype.—L = 6.0; W = 4.3; H = 3.6 mm (C3671; Fig. 124a).

Discussion.—For an in-depth analysis of these species it will be necessary for the student to consult the complicated original Schilder formulae and tables.

77. *Trivirostra oryzoidea* Iredale, 1935

(Fig. 125: lectotype)

1917 *Trivia oryza* (Lamarck) of Odhner, Kungl. Sv. Akad. Handl. Bd. 52, No. 16; 53 pl. 2, figs. 52–53, text fig. 12 (not *Cypraea oryza* Lamarck, 1811). Loc. NW Australia, 11 fms [20 metres] (Fig. 125: type).

1935 *Trivirostra oryzoidea* Iredale, Australian Zoologist 8: 99.

Original description.—"Trivirostra *oryzoidea* (= *Trivia oryza* (Lamarck) of Odhner, 1917) . . . The difference between this species and the preceding one [*Trivia grando* of Odhner, 1917 (Fig. 145) = *Trivirostra pargrando* Iredale, 1935] is shown clearly from the figures given here [figures 145–146] compared with those of the former. The dorsal furrow in the present specimen is rather short (< half the shell). The distance of the under margin from the basal (anterior) end of the furrow is equal to the corresponding apical (posterior) distance and equal to about $\frac{1}{2}$ – $\frac{2}{3}$ of the length of the furrow; the whole surface up to the furrow is rugous in the interstices of the ribs and the colour is pure white" (Odhner, 1917: 43).

"Not *Cypraea oryza* Lamarck above" (Iredale, 1935: 99).

Measurements, lectotype.—L = 9.5 mm (Andersson, in litt.) = *oryza* of Odhner, 1917.

Measurements, hypotype 1.—L = 10.6; W = 7.1; H = 6.0 mm (C2468) (Fig. 125a).

Measurements, hypotype 2.—L = 10.5; W = 7.1; H = 6.1 mm (C2594).

Type locality.—The Pearl Banks, 44 miles [71 km] WSW of Cape Jaubert [N end of 80 Mile Beach, just south of Roebuck Bay], West Australia; in 11 fathoms [20 metres] 19° 47' S; 120° 33' E.

Distribution.—Quobba Point: Willie Creek; 28 km N of Broome (C2468); Lighthouse Point, Broome (Roebuck Bay); West Australia (leg. C. N. Cate Oct.) 1966 (C2468).

Type.—NRS (Andersson, in litt.) 1 of 3 syntypes.

Discussion.—Realizing that Odhner's shell was not *Trivirostra oryza* of Lamarck, 1811, Iredale gave it a new name. The pronounced recurving of the posterior canal seems to be the most outstanding character of this small white shell species. The author collected several of these shells during a trip to Western Australia in 1966.

A supplementary description of the species is

offered here, including additional detail: Shell of medium size, regularly ovate, solidly formed. Terminals produced, broadly squared, subspatulate at ends. Dorsum elevated, tapering evenly to terminal beaks and sides. Dorsal ribs numerous, dull, with subglossy interstices; ribbing crossing the dorsum, from inner edge of outer lip to inner edge of columella, generally continuous except for a long, narrow, moderately impressed longitudinal medial furrow interrupting dorsally. Base and ventral surface of outer lip of approximately equal width, separated by a narrow, almost straight aperture. Columella broad, distinctly concave, heavily ribbed. Columella broadening and deepening to the front as a fossula. Shell color is off-white overall.

Radula of "*T. oryza* (Lamarck) of Odhner" [= *Trivirostra oryzoidea* Iredale, 1935]; (Fig. 125*b*).

Etymology.—The suffix *-oidea* (like), is added to the Latin noun, *oryza*, like rice.

78. *Trivirostra vitrina* Cate, sp. nov.

(Fig. 126)

Description.—Shell small, inflatedly humped, rounded. Terminals squarely produced, being of equal extension at either end. Dorsum shiny, glossy, elevated, humped, tapering evenly to sides and terminal beaks. Base broad for its length, curving, convex; both front and back terminal processes curiously extended and thickened into a semi-ridge, apex almost hidden by the shell ribbing; this terminal thickening seems to define the spherical aspect of the shell's ventral side. Aperture narrow, curved, somewhat sinuous. Columella curving longitudinally, narrow, concave, deepening to the front and becoming a wide, deep fossula. Outer lip broad, convex, narrowing front and back. Shell ribs numerous, rather fine. Deeply depressed longitudinal dorsal groove not interrupting the transverse ribs at base of groove; thus it can be said that the transverse dorsal ribbing is continuous from inner adaxial columellar ridge to the apertural edge of the outer lip. Ribs become longitudinal over the terminal beaks, where they protrude beyond the peripheral edge of the canals. Shell color a light grey overall.

Measurements, holotype.—L = 7.0; W = 5.3; H = 4.5 mm.

Type locality.—Malampaya Sound, NW Palawan Island (10° 57' N; 119° 15' E); leg. Moro collectors, ex F. G. Dayrit, Diliman, Rizal, Philippines (1969).

Holotype.—LACM No. 1809.

Discussion.—This new species from the south China Sea has an unusual peripheral outline. It may be compared with the SE African *Trivirostra tomlini* Schilder, 1944. It differs from that species in that it is smaller; it has a narrower aperture, without base and lip constriction abapically; the rear terminal beak and canal are more greatly reflected, with a different relationship to the rear base, and the shell is more globose, with less distinctively margined sides.

Etymology.—The new name is the Latin adjective, *vitreus*, meaning glassy.

79. *Trivirostra shawi* Schilder, 1933

(Fig. 127: holotype)

1933 *Trivirostra edgari shawi* Schilder, Zool. Anz. 102: 290.

Description.—Shell of medium size, solid, elongately ovate. Terminals squarely, moderately produced. Dorsum subglossy (because of shiny interstices), with a well defined median dorsal furrow; numerous ribs (18), excluding two or three on each terminal beak, traversing dorsum to either side margin, although not crossing dorsal line. Base broad, shiny, ribbed (22), interstices wide. Aperture somewhat wide, narrowest centrally, straight. Columella fairly wide, shallowly concave, broadening in front to form a fossula. Outer lip broad, convex, shiny, ribbed (22). Shell color off-white overall.

Measurements, holotype.—L = 6.0 mm (Kilias, *in litt.*).

Measurements, hypotype 1.—L = 5.3; W = 3.7; H = 3.2 mm (C3667; Fig. 127*a*).

Measurements, hypotype 2.—L = 6.7; W = 4.5; H = 3.9 mm (C4237).

Type locality.—Hawaii (designated herein: Maalaea Bay, Maui; leg. Reggie P. Gage, Wailuku, Maui; December 1967 (C4237) (20° 55' N; 156° 31' W).

Distribution.—Waikiki, Oahu, Hawaii; leg. Ted Dranga, Apra Harbor, Guam (C3667) (Fig. 127*a*: hypotype).

Holotype.—ZMB, Schilder collection, No. 186 (Kilias, *in litt.*).

Discussion.—For pertinent details concerning this species, and other Schilder species of this date, refer to the previous species, *Trivirostra tomlini* Schilder, 1944. Because the use of intricate tables and critical alphabetical "capital" letter reference, it will be important for the student to make direct reference to both the Schilder (1933: 290) and (1944: 15) works. To the latter date, add the Schilder comment: "Tier von beiden Arten hell, nur der mit distanten Warzen besetzte faltige Mantel zeigt besonders rings um den Siphon zerstreute kleine schwarze Flecke."

80. *Trivirostra bocki* Schilder, 1944

(Fig. 128: paratype)

1944 *Trivirostra shawi bocki* Schilder, Arkiv för Zoologi, K. Svenska Vetenskapsakad. 36 A (2); 5, 15.

Original description.—(See the Schilder reference given above for that author's description, which consists of a complex assortment of Tables, etc. This author's redescription follows below.)

Description.—Shell of medium size for the genus, somewhat narrowed, elongate. Terminals slightly produced. Base convex, elongately ovate. Aperture almost straight, except for gentle recurving abapically, with a broadening in front due to some constricting of both base and outer lip. Columella wide, shallow. Fossula, a continuation of columella in

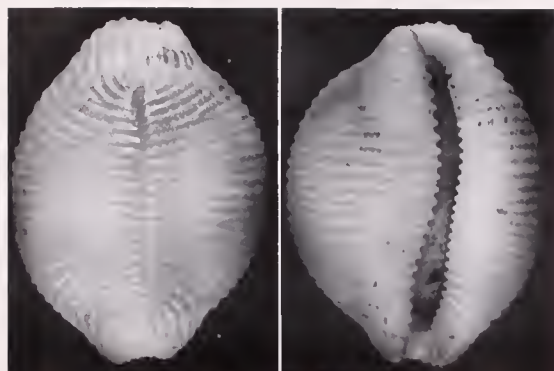


Fig. 126. *Trivirostra vitrina*:
DP, [78], holotype: L—7.0 mm.

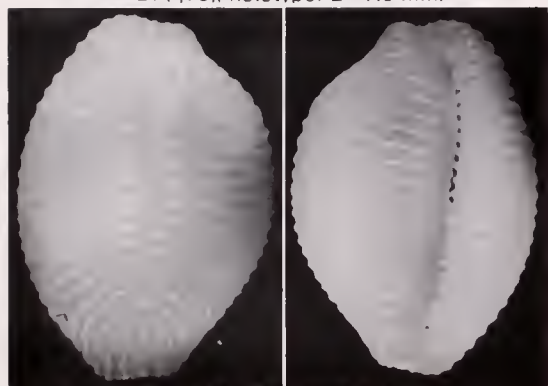


Fig. 127a: *Trivirostra shawi*.
DP, [79], hypotype: L—5.3 mm.

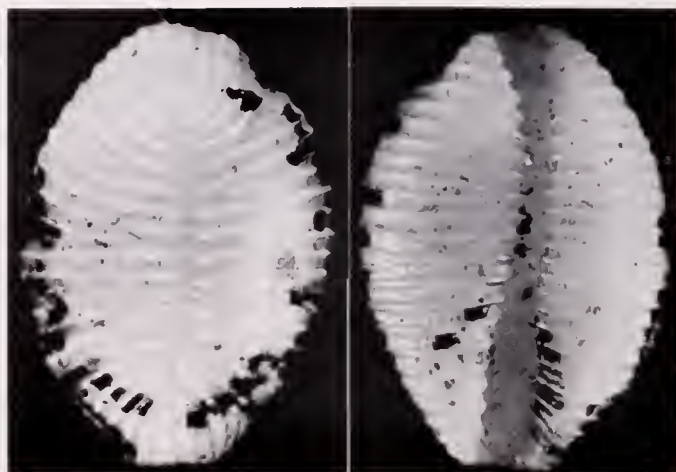


Fig. 127. *Trivirostra shawi*:
ZMB photo, [79], holotype: L—6.0 mm.

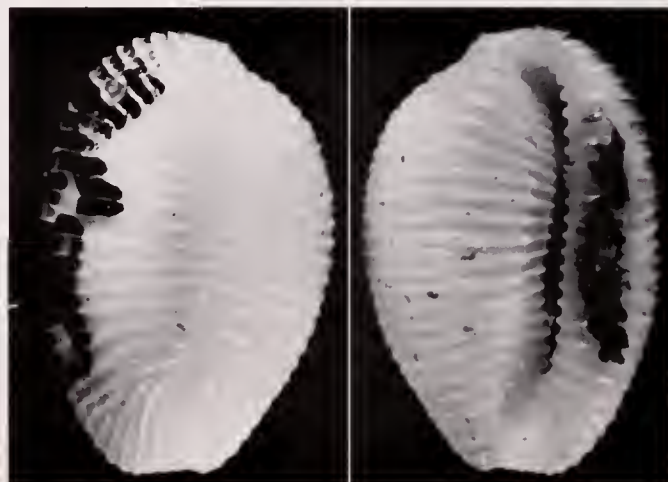


Fig. 128. *Trivirostra bocki*:
ZMB photo, [80], paratype: L—7.3 mm.

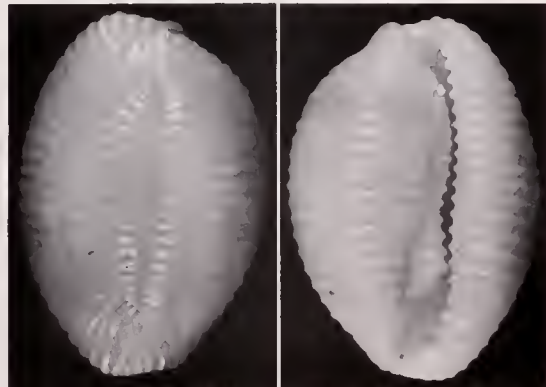


Fig. 128a: *Trivirostra bocki*:
DP, [80], hypotype: L—6.8 mm.

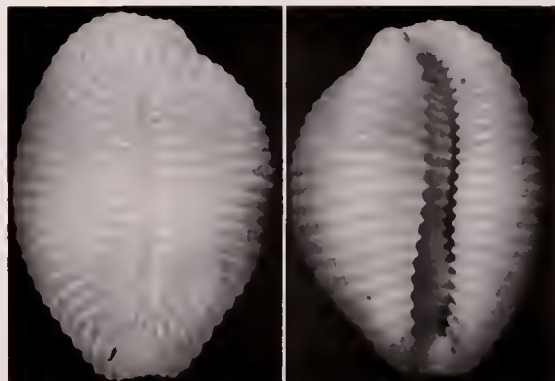


Fig. 129. *Trivirostra spioinsula*:
DP, [81], holotype: L—9.0 mm.

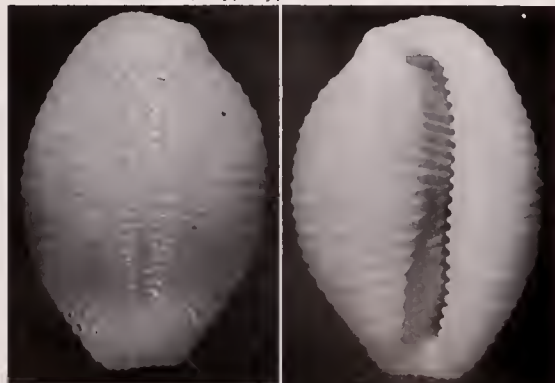


Fig. 129a: *Trivirostra spioinsula*:
DP, [81], hypotype: L—11.9 mm.

front, is broad, deep, with a highly arched inner wall. Outer lip convex, almost evenly wide its length, except for some narrowing to the front. Shell ribbing strong, distinct, sharply dentate at the ends; interstices wide and shiny, with a longitudinal dorsal furrow on the central dorsum not effectively interrupting the upper transverse ribbing; ribs continuous over base and outer lip to their respective apertural edges, terminating as strong, sharp teeth on the outer lip and columellar adaxial edge. Shell lustrous glassy-white overall.

Measurements, paratype.—L = 7.3 mm (Kilias, *in litt.*).

Measurements, hypotype.—L = 6.8; W = 4.7; H = 3.9 mm (C4250); ex C. Connolly.

Type locality.—Gilbert Islands, W Pacific Ocean.

Distribution.—Niue Island, S central Pacific Ocean: (C4250); ex C. Connolly.

Paratype.—ZMB, Schilder collection, No. 7680 (Kilias, *in litt.*).

Discussion.—Schilder originally described this species as a subspecies of *Trivirostra shawi* Schilder, 1933. However, because of rather distinct morphological differences and a lack of understanding of their somewhat adjacent living ranges, I am separating them here. *Trivirostra bocki* Schilder appears to differ significantly from the early species by having a larger shell; by having a totally different adapical terminal process rather acutely recurved posteriorly; in having stronger, seemingly more pronounced, sharp ribbing and by having a greater constricting of the front base and outer lip. Schilder named this shell in honor of Dr. Sixten Bock.

81. *Trivirostra spioinsula* Cate, sp. nov.

(Fig. 129: holotype)

Description.—Shell large, ovate, somewhat narrow. Terminals produced, well developed. Dorsum bulbously elevated, sides rounded and tapering sharply to the back, less so to the front. Base convex, rounded, sloping to side margin and aperture. Aperture almost straight, evenly narrow. Columella fairly wide, concave, deepening and broadening anteriorly as a fossula. Outer lip broad, convex, becoming narrower as it approaches either end. Shell ribbing numerous overall; a long, narrow, longitudinal medial dorsal furrow present; ribs continuous from medial line on the left, over side margins, base, concave columella, then terminating as sharp teeth at edge of inner adaxial ridge within; ribs continuous over right side margin and outer lip, ending at the apertural edge of lip as sharp denticles. Shell color white overall.

Measurements, holotype.—L = 9.0; W = 6.4; H = 5.5 mm.

Measurements, hypotype 1.—L = 7.1; W = 5.0; H = 4.3 mm (C4125).

Measurements, hypotype 2.—L = 11.9; W = 8.3; H = 6.7 mm (C2573; Fig. 129a).

Measurements, hypotype 3.—L = 10.0; W = 6.9; H = 5.5 mm (C3668).

Type locality.—Ableta, roughly 35 kilometres from Jingo, Rossel Island, Papua (SE New Guinea) (11° 30' S; 154° 00' E); leg. Fr. J. M. Chow, Catholic Mission, 26 October 1963.

Distribution.—East Indies; New Guinea: Put Put Harbor, leg. Richard Willis, Yacht Rambler (C4125); Madang, leg. Isobel Pert, Madang (C2631). East Australia: Lady Elliott Island, leg. Lorraine Rutherford, Rockhampton, Queensland, 1960 (C2573).

Holotype.—LACM No. 1807.

Discussion.—This new species may be related to the Hawaiian *Trivirostra shawi* Schilder, 1933. There seem, however, to be enough distinct differences to separate the two. *Trivirostra spioinsula* Cate is larger, with a more acutely reflexed posterior canal and terminal beak; the aperture is straighter, more evenly narrow throughout, not widening in front and back; there is no constriction of the anterior outer lip; and, even though this new form is larger, it possesses fewer (average 18, in 4 specimens) ribs on the base, than the Hawaiian *T. shawi* Schilder, which shows at least 21 on the type.

Etymology.—The new name is a combination of 2 Latin nouns: *insula*, meaning island; and *spio*, meaning a sea nymph.

82. *Trivirostra pellucidula* (Gaskoin, 1846)

(Fig. 131: holotype)

1846 *Cypraea pellucidula* Gaskoin, Proc. Zool. Soc. London 1846: 23.

1881 *Cypraea pellicula*. Weinkauff, in: Martini and Chemnitz, Syst. Conch. Cab. (ed. 2) 5/3, *Cypraea*: 161; pl. 43, figs. 1, 4 (Fig. 130: type illustration) (spelling error).

1928 *Trivia pellucidula*. Faustino, Phil. Mar. Moll. 220.

1930 *Trivia pellucida* Gaskoin, 1846. Iredale, Mem. Queensld. Mus. (Sydney) 10: 83 (spelling error).

1968 *Trivirostra (Dolichupis) pellucidula*. Cernohorsky, Veliger 10: 369; pl. 52, figs. 21, 21a.

Original description.—"Cypraea pellucidula . . . Cyp. testâ ovatâ, nitidâ, albicante subhyalinâ; costellis continuis ad utrumque latus aperturæ terminatis; dentibus aequalibus, minimis, numerosisque; sulco columellari profundo, lato; lineâ, dorsali nullâ; extremitatibus valdè productis et obtusis; aperturâ rectâ, posticè subsinuâtâ."

"Semipellucid cowry . . . Shell ovate, of a beautiful semipellucid white color, shining; the ribs—anterior, posterior and dorsal—terminate in teeth on both sides and ends of the aperture, and traverse the columellar groove [fossula] to its inner edge [adaxially]; a few ribs do not continue over the dorsum; the teeth, even, fine, and numerous, about thirty on the [outer] lip; columellar groove [fossula] deep and broad; base round; margins wide; no dorsal impression [sulcus]; extremities much produced, and obtuse; aperture straight, except a slight curve at its posterior extremity" (Gaskoin, 1846: 23).

Measurements, holotype.—"Size $1\frac{1}{100}$ ths of an inch" [\approx 4 mm].

Measurements, hypotype.—L = 6.2; W = 4.4; H = 3.9 mm (C4285; Fig. 131a).



Fig. 130: *Cypraea pellicula*:
DP, [82], (type fig. 1): $\times 9$.

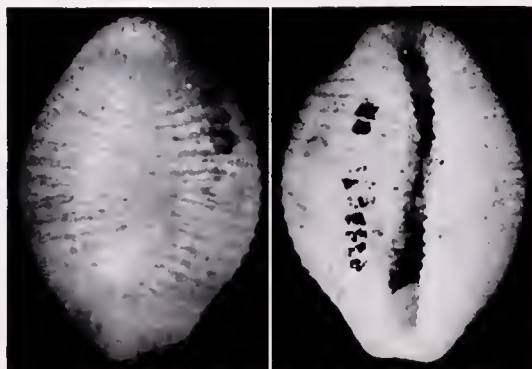


Fig. 131: *Cypraea pellucidula*:
BM(NH) photo, [82], holotype: L—4.0 mm.

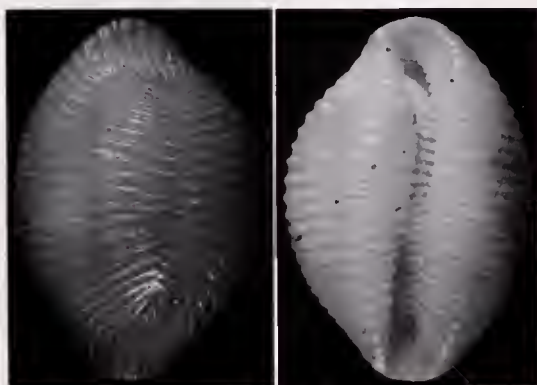


Fig. 131a: *Trivirostra pellucidula*:
DP, [82], hypotype: L—6.2 mm.

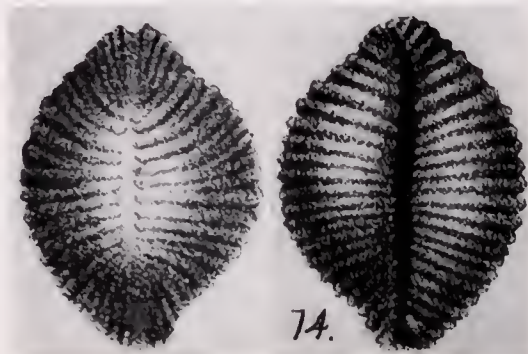


Fig. 132: *Trivia corrugata*:
DP, [83], (type fig.): $\times 11$.

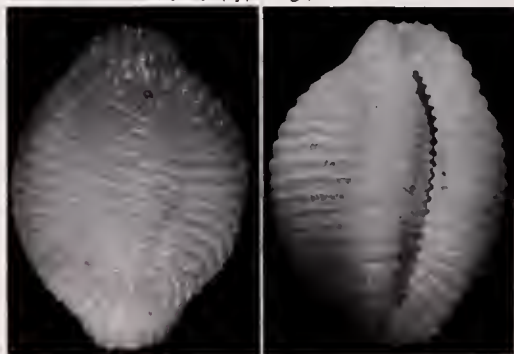


Fig. 132a: *Trivirostra corrugata corrugata*:
DP, [83], hypotype: L—5.5 mm.

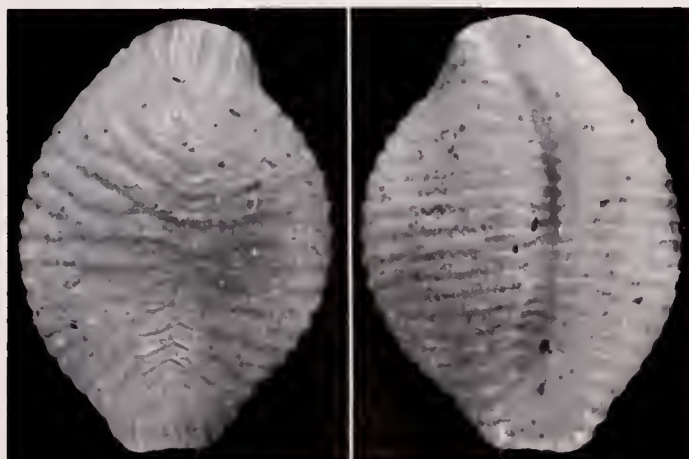


Fig. 133: *Trivirostra exigua hyalina*:
ZMB photo, [84], holotype: L—4.3 mm.

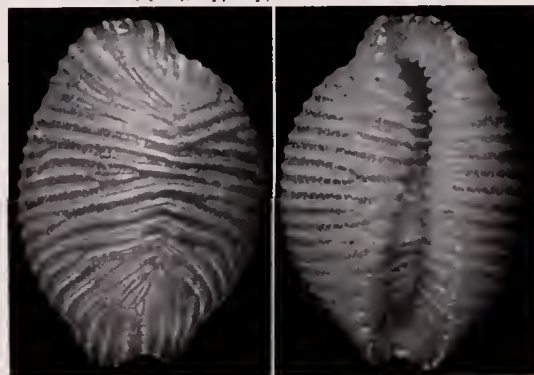


Fig. 133a: *Trivirostra corrugata hyalina*:
DP, [84], hypotype: L—4.8 mm.

Measurements (Vayssi re, 1923: 88).—L – 7; W – 4.75; H – 4 mm.

Type locality.—"South Pacific."

Distribution.—Hawaii: Kauai; Maalaea Bay, Maui; (leg. Reggie P. Gage, Waikiki); Midway Islands; Pearl, Hermes Reefs; Tahiti; Raiatea; Tuamotu Islands: Makatea (259 km NNE of Tahiti).

Holotype.—BM(NH) Reg. No. 1874.12.11.63.

Discussion.—Gaskoin made the following comment: "Differs from *exigua* of Gray, the *tremeza* of Duclos, in being less gibbous, ribs more numerous, finer, more even and regular, and but two or three terminate on the sides of the shell, none on the dorsum; they pass continuously over the shell from side to side of the aperture to the other; shell perfectly colorless, and has no dorsal line or impression."

An important diagnostic character in this species is the lack of a longitudinal dorsal furrow.

Etymology.—The species name, a diminutive of the Latin adjective, *pellucidus*, means clear.

83. *Trivirostra corrugata corrugata* (Pease, 1868)

(Fig. 132: type fig.)

1868 *Trivia corrugata* Pease, Amer. Journ. Conch. 4: 95; pl. 11, figs. 14–15 (Fig. 132).

1914 *Trivia exigua* var. *alba* Sowerby III, Proc. Malac. Soc. London 11: 10 (invalid, name preoccupied).

Original description.—"Trivia corrugata . . . T. ovato-globosa, elevata, nitida, impressione dorsali obsoleta; transversim fortiter costata, costis vix flexuosis, interdum bifurcatis, ad impressionem dorsali subnodulosi, extremitatibus leviter productis; basi rotundata; columella angulata, sulcata; aperture vix flexuosa; utrinque dilatata; alba, irregulariter rosaceo picta, interdum omnino pallide rosacea."

"Shell ovately globose, elevated, shiny, with an indistinct dorsal impression, transversely strongly ribbed, ribs flexuous, sometimes terminating abruptly on the sides or bifurcate, on the extremities the ribs are of a smaller size, slightly nodulose at the dorsal groove; base rounded; columella angulate on its edge and grooved its whole length; aperture somewhat flexuous, widened at each extremity; extremities slightly produced; white, irregularly blotched with pink, or wholly of a light rose color" (Pease, 1868: 95–96).

Measurements, holotype.—"Long. 5, diam. 3½ mill."

Measurements, hypotype.—L – 5.8; W – 4.3; H – 3.8 mm (C4083; Fig. 132a).

Type locality.—"Paumotu [Tuamotu or Low Archipelago: group of about 80 small islands, included in French Oceania, E of Society Is., S of Marquesas Is., S Pacific Ocean]."

Distribution.—Makatea, 259 km NNE of Tahiti; Raiatea, Tahiti; Wallis Islands, SW Pacific, French Territ.; Samoa; off Nada, Kii Channel, Japan (C4083).

Holotype.—Location unknown.

Discussion.—"Allied to *T. gemmula* Gld. [Gould, 1845]. The ribs are stronger, less in number, rather

more flexuous and noduled at the dorsal groove, which together gives the shell a rough appearance. The pink color is not so persistent as on that species; most of the specimens received being of pure white."

Etymology.—The Latin adjective, *corrugatus*, means wrinkled or ridged.

84. *Trivirostra corrugata hyalina* Schilder, 1933

(Fig. 133: holotype)

1933 *Trivirostra exigua hyalina* Schilder, Zool. Anz. 102: 290, 297; fig. 9.

1971 *Trivirostra corrugata hyalina*. Schilder and Schilder, Cat. Liv. and Foss. Cowries (Brussels): 21.

Description.—Shell small, evenly ovate, well formed. Terminals somewhat squarely produced, more so posteriorly. Dorsum semiglossy, transversely ribbed; ribs heavily formed, less numerous than usual, with wide, somewhat smooth semiglossy interstices; ribs greater in number (19) on base and sides than at weakly formed dorsal furrow (11); rear 3 dorsal ribs traversing furrow uninterruptedly, the remainder (6) seemingly terminating at furrow before continuing on to either side; ribbing over either terminal collar U-shaped, generally unbroken. Base broad centrally, narrowing to either end in a broad arc; base strongly, evenly ribbed, with ribs crossing columella to interior adaxial ridge. Columella broad, concave, well defined. Aperture long, fairly narrow, almost central, curving gently apically. Outer lip broad, ¾ width of base, convex, equally ribbed, with wide interstices. Shell color: off-white overall.

Measurements, holotype.—L – 4.3 mm (Kilias, *in litt.*).

Measurements, hypotype.—L – 4.8; W – 3.4; H – 2.9 mm (C4268; Fig. 133a).

Type locality.—New Britain, Melanesia.

Distribution.—Amami-Oshima, Ryukyu Islands (C4268).

Holotype.—ZMB No. 78596 (Kilias, *in litt.*).

Discussion.—Schilder made the following comments: "9 (*hyalina*): ausnahmslos ungefleckt weiss, dünn-schalig bis durchscheinend, RF. fehlend (35%), obsolet (35%) bis schwach eingedrückt (26%), nur selten tiefer, aber quengerippt (4%); bisher nur von Karlei bekannt (Abb. 9)."

"9 (*hyalina*): invariably unspotted white, thin-shelled to translucent, dorsal sulcus missing (35%), obsolete (35%), or weakly impressed (26%), only seldom deeper, but transversely ribbed (4%); so far known only from Karlei . . ." (translation by George Hanselman).

Etymology.—The Greek adjective *hyalinos*, means glassy, transparent.

85. *Trivirostra exigua* (Gray, 1831)

(Fig. 135: lectotype herein)

1831 *Cypraea exigua* Gray, Zool. Misc., 1: 36.



Fig. 134 *Cypraea tremeza*:
DP, [85], (Sowerby II, 1870; fig. 510): $\times 9$.

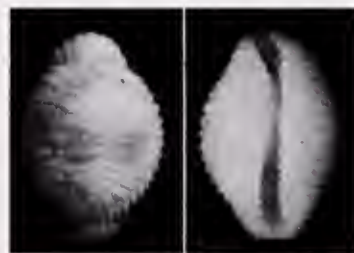


Fig. 135: *Cypraea exigua*:
BM(NH) photo, [85], lectotype: L—4.2 mm.

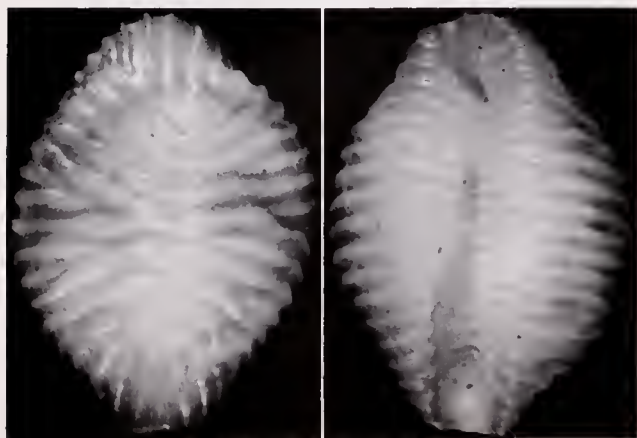


Fig. 135a: *Trivirostra exigua*:
DP, [85], hypotype: L—4.3 mm.

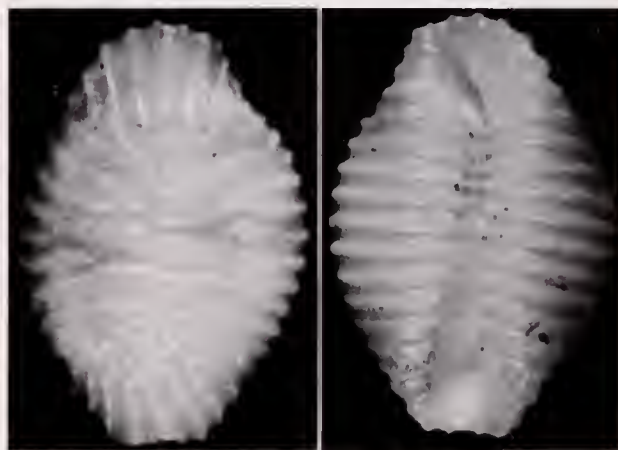


Fig. 135b: *Trivirostra exigua*:
DP, [85], hypotype: L—3.9 mm.

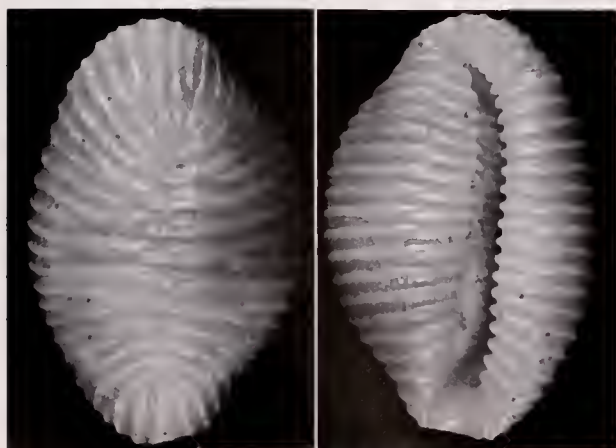


Fig. 136: *Trivirostra polynesiae*:
DP, [86], holotype: L—4.8 mm.

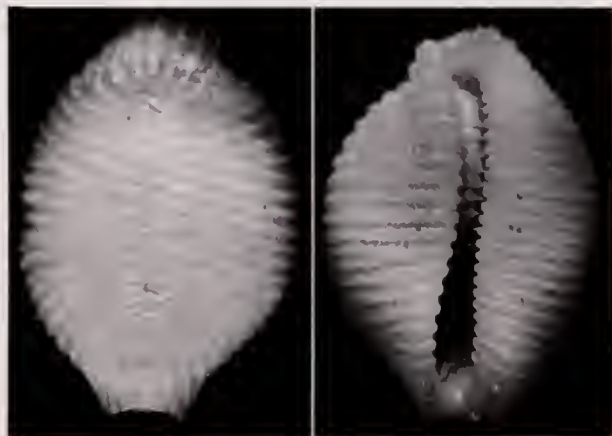


Fig. 137: *Trivirostra keehiensis*:
DP, [87], holotype: L—5.0 mm.

- 1833 *Cypraea tremeza* Duclos, in: Guérin-Meneville, Mag. Zool. Moll. 3: fig. 25 (Fig. 134; Sowerby 1; figs. 510–511).
 1845 *Cypraea gemmula* Gould, Proc. Boston Soc. 1: 27.
 1963 *Trivia (Trivirostra) exigua*. Shikama and Hori-koshi, Selected Shells of the World.
 1968 *Trivia tremeza* syn. *gemmata* Schmeltz, Cat. Mus. Godeffroy 4: 94 (nom. nud.).
 1971 *Trivirostra exigua*. Schilder, Institut. Roy. Sci. Nat. Belgium (2nd ser.) 85: 21.

Original description.—"Cypraea exigua . . . Rose-spotted cowry . . . Shell oblong pellucid, white, with pellucid rose-coloured spots and streaks, with transverse ridges [ribs], which are branched near the margin; the extremities rather produced, rounded. Dorsal ridge [furrow] none" (Gray, 1831: 36). [Under magnification one may observe a rudimentary furrow (cf. Fig. 135a).]

Measurements, holotype.—"length $2\frac{1}{2}$ lines" [line = $\frac{1}{12}$ part of an inch; ≈ 5.3 mm].

Measurements, lectotype.—L = 4.2 mm (Way, in litt.).

Measurements, hypotype 1.—L = 4.5; W = 3.3; H = 2.9 mm (C3773; Fig. 135a).

Measurements, hypotype 2.—L = 3.9; W = 2.8; H = 2.5 mm (C4270; Fig. 135b).

Type locality.—Not recorded, 1831 [Gray, 1832: 15] China.

Distribution.—Hawaii: dredged at the entrance of Pearl Harbor; (C3773); Amami-Oshima, Ryukyu Islands (C4270) (Schilder, 1941: Tahiti; Tonga-Gilbert Islands; Hawaii; Loyalty, New Caledonia).

Lectotype.—BM(NH) Register No. 1975630; 1 of 4 syntypes; (Way, in litt.).

Discussion.—"Allied to *Cypraea rugosa* [= *Cypraea scabriuscula* Gray, 1827 (Fig. 149)], but is smaller, rose-spotted, and the ridges are fewer, larger, and the interspaces between them smooth."

Etymology.—This name is derived from the Latin adjective, *exiguus*, meaning small.

86. *Trivirostra polynesiae* Cate, sp. nov. (Fig. 136: holotype)

Description.—Shell small, ovate. Dorsum bulbously inflated, tapering equally to front and back, interstices shiny. Terminals broad, evenly produced: roundly so adapically, more squarely in front. Base convexly rounded, narrowly ovate. Aperture almost straight, although semiacutely reflected toward left adapically. Columella shallowly concave, weakly transversely ribbed adaxially. Fossula shallow, broad, only weakly ribbed. Outer lip fairly wide, convexly transversely rounded to apertural edge. Ribs numerous and continuous over dorsum from either side margin, not interrupted by the shallow longitudinal medial dorsal furrow; base and outer lip ribbing a continuation of dorsal rib striation. Shell color white overall, except for a very faint lavender shading dorsally.

Measurements, holotype.—L = 4.8; W = 3.1; H = 2.6 mm.

Type locality.—In 2–3 metres of water near Club Mediterranea, Moorea Island (W side), Society Islands (17° 31' S; 149° 46' W); leg. De Koontz, on the Yacht Constitution.

Holotype.—LACM No. 1121.

Discussion.—This new species may most closely resemble *Trivirostra exigua* (Gray, 1831). *Trivirostra polynesiae* is more numerous ribbed overall, and ribs are more evenly spaced on the dorsum; the aperture seems longer because of being more narrow and straight. The rear terminal is more tightly reflexed; the front canal opening is narrower, less open and flaring; the columella-fossula ribbing is less bold, being hardly apparent in front, and the dorsal medial furrow, though shallow, is more clear-cut.

Etymology.—The new name derives from the proximity of the new species to the center of Polynesia.

87. *Trivirostra keehiensis* Cate, sp. nov. (Fig. 137: holotype)

Description.—Shell small, subroundly ovate, humped. Terminals protruding, square-ended, roundly arched at the openings. Base and outer lip of nearly equal dimension, half-moon shaped, convex. Aperture narrow, almost straight, with rear base constricted, longitudinally grooved, thus forming a distinct left rear canal wall. Columella undulating, somewhat narrow, concave. Fossula unusual in form: broad, deep, cup-shaped, causing a thinning of the columellar lip anteriorly. Ribs numerous, with an exceedingly shallow longitudinal dorsal furrow barely impeding rib continuity from one side margin to the other; ribs comparatively coarse for size of shell; ribs continue transversely over base to sharply formed columellar lip edge, boldly crossing columella to its inner adaxial edge, terminating as heavy, dull denticles; ribs continuing over convex outer lip, coming to the end as sharp teeth at the edge of aperture. Shell color white overall.

Measurements, holotype.—L = 5.0; W = 3.5; H = 3.0 mm.

Type locality.—In 45–109 metres, muddy sand, off Keehi Lagoon entrance, Oahu, Hawaii (21° 17' N; 157° 54' W); leg. Twila Bratcher, 11 July 1975.

Holotype.—LACM No. 1825.

Discussion.—Being of approximately the same size, and having a similar peripheral outline, *T. keehiensis* may be compared with *T. exigua* (Gray, 1831). It differs, however, from that species by having a slightly narrower shell; by having finer, more numerous rib-striae; in its more squarely ended terminal beaks, its narrower aperture, less open in front; and in being devoid of any shell color.

88. *Trivirostra natalensis* Schilder, 1932 (Fig. 138: holotype)

- 1923 *Trivia pellucidula* (Gaskoin, 1846). Vayssière, Ann. Mus. d'Hist. Nat.: 87; fig. 173; (Fig. 138).
 1932 *Trivirostra pellucidula natalensis* Schilder, in: Quenstedt, Fossil. Cat., Animalia 1 55: 102.

Original description.—"Coquille ovale, courte, ventrue, à test épais; dos très bombé, subconvexe en dessous; de 23 à 26 côtes (34 d'après Hidalgo), lisses, les unes continues (les

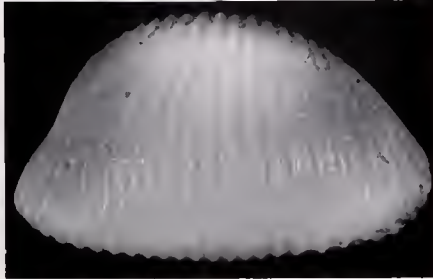
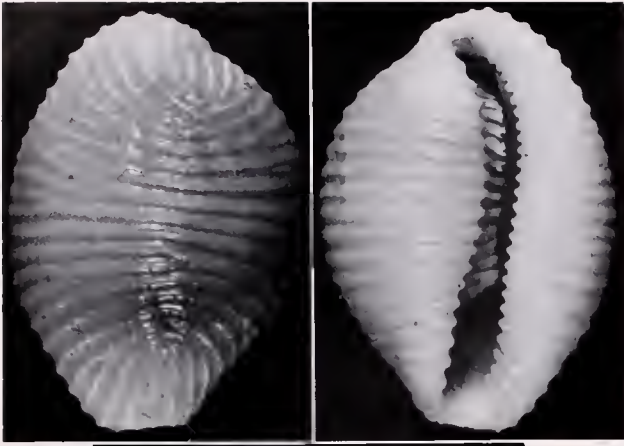


Fig. 138: *Trivia pellucidula* (Gaskoin)
= *Trivirostra natalensis* (Schilder):
DP, [88], holotype: L—6.2 mm.

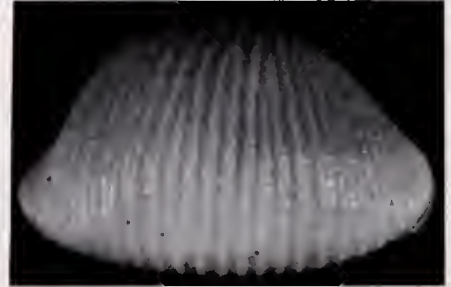
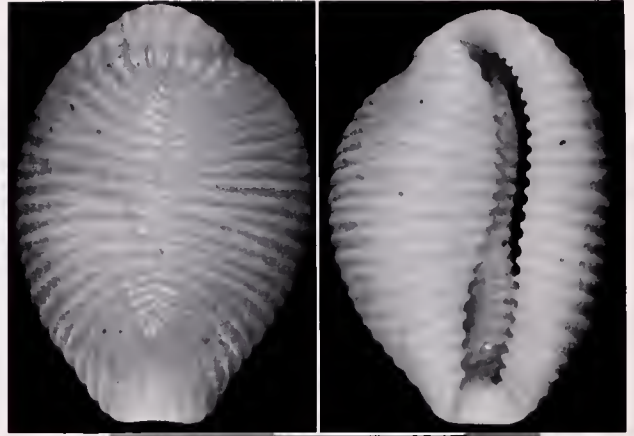


Fig. 138a: *Trivirostra natalensis*:
DP, [88], hypotype: L—7.8 mm.

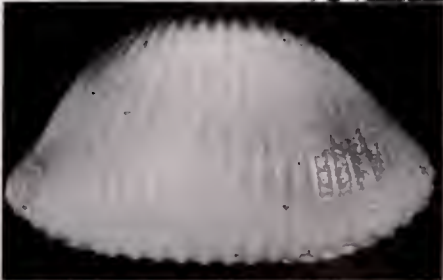
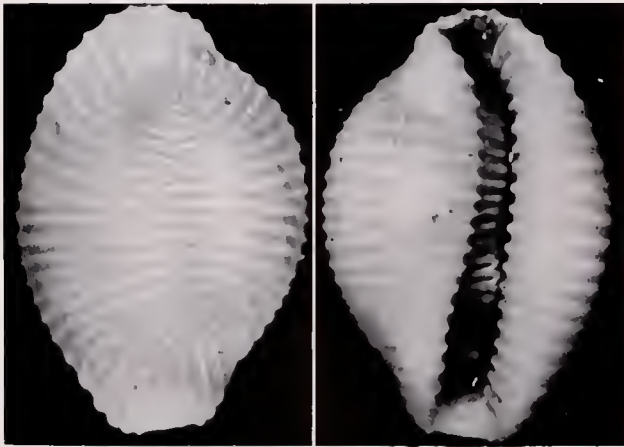


Fig. 139: *Trivirostra vayssierei*:
DP, [89], holotype: L—5.7 mm.

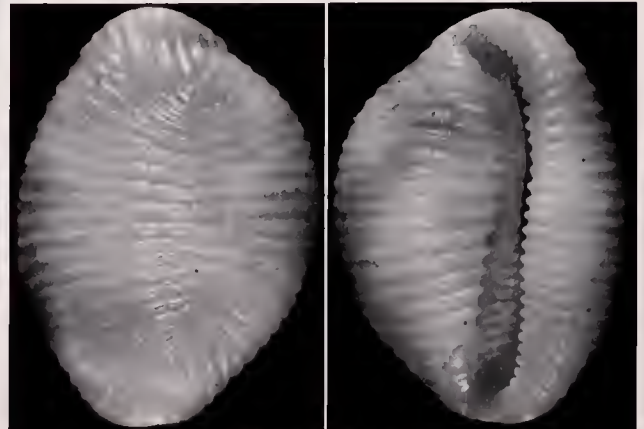


Fig. 140: *Trivirostra turneri*:
DP, [90], hypotype: L—7.8 mm.

6 médianes), les autres interrompues au milieu du dos, alternant et chevauchant un peu, sans présenter trace d'un sillon longitudinal. Ouverture étroite, droite, offrant 25 dents marginales et 20 dents columellaires; extrémité postérieure de la coquille très arrondie, extrémité antérieure large, courte et tronquée" (Gaskoin, 1846).

"Shell oval, short, inflated, thick shelled; dorsum very humped, somewhat depressed ventrally; 23 to 26 (34 according to Hidalgo [probably based upon the true *pellucidula*]), smooth, some are continuous (6 median), the other ribs are interrupted in the middle of the dorsum, crossing without showing a trace of longitudinal furrow. Aperture straight on the right side, with 25 labial teeth, 20 columellar teeth; posterior entrance to shell very rounded, anterior extremity short, wide, truncated" [color white, translucent] (translation by Jean Cate).

Measurements, Vayssière.—"Maxima: 7 millimètres de long, sur 4¾ de large, et 4 millimètres de haut."

Measurements, holotype.—L = 6.2; W = 4.4; H = 3.8 mm (C4329).

Measurements, hypotype.—L = 7.8; W = 5.5; H = 4.8 mm (C4251B; Fig. 138a).

Type locality.—"Indian Ocean." Herein restricted to [from museum label] Durban, Natal, South Africa (29° 51' S; 31° 00' E).

Distribution.—East London, South Africa; ex C. M. Connolly (C4251B).

Holotype.—MDNM, without Cat. No. C4229.

Discussion.—Schilder (1932: 102) has given the Vayssière species another name because of the obvious misidentification.

89. *Trivirostra vayssierei* Cate, sp. nov.

(Fig. 139)

1923 "*Trivia pellucidula*. (Gaskoin, 1846)" of Vayssière. *Annal. Mus. d'Hist. Nat., Marseille* (1) 18: 87; [not pl. 11, fig. 173].

Description.—Shell small, evenly ovate. Terminals produced, flaringly rounded posteriorly, squarely so in front. Dorsum inflatedly humped, tapering quickly apically, less so to the front. Base convex, somewhat spindle-shaped. Aperture narrow, slightly curving, almost straight. Columella fairly wide, concave, broadening and deepening to the front as a fossula, and having an inner adaxial longitudinal toothed ridge throughout. Outer lip convex, nearly as wide as base. Shell ribbing fine and ribs numerous overall; dorsal ribs continuous, uninterrupted from one side margin to the other; with no median dorsal furrow; dorsal ribs continuous over base and columella, and over the outer lip to its apertural edge, in each case terminating as sharp denticulations. Shell color off-white overall.

Measurements, holotype.—L = 5.7; W = 3.9; H = 3.4 mm.

Type locality.—"Umlhali, SE coast of Africa"; ex M. Couturier, 1902. An accompanying label added: "Durban, SE Africa": (Jullien, in litt.) (29° 51' S; 31° 00' E).

Holotype.—MHNM, without catalogue number, but now bearing this author's No. C4330.

Discussion.—It seems apparent that Vayssière worked

with 2 different triviid specimens (Fig. 138 and 139) misidentifying both in identifying them as *Trivia pellucidula* (Gaskoin, 1846), and possibly failing to notice one was without a median dorsal groove, a primary characteristic of the Gaskoin species. He illustrated only 1 of the 2 shells, the 1 Schilder named *Trivirostra natalensis* in 1932.

Dr. Robert Jullien, MHNM, sent both of the Vayssière specimens to me for study; at that time it was discovered that the second shell was also misidentified.

Because both shells appear to be distinct from one another and from their congeners, this species may probably be best compared with *Trivirostra corrugata hyalina* Schilder, 1933. It differs morphologically from that species in being smaller; in not having a median dorsal groove; in having a narrower, more pyriform shell, with finer dorsal ribbing, and by having a more acutely recurved canal and beak adapically.

Etymology.—The new name honors Professor A. Vayssière, distinguished for his many contributions to malacology.

90. *Trivirostra turneri* Schilder, 1932

(Fig. 140: hypotype)

1861 *Cypraea oryza* (Lamarck) var. Dunker, *Malak. Blatter* 8: 38 (misidentification).

1896 "*Cypraea turneri* (Jouss.)" Shopland, *Journ. Bombay Nat. Hist. Soc.* 10: 227; (nom. nud.).

1932 *Trivirostra oryza turneri* Schilder, in: Quenstedt, *Fossil. 1 Animalia*, 1: 55: 101.

Original description.—"Cypraea oryza Lam. var. . . . Testa alba, ovata, ventrosa, transversim costata, costae laeves earumque interstitia scabra; latera subcompressa; extremitates paullo productae; dorsum valde fornicatum; impressio dorsalis paene nulla; basis convexa; apertura angusta, denticulis subaequalibus instructa."

"Diese kleine aus dem Rothen Meere stammende Schnecke unterscheidet sich von der Normalform der *C. oryza* des Lamarck, welche eine grosse Verbreitung hat, durch geringere Grösse, mehr hervortretenden Vorder- und Hinterheil und daher minder kuglige Gestalt, sowie auch namentlich durch die kaum angedeutete Rückenfurche, Unterschiede, die indessen bei der übrigen Uebereinstimmung mit der *oryza* wohl um so weniger eine Trennung von derselben rechtfertigen, als überhaupt manche Cypräen in ihrer Form bedeutende Abweichungen zeigen" (Dunker, 1861: 38).

Shell of medium size, ovate, convexly humped. Terminal rounded in back, somewhat squarely so anteriorly, with an acute reflection of the rear canal. Base narrowly ovate, convex, with a minute constriction adjacent to the fossular lip. Aperture almost straight, with a gentle broadening to the front. Columella wide, concave, becoming broader apically to form the fossula; adaxial carinal edge of fossula is somewhat elevated, arched. Outer lip wide centrally, only slightly less than the base. Shell ribbing strong, distinct overall; with no longitudinal median dorsal

furrow; transverse rib striation continuous from adaxial edge of columella, across base, side margin, dorsum, lip-base to apertural edge of the outer lip. Shell color white overall (C3757).

Shopland Reference: "*Cypraea turneri* . . . Jous. [error] . . . Aden . . . Sk. Othman, coral MP."

Measurements, Dunker.—None recorded.

Measurements, Schilder (1933: 291).—L – 8.4 mm.

Measurements, hypotype.—L – 7.8; W – 5.2; H – 4.6 mm (C3757; Fig. 140).

Type locality.—"Red Sea (Dunker)": (Shopland, 1896: 217), Schilder, 1941: 76; Hadramant, coastal region of S Arabia; Assab, SE Eritrea; Dahlak Islands, S Red Sea; Bay of Massaua, Eritrea; Algoa, Port Alfred, East London, SE Africa; Kuria Islands, Arabian Sea, off SW Oman; Muscat (Mascot), Oman, SE Arabia.

Holotype.—Unable to locate; possibly in the Cuming collection; possibly lost.

Discussion.—The specimen Dunker was describing, according to Schilder (1932: 101 x), was not the Lamarek species he had in mind, that is, he made an incorrect identification of the shell. Schilder (1933: 291), supplied the following notes: *Trivirostra turneri* Schilder, 1932: "terminal produced, dorsal furrow obsolete, shell inflated."

91. *Trivirostra triticum* Schilder, 1932

(Fig. 141: Sowerby II, 1870; figs. 474–476, presumed type fig.)

1870 *Cypraea oryza sandwichensis* Sowerby II, The-saur. Conchyl., 4, *Cypraea*: 46; figs. 474–476 (Fig. 147: 141) (not valid: in synonymy only).

1932 *Trivirostra oryza triticum* Schilder, in: Cyp. Foss. Cat. I Animalia (pars 55) Berlin: 101.

1933 *Trivirostra triticum subinflata* Schilder, Zool. Anz. 102: 290 (Fig. 142: holotype).

Original description.—"*Cypraea oryza*, (Lam.) . . . C. testâ albâ, ovato-globosâ, ad latera vix marginatâ; extremitatibus plus minusve productis, obtusis; dorso medio leviter sulcato; costellis tenuibus, numerosis, plerumque per sulcum continuis, interstitiis granulatis; basi convexâ, columellâ utrinque subvaricosâ; labio medio dilatato" (Sowerby II, 1870: 46).

Measurements, holotype.—Not recorded.

Measurements, hypotype 1.—L – 7.5; W – 5.2; H – 4.6 mm (C690; Fig. 141a).

Measurements, hypotype 2.—L – 8.1; W – 6.4; H – 5.3 mm (C2467; Fig. 141b).

Type locality.—SE Africa (Schilder, 1941: 76).

Distribution.—Waikiki, Oahu, Hawaii (C690); Eilat, Akaba Bay, S Israel, Red Sea; leg. Yehuda Kandel, Tel Aviv (C2467), Schilder, 1941: Diego-Suarez, Madagascar [a town and harbor N end of Madagascar]; Nossi-Bé [in NE Mozambique]; Majunga [town, Bombetoka Bay, NW coast of Madagascar]; Réunion; Mauritius; Rodriguez [Mascarene Islands, 926 km E of Madagascar].

Holotype.—Location unknown.

Discussion.—Schilder (1932: 101) questioned the Sowerby II (1870: 46; figs. 474–475) identification of a shell listed as *Cypraea oryza* Lamarck, 1810, and proposed another name for it. The holotype of *Trivirostra triticum subinflata* Schilder, 1933 (Fig. 142: holotype), is located at ZMB, in the Schilder collection No. 3561 (L – 7.5 mm). Type Loc.: Mombasa, E Africa (Kilias, *in litt.*).

Etymology.—The Latin noun, *triticum*, means wheat.

92. *Trivirostra obscura* (Gaskoin, 1849)

(Unfigured)

1849 *Cypraea obscura* Gaskoin, Proc. Zool. Soc. London: 94 [not illustrated].

Original description.—"*Cypraea obscura* . . . Cyp. testâ ovatâ, albicante, maculis duabus dorsalibus nigricantibus inconspicuis; costellis rudibus, prominentibus, ad dorsum concoloribus, ad margines et ad basin albis; dentibus labii externi circa viginti, labii interni distantibus circa duodecim; sulco columellari lato, margine interno dentibus serrato; extremitatibus albis, crassis, productiusculis."

"Shell ovate, of a dingy white colour, having two remarkable, small, blackish, undefined spots or markings on the dorsum, one a little less than a third the length of the shell from each extremity; ribs coarse and prominent, on the back of the same colour as the shell, but on the margins and base of a pure white; they traverse the shell from one side of the aperture to the other, having a slight curving at the center of the dorsum; on the outer side several terminate on the side of the shell, fewer terminate on the columellar side, where some float; base white, rather round; aperture straightish, curved at the posterior end, rather narrow; teeth even, formed by the costae, about twenty on the lip and about twelve on the columellar side, where they are distant and extend over a broad columellar groove to serrate its inner ridge; margin on the outer side thick and white, none on the columellar side; extremities white, thick, and somewhat produced. No dorsal impression" (Gaskoin, 1849: 94).

Measurements, holotype.—"Length, $\frac{36}{100}$ ths of an inch; altitude, $\frac{20}{100}$ ths; breadth, $\frac{25}{100}$ ths" [= L – 8.6; W – 6.7; H – 5.2 mm].

Type locality.—Northwest Australia; Depuch's Island (under stones, low water), collected by J. E. Dring, Esq. R.N.

Distribution.—"Abrolhos Island[s] (under coral), by ditto."

Holotype.—Missing (Way, *in litt.*).

Discussion.—Gaskoin: "This shell is perhaps nearest in form to *Cypraea pulex* Gray [1827], but cannot be confounded with any other species. I have had for several years specimens of this shell, and the locality given me with them was Senegal; but as Mr. Dring has lately brought others to this country [England], I have thought it right to give so authenticated a habitat as we have received from him."

It is important to note that Gaskoin specifically said this species did not have a dorsal medial groove. Because of this, it would appear that he was not work-



Fig. 141: *Cypraea oryza* (Sowerby II) = *Trivirostra triticum*: DP, [91], (type fig.): $\times 6$.

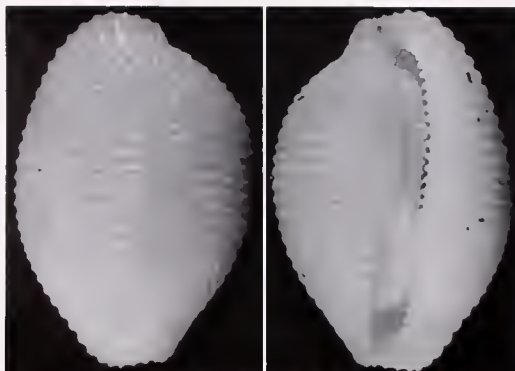


Fig. 141a: *Trivirostra triticum*: DP, [91], hypotype: L—7.5 mm.

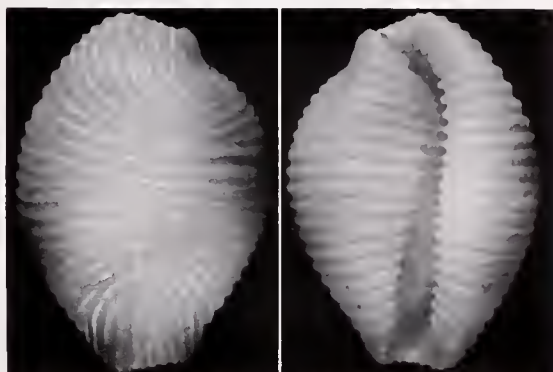


Fig. 141b: *Trivirostra triticum*: DP, [91], hypotype: L—8.1 mm.

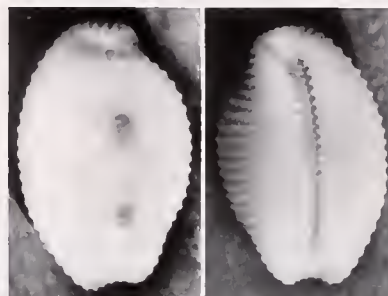


Fig. 143: *Trivia bipunctata*: NRS photo, [93], holotype: L—7.5 mm.

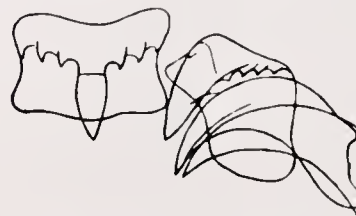


Fig. 143a: *Trivia bipunctata*: NRS DP, [93], radula: $\times 1$.

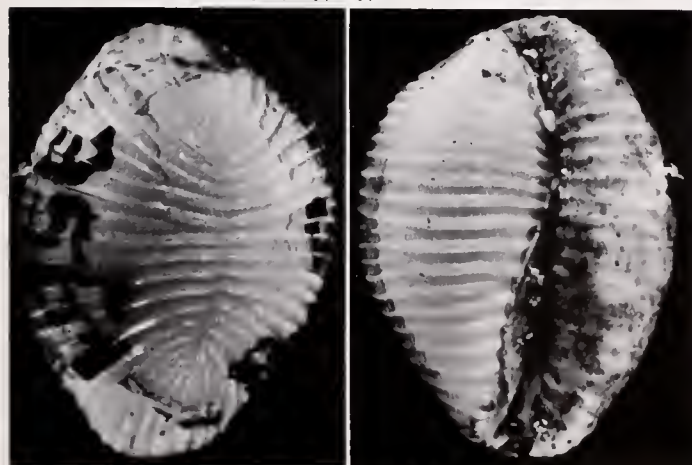


Fig. 142: *Trivirostra triticum subinflata*: ZMB photo, [91], holotype: L—7.5 mm.

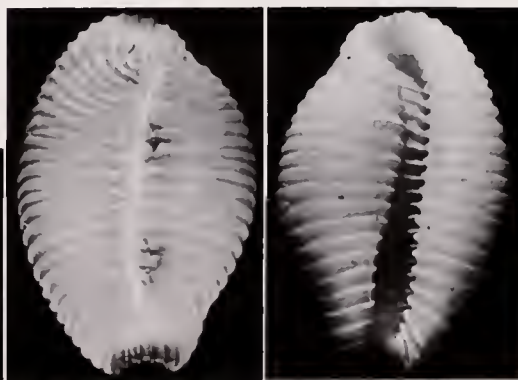


Fig. 144: *Trivirostra exmouthensis*: DP, [94], holotype: L—8.8 mm.

ing with the species *Trivirostra bipunctata* (Odhner, 1917), nor with the new species, *T. exmouthensis* Cate (herein), as both of these species have very distinct dorsal grooves. Because this Gaskoin species is now without either a type specimen or figure, it must be considered here as a *species inquirendae*.

Allan (1952; plt. 14, fig. 73) gives an illustration of *Trivirostra obscura* (Gaskoin, 1849); it shows the 2 blackish spots mentioned by Gaskoin; on the dorsum, however, her hand-drawn illustration also seems to indicate a longitudinal dorsal line as well, which does not appear to exist in the Gaskoin species.

Etymology.—From the Latin adjective, *obscurus*, meaning dark, indistinct.

93. *Trivirostra bipunctata* (Odhner, 1917)

(Fig. 143: holotype)

1917 *Trivia bipunctata* Odhner, Svenska Akad. Handl. 52/16: 53; plt. 2, fig. 10, figs. 54–55; radula, fig. 10.

1956 *Trivia (Dolichupis) obscura*. (Gaskoin, 1849), Allan, Cowry Shells of World Seas: 150; plt. 14, fig. 73.

Original description.—"Trivia bipunctata . . . Shell of the same shape as *T. oryza*, only somewhat narrower; color light reddish, somewhat deeper towards the ends and around the base; on the inner (left) side of the dorsal furrow 2 reddish brown dots placed one behind the other. The dorsal furrow long ($> \frac{1}{2}$ the shell): the distance from the anterior (basal) end to the shell end is $\frac{1}{2}$ – $\frac{3}{4}$ of the posterior upper corresponding distance and about $\frac{1}{3}$ – $\frac{1}{4}$ of the length of the furrow. Sculpture consisting of strong radiating ribs with the interstices on the under side and down the sides feebly rugated, dorsally smooth. The shape of the aperture as in *T. oryza*. The apical end of the shell somewhat produced. Spire not prominent nor visible" (Odhner, 1917: 53–54).

Measurements, holotype.—"L – 7.5; br. – 4.9; h – 4.3 mm" L – 5.5 mm (Andersson, *in litt.*).

Radula, holotype.—(Fig. 143a: Odhner drawing).

Type locality.—42 miles [68 km] WSW of Cape Jaubert, NW Australia (the Pearl Banks), Mjöberg Exped. (1910–1913).

Holotype.—NRS No. 1076 (Andersson, *in litt.*).

Discussion.—Odhner: "The radula of *T. bipunctata* [Fig. 143a] differs from that of *T. grando* and *T. oryza* in being comparatively broader; its median tooth has an elongated central spine and 3 denticles on each side of it; and the first lateral has 4 outer and 1 inner denticle. For comparison the radulae of the two other species, and even the specimens figured on plate 2, are reproduced here; they are narrower, have a smaller cusp of the central tooth and 4 denticles on its sides; the first lateral has 1 inner and in *T. grando* 4, in *T. oryza* about 8 outer denticles."

Trivirostra bipunctata (Odhner, 1917) is here being provisionally removed from the synonymy of

T. obscura (Gaskoin, 1849) for 2 reasons: Gaskoin's original description says there is "no dorsal impression"; and, secondly, Gaskoin's type specimen cannot be located at BM(NH) (Way, *in litt.*).

Etymology.—From the Latin, *bis*, two, and *punctulus*, an adjective meaning two-spotted.

94. *Trivirostra exmouthensis* Cate, sp. nov.

(Fig. 144: holotype)

Description.—Shell of medium size, elongately ovate. Terminals prominent, protruding. Dorsum elevated subcentrally, tapering abruptly to the back, gradually to the front. Base convex, narrow, elongate; constricted and narrowed abapically. Aperture nearly straight, curving posteriorly, slightly constricted at the front. Columella broad, concave, broadening, deepening anteriorly as a fossula. Outer lip fairly broad, convex, narrowing at either end. Right side somewhat broadly shouldered above side-margin. Dorsum with a long, narrow, curving, longitudinal furrow from which numerous dorsal ribs radiate to either side-margin, continuing over left side, base, and columella, terminating as strong, blunt teeth (18) at inner adaxial columellar edge, continuing over right side-margin and convex ventral lip surface to apertural edge, forming strong, protruding denticles (24). Shell color: pale beige overall, except that there are 3 pale brown spots on dorsum (because of thin nacre overlay). Two spots are much larger than the third; the larger ones are evenly separated, counting from central dorsum at the left edge of medial furrow; the third small spot is on the right side of medial furrow, half way from central spot to adapical terminal beak; there is a dark brown color stain at front and rear canal outlet, darker and to a broader extent at the front outlet.

Measurements, holotype.—L – 8.8; W – 5.7; H – 4.8 mm.

Type locality.—Under coral slabs, near Gerialia, Exmouth Gulf, West Australia (22° 00' S; 114° 15' E); leg. Leslie Figgis, Exmouth, W Australia.

Holotype.—LACM No. 1797.

Discussion.—This new triviid species may be compared with *Trivirostra bipunctata* (Odhner, 1917), with which it may partially share a range. *Trivirostra exmouthensis* seems to differ from it in many substantial ways: it has a larger, somewhat broader shell; the terminal beaks are differently formed, especially adapically; the overall shell color is light beige, rather than bright white; the dorsal punctation is 3 instead of 2, and the dark brown color staining at the terminal and canal ends is distinctive.

Etymology.—The new name is based on that of the type locality.

95. *Trivirostra pargrando* Iredale, 1935

(Fig. 145: holotype, Odhner specimen)

1917 *Trivia grando*. (Gaskoin) of Odhner, Kungl. Sv. Vet. Akademiens, Band 52 (16): 53; plt. 2, figs. 50–51; text fig. 11; (probably a misidentification).

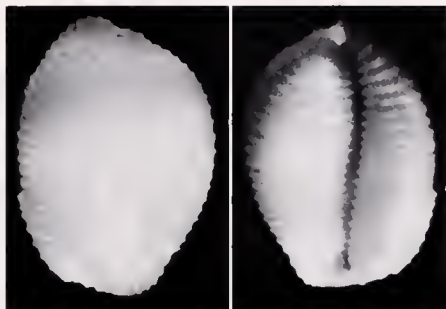


Fig. 145: *Trivia grando* (Odhner) = *Trivirostra pargando*:
MHNG photo, [95], holotype: L—8.5 mm.

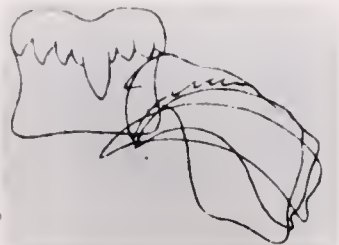


Fig. 145a: *Trivia grando* = *Trivirostra pargando*:
MHNG:DP, [95], radula: $\times 1\frac{1}{2}$.

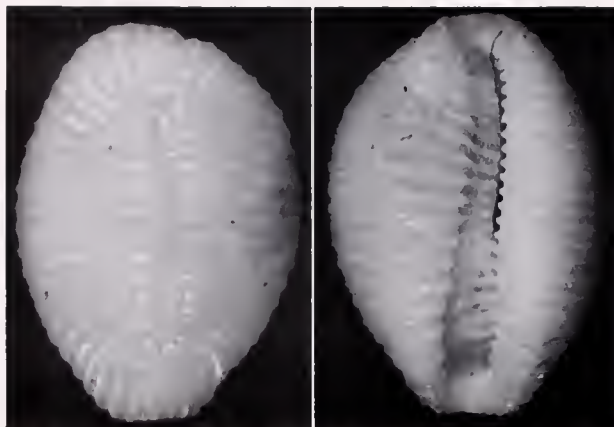


Fig. 146: *Trivirostra pargando*:
DP, [95], hypotype: L—5.5 mm.

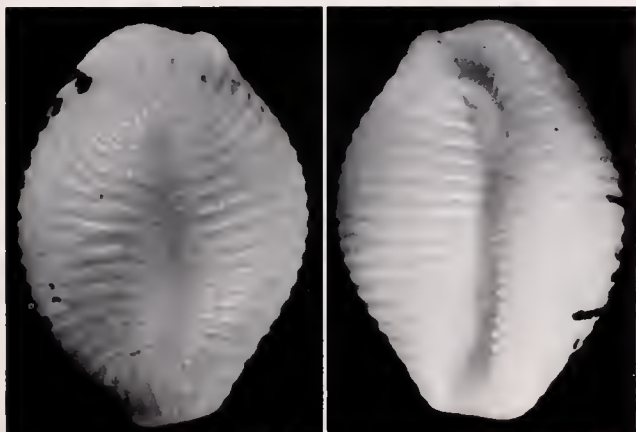


Fig. 147: *Cypraea oryza*:
MHNG photo, [96], holotype: L—9.5 mm.

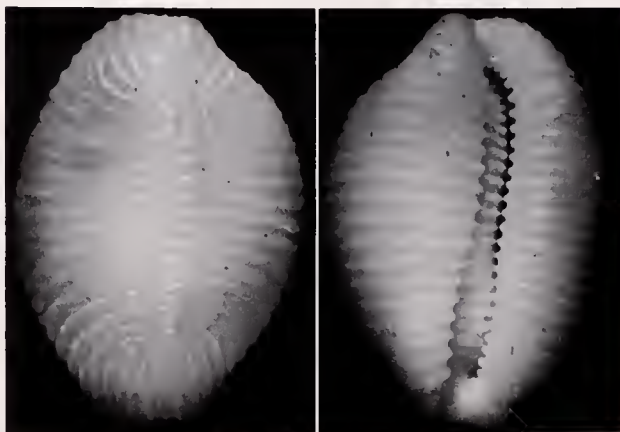


Fig. 147a: *Trivirostra oryza*:
DP, [96], hypotype: L—10.0 mm.

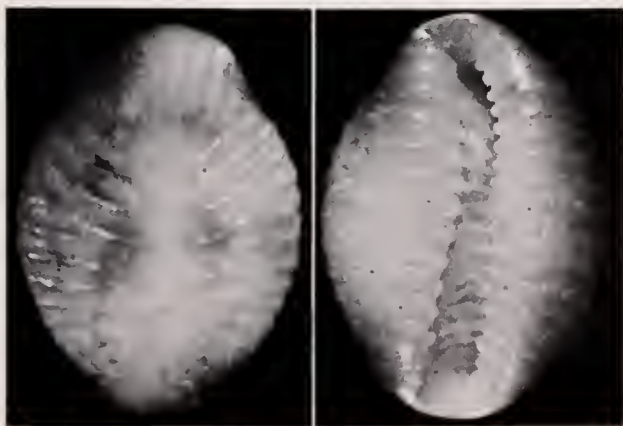


Fig. 148: *Trivirostra zzyzyxia*:
DP, [97], holotype: L—3.9 mm.

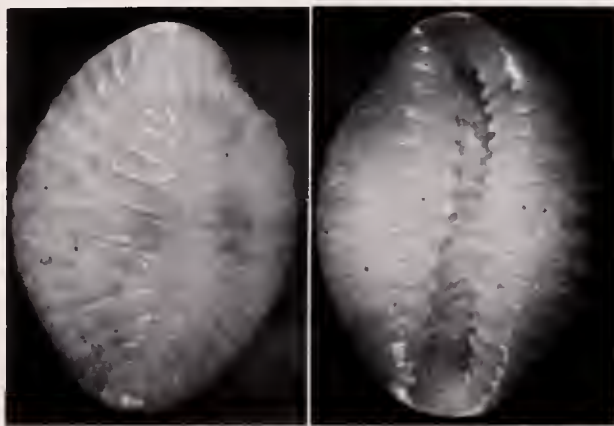


Fig. 148a: *Trivirostra zzyzyxia*:
DP, [97], hypotype: L—3.6 mm.

1935 *Trivirostra pargando* Iredale, Austral. Zool. 8 (2): 99.

Description, holotype.—"Trivia grando Gaskoin . . . The specimen corresponds with the description and figures given by Roberts (Tryon, Manual of Conch., Vol. VII, p. 200, pl. 21, figs. 86, 87), in the respect that the ribs are extremely fine and the spire is prominent, i. e., visible and papilliform, projecting under the ribs. The shell is rose at both ends. The shape of the aperture seems to agree most nearly with the figures, as it is uniformly broad throughout and strongly flexuous (concave) only above at the spire, straight below (in contrast to *T. australis* Lamarck, where it is flexuous below in the same degree as above). The interstices between the ribs are smooth above, on the under side feebly granulose. The dorsal furrow lies somewhat to the left and is curved to the left" (Odhner, 1917: 53).

Measurements, holotype.—L = 8.5 [= *Trivia grando* Odhner, 1917: Andersson, *in litt.*].

Measurements, hypotype.—L = 5.5; W = 4.0; H = 3.5 mm (C3622; Fig. 146).

Type locality.—78 km WSW of Cape Jaubert, West Australia, 66 feet [20 metres] water, [N end of 80 Mile Beach, just S of Roebuck Bay].

Holotype.—NRS, no catalogue number (Andersson, *in litt.*).

Radula.—(Fig. 145a).

Discussion.—The listing of this species here is on a provisional basis, as its true identity has not been definitely established. Odhner had this to say of the only specimen collected by the Expedition: "As typical specimens are not at my disposal and the determination is thus somewhat uncertain, I give a photograph of the specimen for identification." Andersson (*in litt.*) adds the following: "In the box in which the animal is stored there is a label with the following text: '*Trivirostra punctata* Odhn. Jun et deform.,' and outside the box Odhner himself has written: '*Trivirostra bipunctata* Odhner (= *grando*? Odhner 1917)." It thus seems as if Odhner any time after 1917 has come to the conclusion that the specimen not represents *grando* but *bipunctata*." Whatever the species, it can be seen from the photograph of the shell, injury to the animal's mantle or some other cause has produced growth-damage during the development of the right outer lip margin. This deformity thus yields a distorted image to the peripheral outline of the base.

The specimen illustrated herein (Fig. 145a) is possibly a good example of an uninjured shell of this species.

Etymology.—The Latin prefix, *par*, equal, is added to the Latin noun *grando*, hail.

96. *Trivirostra oryza oryza* (Lamarck, 1811)
(Fig. 147: holotype)

1705 *Porcellana pediculus* Rumphius, Amboin. Rariteitkamer: 18; plt. 39, fig. 5 (pre-Linnean name).

1811 *Cypraea oryza* Lamarck, Ann. Mus. Nat. Hist. (Paris) 16: 104.

1817 *Cypraea sulcata* var. *oryza* syn. *nivea* Dillwyn, Descr. Cat. Rec. Shells 1: 466 (name in synonymy only).

1843 *Cypraea intermedia* Kiener, Spec. Icon. Coq. Viv., *Cypraea*: 145; plt. 54, figs. 1–1a; (name preoccupied).

1870 *Trivia pediculus*. Roberts, Am. J. Conch. 5, App.: 207.

1909 *Trivia oryza* Lam. forma *minor* Schepman, Siboga Exped. 49/2/2: 137.

1928 *Trivia oryza*. Faustino, Phil. Mar. Moll.: 220.

1963 *Trivia (Trivirostra) oryza*. Shikama and Horikoshi, Selected Shells World: 44.

Description, holotype.—"Porcelaine grain de riz. *Cypraea oryza* . . . C. Ovato-globosa, nivea, immarginata, transversim striata; sulco dorsali; rimae labiis subaequalibus" (Lamarck, 1811: 104).

Measurements, holotype.—L = 9.5 mm (Binder, *in litt.*).

Measurements, paratype.—L = 9.7 mm (Benoit, *in litt.*).

Measurements, hypotype 1.—L = 10.0; W = 7.3; H = 6.3 mm (C3782; Fig. 147a).

Measurements, hypotype 2.—L = 9.6; W = 7.1; H = 6.0 mm (C3612).

Type locality.—"Habite l'Océan asiatique; les côtes de Timor [South Malay Archipelago; NE of Darwin, NW Australia], celles du Sénégal [West Africa]."

Distribution.—Siasi Island, Sulu Sea (C3782); Borongon, Samar, Philippines (C3612). The species seems to have a widespread discontinuous range. Schilder, 1941: Netherlands Indies; Soembawa (Soemba); Sunda Islands; S and SW New Guinea; Obi Islands, N central Moluccas; Minahassa Peninsula, NE Celebes Islands; Kangean, Bawean Islands, Java Sea; N Java, Malay Archipelago; Palk Strait, N Ceylon, SE India; Nissan, Green Islands, Solomon Islands; E Australia.

Holotype.—MHNG No. 1104/51/3 (Binder, *in litt.*).

Paratype.—MNHN, without cat. no., (Benoit, *in litt.*).

Discussion.—Lamarck: "Cette porcelaine est plus petite que la précédente, ovale-globuleuse, et n'est point marginée au bord droit. Elle est très-blanche, sans aucune tache. Ses stries transverses ne sont jamais granuleuse, et traversent le sillon dorsal qui néanmoins est bien marqué. Les deux bords de l'ouverture sont à peu près égaux."

"This cowry is smaller than the preceding [*C. pediculus* Linné, 1758], ovate-globose, and is not margined on the right edge. It is very white, without any spots. Its transverse ribs are never granulose, and traverse the dorsal furrow which nevertheless is well marked. The two sides of the aperture are nearly equal" (translation by Jean Cate).

There is 1 fossil subspecies: *Trivirostra oryza pyrinula* (Hatai and Nisiyama, 1948).

Etymology.—*oryza* is the Latin word for rice.

97. *Trivirostra zzyzyxia* Cate, sp. nov.

(Fig. 148: holotype)

Description.—Shell small, subtrigonal, thickly solid, humped, narrowing evenly to either end. Terminals broadly rounded, somewhat produced, subspatulate posteriorly. Base narrowly ovate, tapering evenly to front and back; aperture curved gently, more acutely adapically, becoming broader and straighter anteriorly. Columella wide, deeply concave, broadening to the front, forming a deep fossula. Outer lip convex, nearly as wide as the base and of the same general shape, except with a slightly upraised, flattened longitudinal carinal lip ridge on both bases. Transverse shell ribbing predominating dorsally on the back and terminal beaks; with a broad, shallow, longitudinal dorsal furrow dividing the dorsum, barely interrupting the transverse ribbing; the dorsal ribbing continuing over the side margins, crossing both base and outer lip, with a weak longitudinal carinal lip ridge to the aperture. Base ribs crossing the columella boldly, terminating at its inner edge; the lip ribs terminating on its apertural edge as sharp, extended teeth (19). Shell color very pale beige with large stains of pale pink on either side of dorsal furrow, and smaller stains elsewhere on the dorsum.

Measurements, holotype.—L – 3.9; W – 2.9; H – 2.5 mm (C3619).

Measurements, hypotype.—L – 3.6; W – 2.8; H – 2.4 mm (C4123; Fig. 148a).

Type locality.—Subtidal, Lighthouse Beach, Vlaming Head, North West Cape, West Australia (C3619); (21° 47' S; 114° 10' E); leg. Leslie Figgis, Exmouth, W Australia.

Distribution.—Kushimoto, Kii, Japan (C4123); (34° 00' N; 134° 48' E); leg. Shingo Habu, 29 March 1973, shallow water.

Holotype.—LACM No. 1800.

Hypotype.—Author's collection No. C3619.

Discussion.—This new species of the Triviidae is distinctive, with apparently no close congener. However, it may be compared with *Trivirostra oryza* (Lamarck, 1811), because of their similar peripheral outlines. *Trivirostra zzyzyxia* Cate differs by having a much smaller shell; by having narrower, less pointed terminal processes; the ribs are less numerous, with wider interstices; the apertural canal outlets are more heavily formed, almost closed posteriorly, and the color staining seen in this new species is lacking in the Lamarckian species.

Etymology.—The new name, *zzyzyxia*, has a very special meaning for the author. An ancient soda spring, bearing the name Zzyzx, is located in the California desert near the state boundary line between Barstow, California and Tonopah, Nevada. I was a very young man (1916) when I visited the then wild area of the spring bearing this name. The new name recalls a long-remembered, youthful fascination.

98. *Trivirostra scabriuscula* (Gray, 1827)

(Fig. 149: lectotype herein)

1827 *Cypraea scabriuscula* Gray, Zool. Journ. 3: 364.1831 *Cypraea rugosa* Gray, Zool. Misc. 1: 36 (name preoccupied).1849 *Cypraea sulcata* Gaskoin, Proc. Zool. Soc. London 1848: 95 (name preoccupied) (Fig. 167).1870 *Trivia gaskoini* Roberts, Am. J. Conch. 5, App.: 206; (nom. nov. pro *C. sulcata*).1928 *Triv. scabriuscula*. Faustino, Phil. Mar. Moll. 220.

Original description.—“*Cypraea scabriuscula* . . . Testâ ovatâ, ventricosâ, utrâque extremitate subrostratâ, niveâ; striis longitudinalibus, confertis laevibus, interstitiis transversim minutè rugosis; lineâ dorsali angustâ, impressâ; basi planulatâ, aperturâ lineari; dentibus aequalibus.”

“Shell ovate, globular, slightly beaked at each end, snow white, longitudinally striated; the longitudinal striae crowded, smoothish, equal, the spaces between the striae beautifully marked with minute, transverse rugae; the dorsal groove concave, narrow, and impressed; base flattish, scarcely margined; mouth linear, longer than the body of the shell. Teeth of both lips similar, minute, close together” (Gray, 1827: 364).

Measurements, holotype.—“Length $\frac{5}{10}$, breadth $\frac{3}{10}$ of an inch” [= 12.7; 7.6 mm].

Measurements, lectotype.—L – 9.9 mm (Benoit, in litt.).

Type locality.—Inhabits Madagascar, [East] Coast of Africa.”

Distribution.—Ihaka, Mozambique (No. 796.376). Schilder, 1941: Java to China; Timor, Malay Archipelago to the Philippines; Karimata Strait, SW Borneo; Penang Island, W Malay Penin.; Medang, NE Sumatra; Sebang, Sumatra; Padang Island, Malacca Strait; Nias Island, W Sumatra; Mentawi Islands, W cent. coast of Sumatra.

Lectotype.—BM(NH) Reg. No. 1975631 (1 of 13 syntypes).

Hypotype.—MRAC No. 796.376 (Fig. 149a).

Discussion.—Gray lists a smaller shell “minor” along with this species, which would be called *Trivirostra scabriuscula minor* Gray. He described the shell “Testâ ovatâ, oblongâ, subrostratâ, triplo minore.” “The small variety is similar in every respect, except that it is more ovate, and only $\frac{1}{3}$ of an inch long, and $\frac{1}{10}$ of an inch broad.”

Etymology.—A diminutive based on the Latin adjective *scaber*, rough.

99. *Trivirostra aussiorum* Cate, sp. nov.

(Fig. 150: holotype)

Description.—Shell small, rectangularly ovate, humped, solidly formed. Terminals barely protruding, somewhat flaring adapically. Dorsum humped generally (in this case beach worn, decorticated, practically obliterating any evidence of a longitudinal furrow; however, the character of the remaining radiating dorsal ribbing would seem to indicate that in life a furrow did exist). Base outline teardrop in shape, broadest adapically, gradually narrowing to a dull point in front. Aperture off center, open in front, narrower to the rear, curved sharply to the left posteriorly, causing a weak flaring of the outer lip adapically. Columella broad, barely depressed at the rear, becoming wider, deeper to the front forming a substantial fossular area; the adaxial edge of columella, barely elevated, becoming a prominent, arch-

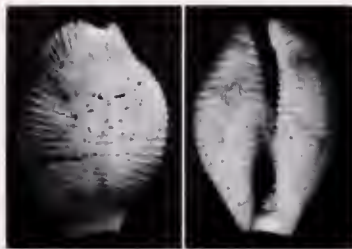


Fig. 149: *Cypraea scabriuscula*:
BM(NH) photo, [98], lectotype: L—11.8 mm.

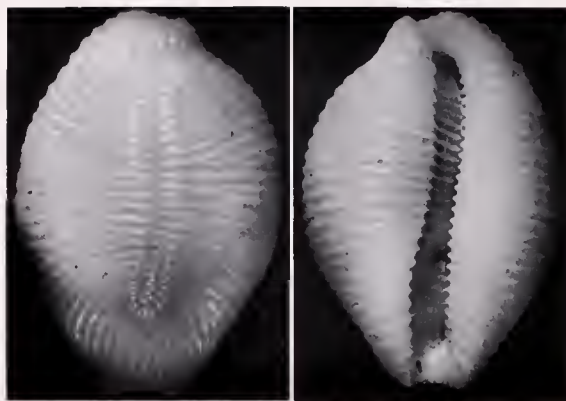


Fig. 149a: *Trivirostra scabriuscula*:
MRAC:DP, [98], hypotype: L—9.7 mm.

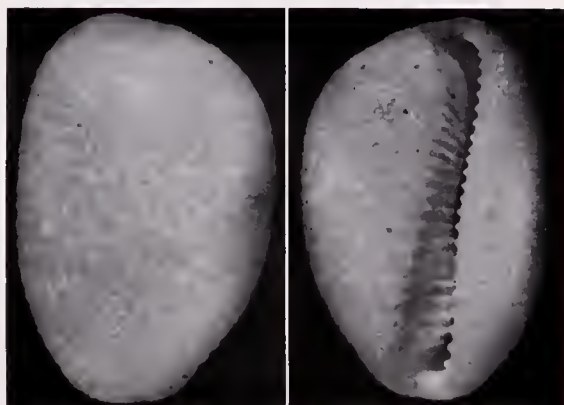


Fig. 150: *Trivirostra aussiorum*:
DP, [99], holotype: L—4.3 mm.

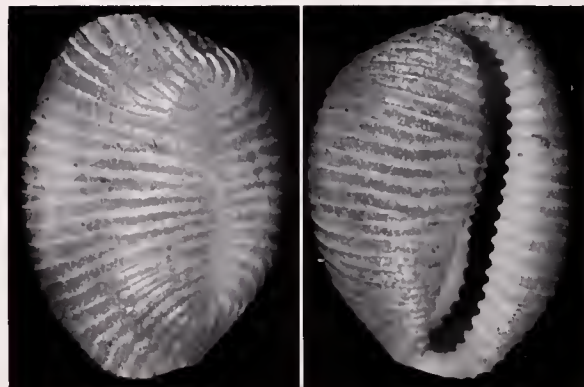


Fig. 151: *Trivirostra cydarum*:
DP, [100], holotype: L—6.0 mm.

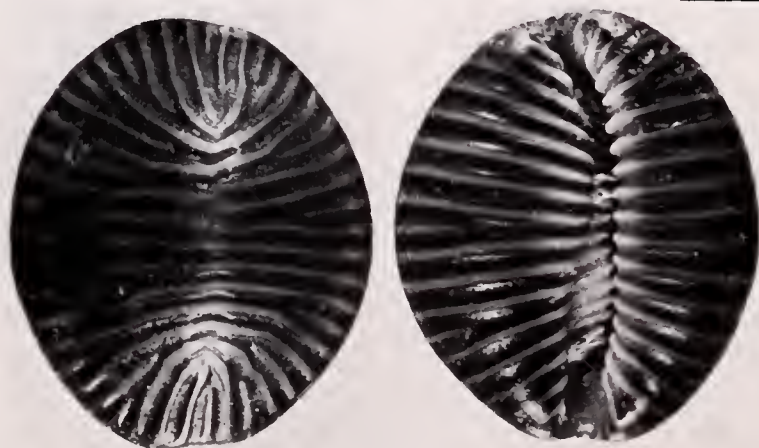


Fig. 152: *Trivia (Pusula) sanguinea circumdata*:
ZMB photo, [135], holotype: L—15.1 mm.

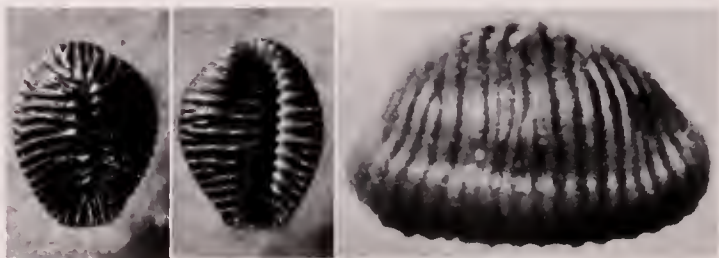


Fig. 153: *Trivia (Pusula) myrae*:
Keen photo, [133], holotype: L—4.8 mm.

like elevation at the fossula. Outer lip comparatively narrow, ventral surface of lip roundly convex, inclining inward and downward to inner lip edge. Dorsal ribbing somewhat strong, radiating from center to either shell margin over terminal beaks; ribbing continuous over either side, over base to left, continuing over columella to its inner ridge; to the right across outer lip, terminating as strong, sharply protruding teeth (22) at the apertural edge; base ribbing terminating weakly on columellar ridge but as short, protruding teeth on the fossular elevation within. Shell color dull off-white overall.

Measurements, holotype.—L = 4.3; W = 3.8; H = 2.4 mm.

Type locality.—Lighthouse Beach, Vlaming Head, NW Cape, West Australia (21° 50' S; 114° 10' E).

Holotype.—LACM No. 1799.

Discussion.—This new species may be compared with *Trivirostra cydarum* Cate (herein) by its larger shell form; by its seeming lack of any medial dorsal line; by its broader, more ponderous columellar sulcus and heavier, more elevated fossular inner wall; and the aperture is straighter, narrower, and less curving at either end.

Etymology.—The new name is derived from the Australian colloquial name, *Aussie*, a name pertaining to its people, or anything representative of the Australian scene.

100. *Trivirostra cydarum* Cate, sp. nov.

(Fig. 151: holotype)

Description.—Shell small, subrectangular, subovate, shiny. Terminals large, barely produced, with a hint of gradual shouldering above: somewhat squared in front, gently flaring to the right posteriorly. Dorsum broadly elevated, evenly humped, somewhat flattened; abruptly tapering quickly and evenly to sides and terminal beaks. Base convex, shiny, centrally broad, elongately ovate, narrowing somewhat sharply to either end. Aperture gently curved, evenly narrow throughout. Columella concave, narrow, deepening and broadening into a well developed fossula in front; the inner fossular wall conspicuously elevated, arched, flange-like. Outer lip somewhat narrow, convex. Shell ribbing bold, ribs numerous overall with wide, shiny interstices dorsally and ventrally; with a longitudinal medial dorsal line formed by the central termination of the ribbing from either side-margin; ribs continuous from this medial line over left margin, across base and columella to become sharp denticles on the inner adaxial columellar fossular ridge, traversing the right margin and outer lip, and terminating at the aperture as bold, sharp teeth. Shell color a dull off-white overall.

Measurements, holotype.—L = 6.0; W = 4.5; H = 3.8 mm.

Type locality.—Unknown, except that the species is thought to have been from the St. Vincent Gulf area of South Australia (34° 55' S; 138° 10' E).

Holotype.—SAM, Kenyon collection, No. D-4095.

Discussion.—This new species may be compared with the NW Australian triviid species, *Trivirostra aussiorum* Cate (herein). However, it has a smaller shell, more rectangular in peripheral outline and more

rounded and swollen laterally; it has a greater extension of the adapical terminal beak, a more curving, less rigidly straight aperture, and a narrower columella, with less developed fossula area.

Etymology.—The new name is taken from the Latin noun, *cydarum*, meaning a kind of small boat.

Decoriatrivia Cate, gen. nov.

Type species: *Cypraea paucilirata* Sowerby II, 1870 Thesaur. Conchyl., *Cypraea*: 49, 53; figs. 502, 526 (cf. species 86, 86a herein).

Shells of the genus *Decoriatrivia* differ from those in the genus *Pusula* Jousseaume, 1884, a genus with which these shells have previously been associated, by their generally smaller, lighter colored shells; by their different transverse rib morphology (different both in form and method of application); the shell's peripheral outline and terminal processes are recognizably different, and the dorsal longitudinal groove is lacking in most of the species of *Decoriatrivia*.

Discussion.—The triviids in this genus all appear to live in the Panamic area of the eastern Pacific, apparently not occurring in the Gulf of California. The new name is from the Latin adjective, *decoris*, meaning ornamented, elegant, beautiful.

101. *Decoriatrivia paucilirata* (Sowerby II, 1870)

(Figs. 86, 86a: holotype)

- 1870 *Cypraea paucilirata* Sowerby II, Thes. Conch., 4 *Cypraea*: 49, 53, figs. 502, 526.
- 1900 *Cypraea buttoni* Melvill, Ann. Mag. Nat. Hist. (7) 6: 209, figs. (Fig. 3: holotype).
- 1931 "*Dolichupis acutidentata* (Gaskoin)" of Schilder and Tomlin, Proc. Zool. Soc. London 19 (6): 274; Figs. a-e (Figs. 87, 87a).
- 1963 *Trivia (Dolichupis) paucilirata*. Solem, Veliger 6 (1): 20; figs. 1-3.
- 1971 *Trivia (Dolichupis) acutidentata* (Gaskoin, 1836). Keen, Sea Shells of Tropical West America: 486; fig. 900.

Original description.—"Cypraea paucilirata . . . C. testâ C. productae affini, sed parvâ; costellis paucis; sulco dorsali conspicuo" (Sowerby II, 1870: 53).

Shell small, ovate, elevated dorsally, solidly formed; dorsum covered with widely spaced transverse ribs, relatively few in number (13), with broad, flattened interstices; these ribs cross over the side margins, traverse the base and outer lip, the former becoming obsolete on the columella; there is a fairly shallow longitudinal furrow; aperture faintly curving, although almost straight.

Measurements, holotype.—L = 7.3 mm (Way, in litt.).

Type locality.—Not recorded.

Distribution.—Schilder, 1941: Panama [Pacific]; Buena-ventura, W Colombia; Esmeraldas, NW Ecuador.

Holotype.—BM(NH) Reg. No. 1975635.

Discussion.—The holotype of *Pusula* (*Pusula*) *butoni* (Melville, 1900) is at FMNH, with catalogue No. 116972 (Fig. 3).

Etymology.—The name *paucilirata* is a combination of the Latin adjective, *paucus*, meaning few, and *liratus*, ribbed.

102. *Decoriatrivia artema* Cate, sp. nov.

(Fig. 88)

Description.—Shell small, evenly ovate, roundly humped. Terminals produced, curvingly extended posteriorly. Base convex, somewhat broadly ovate, narrowing evenly front and back. Columella somewhat narrow, shallowly concave, deepening anteriorly as a fossula. Aperture long, narrow, curving gently throughout. Outer lip broad, convex, almost as wide as base. Shell ribbing numerous, uninterrupted by medial line; ribs heavily formed, with interstices somewhat wide, deeply incised and shiny; ribs continuous from inner edge of outer lip to adaxial columellar inner edge, with ribbing on columella less bold than the rest; bold longitudinal ribbing over terminal collars extending beyond peripheral edge of terminal beaks as distinct teeth. Shell color white overall.

Measurements, holotype.—L – 4.8; W – 3.4; H – 3.1 mm.

Type locality.—In 57 metres of water, on fine sand; Stephen Bay, Chatham Island, Galápagos Islands, Ecuador (00° 47' S; 89° 31' W); 21 January 1934.

Holotype.—LACM No. 1801.

Discussion.—This new species would seem to reflect some affinity with the species *Decoriatrivia paucilirata* (Sowerby II, 1870). There are, however, enough morphological differences to separate them: the shell of *D. artema* is smaller; the aperture is more central to the base, more curving, less constricted adapically; the columella is longer (rather than shortened as in the Gaskoin species: “a deep depression at each end of the columellar side of the aperture caused by the abrupt termination of the columella, it not extending to the extreme ends of the aperture”); the columella is less concave, less boldly dentate; the terminal ends are more produced, with a peculiar flaring to the left posteriorly; and the dorsal ribbing seems to have greater continuity, less minor detachment in the dorsal medial area, and the terminal collar ribbing, at either end of the shell, protrudes sharply as denticles.

Etymology.—From the Greek noun, *artema*, meaning pendant.

103. *Decoriatrivia halians* Cate, sp. nov.

(Fig. 89: holotype)

Description.—Shell small, somewhat roundly ovate. Terminals rather squarely produced, gently reflexed to the left adapically; terminal canals broad, open. Dorsum highly ele-

vated subcentrally, tapering quickly to the rear, more gradually to the front. Base broadly convex, rectangularly ovate. Aperture somewhat narrow, almost straight, reflexed to the left posteriorly. Columella-fossula continuous, rather narrow, barely depressed. Outer lip ventrally convex, wide, only slightly curving. Shell ribbing coarse, heavily formed, with noticeably wide interspaces, numerous overall; dorsally, with 11 continuous ribs (as against 8 for *Pusula panamensis* [Dall, 1922]); ventrally, with approximately 17 rib-denticles on outer lip, 12 on the columellar-base margin, the latter ribs becoming much narrower and finer as they traverse the columella-fossula; ribs a lighter shade of color than the interstices; dorsal ribbing continuous, with no longitudinal medial dorsal furrow. Shell color basically off-white overall, with, at times, an exceedingly pale pinkish cast to the shell in general.

Measurements, holotype.—L – 7.3; W – 5.6; H – 4.3 mm.

Type locality.—San José, Guatemala, Pacific Central America (13° 57' N; 90° 49' W).

Holotype.—LACM No. 1822.

Discussion.—This new species may be compared with *Pusula panamensis* (Dall, 1922), from which it differs by having a much smaller shell form, more sharply defined, more numerous shell ribbing; by having a narrow, more reflexed posterior canal and terminal beak and a less prominent, less developed columella-fossula; and by the very pale pinkish color.

Etymology.—This new name is a corruption of the Greek adjective, *halios*, meaning of the sea.

104. *Decoriatrivia burius* Cate, sp. nov.

(Fig. 90: holotype)

Description.—Shell small, ovate. Terminals somewhat squarely formed, and only barely produced, most prominently so adapically. Dorsum rather abruptly humped subcentrally, tapering quickly to the rear, more evenly to the front. Base narrowly ovate, convex. Aperture mostly straight, somewhat narrow, with a very slight curving at either end; terminal canals open, fairly wide. Columella narrow, concave, shallow. Fossula narrow, seemingly only a continuation of columella. Outer lip convexly rounded, nearly as broad as base. Shell ribs numerous overall, with a longitudinal medial dorsal furrow; dorsal ribs continuous across dorsal furrow becoming much finer in the furrow; one dorsal intercalary rib, as observed on the left dorsum, discontinuous, terminating pointedly at the furrow; ribs from dorsum otherwise continuous over side margins, base and outer lip, terminating at apertural edge as sharpened denticles; interstices are broad, deep. Shell color off-white overall.

Measurements, holotype.—L – 6.4; W – 4.9; H – 4.0 mm.

Type locality.—Panama Bay, Pacific Panama, Central America (08° 50' N; 79° 15' W).

Holotype.—LACM No. 1823.

Discussion.—This new species would appear to resemble *Decoriatrivia halians* Cate (herein). There seem, however, to be enough morphological differences to separate them, at least provisionally, into

distinct species. *Decoriatrivia burius* Cate has a much smaller shell form; the aperture is straighter, without having the acute reflexing of the canal adapically; the dorsal ribs are mostly fewer in number, and there is present a longitudinal medial dorsal furrow, not observed in the former species. The dorsal furrow separates it from both *Decoriatrivia paucilirata* and *P. (P.) panamensis* (Dall, 1902).

Etymology.—The new name is the Latin noun, *burius*, meaning an unknown animal.

105. *Decoriatrivia acutidentata* (Gaskoin, 1836)
(Unfigured)

1836 *Cypraea acutidentata* Gaskoin, Proc. Zool. Soc. London 3: 201.

Description, holotype.—"Cypraea acutidentata . . . Cypr. testâ candidâ, ovaio-globulosâ, utrinque subproductâ; labro incrassato; costis acutis prominentibus, dorsum versus partim interruptis, opacis interstitiis inaequalibus nitidulis; columellâ convexiusculâ, absque plicâ."

"Shell ovato-globular, white; extremities slightly produced. Aperture narrow, somewhat ventricose at the middle of the columella, and a little concave [fossula] at the anterior end. Teeth numerous, about seventeen, thin, sharp, and prominent, continued to form the ribs, several of which terminate (especially at the outer part of the shell) before arriving at the summit of the back, and the teeth are consequently more numerous on the lip than on the columella; a deep depression at each end of the columellar side of the aperture caused by the abrupt termination of the columella, it not extending to the extreme ends of the aperture. Ribs rather thick, not crowded, prominent, the interstices between them somewhat shining; observed by a magnifier the ribs appear uneven; false ribs at both extremities, a few only forming teeth. No complete dorsal line, but a faint depression. No depression or groove [fossula] in front of the columella. Columellar side more gibbous than the outer, and the ribs continue entirely around it, converging toward the center" (Gaskoin, 1836: 201–202).

Measurements, holotype.—"Length .300 of an inch; breadth .200; height .175"; [= L – 7.5; W – 5.0; H – 4.4 mm].

Type locality.—"Isle of Muerte, Bay of Guayaquil [SW Ecuador]."

Holotype.—UMZC, in [Miss Jane] Saul collection; fragmented (Joysey, *in litt.*).

Discussion.—Gaskoin: "Nearest in shape to *Cypr. exigua*, and in the manner of the ribs terminating on the back; but it is of a dull white colour, destitute of markings, and has no groove or depression in front of the columella, which distinguishes it from all other species of this form of *Cypraea*."

"I had the misfortune to break the only specimen that I have seen of this shell shortly after I described it, but having submitted the description to the critical examination, with the shell, of Dr. Beck [Henrik Beck (1799–1863)] and Mr. Sowerby [11] at the same

time, I conclude this description may be received, although I have no specimen to show to the Society."

Fulton thought a shell specimen he was working with (Fig. 83 herein), was an example of the broken-shell Gaskoin species. For details of the Fulton shell, see species 131 herein, which now bears the new name, *Pusula (Dolichupis) fultoni* Cate.

Schilder and Tomlin (1931: 274) also present a specimen they thought adequately represented *Cypraea acutidentata* Gaskoin, 1836. Their specimen (Fig. 87a), appears to be, in fact, a specimen of *Cypraea paucilirata* Sowerby 11, 1870. Under the present circumstances, this Gaskoin species, like that of another of his species, *Trivirostra obscura* (Gaskoin, 1849) must exist as a *species inquirendae*. In a complicated family such as the Triviidae, a designation without an adequate illustration is almost impossible to interpret.

Etymology.—Latin adjective, *acutus*, sharp, and *dentatus*, toothed.

106. *Decoriatrivia pulloidea* (Dall and Ochsner, 1928)

(Fig. 92: holotype)

1928 *Trivia pulloidea* Dall and Ochsner. Proc. Calif. Acad. Sci., San Francisco 17: 113; pl. 6, figs. 16–17.

1971 *Pusula (Pusula) acutidentata pulloidea*. Schilder and Schilder, Cat. Liv. Foss. Cowries, Mem. Institut. Roy. Sci. Nat. Belgium (series 2), Fasc. 85: 21.

Measurements, holotype.—L – 8.1 mm.

Type locality.—Galápagos Islands.

Holotype.—CAS No. 2935.

Discussion.—This is a fossil species and is entered here among the Holocene species of Triviidae only because the photographs of the holotype were at hand; the illustration will serve as a convenient reference for students working with the fossil triviid species.

107. *Decoriatrivia citeria* Cate, sp. nov.

(Fig. 93: holotype)

Description.—Shell very small, ovate, broad, humped. Terminals only barely protruding; wide, squared in front, flaring to the left posteriorly. Base convex, spindle-shaped, subovate. Aperture broad, almost straight, acutely curving toward left in back. Columella very broad, deeply concave, becoming deeper in front as a fossula. Outer lip roundly convex. Ribs: dorsum (19), base (12), outer lip (17); ribbing coarse, interstices shiny, wide, in a continuous transverse pattern from ore lip of aperture to the other, with bold, heavy ribbing crossing columella, ending on inner adaxial ridge as blunt teeth; terminating on adapertural edge of outer lip as fairly bold and sharp denticles. There is no medial dorsal furrow. Shell color white overall.

Measurements, holotype.—L = 2.9; W = 2.3; H = 1.9 mm.

Type locality.—55 metres of water, on coarse sand; off James Bay, James Island, Galápagos Islands, Ecuador (00° 10' S; 90° 52' W); 24 January 1924.

Holotype.—LACM No. 1802.

Discussion.—One could easily be misled into misidentifying this new species as *Decoriatrivia hali-ans* Cate, herein (Fig. 89). In looking at the illustrations, the morphological resemblance between them is striking. However, inspection of the shells reveals a much different story. *Decoriatrivia citeria* differs from the Gaskoin species distinctively by having a much smaller shell only $\frac{1}{3}$ the size; by having a very broad, deep columella-fossula cavity, rather than being narrow, flattened, hardly or not impressed; and the apical terminal beak is differently formed, flaring to the left.

It is true, both species appear to share the same overall living range, Galápagos Islands, Ecuador, although seemingly not the same local habitat.

Etymology.—The similarity of this new species to that of *Decoriatrivia hali-ans* Cate, has suggested the new name *citeria* from a Latin noun meaning likeness, effigy (image).

108. *Decoriatrivia ritteri* (Raymond, 1903)

(Fig. 94; lectotype herein)

1903 *Trivia ritteri* Raymond, Nautilus 17: 85.

Original description.—"Trivia ritteri . . . Shell small, white, form ovate, inflated, anterior extremity slightly produced, spire completely covered, but rather prominent, base convex, outer lip margined, strongly sculptured with about twenty smooth, sharp ribs, much narrower than the interspaces which are nearly flat and scarcely roughened by irregular rugae parallel to the axis of the shell, no sulcus, the ribs continuing unchanged in width across the back, except that occasionally a few ribs near the spire are interrupted at the median line; a few short intercalary ribs are usually present on the sides of the shell; aperture rather wide, armed with 17 to 18 denticulations on the outer lip, and 14 to 16 on the inner" (Raymond, 1903: 85–86).

Measurements, lectotype.—L = 11.2; W = 8.1; H = 6.2 mm (CAS 12186).

Measurements, hypotype.—L = 10.4; W = 7.9; H = 6.8 mm (C2452; Fig. 94a).

Type locality.—Catalina Island [California] "In 60 fathoms [= 109 metres]; Sta. 21 (haul 3), green mud, [water] 51 F., Univ. of California launch 'Elsie,' " [leg.] Cooper.

Distribution.—"Monterey [California] (Dall); Catalina Island, near Avalon, 40 fathoms [73 metres] = Sta. 21. U.C.M.B.L. [University of California Marine Biological Laboratory at San Pedro, California]; off San Pedro, about 50 fathoms [91 metres], Sta. 83, U.C.M.B.L."

Lectotype.—CAS No. 12186 (1 of 10 syntypes).

Discussion.—Raymond: "In character of the ribs it somewhat resembles *T. buttoni* Melvill [1909 = *Decoriatrivia paucilirata* (Sowerby II, 1870)], but differs in color, being white instead of straw-colored, in having twenty instead of fourteen ribs, and in the size, the latter species being 5.5 mm. in length. *T. ritteri* differs from *T. europaea* [Montagu, 1808] in the ribs, which in the former species are less numerous, sharp, and much narrower than the interspaces, while in the latter they are more rounded and wider. The shell of the latter is also more inflated. From *T. panamensis* Dall [1902], the present species differs in much greater size and more numerous ribs. It gives me great pleasure to dedicate this beautiful species to Professor William E. Ritter, in charge of the University of California Marine Biological Laboratory at San Pedro, 1901."

109. *Decoriatrivia wayiana* Cate, sp. nov.

(Fig. 95; Sowerby II, 1870; fig. 520 = type illustr.)

1832 [*Trivia rufescens* Gray, Descr. Cat. Shells: 13] (never published).

1832 *Cypraea rufescens* Sowerby II, Conch. Illustr. 12 (113); fig. 31; non Gmelin, 1791 (name preoccupied).

1870 *Cypraea rubescens* Sowerby II, Thes. Conch., *Cypraea*: 50; f. 520, (not of Gray, 1833).

Original description.—"Shell nearly globular, pale reddish, thin, pellucid, ribs thin, rather close; under side white, outer lip rather narrow; no dorsal line."

Gray's [1832] description.—"Shell ovate, sub-globular, pale red-brown, thin, pellucid; ribs thin, continued, rather close; outer lip narrow. Young, transparent rose-colour."

Measurements, holotype.—"length 0.4, breadth 0.3 inches" [= L = 10.2; W = 7.7 mm].

Type locality.—Not recorded by Sowerby II; Gray gave Pacific Ocean. Information is scarce for this species, although Sowerby II must have had a specimen from which he took his drawing (Sowerby II, 1870; *Cypraea* fig. 520); it may eventually be found among the Cuming (collection) shells.

Type.—Location presently unknown.

Discussion.—The author has separated this species from that of *Cypraea rubescens* Sowerby II, 1870, with which that author has seemingly arbitrarily combined it. It is interesting to observe that Sowerby II has listed this name, completely ignoring his earlier name, *Cypraea rufescens* Sowerby II, 1832, of his own designation, and that of an even earlier *Trivia rufescens* Gray, 1832. No explanation was given for this oversight. Sowerby II, 1870, combined his figures 506 and 507 with a figure 520, as being the combined illustrations of his *Cypraea rubescens*. One needs but to compare the shells of figures 506–507

and 520 to see how different morphologically they are.

This author is provisionally separating the 2 apparently different species, applying the new name to the shell which most closely seems to agree with the Gray [1832] and Sowerby II (1832) original descriptions for *Pusula* (*Pusula*) *rufescens*. *Decoria-trivia wayiana* differs from *P. (P.) rufescens* Sowerby II, 1870 by having a more rounded, subglobular rather than ovate shell; the formation of the front and rear terminal beaks are different; and there is a complete absence of a medial dorsal furrow, while in *P. (P.) rufescens* (Sowerby II) a dorsal line is mostly obscure; one may, however, under magnification see a very faint medial line. Also the base of the shell is white rather than the dark brown of *Pusula* (*P.*) *rufescens*.

Etymology.—This new name honors Kathie Way (BM[NH]), who has contributed so much to this work on the Triviidae.

Genus *Pusula*, subgenus (*Pusula*):

Pusula Jousseaume, 1884

Naturaliste 1884: 415 (name not established in a valid way)

Pusula Jousseaume, 1884

Bull. Soc. Zool. de France 9: 19

Type species: *Cypraea radians* Lamarck, 1811, Ann. Mus. Nat. Hist. Paris 16: 102.

Syn.: *Pustula* Roberts, 1885 in: Tryon, Man. Conch. 7: 161.

: *Vusula* Cossmann, 1896. Feuille Natural. (3) 26: 49.

“Genre *Pusula* . . . Coquille semi-ovale, déprimée en dessous, convexe en dessus, arrondie aux extrémités et à bord saillant; face dorsale divisée par un sillon longitudinal profond; côtes circulaires assez fortes, devenant granuleuses ou tuberculeuses près du sillon dorsal; ouverture subcentrale un peu courbe, évasée; bord columellaire à sillon longitudinal à peine marqué” (Jousseaume, 1884: 19).

“Genus *Pusula* . . . shell semi-ovate, depressed underneath, convex on top, rounded at extremities and projecting at the margin; dorsal surface divided by a long, deep furrow; rather strong rounded ribs, becoming granulate or tuberculate near the dorsal furrow; subcentral aperture a little curved, flaring; columellar lip hardly distinguished by a longitudinal furrow” (translation by Jean Cate).

110. *Pusula* (*Pusula*) *panamensis* (Dall, 1902)
(Fig. 85: holotype)

1902 *Trivia panamensis* Dall, Nautilus 16: 43.

1908 *Trivia panamensis*. Dall, Bull. Mus. Comp. Zool. 43: 324; figs. 7, 9, 12.

Original description.—“*Trivia panamensis* . . . Shell small, strongly sculptured, sub-ovate, inflated, with its posterior extremity slightly produced; sculptured with about 15 rather sharp-edged strong ribs, of which about 4 are intercalary and the others continuous over the shell; in the middle line of the back they dip slightly but are not interrupted or attenuated; aperture narrow, strongly and nearly equally toothed on each lip; the spire wholly concealed; the interspaces are smooth and somewhat wider than the ribs” (Dall, 1902: 43–44).

Measurements, holotype.—L = 4.2; W = 3.0; H = 2.5 mm.

Type locality.—Dredged in 18 fathoms [33 metres], Panama Bay, U.S. Str. Albatross.

Holotype.—SDNHM No. 10905 (Keen: USNM No. 109205, *vide* Rosewater et al., 1968, p. 239).

Discussion.—The differences seen in the Dall shell morphology seem substantial enough to separate it from *Pusula* (*Pusula*) *paucilirata* (Sowerby II, 1870), with which it is compared herewith: *P. (P.) panamensis* has a much smaller shell form, and the shell is shorter and broader in peripheral outline; it has a wider, more curving aperture; the terminals, front and back, are wider in scope, flatter, and much less produced; and both canal openings, especially in front, are wider and more open. The dorsal ribbing (6) is comparatively coarser and to some extent discontinuous on the central dorsum, where the rib ends dead-end, become lobular and overlap; and it lacks a longitudinal dorsal furrow.

111. *Pusula* (*Pusula*) *rufescens* (Gray, 1833)
(Figs. 96, 96a: lectotype herein)

1833 *Cypraea rufescens* Gray, Proc. Zool. Soc. London 2 (1832): 185.

1870 *Cypraea rufescens*. Sowerby II, Thes. Conch., *Cypraea* 50, figs. 506–507 [not fig. 520] (Fig. 96b).

1971 *Trivia* (*Cleotrivia*) *rufescens*. (Gray, 1833), Keen, Sea Shells Trop. W America: 485; fig. 899.

Original description.—“*Cypraea rufescens* . . . Cyp. testâ ovato-subglobosâ, pallidè rufescenti-brunnea, tenui, pellucidâ, immaculatâ; porcis transversis angustis, acutis, subaproximatis, per lineam dorsalem continuis; ore lineari, subcurvâ, labio externo angusto, subinflexo; columellae dimidio antico concavo, margine internâ acutâ denticulatâ” (Gray, 1833: 185).

Measurements, holotype.—“long. 4, lat. 2½ lin.” [≈ L = 8.5; W = 5.3 mm].

Measurements, lectotype.—L = 8.6 mm (Way, *in litt.*).

Type locality.—Galápagos Islands, under stones.

Distribution.—Schilder, 1941: Payta, Ecuador [sic; Peru]; Sechura Bay, NW Peru; Buenaventura, W Colombia; Esmeraldas, NW Ecuador.

Lectotype.—BM(NH) Register No. 1975637 (1 of 6 syntypes).

Discussion.—If viewed from the dorsal aspect, this species seems to resemble *Pusula* (*Pusula*) *fusca* (Sowerby II, 1832); however, the differences become apparent on inspection of the basal characteristics of the 2 shells. In this species the aperture is more evenly broad throughout, with a widening of the outer lip centrally; the terminal canal is straighter, more open apically. In *Pusula* (*P.*) *fusca* (Sowerby II, 1832), the aperture is narrower in back, with an even broadening of the outer lip and less constriction of the base in front; the base color of *P.* (*P.*) *rubescens* Sowerby II is a dark deep brown color, while that of *P.* (*P.*) *fusca* is light beige, and the shell is slightly larger in overall dimensions.

Etymology.—Latin adjective from *ruber*, meaning red.

112. *Pusula* (*Pusula*) *fusca* (Sowerby II, 1832)

(Figs. 97, 97a: lectotype herein)

1832 [*Cypraea fusca* Gray, Descr. Cat. Shells] (invalid; not published).

1832 *Cypraea fusca* Sowerby II, Conch. Illustr., Cypraeidae: 13 (120); fig. 37.

1971 *Trivia* (*Pusula*) *fusca* (Sowerby, 1832, ex Gray, MS). Keen, Sea Shells Trop. W America: 487; fig. 906 (syntype.)

Original description.—"Cypraea fusca . . . Shell ovato-globose, dark brown, with a pale dorsal streak, extremities slightly produced; ribs small, rather close, some of them not continued to the edge of the lips beneath" (Sowerby II, 1832: 13).

Sowerby II, 1870: 48 (*Cypraea*): "*Cypraea fusca* . . . *C. testâ C. sanguineae* [Sowerby II, 1832: 12 Cypraeidae] affini, parvâ, angustâ, ominino fumeo-fuscâ [darkly smoke colored]; costellis tenuioribus; dorso magis rotundo-elevato, lineâ, centrali albidâ; latere dextro conspicuè marginato; extremitatibus productis, acutis; columellâ utrinque varicosâ, labio angustato [figs. 487-488]."

Gray, 1832 MS: "Brown Pig. . . . *Tri. fusca* Gray, Illust. f. 37 [undoubtedly referring to the Sowerby II, 1832; fig. 37] . . . Shell subglobular, dark brown, with a pale dorsal streak, the extremities slightly produced; ribs few, short, continued. . . . Pacific Ocean, Mr. Cuming's collection."

Measurements, holotype.—"length 0.33, breadth 0.25" [of an inch = L - 8.4; W - 6.3 mm].

Measurements, lectotype.—L - 9.3 mm (1 of 4 syntypes; Way, *in litt.*).

Type locality.—"Galapagos [Islands] and Bay of Guayaquil [central coastline of Ecuador]."

Lectotype.—BM(NH) Register No. 1874:12:11:60 (1 of 4 syntypes; Way, *in litt.*).

Discussion.—See the *Discussion* under the species *Pusula* (*Pusula*) *rubescens* (Gray, 1833), for an explanation of the differences between that species and *P.* (*P.*) *fusca* (Sowerby II, 1832).

Etymology.—From the Latin adjective, *fuscus*, meaning dark, dusky, swarthy.

113. *Pusula* (*Pusula*) *galapagensis* (Melvill, 1900) (Fig. 98: paratype [Solem, *in litt.*])

1900 *Cypraea* (*Trivia*) *galapagensis* Melvill, Ann. Mag. Nat. Hist. 6 (7): 208; fig.

1963 *Trivia* (*Pusula*) *rufescens* (Gray, 1832) Solem, Veliger 6 (1): 21; figs. 4-6 (name preoccupied).

1971 *Pusula* (*Pusula*) *fusca galapagensis*. (Sowerby II, 1832) Schilder, Cat. Liv. Foss. Cowries. Institut. Roy. Sci. Nat., (ser. 2) 85: 22.

Original description.—"C. (*Trivia*) testa ovato-rotunda, parva, nigrescenti-purpurea, lateribus paullum dilatatis, extremitatibus vix productis, obtusis, costis numerosis, crassis, laevibus, pallide cinereis, dorsaliter apud medium superficie callosa omnino oblecta, versus extremitatem utramque callositatis, velut oculo, albo-maculata, nitidissima, basi convexiuscula; apertura arcuato-recta; columella haud varicosa" (Melvill, 1900: 208).

Measurements, holotype.—"Long. 8, lat. 5.75 mm. (spec. maj.): Long. 7, lat. 5 mm. (spec. min.)."

Type locality.—Albemarle Island, Galápagos Islands. "Hab. Insula 'Albemarle', e grege [belonging to] Galapagensi."

Lectotype.—FMNH No. 116973.

Paralectotypes.—(2), FMNH No. 116974, (Solem, 1963: 22); "3 additional paralectotypes at Stanford University."

Discussion.—Melvill's figures of the type shell are misleading in their representation of this species; the entire central dorsal area is depicted as having a ribless, smooth, polished callus, whereas the species is fully ribbed dorsally in the normal state. The literature holds much discussion about this and other species attributed (Pacific Panamic region) to the Galápagos marine area. Undoubtedly there remains much to be done, before a valid species may be listed.

Melvill compares this species with that of *Pusula* (*Pusula*) *sanguinea* Gray [sic] [= Sowerby, 1832]. *Pusula* (*P.*) *sanguinea* Sowerby is, however, quite distinctive from all other triviids by having the large blood-red blotches of background color which straddle the dorsal impression centrally. It should be pointed out that these characteristic blotches of color do not photograph well, and therefore are not readily seen in the accompanying illustrations.

114. *Pusula* (*Pusula*) *carabus* Cate, sp. nov.

(Fig. 99: holotype)

Description.—Shell of medium size, evenly ovate, solidly formed. Terminals barely protruding, peripherally semicircular posteriorly, somewhat flattened in front. Dorsum acutely elevated, inflated. Base convex, with a poorly defined full-length longitudinal ridge. Aperture fairly narrow, centrally straight, reflexed to the left at either end. Columella narrow, shallowly concave. Fossula broad, deep, defined within by an adaxially arched, elevated, heavily dentate cari-

nal wall. Outer lip wide ($\frac{1}{3}$ width of base), convex. Shell with numerous ribs overall; with only a rudimentary suggestion of a longitudinal medial dorsal furrow, not effectively interrupting the transverse dorsal ribs; except for a few at the staggered termination of rib-ends in pseudofurrow; otherwise, ribbing continuous over side margins, base, and columella and over outer lip to the apertural edge, terminating as strong denticulations. Shell color (mostly in interstices) basically coffee-brown, with ribs and fossula bright white; canal interiors light beige-brown.

Measurements, holotype.—L = 8.3; W = 6.0; H = 4.8 mm (C4328A).

Measurements, paratype.—L = 8.0; W = 6.0; H = 4.8 mm (C4328B; Fig. 99a).

Type locality.—Gulf of Guayaquil, Ecuador (03° 00' S; 80° 30' W); ex Morris Schick, Glendale, California.

Holotype.—LACM No. 1838.

Discussion.—This new species was first thought to be *Pusula (Pusula) galapagensis* (Melvill, 1900). However, *P. (P.) carabus* can be seen to differ from that species by having a more broadly ovate, less pyriform shell; by having a more rounded posterior terminal beak; by having fewer (10) transverse dorsal ribs, with a very weak dorsal furrow as well (the Melvill species has at least 16 dorsal ribs); by having a narrower, almost straight aperture; and the species has a different structuring of the columella-fossula area.

Etymology.—The new name is from the Latin noun, *carabus*, meaning a kind of a beetle.

115. *Pusula (Pusula) cherobia* Cate, sp. nov.

(Fig. 100: holotype)

Description.—Shell of medium size, ovate, somewhat humped. Terminals evenly protruding, concavely squared at both ends, with apertural canals straight, open, notably so adapically. Base elongate, narrowly ovate, with central longitudinal, elevated angular ridge length of base. Columella broad, concave, broadening to the front as a large fossula. Aperture almost centrally dividing the base, narrow, nearly straight, curving gently left at either end. Outer lip and base angularly ridged, sloping downward to aperture and side margin. Shell sculptured over all with numerous upraised strong ribs, mostly discontinuous at the central dorsum, in effect producing a shallow longitudinal medial line; otherwise, ribbing continuous over sides: on the right, over outer lip to apertural edge, terminating as strong denticles (21); on the left, across base and columella (except ribs almost obsolete in fossular cavity), ending as weak teeth at inner edge of columella; both terminal collars mostly longitudinally ribbed. Shell color rich dark brown overall except that ventral ribbing, columella, posterior canal, and teeth are a lighter shade of dark beige; anterior canal opening stained with brown.

Measurements, holotype.—L = 6.3; W = 4.4; H = 4.0 mm.

Type locality.—In 18 metres (10 fathoms) of water; Magdalena Bay, SW Baja California, Mexico (\approx 24° 30' N; 112° 00' W); leg. Herbert Nelson Lowe, 1931.

Holotype.—LACM No. 1803.

Discussion.—This new west American triviid species appears very closely to approximate *Pusula (Pusula) campus* Cate (the next species herein). Their shells, when viewed under a microscope, seem to differ greatly from one another. There does exist, however, the possibility they are subspecific. The 2 populations seem to be adequately separated geographically, with little chance of interbreeding. Because of this and other differences in their shells, I am provisionally separating them as species.

Pusula (Pusula) cherobia is noticeably smaller; it has prominently sculptured dorsal shell ribbing, with a more evident dorsal furrow that distinctly interrupts the transverse ribbing; these ribs are broken in an irregular fashion, while those in *P. (P.) campus* are continuously, evenly transversely striate, without much of a clear-cut interruption; the dorsal ribs projecting (on the right side margin) as pseudo teeth; the posterior terminal beak is less produced; the aperture is narrower, straighter, and the shell is of a somewhat lighter color.

Etymology.—The name for this new species has a personal significance for the author, without translation otherwise.

116. *Pusula (Pusula) campus* Cate, sp. nov.

(Fig. 101: holotype)

Description.—Shell of medium size, ovate. Terminals produced, somewhat squared at both ends, slightly reflexed posteriorly. Dorsum roundly, evenly humped centrally, tapering quickly to sides and terminal beaks. Base elongately ovate, convex, narrowing to a dull point in front, roundly broader in back; both base and outer lip longitudinally angularly elevated, in either case sloping to the side and aperture. Aperture fairly wide, almost straight. Columella broad, concave, with an undulating adaxial carina within. Fossula a continuation of columella, its inner wall arched, elevated. Outer lip fairly broad, convex, narrowing to the front and back. Shell with numerous heavy ribs overall, with ribs a darker color dorsally, interstices lighter; ventrally, in reverse: ribs lighter, interstices darker; with a weak, though distinct, shallowly depressed longitudinal medial line in central dorsum not clearly interrupting transverse and continuous dorsal rib striation: passing over side-margin, base, and columella, and becoming strong sharp teeth on inner adaxial ridge, on the right, crossing over side-margin and outer lip, terminating as bold denticles at the aperture. Shell color is dark brown overall.

Measurements, holotype.—L = 7.4; W = 5.3; H = 4.5 mm.

Type locality.—Cholla Bay, Sonora, W Mexico; leg. Andrew Sorensen, Pacific Grove, California (1945); (\approx 27° 88' N; 111° 00' W).

Holotype.—LACM No. 1808.

Discussion.—This new triviid from the Gulf of California may be compared with the Galapagan *Pusula (Pusula) rufescens* (Sowerby II, 1832). It differs

from that species in being smaller; by having dark ribbing; by having a longitudinal angled ridge on the base and outer lip, a more evenly narrow aperture and a different adapical terminal beak morphology; the dorsum is more centrally humped, and the columella-fossula development is different.

Etymology.—The new name is derived from the Greek noun, *kampos*, meaning a kind of sea animal.

117. *Pusula (Pusula) sanguinea* (Sowerby II, 1832)
(Fig. 102: lectotype herein)

1832 *Cypraea sanguinea* Sowerby II, Conch. Illustr. Cypraeidae: 12 (115); fig. 32.

1971 *Trivia (Pusula) sanguinea*. (Sowerby, 1832, ex Gray MS) Keen, Sea Shells of Tropical West America: 487; 909.

Original description.—"Cypraea sanguinea . . . Shell ovate, dark purplish brown, with a dark crimson blotch on the back, dorsal line short, its ends whitish; ribs rather distant, smooth, lighter coloured" (Sowerby II, 1832: 12).

Sowerby II, 1870; *Cypraea*: 48: "Cypraea sanguinea . . . C. testâ ovatâ, fusco-purpurascenti vel roscenti, frequenter latera versus basimque nigricanti; lateribus dilatatis, leviter depresso-marginatis; extremitatibus obtusis; lineâ dorsali brevi, vix depressâ, medio maculâ sanguineâ magnâ pictâ, utrinque albidâ; costellis albidis, crassis, validè divaricatis et radiantibus, plerumque per sulcum continuis: basi convexâ, labiis dilatatis; columellâ vix varicosâ; aperturâ arcuatâ, ad terminos leviter arcuatâ, costellis dentalibus et interstitialibus crassis, albidis [figs. 483-486]."

Measurements, holotype.—"length 0.45, breadth 0.30" [of an inch, L = 11.5; W = 7.6 mm].

Measurements, lectotype.—L = 13.7 mm (Way, *in litt.*).

Measurements, hypotype 1.—L = 9.8; W = 7.0; H = 5.7 mm (C2456; Fig. 102a).

Measurements, hypotype 2.—L = 11.5; W = 9.1; H = 7.0 mm (C2459).

Type locality.—Not recorded; designated herein: Guaymas, Sonora, W Mexico (≈ 27° 88' N; 111° 00' W).

Distribution.—SW Mexico, Guaymas to Acapulco, Tehuantepec; possibly S to Peru (the author has not seen specimens from NW coast of S America).

Lectotype.—BM(NH) Register No. 1966620 (1 of 6 syntypes: Way, *in litt.*).

Discussion.—A distinguishing character for identifying this species is the large, central red color blotch which spans the weakly impressed dorsal furrow. Although clearly visible to the eye, this red color blotch does not seem to photograph well; therefore, it will be difficult to discern it in the illustrations.

Etymology.—From the Latin adjective, *sanguineus*, meaning blood-red.

118. *Pusula (Pusula) maltbiana* (Schwengel and McGinty, 1942)

(Fig. 103: lectotype herein)

1942 *Trivia maltbiana* Schwengel and McGinty, Nautilus 56: 16, pl. 4, fig. d.

Original description.—"Trivia maltbiana . . . Shell rotundly ovate, right side definitely margined [shouldered], a little produced to the right [from ventral aspect] posteriorly, transversely very closely ribbed throughout, interstices faintly granular, ribs weakly continuous across shallow dorsal sulcus. Vinaceous pink, with a large pale pink blotch in center of back. Aperture narrow, moderately straight except at posterior end where it is recurved, right [outer] lip finely toothed and slightly wider at center, lip edge and posterior and anterior canal pale pink. About 30 ribs on outer lip, of which 9 do not extend to the dorsal sulcus. About 24 ribs on body whorl, all but 3 or 4 continuous, but these few broken and overlapping" (Schwengel and McGinty, 1942: 16).

Measurements, holotype.—"L = 13 mm., breadth 10 mm., height 8 mm."

Measurements, paralectotype.—L = 11.4; W = 8.8; H = 7.1 mm (Fig. 103a).

Type locality.—"Dredged in 14 fathoms [25 metres] off Destin, Northwest Florida. leg. T. L. McGinty."

Lectotype.—ANSP No. 178721 (1 of 2 syntypes); paralectotype, No. 341133.

Discussion.—Note: the published catalogue number for the type specimen was recorded as being No. 178703, which should be corrected to 178721, the former being printed in error (Sponsler, *in litt.*). This appears to be a deep-water triviid species, and not likely to be found intertidally.

119. *Pusula (Pusula) californiana* (Gray, 1827)
(Fig. 105: lectotype herein)

1827 *Cypraea californiana* Gray, Zool. Journ. 3: 365.

1971 *Trivia (Pusula) californiana*. (Gray, 1827) Keen, Sea Shells Trop. W America: 486; fig. 905 (lower left).

Original description.—"Cypraea Californiana . . . Testâ ovatâ, ventricosâ, purpureo-fuscâ; striis longitudinalibus convexis, distantibus, apice sub-incrassatis; lineâ dorsali latiusculâ, impressâ, albidâ; basi planulatâ, submarginatâ; aperturâ lineari; dentibus subaequalibus."

"Shell ovate, ventricose, purplish-brown; the longitudinal [transverse ?] striae (9 transverse dorsal ribs) are distant and convex; their ends are slightly thickened in the middle of the back, where there is a broad, whitish, impressed dorsal line. The base is rather flat, and slightly margined on the outer lip; the aperture is linear; the teeth of the inner [columellar] lip 11, of the outer 16, nearly similar, small" (Gray, 1827: 365-366).

Measurements, type.—"Length $\frac{1}{10}$, diameter $\frac{3}{10}$ of an inch" [≈ L = 10.2; W = 7.5 mm].

Measurements, lectotype.—L = 11.0 mm; 1 of 6 syntypes (Way, *in litt.*); Fig. 177 = type lot.

Measurements, hypotype 1.—L = 9.7; W = 7.5; H = 6.8 mm (C2470; Fig. 105b).

Measurements, hypotype 2.—L = 11.9; W = 9.5; H = 7.2 mm (C3758; Fig. 105a).

Type locality.—"Inhabits California." Herein designated as 9.3 km off Pismo Beach, California (C3758); (approx. 35° 40' N; 120° 40' W).

Distribution.—Monterey Bay is seemingly the northern range limit; Channel Islands; Point Vicente (C2470); Terminal Island (until the habitat was destroyed); Laguna Beach; Corona del Mar; Mission Bay, San Diego, California. A specimen from Magdalena Bay, SW Baja California, measures: L = 6.3 mm.

Lectotype.—BM(NH) Register No. 1975632, is 1 of 6 syntypes: (Fig. 177 [6]; Way, *in litt.*). See hypotypes: Figs. 174, 176.

Discussion.—Due to the inroads of modern civilization, many of this animal's habitats have all but been eliminated; Terminal Island, San Pedro and Mission Bay, San Diego, are classic examples of man's devastation.

Gray (1827) made the following comment: "This species is very like the preceding [*Cypraea radians* Lamarck, 1811], but differs in always being of a darker color, the dorsal line being narrower, and the ends of the longitudinal [transverse] lines not being so distinctly thickened, nor the margin so much expanded . . ."

120. *Pusula (Pusula) californica californica* (Sowerby II, 1832, ex Gray MS)

(Fig. 106; type fig.: Sowerby II, 1832; fig. 42; Sowerby II, 1870; figs. 425–426)

- 1832 [*Trivia californica* Gray, Descr. Cat. Shells, Cypraeidae (*Trivia*): 16 (135); not published, proofs only (Proof date: June, 1832)].
- 1832 *Cypraea californica* Sowerby II, Conch. Illustr. Cypraeadae [sic], *Cypraea*: 13; fig. 42 (Publication date: 9 November 1832).
- 1843 *Cypraea depauperata*. Kiener, Spec. Gen. et Icon. Coq. Viv. *Cypraea*: 131; pl. 47, fig. 2.
- 1870 *Cypraea californica*. Sowerby II, Thesaur. Conchyl., *Cypraea*: 49 (174); figs. 425–426.
- 1963 *Pusula* (text figure) Keen, Mar. Moll. Gen. of Western North America, Illustr. Key; Gastrop.: 31.
- 1971 *Trivia (Pusula) californiana*. (Gray, 1827) Keen, Sea Shells of Trop. W. Am. (ed. 2): 486; fig. 905, [upper figs. only; not lower left fig., which = *Cypraea californiana* Gray].
- 1974 *Trivia californiana* (Gray, 1827). Abbott, Am. Sea Shells (ed. 2): 148; fig. 1629.

Gray description.—"Tri. *californica*, Gray, Illus. f. 42 . . . Shell deep purple-brown, with a broad white dorsal streak; ribs strong, far apart; front of columella ribbed" (Gray, 1832: 16 June).

Sowerby II description.—"Cypraea *californica* . . . C. testâ C. sanguineae affini: costellis crassis, perpaucis, ad sulcum subtuberculatis, nonnullis interruptis" (Sowerby II, 1870: 49).

Description.—Shell of medium size, roundly ovate (broad for its length, subcircular in peripheral outline). Terminal not produced, except very slightly so apically. Dorsum humped, somewhat abruptly elevated, with shiny, wide

interstices between ribs; ribs usually curving, few in number, irregular in direction, widely separated, and thickly formed; a central longitudinal dorsal line, barely depressed, formed by termination of discontinuous ribs on either side of medial line; rib ends generally without knobs at sulcus. Base wide, short for its length, narrowing quickly to either end, somewhat sharply convex, sloping downward into aperture; columella somewhat narrow, concavely grooved, deepening, widening to the front into a well developed fossula. Aperture rather evenly narrow, centrally straight, reflexing left at both ends. Apertural canal openings wide, open, though less so posteriorly. Outer lip convex ventrally, almost longitudinally ridged, sloping downward to aperture. Shell ribbed overall, although with some transverse irregularity dorsally; dorsal ribs (5) weakened, almost interrupted at dorsal impression; dorsal ribs continuous over either side-margin: to the inner columellar carinal ridge adaxially, to the apertural edge of the outer lip on the right—in each case as strong, broad denticles (13) on the columella, as strong teeth (14) on the outer lip. Basic color medium dark brown, with dorsal medial impression, rib edges, and columella bright white, (C2448; Fig. 106a).

Measurements, holotype.—Not recorded by Gray (1832); Sowerby II (1832); or Sowerby II (1870). Note: see hypotypes, figs. 175 and 176.

Measurements, hypotype 1.—L = 12.8; W = 11.0; H = 9.8 mm (C4334; Fig. 106d) (C2448; Fig. 106a).

Measurements, hypotype 2.—L = 10.6 mm; Draper, *in litt.*: Fig. 106e.

Type locality.—"California." Designated herein: subtidally, Laguna Beach, California (≈ 33° 44' N; 118° 00' W).

Distribution.—Bluff Cove, Palos Verdes peninsula (C4128; Fig. 106e); leg. B. Draper, Los Angeles; Magdalena Bay, W Baja California, leg. H. N. Lowe, ex Rubie Sharon Coll., Venice; SDNHM, No. 34634; Fig. 106b; generally intertidally from Monterey Bay, California, south to Magdalena Bay, W Baja California; Puertecitos, E Baja California (Fig. 106d).

Holotype.—Missing; probably without identification in the Sowerby collection (BM(NH)).

Discussion.—It may possibly be that the name *Cypraea californica* Sowerby II, 1832, originated as a *lapsus calami* for *C. californiana* Gray, 1827. However, there is some evidence that it did not. In his unpublished "Descriptive Catalogue of Shells" (1832, June), Gray referred to the name *C. californica* without alluding to his earlier (1827) species, *C. californiana*. In addition to a new description of the shell, he used figure 42 in the Conchological Illustrations (of Sowerby II, 1832) to illustrate the species. It may now be said that he was describing a new triviid species (ICZN; Art. 16 [vii]) from California, which Sowerby II, 1832, would, a few months later, validate through publication.

Sowerby II, 1832 (November), in his new publication, Conchological Illustrations, parts of which bear various dates of publication: see Proc. Malac. Soc. London 1909: 8 (6): 333 and 1910: 9 (3): 212. Illustrations: Sowerby, 1832, figs. 1–62; 1836,

figs. 63–112; 1837, figs. 113–181, also listed *Cypraea californica*, possibly having seen the Gray unpublished “Catalogue” earlier in proof form. Sowerby II also used figure 42 to illustrate the species. It is interesting to point out that Gray used the Sowerby II figured illustration prior to its publication date. Another point of interest is that the species name *C. californiana* of Gray, 1827, appears never to have been recorded again in the 19th century literature; Schilder (1927: 61), perhaps, first recording the 1827 Gray triviid species.

Gray's description of *Cypraea californica* (1832) is significantly different from that of his 1827 species, *C. californiana*, whose type specimen fits the earlier description well (especially in the ventral rib count), while his subsequent (1832) description adequately points out the “. . . strong, far apart” detail of the *C. californica* dorsal ribs, an important feature of this species.

Pusula (Pusula) californica (Sowerby II, 1832) differs from *P. (P.) californiana* (Gray, 1827) by having fewer (6) and more coarse dorsal ribs; *Pusula californiana* (Gray) seems to average at least 8 dorsal ribs. Instead of more or less straight ribs with very narrow interstices, this species' ribs are conspicuously irregular in direction, the interstices are broad, somewhat “V” shaped, broadest at the side-margin; infrequently having a more roundly ovate shell, rather than rectangularly ovate; and the longitudinal dorsal sulcus seems broader, less depressed. *Pusula californica* is also more inflatedly humped dorsally.

Note: Sowerby (1870), in his plate explanation (plt. 325; figs. 425–426) has seemingly made an erroneous reference to the Zoological Journal (1827 [3]: 365), in which Gray described *Trivia californiana*. I have interpreted Sowerby's reference to that species as being nothing more than a *lapsus calami*. Had Sowerby compared his twice figured specimen (1832 and 1870) with that of Gray's type specimens he would probably have quickly noted the difference in these shells that now seem clearly separable as 2 different species. I am convinced that the name *C. californica* should be retained as a validly cited and indicated species. It seems unnecessary to establish a new name for the Sowerby, 1832, species.

121. *Pusula (Pusula) californica lochoensis* Cate, subsp. nov.

(Fig. 106c)

Description.—Shell fairly large, subcircular, ovately evenly outlined. Terminals not extending beyond periphery of shell. Dorsum roundly humped, tapering quickly to either terminal. Base broad, convex, rather pointedly ovate. Aper-

ture evenly curving throughout, with canal openings quite wide. Columella broad, curving, concave, with a sharply margined basal angle. Outer lip somewhat wide, convex. Shell ribbing somewhat restricted; ribs transversely, broadly separated, with an unbroken, straight continuity from one side of the shell to the other; with a very shallow longitudinal dorsal impression; shell ribbing on holotype not sharply sculptured (it could possibly be beach-worn), and the ribs terminating as knobs at the dorsal median line; ribs continuous from dorsum over outer lip and base, the former terminating as large, sharp denticles at the apertural edge, with the latter traversing the columella groove, then ending on the inner adaxial edge as elongate, sharp teeth (10). Shell color medium brown, except that shell ribs, columella-fossula, and dorsal median line are white.

Measurements, holotype.—L – 10.8; W – 8.8; H – 6.9 mm.

Type locality.—Ryukyu Islands (24° 40' N; 126° 10' E).

Holotype.—LACM No. 1840.

Discussion.—This new subspecies name is provisionally proposed for this shell until further fieldwork may more validly confirm its existence in the Ryukyu Islands. The shell was collected by Harry Koenig of Santa Monica, California, while on World War II duty in the western Pacific. The subspecies is very close to *Pusula (Pusula) californica californica*, but seems to differ from it not only geographically, but by having less acutely sculptured shell ribbing (although the possibility exists that beach-rolling may have been responsible for this decortication). Its dorsal continuity of ribs is more evenly lineal, without any apparent knobs at termination of the dorsal line; the transverse dorsal ribbing is also fewer in number (5); there is also some noticeable morphological variance in the columellar-fossular construction, and the columellar teeth are fewer in number.

Etymology.—The new name is derived from a more ancient colloquial name given to the Ryukyu Islands.

122. *Pusula (Pusula) elsiae* (Howard and Sphon, 1960)

(Fig. 108: holotype)

1960 *Trivia (Pusula) elsiae* Howard and Sphon. *Veliger* 3 (2): 41: plt. 7, figs. 1–4.

1971 ? *Trivia (Pusula) californiana* (Gray). Keen. *Sea Shells Trop. W Am.*: 486.

Original description.—“*Trivia (Pusula) elsiae* . . . Shell small, thin, ovate in shape; olivaceous in color; the ribs smooth and flattened, about half the diameter of the inter-spaces, 18 in number with 8 of them intercalary, the remaining 10 pass over the columella where they are knobbed, the two short anterior ones most heavily so; the ribs of the outer lip number 12 and are produced as teeth on the outer lip; all ribs fading about two-thirds the distance up the shell; the dorsum is oval and completely smooth; the spire is distinctly visible when viewed from the dorsal surface; three whorls plus body whorl can be seen” (Howard and Sphon, 1960: 41).

Measurements, holotype.—"L - 7; W - 6; H - 4 mm."

Measurements, paratype 1.—"L - 7; W - 6; H - 4 mm."

Measurements, paratype 2.—"L - 7; W - 5.5; H - 4 mm."

Measurements, hypotype.—L - 5.5; W - 4.6; H - 3.7 mm (C4140E; Fig. 108a).

Type locality.—Punta Final, East Baja California, Mexico; ≈ 10 miles [16 km] south of Bahía San Luis Gonzaga.

Holotype.—SDNHM No. 1458; (the original No. 41906 has been replaced [Radwin, *in litt.*]).

Discussion.—According to the authors: "*Trivia elsiae* might be thought to be a juvenile of some other species of *Trivia* with incompletely formed dorsal ribs. Specimens of *T. solandri* (Sowerby), however, have completely formed ribs in the *bulla* stage before the outer lip is turned, as shown in one specimen collected by the senior author at the type locality of *T. elsiae* and in five specimens collected by Mr. Mark Rogers, on April 13, 1960. All of these young specimens are white in color lacking the typical brownish-pink of *T. solandri* whereas all known specimens of *T. elsiae* are colored and appear to be adults."

Schilder (1971: 22) lists this species in the synonymy of *Pusula (Pusula) californiana* (Gray, 1827). It should be pointed out, however, that our present knowledge of the distribution of *P. (P.) californiana* Gray limits its living range to the west coast of California, south possibly to Cape San Lucas, Baja California; apparently not extending into the Gulf of California. It therefore seemingly cannot be related to *P. (P.) elsiae* of Howard and Sphon, 1960.

Several years ago Andy Sorensen, of Pacific Grove, California gave this author a small shell (Fig. 108a) he had collected ≈ 9 miles [15 km] south of San Luis Gonzaga Bay, East Baja California. The study in this present work has brought this little shell into clearer focus. One wonders if it is not an adult specimen of *P. (P.) elsiae* (Howard and Sphon), as it lived in the type locality of their new species! Although somewhat smaller than their shells, there seems to be credibility in the assumption. In series or the Gulf of California shells it is not difficult to observe quite a size range among them, and the small Sorensen shell does not agree in any morphological aspects of *P. (P.) solandri* (Sowerby II, 1832), or other Gulf triviid species. It will need additional field-work to decide if this specimen really is an adult specimen of *P. (P.) elsiae* (Howard and Sphon, 1960).

Etymology.—The species was dedicated to Elsie Chace, Los Angeles.

123. *Pusula (Pusula) solandri* (Sowerby II, 1832)
(Figs. 107, 107a: lectotype herein)

1832 *Cypraea solandri* Sowerby II, *Conch. Illustr.*, Cypraeidae: 14 (128): fig. 43.

1927 *Pusula (Pusula) solandri* [em.] (Sowerby, 1832) Schilder, *Arch. Naturgesch.* 91A 10: 61.

1971 *Trivia (Pusula) solandri*. (Sowerby, 1832, ex Gray, MS) Keen, *Sea Shells of Tropical West America*, 487; [fig. 910 = *Pusula (Pusula) padreserrai* Cate].

Description, holotype.—"Cypraea solandri . . . Shell reddish brown, with a light-coloured dorsal groove, and a dark streak along each side of it; ribs prominent, wide apart, tuberculated at their dorsal extremities, mouth rather narrow, teeth of the outer lip more numerous than in *C. radians*: margin generally broad" (Sowerby II, 1832: 14).

Measurements, holotype.—"Length 0.7, breadth 0.55" [of an inch = L - 17.8; W - 14.0 mm].

Measurements, lectotype.—L - 15.3 mm; (1 of 6 syntypes; Way, *in litt.*).

Measurements, hypotype 1.—L - 18.5; W - 13.4; H - 10.5 mm (C2426A; Fig. 107c).

Measurements, hypotype 2.—L - 12.0; W - 9.5; H - 6.6 mm (C2426B).

Measurements, hypotype 3.—L - 16.3; W - 11.7; H - 9.0 mm (C2422; Fig. 107b).

Type locality.—"Pacific Ocean." Designated herein: Cholla Bay, Gulf of California, Sonora, W Mexico.

Distribution.—Puertecitos, (C2422; Fig. 107b), E Baja California; Salsipuedes Island, (C2572), Baja California; Cholla Bay, (C2426; Fig. 107c), W Mexico; Las Gaviotas, Guaymas (C2420), W Mexico; Mazatlan: SE Mexico.

Lectotype.—BM(NH) Reg. No. 1975633 (1 of 6 syntypes).

Discussion.—Sowerby: "This species is very much like *radians*, indeed it is impossible to know which of the two, this or the one we commonly call by that name, is the *radians* of Lam. The principal difference is in the number of teeth on the inner edge of the outer lip."

The two species may be easily separated from each other, even though the resemblance is strong. In *Pusula radians* (Lamarck, 1811) the shell is larger, more massive in appearance; the shell is roundly ovate, rather than more narrowly, subpyriformly ovate; the transverse ribs are more heavily formed, are sharper; and the side margins flare out more widely, with a significant flattened dorsal shouldering.

124. *Pusula (Pusula) padreserrai* Cate, sp. nov.
(Fig. 109: holotype)

1971 *Trivia (Pusula) solandri*. (Sowerby, 1832, ex Gray MS) Keen, *Sea Shells Trop. W. Am.*: 487; fig. 910.

Description.—Shell relatively large, wide, broadly ovate, lightweight. Terminals distinct, though only barely pro-

duced, posterior terminal beak although more prominent, beak squared in front. Dorsum roundly humped, bulbously inflated. Base centrally broad, convex, with a laterally angled, shouldered side margin, shell tapering more abruptly to the back than to the front. Aperture gently curving, with canals at each end recurved. Columella short, almost-without impression. Fossula long, deep, with an upraised, arched, inner wall. Outer lip broad, convex. Shell ribs rather fine, thread-like, distant; with a longitudinal deeply grooved dorsal sulcus, somewhat narrow and smooth; dorsal striae interrupted by this groove, ribs terminating there as small, usually poorly developed, smooth tubercles; other dorsal ribs continuous over both side-margins, then terminating, on the one side, as sharp denticles on the apertural edge of the outer lip; on the other crossing base and columella-fossula to the adaxial edge of columella-fossula. Shell color a pale fawnish-pink, with the dorsal groove, rib pustules, rib striae, columella-fossula, terminal canals a light beige.

Measurements, holotype.—L – 21.0; W – 15.8; H – 12.2 mm.

Measurements, hypotype.—L – 19.1; W – 14.5; H – 11.3 mm (C4232; Fig. 109a).

Type locality.—Bluff Cove, Palos Verdes, California (C4333) under rocks; leg. Bert Draper, Los Angeles (33° 45' N; 118° 25' W).

Distribution.—Dead Mans Island, San Pedro (C4142); Palos Verdes; Point Vicente; Newport Beach; Corona del Mar; Mission Bay (C2423); California. Added distribution: Seal Beach, ex H. R. Hill (C2427); Balboa Bay, ex Rubie Sharon (C2419); Beach, Rancho de la Abundancia, La Riviera, Baja California; leg. T. Bratcher (1965).

Holotype.—LACM No. 1828.

Discussion.—This new species could possibly be an analogue of the Gulf of California species *Pusula* (*Pusula*) *solandri* (Sowerby II, 1832). Although they may appear to be somewhat similar when one compares the figure illustrations herein, the illusion seems to end there. The shells themselves, when brought together, are easily separable and distinct from one another. *Pusula* (*P.*) *padreserrai* differs from *P.* (*P.*) *solandri* (Sowerby II), by having a much larger, lightweight shell; by being more widely, roundly ovate, rather than narrowly so as in *P.* (*P.*) *solandri* (Sowerby II, 1832); by having a subspherical, highly elevated shell in which dorsal rib-ending tubercles are very much more fine, less obtrusive. The shell color is completely different, a mixture of pale fawnish-pink and beige; the colors of *P.* (*P.*) *solandri* being a characteristic mauve color, with the color deepening in a longitudinal line at the base of the very large dorsal rib-ending tubercles, whereas in the Sowerby species ribs are bright, off-white. The shell ribbing in this new species is considerably finer and more delicately sculptured.

Etymology.—This new species is dedicated to the Franciscan missionary, Junipero Serra (1713–1784), who worked with the California Indians whose food

included mollusks from the same range as this species.

125. *Pusula* (*Pusula*) *radians* (Lamarck, 1811) (Fig. 110; holotype)

1811 *Cypraea radians* Lamarck, Ann. Mus. Nat. Hist. (Paris) 16: 102.

1817 *Cypraea oniscus* Dillwyn, Descr. Cat. Shells 1: 466: (name invalid; preoccupied).

1971 *Trivia* (*Pusula*) *radians*. (Lamarck, 1811), Keen, Sea Shells Tropical W America: 487; fig. 908.

1971 *Cypraea rota*. (Weinkauff, 1881), Keen, op. cit.: 487.

Description, holotype.—"Porcelaine rayonnante. *Cypraea radians* . . . C. Suborbiculata, pallidè rubella; lateribus dilatatis depressis; striis transversis subradiatis; sulco dorsali; ventre plano, striato" (Lamarck, 1811: 102–103).

Measurements, holotype.—"19 millimeters." (L – 20.25 mm; Binder, *in litt.*).

Measurements, hypotype.—L – 23.4; W – 17.9; H – 12.1 mm (C2430; Fig. 110a).

Type locality.—"Habite l'Océan de l'Amérique occidentale, à Acapulco."

Distribution.—Vera Cruz Beach, Pacific Panama (C2430); Panama Bay to northern Costa Rica.

Holotype.—MHNG No. 1104/49/1 (Binder, *in litt.*).

Discussion.—"Coquille très-distincte des suivantes par ses côtes dilatés et comprimés. La figure de Lister [1688]; t. 706, f. 55, la représente assez bien du côté du dos; mais celle qui est au-dessous, et qui exprime le côté inférieur de la coquille, montre que ce n'est point notre espèce. Elle est presque orbiculaire, large et très-aplatie en dessous, avec des stries transverses qui se continuent sur les côtés et remontent sur le dos jusqu'au sillon longitudinal du milieu où elles s'arrêtent en formant chacune un épaississement tuberculeux. Le dos est élevé sans être arrondi ou enflé comme dans la suivante."

"Shell very distinct from the following by the dilated and compressed ribs. The figure of Lister [1688]; t. 706, f. 55, represents it well enough as to the dorsal ribs; but that which is underneath, and which expresses the lower side of the shell, shows that it is not [that] species at all. It is almost orbicular, large and very flattened underneath, with transverse striae which continue on the sides and show up again on the back as far as up to the longitudinal furrow in the middle [of the back], where they stop, each one forming a thickened tubercle. The back is raised [elevated] without being rounded . . ." (translation by Jean Cate).

Etymology.—The name is derived from the Latin noun, *radius*, meaning rod, ray, spoke.

126. *Pusula (Pusula) costispunctata* (Sowerby II, 1870)

(Fig. 111: type figure)

- 1870 *Cypraea costis-punctata* Sowerby II, Thesaur. Conchyl. 4, *Cypraea*: 42; figs. 452–453.
 1881 *Cypraea costispunctata*. (Gaskoin) Weinkauff in: Martini and Chemnitz, Syst. Conch. Cab. (ed. 2) 5 3, *Cypraea*: 137; plt. 39, figs. 2–3.
 1971 *Niveria (Niveria) costispunctata*. Schilder, Cat. Liv. Foss. Cowries. Institut Roy. Belg. Mem. (ser. 2), Fasc. 85: 20.

Original description.—"Cypraea costis-punctata . . . *C. testâ C. radiantii* affini; costellis conspicuè lentiginosis, maculis dorsalibus plurimis, sulco angustiori; lateribus haud tantum dilatatis; basi rotundo, sulco columellari lato" (Sowerby II, 1870: 42).

Measurements, type.—Not recorded (not at BM[NH], Way, in litt.).

Measurements, hypotype 1.—L – 17.3; W – 12.3; H – 9.2 mm (C4256).

Measurements, hypotype 2.—L – 19.0; W – 12.8; H – 9.5 mm (C4228; Fig. 111b).

Measurements, hypotype 3.—L – 20.4; W – 15.5; H – 10.1 mm (C4143).

Measurements, hypotype 4.—L – 21.0; W – 17.4; H – 11.5 mm (C4231; Fig. 111a).

Type locality.—Not recorded. Designated herein: Las Gaviotas, Mazatlan, Sinaloa, W Mexico (23° 12' N; 106° 25' W).

Distribution.—Tres Marias Islands, Nayarit, SW Mexico.

Hypotype (C4256).—LACM No. 1816.

Discussion.—Sowerby II: "*Costis-punctata* also has a rounded base [compared with '*Solandri*' (Sowerby II, 1832)], but in other respects more generally resembles *radians* [Lamarck, 1811], and the spots [a large single color blotch] are divided [by dorsal groove]; the ribs are also spotted and the dorsal groove is narrow."

Heretofore, this species seems to have been misunderstood, overlooked, and perhaps lumped with the species *Pusula (Pusula) radians* (Lamarck, 1811). The species seems to have also been considered to be a variant of *P. (P.) solandri* (Sowerby II, 1832). It, therefore, seems pertinent to point out the differences between them at this time:

Pusula (Pusula) costispunctata (Sowerby II, 1870), appears to differ from *P. (P.) radians* (Lamarck, 1811), by having a longer, narrower shell; the base is more narrowly elongate, with a correspondingly narrow outer lip; the longitudinal dorsal furrow is longer, beige in color, less deeply impressed; the aperture is longer, less acutely reflected at either end; and the species has a very distinctive large dark brown dorsal color blotch which stains the central part of the dor-

sum, including the medial furrow and the adjacent rib-knobs.

It differs from *Pusula (Pusula) solandri* (Sowerby II, 1832), in not having a bright white medial dorsal furrow, with the adjacent rib-knobs of the same white, both of which are so characteristic; also, the brown (rather than white) dorsal ribs are much more numerous; and the shell varies in peripheral outline, from narrow to subcircular.

See Cate, 1961: 112, for a similar variation in peripheral outline in another cowry species.

Etymology.—From Latin noun, *costa*, rib, and the adjective, *punctatus*, spotted or pricked.

(*Dolichupis*) Iredale, 1930

Mem. Queensland Mus. (Sydney) 10/1: 83 (cf. Schilder, 1939: 173 [31]).

Type species [OD]: *Cypraea producta* Gaskoin, 1836 Proc. Zool. Soc. London 3: 200.

Syn.: *Trivellona* Iredale, 1931 Rec. Austral. Mus. (Sydney) 18/4: 221.

Type species [OD]: *Trivellona excelsa* Iredale, 1931 Rec. Austral. Mus. (Sydney), 18/4: 221; plt. 24, figs. 13–14.

127. *Pusula (Dolichupis) producta producta* (Gaskoin, 1836)

(Figs. 79, 79a: holotype)

- 1836 *Cypraea producta* Gaskoin, Proc. Zool. Soc. London 3: 200 (there are 2 fossil subspecies: *Dolichupis soloënsis* Schilder, 1937; *Trivia (Trivia) datensis* Nomura and Zinbo, 1935).
 1941 *Trivia (Trivia) latensis* Schilder, Arch. Moll. 73: 110; (nom. nud.).
 1967 *Pusula producta*. Cernohorsky, Mar. Shells Pacific (1): 112; plt. 22, fig. 135.

Original description.—"Cypraea producta . . . Cypr. testâ ovato-subglobosâ, basi planulatâ, transversim costatâ, albida, marginibus crassiusculis, ad extremitates subdepressis; aperturâ angustiore, labri margine subrectâ, columellae flexuosâ, acutangulâ; lineâ dorsali nullâ."

"Shell ovato-subglobose, of a uniform dull white colour. Aperture rather narrow: teeth prominent and even, about twenty-six on the lip, and twenty-three on the columella; between the beaks there are about five or six rather strongly marked denticulations. The columellar edge of the aperture forms a sharp line, within which is a broad and rather deep groove, extending the length of the mouth, deeper at each end; the ribs, extending through it, form on its inner border a denticulated line, and they are more acutely prominent within the aperture than on the outside of the shell. Ribs prominent, smooth (interstices uneven), many terminating on the side of the shell at various distances from the middle of the back, those continuing to the middle about fifteen, a few only of which are continuous down the opposite side, the rest terminating in the centre of the dorsum between each other, but not in obtuse or thickened ends:

false ribs about six posteriorly and eight anteriorly, and, like those in *Cypr. sanguinea*, extending high up towards the back. Extremities much produced, somewhat flattened. Margins thick. No impressed dorsal line. Anterior beaks wider apart than the width of the aperture, and within each of these beaks is a slight impression or groove" (Gaskoin, 1836: 200).

Measurements, holotype.—"Length .500 of an inch; breadth .375; height .300" [12.5; 9.5; 7.5 mm] (L = 12.2 mm, Way, in litt.).

Type locality.—Not recorded.

Distribution.—Schilder, 1941: Singapore, Malaysia; N Mindanao to Luzon, Philippines.

Holotype.—BM(NH) Register No. 1874.12.11.59.

Discussion.—Gaskoin: "It is thus distinguishable from *Cypr. scabriuscula*: it has no dorsal line; ribs much larger and prominent; has wide margins; a broad and flattened base; a slight groove within the anterior beaks; extremities much produced and flattened, &c."

Etymology.—*producta*, from the Latin adjective, *productus*, meaning produced, extended.

128. *Pusula (Dolichupis) akroterion* Cate, sp. nov.
(Fig. 80: holotype)

Description.—Shell large, ovate, solidly formed. Terminals produced; posterior beak somewhat lengthened, curvingly reflexed. Dorsum inflatedly humped, tapering rather sharply to either end. Base convex, narrowly ovate. Aperture fairly broad, mostly straight, though somewhat acutely reflexed left adapically, and becoming wider in front due to a slight constriction of front base. Columella broad, deeply concave, becoming deeper in front as a fossula. Outer lip broad, convex, slightly curving, barely shouldered above. Shell ribbing fine, ribs numerous overall; dorsal ribs mostly continuous from one side margin to the other, except that in front some ribs discontinuous due to incompletely extended rib-ends, at the weakly impressed longitudinal medial dorsal line; dorsal arched edge of canal ends minutely denticulate; base ribs continuous over columellar depression, terminating as strong teeth on adaxial carinal edge of columella-fossula wall; outer lip teeth continuous from side-margin to apertural edge, becoming strong bold teeth thereon. Shell color dull white overall.

Measurements, holotype.—L = 12.0; W = 8.3; H = 7.2 mm.

Measurements, paratype.—L = 11.6; W = 8.2; H = 7.1 mm (C4298; Fig. 80a).

Type locality.—Coron, Palawan Island, SW Philippines (12° 10' N; 120° 13' E); leg. Franz Steiner, of Mill Valley, California.

Holotype.—LACM No. 1837.

Discussion.—This new triviid species is very large for the genus, and may possibly be compared with *Pusula (Dolichupis) producta* (Gaskoin, 1836). It differs from that species, however, in having a narrower, slimmer peripheral outline of the shell, and is less spherically inflated; by the different form of the

columella and fossula; by the singularly tortuous aspect to the rear terminal beak; and, with a broader curving, more open aperture.

Etymology.—This new name is derived from the Greek noun, *akroterion*, which means extremity; the rear extremity of this species is unusually formed.

129. *Pusula (Dolichupis) excelsa* (Iredale, 1931)
(Fig. 81: holotype)

1931 *Trivellona excelsa* Iredale, Rec. Austral. Mus. (Sydney) 18/4: 221; pl. 24, figs. 13–14.

Original description.—"Trivellona excelsa . . . Shell of medium size for the family, globose, mouth fairly wide, open. Colour of dead shell dirty white. The aperture is longer than the body whorl, the outer lip descending to meet the inner in front of the somewhat flattened spire. The dorsal view is of a well elevated shell [without a medial dorsal sulcus], the lirae running right across the shell from outer lip to inside the columellar lip. The aperture has the sides fairly parallel. The lirae form loops at the posterior and anterior ends, about six forming the loop, between which are about twelve and twenty-one may be counted on the outer lip, sixteen on the inner lip" (Iredale, 1931: 221).

Measurements, holotype.—"Length 18 mm., breadth 13 mm., height 10 mm."

Type locality.—"Trawled off Montague Island [36° 15' S; 15° 15' E], New South Wales; in 50–70 fathoms [91–128 metres]."

Distribution.—Not known.

Holotype.—AM No. C.57766 (Ponder, in litt.).

Discussion.—Iredale: "The large size of this species separates it at once from all other triviids, especially as in this depth a form of the littoral *merces* is found which is smaller, more strongly sculptured, the sculpture crossing the back and thus definitely distinguishing it, though the blotches of colour on the dorsal surface are sometimes retained."

Etymology.—The name seems to have been derived from the Latin adjective, *excelsus*, meaning distinguished.

130. *Pusula (Dolichupis) rubinicolor* (Gaskoin, 1836)
(Fig. 82: Sowerby II, 1870; figs. 500–501)

1836 *Cypraea rubinicolor* Gaskoin, Proc. Zool. Soc. London 3: 199.

1885 *Trivia rubinicolor*. Tryon, Man. Conch. 7: 204; pl. 22, figs. 27–28.

Original description.—"Cypraea rubinicolor . . . Cypr. testá ovato-subglobosá, utrinque subrostratá, rubellá, extremitatibus pulchrè roseo-rubris; labro incrassato, convexo; costis acutis, continuis, indivisis; lineá dorsali nullá."

"Shell ovato-globose, of a light red or pinkish colour; the four beaks, particularly on the base, of a much deeper red. Base roundish, aperture and margins lighter coloured. Margins thickened, somewhat produced, in short, rather broad beaks. Aperture rather narrow, and inner edge of the

lip nearly circular. Columella somewhat ventricose towards the middle, concave towards the anterior end; teeth numerous and even; on the lip about twenty, proceeding across the back, forming ribs, and continuing over the columella, pass through the frontal [fossular] groove, converging towards the middle, and terminating at its inner border in a very slightly curved serrated edge; one or two ribs terminate near the middle of the back. False ribs few, and terminating in teeth only between the beaks. No dorsal line" (Gaskoin, 1836: 199–200).

Measurements, holotype.—"Length .475 of an inch; breadth .400; height .250" [= 12.0, 10.0, 6.5 mm].

Type locality.—Tiger Island, Western Celebes (Schilder, 1941: 76).

Distribution.—Schilder 1941: NE Borneo; Sulu Sea; S Mindanao, Zamboanga, S Philippines.

Holotype.—Not in BM(NH) (Way; *in litt.*).

Discussion.—Gaskoin: "Its distinctive characters from *Cypr. sanguinea* are: teeth much more numerous and even; no ribs terminate on the lip, rarely more than one or two on the side of the back, and they are of the colour of the shell; colour much lighter, and the beaks on the base deepest coloured."

Etymology.—From the Latin adjective, *ruber*, meaning red, reddish, and the noun, *color*, hue.

131. *Pusula (Dolichupis) fultoni* Cate, sp. nov.
(Fig. 83: holotype)

1927 "*Trivia acutidentata*" of Fulton, Proc. Malac. Soc. London 17 (6): 250; 3 figs.

Description.—Shell of medium size, short, broad, roundly ovate, subspherical. Terminals distinctly produced, squarely so in front, narrowing, flaring to the left apically. Base convex, centrally broad, becoming somewhat roundly pointed front and back. Aperture wide, broader in front, nearly straight, curving to the left posteriorly. Columella wide, undulating, becoming wider, deeper in front, forming a large fossula with an elevated inner wall adaxially. Apertural columellar-base lip margin curving in a drawn-out "S"-shape; apertural edge of the outer lip, in contrast, even and straight. Outer lip convex, almost as broad as the base. Transverse shell ribbing rather fine, with fairly distant interstices; base ribs extending over side margins restrictedly, not lengthening onto the smooth dorsum, subglossy, and without any indication of dorsal groove; ribs weakly evident crossing the columella; and the rear 4 or 5 base ribs large, knob-like, projecting at the columellar-base marginal edge, somewhat similarly so along the fossular base margin. Shell color is off-white overall.

Measurements, holotype.—L – 7.0; W – 5.9; H – 4.5 mm.

Type locality.—"Loc.: . . . ?" (Way, *in litt.*).

Holotype.—BM(NH) Register No. 1927.6.8.11.

Discussion.—Schilder and Tomlin (1931: 274), give New Caledonia as the locality for this shell; however, it is not known how they arrived at that decision. This new species honors Hugh Coomber Fulton (1861–1942), who contributed much to malacology in earlier

years, and who brought this new triviid to the attention of the modern world of malacology.

132. *Pusula (Dolichupis) cicatrosa* (Sowerby II, 1870)
(Figs. 84, 84a: holotype)

1870 *Cypraea cicatrosa* Sowerby II, Thes. Conch. 4, *Cypraea*: 46; figs. 458–459.

1885 *Trivia cicatrosa*. Tryon, Man. Conch., Cypraeidae: 7: 199; plt. 21, figs. 77–78.

Original description.—"Cypraea cicatrosa . . . C. testâ albâ, parvâ, crassâ, subglobosâ, posticè subexpansâ, margine terminali postico crasso, lato; dorso subelevato; sulco tortuo, brevi, profundissimo; costellis crassiusculis, rotundis, divergentibus; basi subcomplanatâ; labio columellari brevi, utrinque calloso; costellis paucis, rotundis, crassis; sulco columellari profundo; labio posticè praecipuè latissimo, crasso" (Sowerby II, 1870: 46).

Measurements, holotype.—L – 6.9 mm (Way, *in litt.*).

Type locality.—Not recorded. Schilder, 1941: 76, suggests the species lives in the "eastern hemisphere."

Holotype.—BM(NH) Register No. 1879.2.26.184.

Discussion.—Sowerby II commented: "Remarkable for its very deep dorsal sulcus and the posterior expansion of the [outer] lip." One might question that the deep dorsal sulcus may have resulted from an injury.

Etymology.—The name appears to have been derived from the Latin adjective, *cicatricosus*, full of scars.

Circumscapula gen. nov.

Type species: *Trivia (Pusula) myrae* Campbell, 1961 The Veliger 4 (1): 25; plt. 5, figs. 1–3.

Shells of this new genus are often very small, roundly ovate; they possess a pronounced shoulder margining of the right side of shell and terminal area; there is usually a longitudinal dorsal line present that varies in distinctness. The new generic name is derived from a combination of a Latin adjective, *circum*, around, and the noun, *scapula*, meaning shoulder.

133. *Circumscapula myrae* (Campbell, 1961)
(Fig. 153: holotype)

1961 *Trivia (Pusula) myrae* Campbell, The Veliger 4 (1): 25; plt. 5, figs. 1–3.

Original description.—"Trivia (Pusula) myrae . . . The shell is minute, ovately globular, and dark brownish purple with the right side and extremities thickened and margined but not quite as rounded as the columella portion. The shell is moderately produced at the extremities, and a fine, shallow, dorsal sulcus is crossed by eight ribs without interruption. There are 22 ribs on each side, nine of which are interrupted or intercalary and correspond to 15 sharp labial teeth, with

14 similar teeth extending over the columella and internal lobe. As the ribs enter the dorsal sulcus, the color is lighter, giving the impression of very slight beading. The ribs are narrow and sharp, equaling about one-half the width of the interspaces, which are filled with minute granulations that extend up the sides but not to the crests of the ribs. The spire is completely covered" (Campbell, 1961: 25).

Measurements, holotype.—L – 4.8; W – 3.6; H – 2.8 mm.

Measurements, paratype 1.—L – 4.5; W – 3.4; H – 2.9 mm.

Measurements, paratype 2.—L – 3.9; W – 3.0; H – 2.7 mm.

Type locality.—Trawled off Loreto, 25 fathoms [45 metres], in channel between Loreto and Carmen Island, Gulf of California [Central coast, E Baja California].

Distribution.—Monserrate Island; Punta Final; San Carlos Bay, Guaymas; Puerto Escondido; Puerto Peñasco (beach shells); Puertecitos, off Rancho Buenavista; Bacoichibampo Bay, Guaymas, Gulf of California.

Holotype.—Stanford University Paleontological Type Collection, No. 8'529.

Discussion.—Campbell commented: "*Trivia myrae* resembles *T. atomaria* Dall, 1902, which was dredged in Panama Bay at a depth of 18 fathoms [33 metres]. . . . *Trivia myrae* is further separated from *T. atomaria* by having produced extremities, slightly beaded ribs, and more numerous ribs. In comparison with *T. sanguinea* (Sowerby, 1832), *T. myrae* is much smaller, has fewer ribs, is much more globular, and has more produced extremities."

Donahue (1966: 35), lists the living range distribution of this species. Donahue (1967: 355): "the distributional range of the species is further extended throughout the Gulf of California."

Etymology.—This species was dedicated in honor of Angeline Myra Keen, Professor Emeritus, Stanford University.

134. *Circumscapula iota* Cate, sp. nov. (Fig. 154)

Description.—Shell small, compact, subglobose, roundly ovate. Terminals not protruding, barely visible posteriorly. Dorsum abruptly elevated, inflated, tapering quickly to either terminal end. Base and outer lip surface convex, nearly equal in breadth. Aperture almost straight centrally, with a broadening in front, recurving gently left posteriorly; columella widening and deepening in front as a fossula. Terminal canals wide, opening front and back. Outer lip distinctly highly shouldered above. Shell ribbing despite the misleading magnified illustration rather fine, ribs numerous overall; longitudinal furrow almost obsolete, almost failing to interrupt transverse dorsal ribs; shell ribs continuous from the dorsum, over the side margins, to the apertural edge of the outer lip on the one side; over the base and columellar groove on the other. Shell color rich dark brown overall.

Measurements, holotype.—L – 5.2; W – 4.3; H – 3.6 mm.

Measurements, paratype 1.—L – 5.5; W – 4.4; H – 4.0 mm (C3652: largest).

Measurements, paratype 2.—L – 3.8; W – 3.0; H – 2.8 mm (C3652: smallest).

Type locality.—In 18 to 21 metres of water; San Carlos Bay, Guaymas, W Mexico ($\approx 111^{\circ} 00' N$; $27^{\circ} 20' W$); leg. L. Shy, Los Angeles.

Holotype.—LACM No. 1839; (holotype, 5 paratypes).

Discussion.—This new triviid species is very small and may be compared with *Circumscapula myrae* (Campbell, 1961). *Circumscapula iota* differs from that species by having a more circular, less pyriform, more globose shell; the aperture is wider and straighter centrally; the side-margin shouldering is more highly elevated, more acutely angled at the suture; transverse ribs are more numerous dorsally, 10 against 8 on the Campbell species; the columella is wider, deeper, and the abapical fossula is more expansive.

Etymology.—The new name is the Greek noun, *iota*, meaning jot or very small dot.

Discotrivia Cate, gen. nov.

Type species: *Trivia dartevellae* Knudsen, 1955 Rev. Zool. Bot. Afric. 51: 102; figs. 8–9.

Shells of this new genus all possess a common morphological characteristic, having shells that are peripherally circular, disk-like; the ventral outer lip surface is usually broad, convex; and there may or may not be a longitudinal dorsal sulcus.

135. *Discotrivia circumdata* (Schilder, 1931) (Fig. 152: holotype)

1931 *Trivia (Pusula) sanguinea circumdata* Schilder, Arch. Mollusk., 63: 43; plt. 3, figs. 4–4a.

Original description.—" *Trivia (Pusula) sanguinea circumdata* . . . Schale ziemlich dick, fast Kreisförmig, [terminal] stumpf, beide [side] verdickt gerandet, [base] ziemlich flach, Rippen scharf, ziemlich distant, an der obsoleten [dorsal sulcus] nicht unterbrochen, Zwischenräume gekörnt; [aperture] eng., fast zentral, [fossula] breit, [columella groove] viel schmaler, [dorsum] dunkelviolet, Rippen heller, [terminal ridge] weisslich, ebenso die [median] Ränder und die [dorsal] Linie (besonders an ihren Enden), roter Millelfleck obsolet" (Schilder, 1931: 43).

"Shell fairly thin, almost circular in shape, terminals blunt, both sides with thickened margins, base fairly flat, ribs sharp, fairly distant, not interrupted at the obsolete dorsal sulcus, interspaces with horns (corniculate); aperture narrow, almost central, fossula broad, columellar groove much narrower, dorsum dark violet, ribs lighter colored, terminal ridge whitish, as are the median margins and the dorsal line (especially at its ends), red central blotch obsolete [as observed in many shells of *sanguinea* because of fading]." (translation by George Hanselman).

Measurements, holotype.—According to Schilder formula: $15.015.84/61 - 18:18 - 47:25 [= L - 15.1 \text{ mm} : \text{Kilias, in litt.}]$.

Type locality.—Unknown.

Holotype.—ZMB, Schilder collection, No. 124 (Kilias, in litt.).

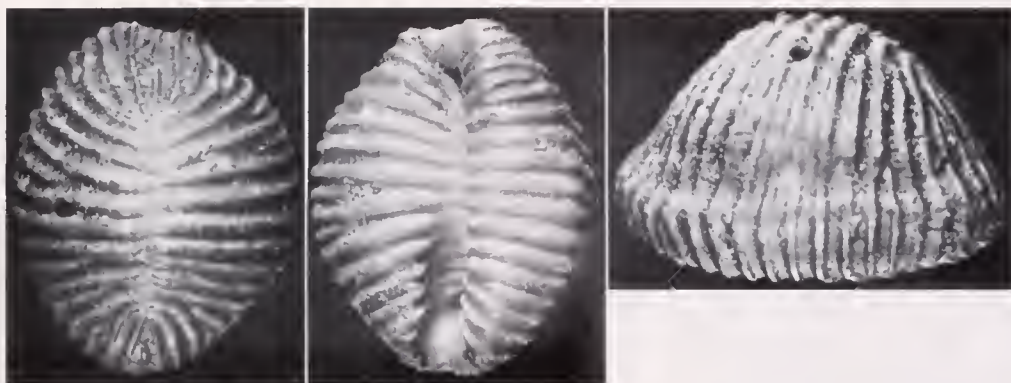


Fig. 154. *Circumscapula iota*:
DP, [134], holotype: L—5.2 mm.

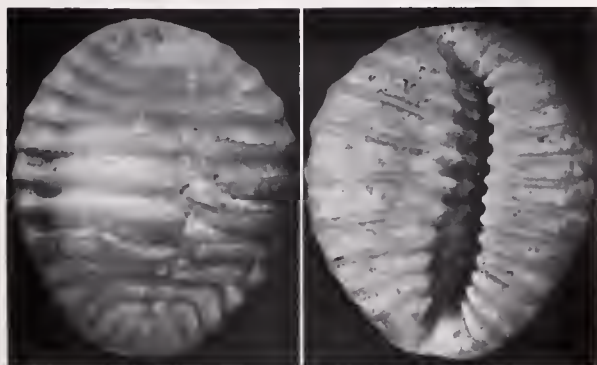


Fig. 155a: *Discotrivia dartevellei*:
DP, [136], paratype: L—14.5 mm.

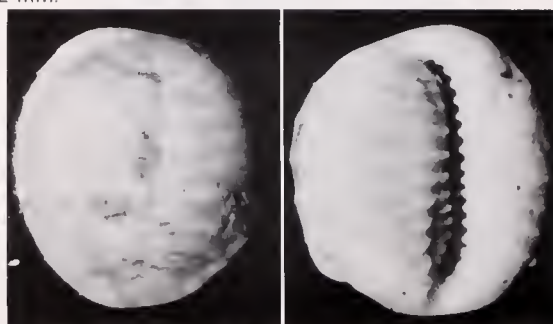


Fig. 155: *Trivia dartevellei*.
MRAC photo, [136], holotype: L—13.6 mm.

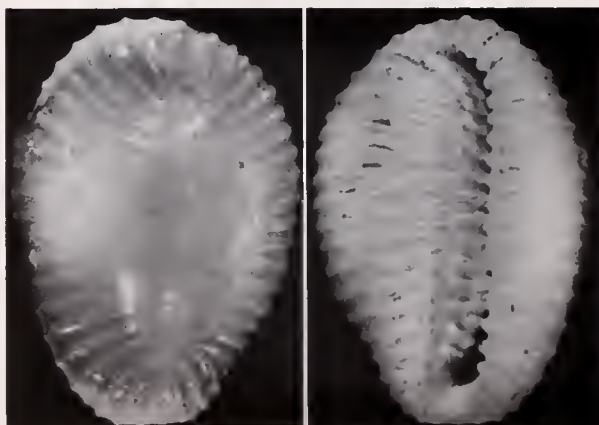


Fig. 156: *Trivia pulex* var. *minor*:
IRSN photo, [29], holotype: L—4.7 mm.



Fig. 157: *Cypraea armandiana*:
DP, [47], (Kiener fig.): $\times 4$.



Fig. 158: *Cypraea australis*:
MNHN photo, [50], holotype: L—14.0 mm.

Discussion.—Schilder commented: "Nächstverwandte mit *sanguinea* (Sow.), aber schwerer, breiter, auch links gerandet, mit weniger [side ribs] und etwas schmalere [fossula] (also etwas an *radicans* (Lam.) erinnernd); [dorsal]-Farbe viel dunkler (vgl. [compare] *galapagensis* Melv.), [dorsal]-Fleck obsolet (vgl. Abb. [fig.] 4–5)."

"Most closely related with [or to] *sanguinea* (Sow.), but heavier, broader, also margined at left, with fewer side ribs and somewhat narrower fossula (thus somewhat reminiscent of *radicans* (Lam.)); [dorsal] color much darker (compare it to *galapagensis* Melv.), [dorsal] spot obsolete (compare it with fig. 4–5)" [in Schilder's original reference].

136. *Discotrivium dartevellei* (Knudsen, 1955)

(Fig. 155: holotype)

1955 *Trivia dartevellei* Knudsen, Rev. Zool. Bot. Afric. 51: 102; figs. 8–9.

Original description.—" *Trivia dartevellei* . . . Seen from the dorsal side the shell is rather broad, almost circular, the dorsal surface is nearly semi-globular and the ventral surface is somewhat convex. The dorsal side has a distinct, rather broad, longitudinal depression. The whole surface of the shell is furnished with low but sharp transverse ridges, separated by broad interstices. The ridges tend to become somewhat nodulose near the dorsal impression, and gradually become more distinct at the ventral surface, forming sharp denticles at the aperture. The columellar side has 10 ridges and 11 denticles at the aperture. The labial side has 14 ridges but 16 denticles. Aperture rather straight and narrow, anterior part slightly broadened. Colouration: Uniformly greyish-brown" (Knudsen, 1955: 102).

Measurements, holotype.—"Length: 13.6 mm. Breadth: 12.3 mm. Height: 8.7 mm."

Measurements, paratype.—L – 14.5; W – 12.5; H – 8.9 mm.

Type locality.—Landana, Cabinda, West Africa [Portuguese colony, N of the Congo River]. Paratype: Moando, Congo (Benoit, *in litt.*).

Distribution.—Off Cabinda, W Africa.

Holotype.—MRAC, No. 521253. Paratype: No. 277531 41; (Fig. 155a).

Discussion.—Knudsen: "The shell is slightly worn, but still in good condition. The present species is closely related to *Trivia pediculus* L., a species having wide distribution in the West Indian Sea. Both species have a longitudinal dorsal impression. The shell of the present species is much broader than the shell of *T. pediculus* L. and distinct differences in the shape and the number of the transversal ridges of the two species are also found: *T. pediculus* L. having 28 to 31 on the columellar side, while there are 27 to 33 on the labial side. The present shell shows no trace of the 6 darker brown spots found in *T. pediculus* L.

"The only species of *Trivia* hitherto found in this

area is *T. candidula* Gaskoin, a species entirely different from the present one, having no dorsal impression and a much larger number of transversal ridges."

Etymology.—This species was named in honor of Dr. E. Dartevelle, Curator of Mollusca, Musée Royal du Congo Belge, Tervuren, Belgium.

137. *Discotrivium splendidissima* (Tomlin and Schilder, 1934)

(Fig. 160: type fig.)

1934 *Triviella splendidissima* Tomlin and Schilder, Ann. S. African Mus. 30: 477; figs. 1–3.

Original description.—" *Triviella splendidissima* . . . Shell white, subpellucid, iridescent, the spire and extremities being slightly tinged with yellow; shape very globular, outer lip very tumid, margined, left border regularly convex; spire entirely hidden, hardly visible through the subpellucid enamel; there is no dorsal sulcus though some ribs alternate on the dorsum; interstices quite smooth without trace of granulation dorsally; aperture narrow, straight, rather central; anterior outlet rather narrow, semicircular, posterior obsolete, hardly marked; ribs rather distant dorsally, interstices nearly as large, labial teeth very distant; columellar ribs close, slightly flattened, interstices half as broad; interstices of the ribs on the outer lip longitudinally corrugate; anterior termination of the inner lip hardly projecting at all; columellar sulcus absent posteriorly, but the columellar ribs pass over the columella for some distance; edge between base and columella distinctly marked; fossula rather broad but very steep and very slightly concave, inner border slightly projecting with two feeble denticles" (Tomlin and Schilder, 1934: 477–478).

Measurements, holotype.—"Length 7.8 mm., breadth 7.3 mm., altitude 6.2 mm."

Type locality.—"One living example dredged off Cape Morgan in 77 fathoms" [141 metres] [Cape Morgan: SE Africa].

Distribution.—Schilder, 1941: Pondoland; Natal; Richards Bay.

Holotype.—SAMC No. A3534. (A note in the type collection tray, SAMC, [Brian Kensley, *in litt.*], states: "a pencilled note in K.H. Barnard's hand: 'Not returned to the S.A.M.!' I can thus only assume that wherever Tomlin and Schilder worked, the type is still there.") In further search, neither Chatfield (NMW) nor Kilias (ZMB) were able to locate the holotype of *D. splendidissima*.

Discussion.—The authors of *Discotrivium splendidissima* made the following comments: "This species is in some ways intermediate between *Trivia* and *Triviella*; the latter genus was founded by Jousseaume in 1884 with the well-known South African *Cypraea oniscus* Lamarck as type. We assign our new species to *Triviella* on account of the coarse labial teeth and the characters of the fossula, the posterior outlet, and the columella. The narrowness of the aperture (caused by the thickening of the lip) and its angular left border are more as in *Trivia*, though the latter character is noticeable also in *costata* Gmelin, which is certainly



Fig. 159: *Trivia bitou* = *Niveria* (*Cleotrivia*) *candidula*.
MNHN photo, [53], holotype. L=8.0 mm.

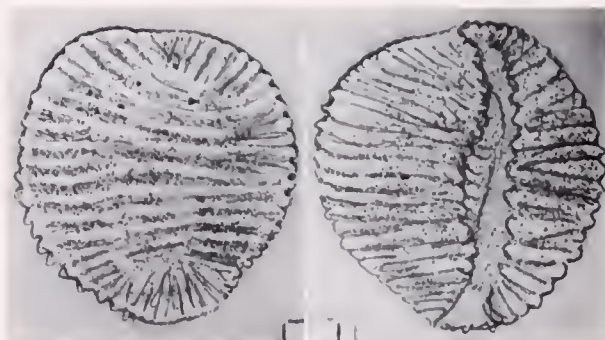


Fig. 160: *Triviella splendidissima*
DP, [137], type fig.: - 7.

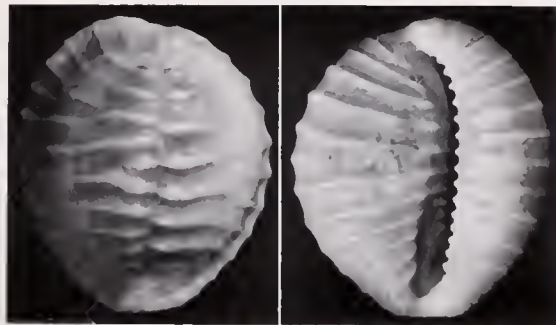


Fig. 161: *Cypraea depauperata*.
BM(NH) photo, [138], lectotype: L=14.4 mm.



Fig. 161a: *Cypraea depauperata*.
BM(NH):DP, [138], lectotype: L=14.4 mm.



Fig. 162: *Cypraea pediculus* var. *labiosa*.
BM(NH) photo, [139], holotype: L=13.7 mm.

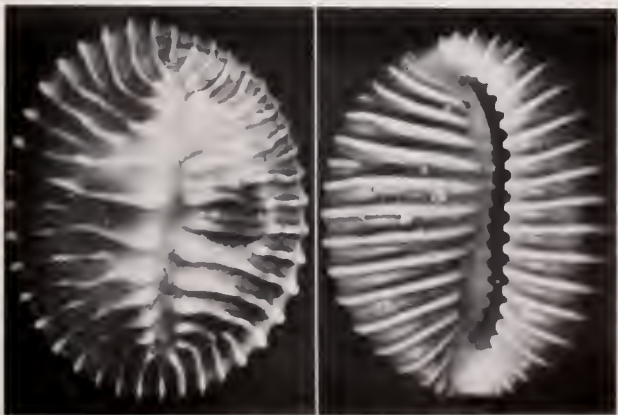


Fig. 162a: *Cypraea pediculus* var. *labiosa*.
BM(NH):DP, [139], holotype: L=13.7 mm.

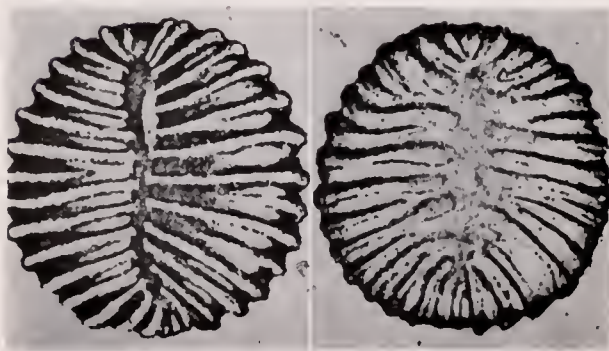


Fig. 163: *Cypraea rota*.
DP, [140], type fig.: - 2 1/4

Figure 164 is vacant.

Triviella. Our new species has no connection with *Trivia suavis* Schilder (= *formosa* Gaskoin, non Gray), another South African species.

"The thickened outer lip and very slight indications of callosities above both extremities are quite similar superficially to *Trivia hamburgensis* Schilder, 1929 [from the N German Miocene: Schilder, 1932: 107] . . . and are caused by similarity of habitat.

"Lt.-Col. Peile succeeded in extracting the dried animal and in mounting the radula, and from a drawing which he has very kindly provided we are able to illustrate the central, lateral, and marginal teeth [Tomlin and Schilder, 1934: fig. 3]. The radula consists of 33 rows + nascent with usual taenioglossate formula 2.1.1.1.2. Fragments of the jaws resemble in structure those of *Trivia coccinella* (Lamarck) as figured by Troschel in *Das Gebiss der Schnecken*, vol. i, pl. xviii, fig. 3." (Schilder, 1929: 13).

Etymology.—*splendidissima*, taken from superlative of the Latin adjective, *splendidus*, meaning very bright, shining.

138. *Discotrivia depauperata* (Sowerby II, 1832)

(Figs. 161, 161a: lectotype herein)

1832 *Cypraea depauperata* Sowerby II, *Conch. Illustr.*, Cypraeidae: 14 (130); fig. 49.

Original description.—"Cypraea depauperata . . . Shell nearly orbicular, rather depressed; pale fawn-coloured, dorsal line narrow, distinct; transverse ribs few, distinct, sometimes interrupted; margins thickened; underside somewhat rounded; ribs and teeth of the outer lip more numerous and closer than those of the inner" (Sowerby II, 1832: 14).

Measurements, holotype.—"Length 0.5, breadth 0.4 of an inch" [= L – 12.6; W – 10.1 mm].

Measurements, lectotype.—L – 14.4 mm (Way, *in litt.*).

Type locality.—"Unknown" [Shell characters, however, would seem to indicate belonging to the Panamic Province].

Lectotype herein.—BM(NH) Register No. 1975634 (1 of 3 syntypes, Way, *in litt.*).

Discussion.—Subsequently, Sowerby II, 1870: 42, redescribed his species: "*Cypraea depauperata* . . . *C. testâ C. radianti* affini, depresso-globosâ, pallida, immaculatâ; costellis dorsalibus perpaucis, in sulcum medianum angustatum alternatim desinentibus, quarum plurimis prope sulcum tumidiusculis. . . . *depauperata* is quite distinct. It has a narrow groove [dorsally], in which the very few ribs, slightly swelled, but not tuberculated, meet alternately."

Etymology.—The name from the Latin adjective, *pauperatus*, deprived, is added to the intensive prefix, *de*, down.

139. *Discotrivia labiosa* (Gaskoin, 1836)

(Figs. 162, 162a: holotype)

1836 *Cypraea pediculus* var. *labiosa* Gaskoin, *Proc. Zool. Soc. London* 3: 202.

Original description.—"Cypraea pediculus var. *labiosa* . . . Cypr. testâ ovali, latâ, extremitatibus rotundatis; costis prominentioribus, nullis supra labium externum terminantibus; marginibus, latoribus crassioribus; lineâ dorsali profundiore, fuscâ; basi marginibusque cinerascenti-griseis; dentibus albis."

"Shell oval, of a reddish brown on the back, running into bluish brown on the sides; six rather large brown spots on the back, three on each side of the dorsal line, placed opposite to each other at the anterior, middle, and posterior parts of the back; base of a greyish brown colour, rounded and broad. Aperture rather wide, white within; teeth about twenty on the lip, white, prominent, even and distant, and all continuing evenly over the lip forming the ribs, several of which terminate on the side of the shell, the others (about twelve) at the dorsal line, in elevated and broad or thickened ends; on the columella there are about fifteen teeth, a few of which, continuing to form the ribs, terminate on the side of the shell, the rest at the dorsal depression, in a similar form to those on the opposite side; there are about two floating ribs, false ribs at each end. Columellar groove very shallow posteriorly, rather deeper and wider anteriorly [fossula]; the teeth passing, slightly prominent, across it form a serrated edge at its inner border. Margins much thickened and produced, terminating in a coronated ridge all around the shell, scarcely more prominent at the extremities than on the outer or lip side. Extremities round. Dorsal line rather broad, deep, shining, and of darker brown colour than the back" (Gaskoin, 1836: 202).

Measurements, holotype.—"Length .525 of an inch; breadth .410; height .320" [≈ 13.0; 10.5; 8.5 mm] (L – 13.7 mm; Way, *in litt.*).

Type locality.—Not recorded. [Thought possibly to belong to the Panamic molluscan fauna.]

Holotype.—BM(NH) Register No. 1879.2.26.165.

Discussion.—Gaskoin and other authors seem to have compared this species, and the earlier *Cypraea depauperata* Sowerby II, 1832, with *Cypraea pediculus* Linnaeus, 1758. However, to this author it seems most closely to relate to the former species. Neither of the shells have been personally examined by the author, but, on the basis of their photographs, they are being listed here as separate species.

Pusula (Pusula) labiosa (Gaskoin, 1836) seems rather obviously to differ in several visible ways: this species does not have an alternating of the dorsal ribs at the median line; it has large color blotches on the dorsum; the shell appears to be less circular in peripheral outline; the dorsal ribs are more numerous, rather more finely striate, with a deeper, more distinct dorsal groove, and the general appearance of the shell ribbing is different.

Etymology.—From the Latin adjective, *labiosus*, large-lipped.

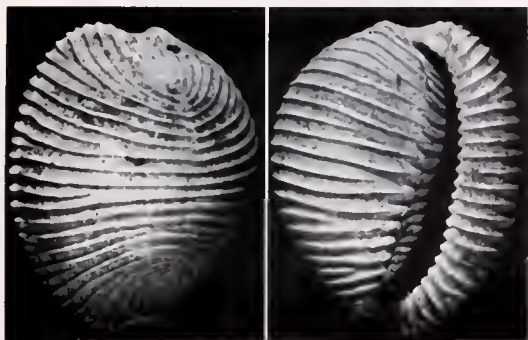


Fig. 165: *Trivia islahispaniola petrela*:
DP, [26], holotype: L—9.8 mm.

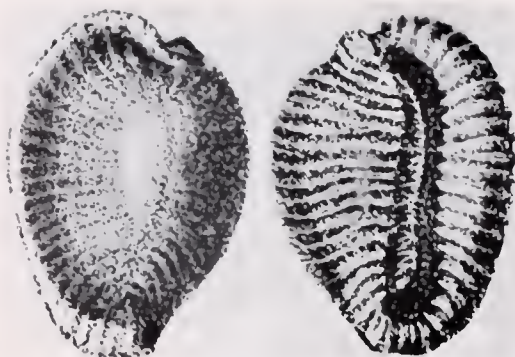


Fig. 166: *Cypraea pulex*:
DP, [49]. (Sowerby II, 1870; figs. 492, 494): $\times 6\frac{1}{2}$.

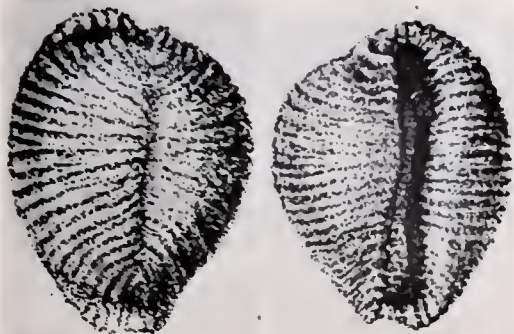


Fig. 167: *Cypraea sulcata*:
DP, [98]. (Sowerby II, 1870; figs. 454–455): $\times 5$.

D. 4210
Trivia
kenyonae n. sp.
Barry.
Hab? or
Cyp. barbara type
no 126
Kenyon Coll

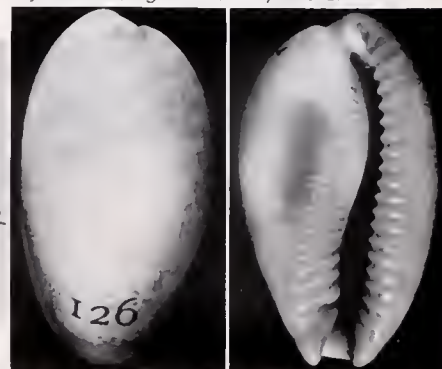


Fig. 168: *Trivia kenyonae* (= *Cypraea barbara*)
SAM photo, [introduction]: type.



Fig. 169 *Trivia (Trivia) pediculus* (Olsson & Harbison)
DP, [49], type: L—16.2 mm.

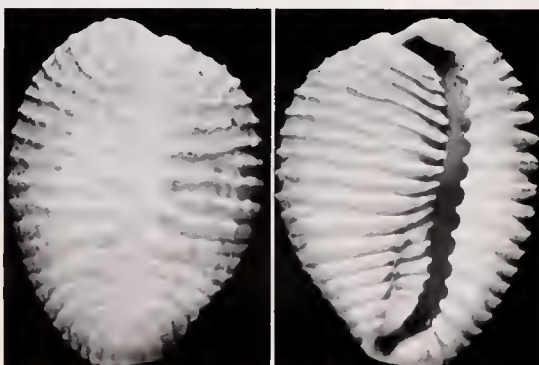


Fig. 170: *Niveria (Niveria) pediculus*:
DP, [49], hypotype: L—13.1 mm.



Fig. 171: *Triviella maoriensis*:
DP, [51], holotype: L—12.0 mm.

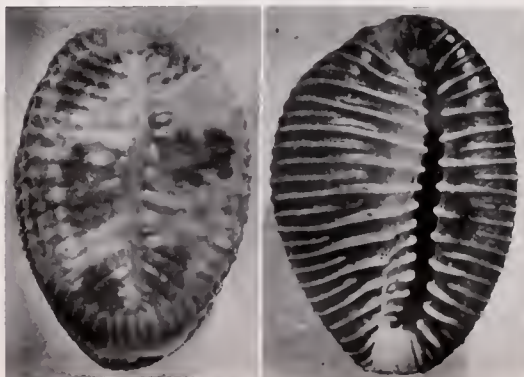


Fig. 172: *Triviella gamma*:
DP, [49], holotype: L—12.0 mm.

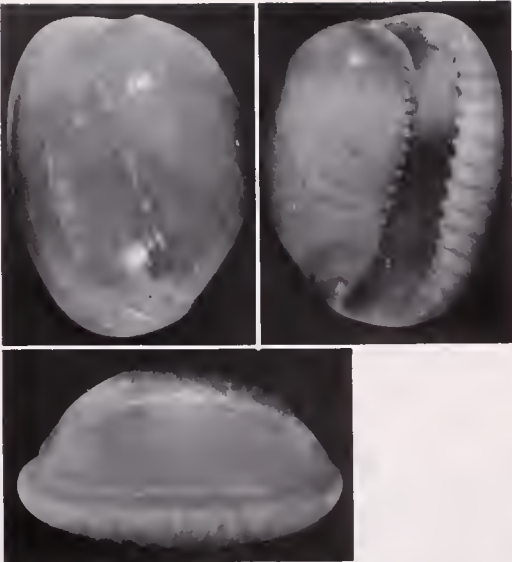


Fig. 173: *Galeatrivia millardi*:
DP. [4], holotype: L—18.2 mm.

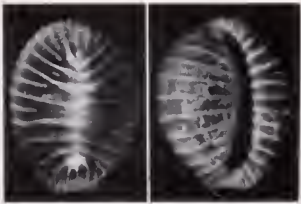


Fig. 174: *Pusula (Pusula) californiana*
(Cuming coll.) BM(NH) photo. [119].

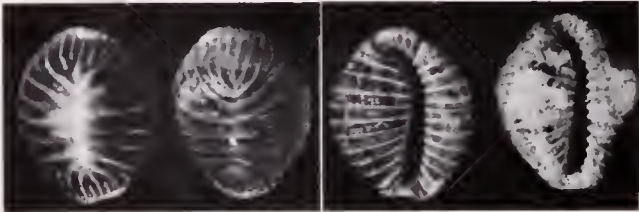


Fig. 175: *Pusula (Pusula) californica*:
(Cuming coll.) BM(NH) photo. [120].

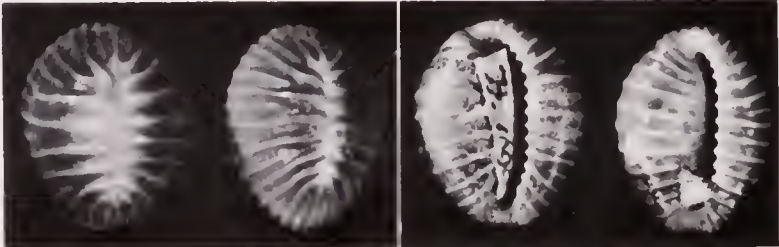


Fig 176: *Pusula (P.) californica* [120] (left):
Pusula (P.) californiana [119] (right):
gen. coll. BM(NH), BM(NH) photo.

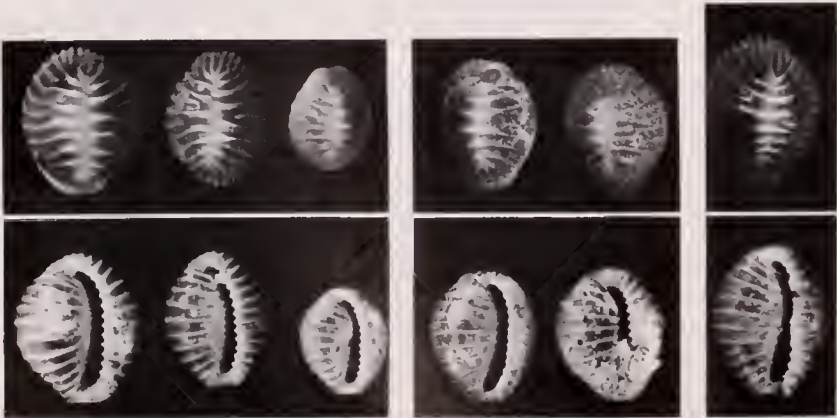


Fig. 177: *Cypraea californiana*
BM(NH) photo. [119]; type lot.

Trivia
californiana

140. *Discotrivia rota* (Weinkauff, 1881)

(Fig. 163: type illustration)

1881 *Cypraea rota* Weinkauff, in: Martini and Chemnitz, Syst. Conch. Cab. (ed. 2), 5/3: 135; plt. 38, figs. 13–16.

Original description.—"Cypraea rota . . . Testa orbiculata, subtus planiscula, dorso convexa, in medio linea dorsali impressa, lata munita, lirata, liris basalis albidis, liris dorsalibus fortioribus nodoso terminatis, liris nodulisque divergentibus; subtus laterisque carnea, dorso cinereo-carnea, linea dorsali et noduli carneo-rosaceae; apertura angusta, recta intus alba, columella intus longitudinaliter excavata, inferne intus incrassata; labrum latum extus carinatum; sinus basalis subnullus, superius nullus."

"Schale kreisförmig—fehlt wenig am vollständigen Kreis—unten fast eben, eben gewölbt, in Mitte des Rückens liegt die breite, vertiefte Rückenlinie, an beiden Seiten von runden Knöpfen umgeben, die die [sic.] Endpunkte der Spiralleisten bilden, die über die ganze Schale von der Mundspalte bis hierher verlaufen, die Leisten theilen sich und laufen an der Rückenlinie alternierend in Knöpfe oder ohne solche zu bilden aus, dadurch werden auch diese Knöpfe alternierend (was auf dem Bild schlecht dargestellt ist). Die Mündungsseite, Enden und Seiten sind fleischfarbig und die Leisten weiss, der Rücken ist grau ins fleischfarbige fallend mit gleichgefärbten Leisten, Leistenknöpfe und Rückenlinie sind fleischfarbig-rosenroth, ohne schwarzen Flecken; Mündung eng grade, nicht ganz in der Mitte stehend, innen weiss; Spindel innen der Länge nach ausgehöhlt, unten mit einer vorspringenden Verdickung, bis zu welcher die Leisten gehen; Mundrand breit, aussen als Seite der Schale scharf gekielt, ebenso die Seite an der Spindel; Basalsinus kaum angedeutet, oberer fehlt ganz" (Weinkauff, 1881: 135).

"Shell circular—not quite a complete circle—the underside nearly flat, the top arched, in the center of the dorsum a broad deepened dorsal line surrounded on both sides with rounded knobs developed by the spiral ridges which run from the aperture over the whole shell, the ridges are alternately spaced and end alternately on the dorsal line either with or without developing knobs, so that the knobs also alternate (which is not well shown by the illustration). The underside, ends and sides are flesh-colored and the ridges white, the dorsum is grey along the flesh-colored descending ridges, the ridge knobs and the dorsal line are fleshy pink, without dark spots; the aperture is narrow and straight, not situated exactly in the center, inwardly white; the columella is hollowed out along the length, with below this some thickening, to which the ridges extend; [underneath] the apertural lip is broad, sharply carinate on the side of the shell, as is the columellar side; the basal sinus is hardly evident, and on the top is entirely lacking" (translation by George Hanselman).

Measurements, holotype.—"Long. 20, diam. major 19, minor 11 mm."

Type locality.—"Locale: probably Western America. Loebbecke collection."

Holotype.—Unable to locate; possibly at Mus. Dusseldorf, Loebbecke collection.

Discussion.—To this species Weinkauff added the following comment: "It is possible this new species is only a widely differing variety of *C. radians*, which I would consider until I am able to see any transition with my own eyes. In any case it has as much validity as *C. solandri* or *C. depauperata*. The coloration is far

from that of *C. radians*, but nearer to that of *C. solandri*; however it is significantly larger than these."

Etymology.—Latin noun, meaning wheel.

A descriptive key to the Triviinae tribes

1. Shell large, subglobular, may be ribbed or smooth though rudimentary ribs may appear on ventral edge of outer lip. Dorsum mostly smooth; outer lip dentate, inner lip only partially so Triviellini
2. Shell with narrower dorsal sulcus; spire often visible; aperture narrow; outer lip broad Triviini
3. Aperture narrow, mostly straight; shell narrower in peripheral outline. Shell surface finely, distinctly ribbed or smooth and polished Pusulini

A descriptive key to genera

1. Shell regularly ovate; medial line short, shallow, broad. Anterior canal broad, open; transverse ribs simple, not well developed. Aperture on right side of base, curving, irregularly wide *Fossatrivia*
2. Shell fairly large; aperture very wide. Dorsum ribbed or only partially ribbed; base and outer lip usually coarsely ribbed (species mostly from SE and S Africa) *Triviella*
3. Shells of medium size, evenly, pyriformly ovate; aperture almost central on base, narrow. Shell surface traversed with broad, somewhat flattened ribs (one species, *T. europaea*, lacks upraised, transverse ribbing, though rudimentary ribbing visible under polished surface). Dorsum mostly without longitudinal dorsal groove *Trivia*
4. Shell large, broadly pyriformly ovate; comparatively narrow, almost straight, narrow aperture on left base. Dorsum may be dorsally grooved. Spire protrudes, longitudinally ribbed; left posterior canal wall knobbed externally *Robertotrivia*
5. Shell broadly pyriform, inflated (greatest diameter at midline). Apex elevated; anterior canal opening, terminal collar reflexed, broadly flaring *Pseudotrivia*
6. Shell of medium size, roundly to oblongly ovate, without dorsal groove. Surface completely ribbed, including columella and fossula (mostly of east, south, and west Australian habitat.) *Ellatrivia*
7. Shells of small size, globular to subglobular, bulbously inflated. Dorsum with or without longitudinal groove. Shell surface finely ribbed, with short, blunt terminal beaks *Cleotrivia*
8. Shell with low lateral profile, oval peripheral outline, and central, almost straight aperture. There may be a rudimentary longitudinal dorsal line *Niveria*
9. Shell white to grey, pyriformly elongate to subrhomboid; surface completely ribbed. Dorsum may be longitudinally grooved; aperture may be central. (Species apparently confined to Indo-Pacific oceans.) *Trivirostra*
10. Evenly ovate, mostly with deep, acutely defined dorsal sulcus. Terminal beaks protrude, somewhat square. Surface ribbing numerous, continuous from outer apertural lip edge to inner columellar-fossular adaxial ridge *Dolichupis*
11. Shell may be large or small, usually dark brown in color, with very coarse surface sculpture (species are mostly from the Panamic areas). Dorsal longitudinal groove deeply furrowed *Pusula*

12. Rhomboidly ovate, centrally positioned aperture curving, with base and outer lip convex, angled sharply aperturally. Surface ribbing continuous from right and left apertural edge; usually no longitudinal dorsal groove *Decorativivia*
13. Shell very small, ovate, solidly formed, surface completely ribbed; there may be a dorsal groove. Aperture central, with right side-margin broad, distinctly, widely shouldered above *Circumscapula*
14. Shells almost circular in peripheral outline, of variable color. Aperture slightly curving, or nearly straight. Base and outer lip very broad, convex *Discotrivia*
15. Shell somewhat rectangularly elongate, with ribbing on outer lip only; lateral shell outline long and low. Numerous small columellar denticles; dorsum smooth except for some longitudinal growth lines; apex protruding *Galeativivia*

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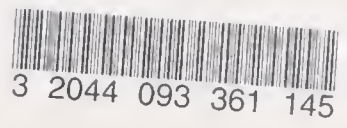
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