

MISCELLANEOUS PUBLICATION
OCCASIONAL PAPER NO. 61

Records of the Zoological Survey of India

**Contribution to the Knowledge of
Indian marine molluscs. I. Family Mitridae**

by

N. V. SUBBA RAO AND A. DEY

Issued by the Director
Zoological Survey of India, Calcutta

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INTRODUCTION

India has extensive molluscan resources which play a definite role in the National Economy. Marine molluscs occupy a prominent place as they include several commercially important species. A rough estimate puts about 209 families as occurring in Indian seas (Anonymous, 1980). The earlier works on the marine molluscs of India are either casual in treatment or isolated in nature not providing a comprehensive picture of marine malacofauna. Systematics, ecology, biology etc. of no major molluscan group in the Indian region are investigated in a detailed manner.

During the last few years there were attempts at revising the individual families (Subba Rao, 1971, 1977). Considering the qualitative and quantitative richness of these molluscs more such studies are needed on the Indian ocean malacology. This has prompted us to take up studies on marine molluscs. It is our endeavour to present an account of all the families with as many details as possible in a series of papers. The present account on the Mitridae is first in the series and will be followed by contributions on other families.

Mitridae were monographed by several workers in the past. A review of mitres of Indian waters was attempted by Ray (1954). He based his studies on the unnamed spirit collections in the Zoological Survey of India and reported 25 species. The large named collections and unnamed dry collections were left out of the purview of that work. The recent monograph on the Mitrinae of the Indo-pacific region (Cernohorsky, 1976) do not include collections from India. An attempt is made to fill up these gaps in our knowledge on these molluscs, and to give a complete account of the species occurring in Indian waters.

CLASSIFICATION

Risbec (1955) drew the attention to the differences between the true mitrids and other allied genera like *Vexillum* and *Pusia*. Based on radular and shell characters Cernohorsky (1976) recognised four sub-families, viz Mitrinae, Imbricariinae, Cylindromitrinae and Vexillinae. Ponder (1972) studied the anatomy of some mitriform gastropods and distinguished three separate families viz Mitridae, Vexillidae and Volutomitridae. The latter System of classification is now accepted (Cernohorsky, 1970, 1976, 1978) and is adapted here.

DIAGNOSTIC FEATURES OF THE FAMILY

Cernohorsky (1970) discusses the value of various diagnostic characters like form, colour and sculpture of the shell, number of whorls, shape of the aperture, the form of the labial lip, the number of columellar folds, anatomical characters and radula. The last mentioned character is useful in distinguishing subfamilies and genera. At the specific level shell characters are dependable to a large extent. We do not have material to deal with the soft parts and radula of different species. As such our studies are based on shell characters only and our observations show that these are reliable.

1 *Anatomical features* : The alimentary canal is a very distinctive type and for this reason it is separated from its allied group (Costellariidae). A peculiar epiproboscis present in the proboscis, serves as a vehicle for the salivary gland. Accessory salivary gland and Leiblein gland are absent. Mid-oesophagus is very short and not conspicuously glandular. Stomach is often with muscular gizzard a modified style sac and without caecum. Gonads tubules are intermingled with digestive gland. Pedal gland is present. Pallial gland is a large and close one except for small posterior pallial opening. Renal gland is with interdigitate primary and secondary lamellae.

The most peculiar anatomical feature is the presence of a venom gland which is used for killing prey. Risbec (1955) suggested the removal of the Mitridae to the Toxoglossa, as he opined that the epiproboscis (poison gland) is homologous with the toxoglossan poison gland.

2. *The radula* : The Radula is of the rachiglossate type with three teeth per each row. The formula is 1-1-1 in all the subfamilies except Cylindromitrinae where it is 0-1-0. The pattern of teeth varies from genera to genera. In the subfamily Mitrinae the rachidian teeth are subquadrate or rectangular in shape with deeply rooted cusps, laterals 1.75 to 4.00 times broader than rachidian, multicuspid. In the Imbricariinae it is of the mitrine type with some modifications. In Cylindromitrinae lateral teeth are absent.

3. *Habitat and Feeding* : Mitrids live under various ecological conditions within the intertidal zone. Some are restricted to coral reefs hiding themselves in holes and crevices. A few species, occur on the rocky coasts taking shelter under rocks or in crevices, while

others are sand-dwelling forms and burrow themselves at various depths. It is known that sand-dwellers live up to 50 to 100mm beneath the sand surface,

The rock and reef dwellers are generally detritus feeders, but the sand dwelling species are carnivorous in habit.

Some species extend into littoral zone and range up to 80 fathoms (Cernohorsky, 1976).

4. *Reproduction and larval development* : Mitrids are dioecious. Rock and coral dwellers deposit egg capsules on the rock and coral boulders, whereas the sand dwellers deposit eggs on weeds. Egg capsules are banana shaped or claviform deposited in loose asymmetrical clusters on hard substratum or tightly packed clusters on sea weed. Each cluster contains 15—100 capsules, and each capsule with 100—500, white, cream coloured translucent yellow eggs. After a period of 2 weeks of incubation free swimming veliger larvae with operculum are released. However, the operculum disappears in the adult stage.

SYSTEMATIC ACCOUNT

Shell large to medium in size, elongately-ovate, cylindrical or fusiform, solid, spire elongated to a greater or less extent. Sculpture consisting of axial ribs, spiral grooves, cords and granules, aperture more or less elongated, narrow, without distinct anterior canal, Siphonal canal notched, columella with 3—11 close-set oblique folds, the posterior larger and longer than the second, operculum absent.

Although known from other seas also this family is represented abundantly in the Indo-pacific region. Some species inhabit shores or coral reefs where they take shelter under boulders of coral rocks or in crevices while some burrow in sand.

Key to the subfamilies

- | | |
|--|-------------------------|
| 1. Shell with variable outline often elongated, columellar plications upto seven | 2 |
| — Shell cylindrical in shape, spire depressed, columella with more than seven plications | <i>Cylindromitrinae</i> |
| 2. Sculptured with smooth or punctated spiral striae | <i>Mitrinae</i> |
| — Sculptured with annulated spiral striae | <i>Imbircariinae</i> |

Subfamily MITRINAE Swainson, 1831

Mitrinae Swainson, 1831, *Zool. Illustr.*, Ser. 2, 1 : pls. 49, 50, 54.

Shell variable, ovate to fusiform, small to large, spire short, elongated, smooth or with punctated spiral striae, aperture longer than the spire, outer lip thick or thin and sometimes crenulated.

Genus *Mitra* Lamarck, 1798

(Type species, *Voluta mitra* Linnaeus, 1758)

Shell medium to large, fusiform, thick, elongate-ovate or inflated. Sculpture variable. Spire elevated, without radial ribs. Shell covered with a thin, translucent or opaque periostracum. Aperture large and narrow, notched in front. Outer lip thick, smooth or provided with crenulations, inner lip or columella strongly and obliquely plaited.

Radula : Radula ribbon shaped, moderately small, about 6 to 21% of the shell length, rachiglossate with 35 to 130 rows, each row with one lateral on either side of a central tooth. Central rectangular, unicuspid or multicuspid, laterals multicuspid and wider than the central tooth.

Egg Capsules : 100 to 500 eggs deposited in a capsule. Eggs cream coloured, translucent yellowish and spherical, capsules laid in cluster on the undersurface of rocks.

Temperate and tropical waters, predominantly on rocks and corals, but few inhabit muddy or coralline sand. Intertidal zone to 700 fathoms.

Geological range : Early Eocene to Recent.

Cernohorsky (1976) gave an excellent monograph of the genus *Mitra*.

Key to the Subgenera

- | | |
|---|-----------------------------|
| 1. Outer lip not calloused | 2 |
| — Outer lip gently calloused, swelling at anterior edge | <i>Strigatella</i> Swainson |
| 2. Sculpture with spiral grooves, pits or granules, columella with 3 to 7 oblique close-set folds, fusiform or elongately ovate | <i>Mitra</i> s. st. |
| — Sculpture with spiral cords or striae, columella with 3 to 6 oblique folds, roundly-ovate to elongately — ovate | <i>Nebularia</i> Swainson |

Subgenus **Mitra** Lamarck, 1798

1784. *Mitra* Martyn, *Universal Conchologist*, 1 : pl. 19 (non binomial).
 1798. *Mitra* Lamarck, *Tabl. Encycl. Meth. Paris*, pl. 369.
 1815. *Mitraria* Rafinesque, *Analyse de la Nature Palermo*, p. 145.
 1823. *Mitrolithes* Krgüger, *Gesch. Urwelt*, 1 : 431 (not available art 20 of ICZN).
 1840. *Tiarella* Swainson, *Treat. Malacology*, pp 130, 131.
 1853. *Tiara* H. and A. Adams, *Gen. Rec. Mollusca*, 1 : 171.
 1895. *Eumitra* Melvill and Standen, *J. Conch., Lond.*, 8 : 99.
 1929. *Vicimitra* Iredale, *Australian Zoologist*, 5 : 343.
 1976. *Mitra* Lamarck : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 305.

Shell small to large, fusiform or elongately ovate, smooth or sculptured with spiral grooves, pits, granules and rarely with axial ribs. Whorls convex, aperture shorter or longer than the spire, outer lip thick or thin, simple or crenulated. Columellar folds 3 to 7, prominent, close set oblique and usually parallel, siphonal canal short or produced, straight or recurved, siphonal notch distinct.

Cosmopolitan, 52 species are reported by Cernohorsky (1976), but seven are known from Indian seas.

Key to the Species

- | | |
|--|-------------------------------|
| 1. Shell ornamented with deeply coloured spiral rows of dark brown or bright orange spots or blotches | 2 |
| — Shell of uniform colour without any coloured spiral rows | 4 |
| 2. Bodywhorl with punctate spiral grooves | <i>M. cardinalis</i> (Gmelin) |
| — Bodywhorl without punctate spiral grooves | 3 |
| 3. Sutures coronated, close-set and prominent, with 4 to 7 bright orange or vermilion rhomboidal and close spaced blotches | <i>M. stictica</i> (Link) |
| — Sutures not coronated, ornamented with 5—9 transverse rows or irregular or rhomboidal bright spots | <i>M. mitra</i> (Linnaeus) |
| 4. Sutures nodular, darkbrown colour, bodywhorl with 15--20 grooves and 6 or 7 oblique cords at the base | <i>M. imperialis</i> Roeding. |
| — Sutures without any nodules | 5 |
| 5. Outer lip without denticles, sculptured with more fine punctated spiral grooves not so distinct in the last two whorls | <i>M. guttata</i> Swainson |
| — Outer lip with denticles, sculptured with more distinct punctate spiral grooves | <i>M. ambigua</i> Swainson |

Mitra (Mitra) ambigua Swainson, 1829

(Pl. I, fig. 1)

1829. *Mitra ambigua* Swainson, *Zool. Illus.*, Ser. 2, Vol. 1, pl. 30, fig. 2 (type locality, not given).
1976. *Mitra (Mitra) ambigua* Swainson : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 317, pl. 255, figs. 1, 2, pl. 269, fig. 1.

Specimens studied : 4 exs., Andamans.*Distribution* : India : Andaman and Nicobar Islands. Madagascar to Polynesia and the Hawaiian Islands.*Description* : Shell uniformly brownish, spiral ribs enclosing punctate grooves between them, sutures distinct. Aperture longer than the spire, columella with five oblique folds, outer lip with 17—20 close set denticles.*Habitat* : Coral reefs, under rocks and coral, generally on hard substratum within the intertidal zone (Cernohorsky, 1976).*Measurements* (in mm) :

Length	Width	Height of the aperture
54.45	19.25	30.76
46.95	17.77	27.05

Mitra (Mitra) cardinalis (Gmelin, 1791)

(Pl. I, fig. 3)

1791. *Voluta cardinalis* Gmelin, *Syst. Nat.*, ed. 13, p. 3458, no. 93, refers to Lister, pl. 838, fig. 65, lectotype, SD Cernohorsky, 1976 (type locality, Indian Ocean).
1976. *Mitra (Mitra) cardinalis* (Gmelin) : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 312, pl. 253, figs. 5, 6.

Specimens studied : 4 exs., Andamans.*Distribution* : India : Andaman and Nicobar Islands. Madagascar to Polynesia.*Description* : Shell ovate, white with rows of orange brown spots, spire short. Sculpture with distinctly punctated spiral grooves and axial striae, aperture longer than the spire, columella with five oblique folds, outer lip with 23—25 denticles.

Cernohorsky (1976) did not include Andamans in the geographical distribution of this species.

Habitat : Coral rocks, generally on the hard reef substratum, in the intertidal zone (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
48.18	28.54	41.19
32.22	12.15	19.16

Mitra (Mitra) guttata Swainson, 1824
(Pl. I, fig. 4)

1824. *Mitra guttata* Swainson, *Quart. J. Sci. Art.*, **17** (33) : 35 (type locality, not known).
1954. *Vicimitra prospora* Iredale : Ray, *Mem. Indian Mus.*, **14** (1) : 46, pl. II, figs. 6 and 6a.
1976. *Mitra (Mitra) guttata* Swainson : Cernohorsky, *Indo-pacific Mollusca*, **3** (17) : 325, pl. 278, figs. 1-8.

Specimens studied : i) 1 ex., Bombay ii) 2 exs., Kathiawar (Gujarat).

Distribution : India : Andaman and Nicobar Islands. Madagascar to Sri Lanka.

Description : Shell elongately fusiform, solid, spire acuminate, sculpture with punctated spiral lines, sutures deep greyish brown with white band on the body whorls, whorls seven, aperture larger than the spire, columella with five oblique folds.

Habitat : Unknown (probably deeper water, Cernohosky, 1976).

Measurements (in mm) :

Length	Width	Height of the apertue
37.10	12.15	18.32
26.90	10.78	14.31

Mitra (Mitra) imperialis Roeding, 1798
(Pl. I, fig. 5)

1798. *Mitra imperialis* Roeding, *Museum Boltenianum*, pt. 2, p. 135, no. 1696 (refers to Chemnitz, *Conch. Cab.*, **10**, pl. 151, figs. 1432, 1433 (type locality, not given).
1976. *Mitra (Mitra) imperialis* Roeding : Cernohorsky, *Indo-pacific Mollusca*, **3** (17) : 321, pl. 255, figs. 15, 16.

Specimens studied : 3 exs., Indian Seas.

Distribution : India : Andaman and Nicobar Islands. Red sea E. Africa and Western Polynesia.

Description : Shell ovate, orange with white patches, spire short, spiral grooves narrow with deep punctures, whorls coronated with blunt tubercles, aperture yellowish and longer than the spire, columella with five to six oblique folds, outer lip with 19—20 denticles.

Habitat Coral reef, under the rocks and coral from intertidal zone to a depth of 50 fathoms (Cernohorsky, 1976).

Measurements (in mm)

Length	Width	Height of the aperture
45.46	18.28	27.00
35.58	14.45	22.75

Mitra (Mitra) mitra (Linnaeus, 1758)

(Pl. I, fig 6)

1758. *Voluta mitra* Linnaeus, *Syst. Nat.* ed 10, p. 732 (type locality, O Asiatico).
 1798. *Mitra carmelita* Roeding, *Museum Boltenianum*, p. 136, no. 1705, (Substitute name for *Voluta episcopalis* Gmelin, 1791).
 1956. *Mitra mitra* Linnaeus : Ray, *Mem. Indian Mus.*, 14 (1) : 40, pl. 2, fig. 5.
 1976. *Mitra (Mitra) mitra* Linnaeus : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 307, pl. 253, fig. 1.

Specimens studied : 2 exs., Andamans.

Distribution : India : Andaman and Nicobar Islands. E. Africa to Polynesia and Hawaii and Galapagos Islands.

Description : Shell elongately ovate, golden yellow with bright orange red rectangular blotches arranged in revolving band, spire longer than the body whorl, with punctate line, aperture creamy yellow, columella with four oblique folds, outer lip denticulate, more distinctly in the lower part.

Habitat : Coralline and silty sand, from intertidal zone to a depth of 33 fathoms (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
151.24	39.95	50.56
66.95	22.77	32.00

Mitra (Mitra) stictica (Link, 1807)

(Pl. 1, fig. 7)

1807. *Voluta stictica* Link, *Beschr. Nat. Samml. Univ. Rostchok*, p. 127 (refers to Chemnitz, Vol. 4, figs. 1355, 1356).
1976. *Mitra (Mitra) stictica* (Link) : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 309, pl. 253, figs. 3, 4 pl. 261, figs. 1 & 2.

Specimens studied : 12 exs., Andamans.

Distribution : India : Andaman and Nicobar Islands. East Africa to Polynesia.

Description : Shell white, ornamented with rows of irregular orange blotches, spire short, sutures deep with prominent coronations, aperture creamy-orange, whorls six, columella with four oblique folds, outer lip thick with eleven denticles, the most anterior ones being conspicuous.

Habitat : Rocks and coral crevices, generally on hard reef substratum, from intertidal zone to a depth of 100 fathoms.

Measurements (in mm) :

Length	Width	Height of the aperture
66.85	23.76	34.38
45.45	18.90	23.10

Subgenus **Nebularia** Swainson, 1840

(Type species : *Mitra contracta* Swainson, 1820).

1840. *Nebularia* Swainson, *Treat. Malacology*, pp. 130, 131, 319.
1858. *Chrysame* H. and A. Adams, *Gen. Rec. Moll.*, 1 : 171.
1976. *Nebularia* Swainson : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 393.

Shell medium to small, roundish-ovate to elongate-ovate, solid, sutures simple or coronated, deep or shallow. Sculpture with spiral cords or striae, interspaces smooth or axially striated. Outer lip simple or crenulated, thickened, convex or contracted, aperture narrow, columella with 3—6 prominent oblique folds. Anterior canal short.

According to Cernohorsky (1976) it is not a well defined group. It is represented by about 50 species in all, but by 14 species in Indian Seas.

Key to the species

- | | | |
|--|----|------------------------------|
| 1. Outer lip prominently crenulated | 4 | |
| — Outer lip very weakly crenulated or almost smooth | 2 | |
| 2. Aperture higher than the spire | | <i>M. contracta</i> Swainson |
| — Aperture shorter than the spire | 3 | |
| 3. Body whorl with narrow, less impressed spiral grooves, whorls without prominent subsutural bands, dark brown or lighter | | <i>M. maesta</i> Reeve |
| — Body whorl with prominent spiral grooves, whorls with prominent subsutural bands, tan to blackish brown with pale yellow subsutural bands | | <i>M. luctuosa</i> A. Adams |
| 4. Body whorl with wide spaced axial folds and spiral grooves | 5 | |
| — Body whorl with spiral grooves | 6 | |
| 5. Sutures coronated, dark brown or greyish brown, ornamented with white spiral band | | <i>M. coronata</i> Lamarck |
| — Sutures not coronated, tan light, yellowish-brown or light yellow | | <i>M. turgida</i> Reeve |
| 6. Shell elongately ovate | 9 | |
| — Shell roundly or cylindrically ovate | 7 | |
| 7. Spire more acuminate, sculpture with prominent elevated and angulated spiral cord, interspaces deep V shaped | 8 | |
| — Spire less acuminate, sculpture rather pronounced, spiral grooves shallow and frequently punctate rather than axially striate | | <i>M. chrysalis</i> Reeve |
| 8. Shell upto 34 mm. blood-red in colour | | <i>M. cucumerina</i> Lamarck |
| — Shell below 20 mm, dark brown or purple brown in colour | | <i>M. tabanula</i> Lamarck |
| 9. Spiral cords on the body whorl more than fifteen | 10 | |
| — Spiral cords on the body whorl less than fifteen | 11 | |
| 10. Shell upto 48 mm., suture deeply impressed, outer lip more thickened and prominently crenulated, elongately-ovate, dark tan to dark brown colour | | <i>M. aurantia</i> (Gmelin) |
| — Shell upto 30 mm., suture not deeply impressed, outer lip thickened and crenulated, fusiformly elongated, light tan to dark brown colour | | <i>M. ruepellii</i> Reeve. |
| 11. Sculptured with prominent, elevated spiral cord | | <i>M. doliolum</i> Küster |
| — Sculptured with shallow, fine spiral grooves | | <i>M. ticaonica</i> Reeve |

Mitra (Nebularia) aurantia aurantia (Gmelin, 1791)

(Fig. 1)

1791. *Voluta aurantia* Gmelin, *Syst. Nat.* ed 13, p. 3454, no 60 (refers to Chemnitz, *Conch. Cab.*, 4, pl. 150, figs. 1393, 1394) (type locality, not given).
1954. *Chrysame aurantia* (Gmelin) : Ray, *Mem. Indian Mus.*, 14 (1) : 24, pl. 1, figs. 9 & 9a.
1976. *Mitra (Nebularia) aurantia aurantia* (Gmelin) : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 425, pls. 256, 257 pl. 372, figs. 1-3.

Specimens studied : i) 27 exs., Andamans, Singapore ii) 1 ex., Kathiawar iii) 30 exs., Andamans iv) 2 exs., Waltair coast.

Distribution : India : Gujarat, Andhra Pradesh, Andaman and Nicobar Islands. Throughout Indo-pacific.

Description : Shell fusiform, with orange or chocolate brown colour, regular prominent ribs upper whorls encircled with a white band, whorls six, spire acuminate, sutures deep, aperture long, whitish, columella with four oblique folds, outer lip with a shallow notch at the upper part and with 12—14 crenulations.

Habitat : On reef, in crevices among algae under coral rocks, from intertidal zone to a depth of 5 fathoms.

Measurements (in mm) :

Length	Width	Height of the aperture
34.17	14.64	18.59
20.00	8.68	12.05
12.37	6.00	8.44

Mitra (Nebularia) aurantia subruppeli Finlay, 1927

(Pl. 1, fig. 8)

1927. *Mitra subruppeli* Finlay, *Trans. Proc. New Zealand Inst.*, 57 : 508 (substitute name for *M. multisulcata* Sowerby, 1914), type locality, Karachi, Pakistan (Cernohorsky, 1976).
1976. *Mitra (Nebularia) aurantia subruppeli* Finlay : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 428, pl. 257, fig. 3, pl. 372, figs. 4, 5.

Specimens studied : i) 4 exs., Kathiawar (Gujarat) ii) 3 exs., Porbandar (Gujarat).

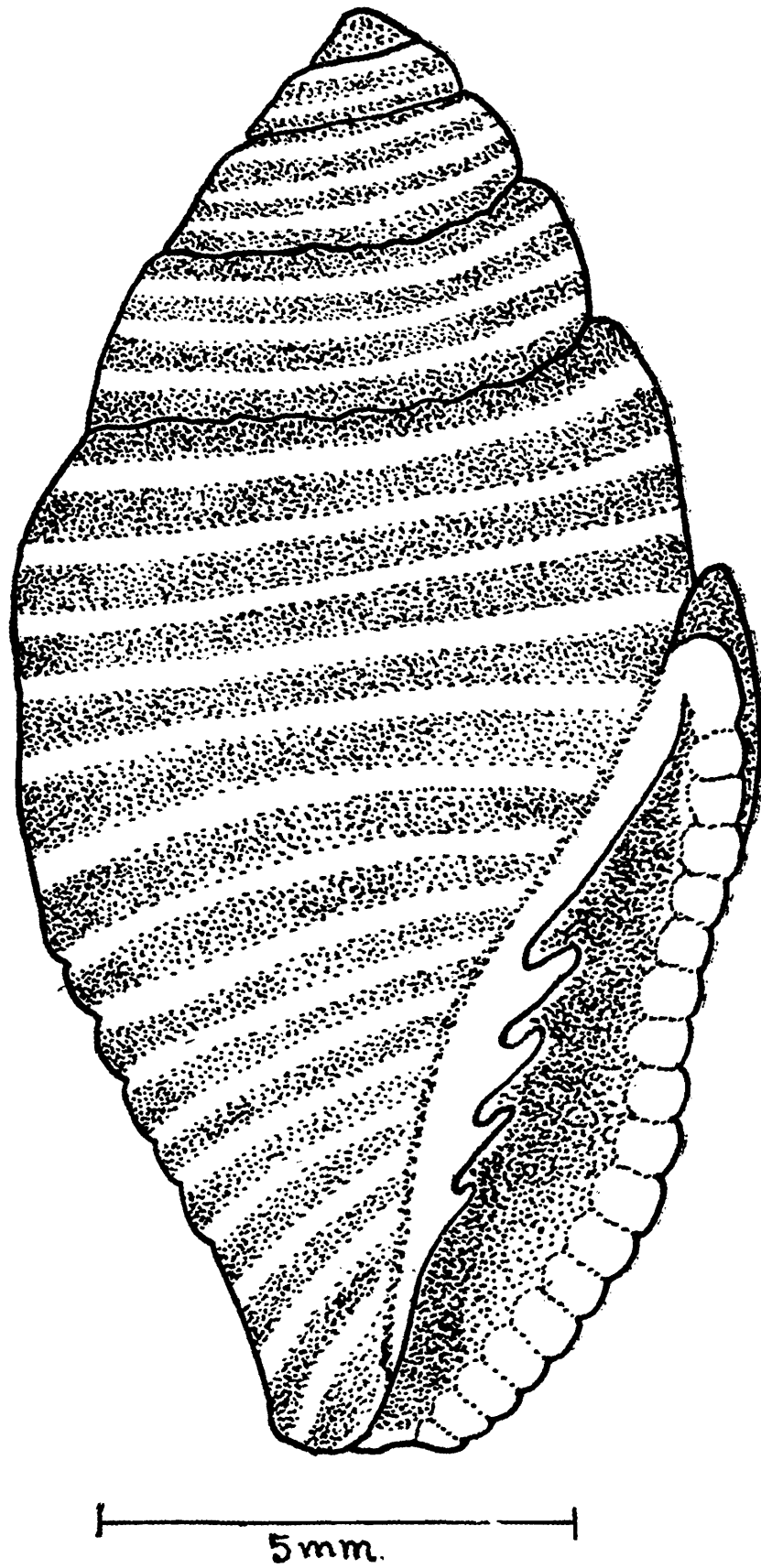


Fig. 1: *Mitra (Nebularia) aurantia aurantia* (Gmelin)

Distribution : India : Gujarat, Goa. Throughout Indo-pacific.

Description : Shell ovate, chocolate colour with a white band below the suture of each whorl, sculpture transversely grooved sutures deep, whorl six, spire smaller than the aperture, columella with four to five oblique folds, outer lip thick and smooth.

Remarks : The specimens from Kathiawar are very much eroded and almost white. However it can be easily recognised by faintly marked spiral ridges and columellar plaits.

Habitat : Unknown.

Measurements (in mm) :

Length	Width	Height of the aperture
26.71	11.86	15.31
20.57	10.35	10.55

Mitra (Nebularia) chrysalis Reeve, 1844

(Fig. 2)

1844. *Mitra chrysalis* Reeve, *Conch. Icon.*, 2, *Mitra* sp. no. 200, pl. 25, fig. 200 (type locality, not given).
1899. *Mitra (Chrysame) buryi* Melvill and Skyes, *Proc. Malac. Soc., Lond.*, 3 : 232 (type locality, Andamans).
1954. *Chrysame chrysalis* (Reeve) : Ray, *Mem. Indian Mus.*, 14 (1) : 20, pl. 1, fig. 6, 6a-f.
1976. *Mitra (Nebularia) chrysalis* Reeve : Cernohorsky, *Indo-pacific Mollusca*, 3(17) : 402, pl. 256, figs 16, 17, pl. 338, fig. 2, pl. 340, figs. 1, 2.

Specimens studied : i) 1 ex., Fulandu Islands. Throughout the tropical Indo-pacific.

Distribution : India : Andaman and Nicobar Islands. E. Africa to Polynesia.

Description : Shell small, ovate, yellowish brown with a broad interrupted whitish band, sculptured with spiral ridges and grooves, aperture longer than the spire, columella with 3—4 strong oblique folds, outer lip thin in case of young ones but becomes thickened, peculiarly contracted in the middle, with 7—8 crenulations.

Habitat : Amongst stones and submerged coral reefs, in intertidal zone but also at a depth of 8 fathoms (Cernohorsky, 1976).

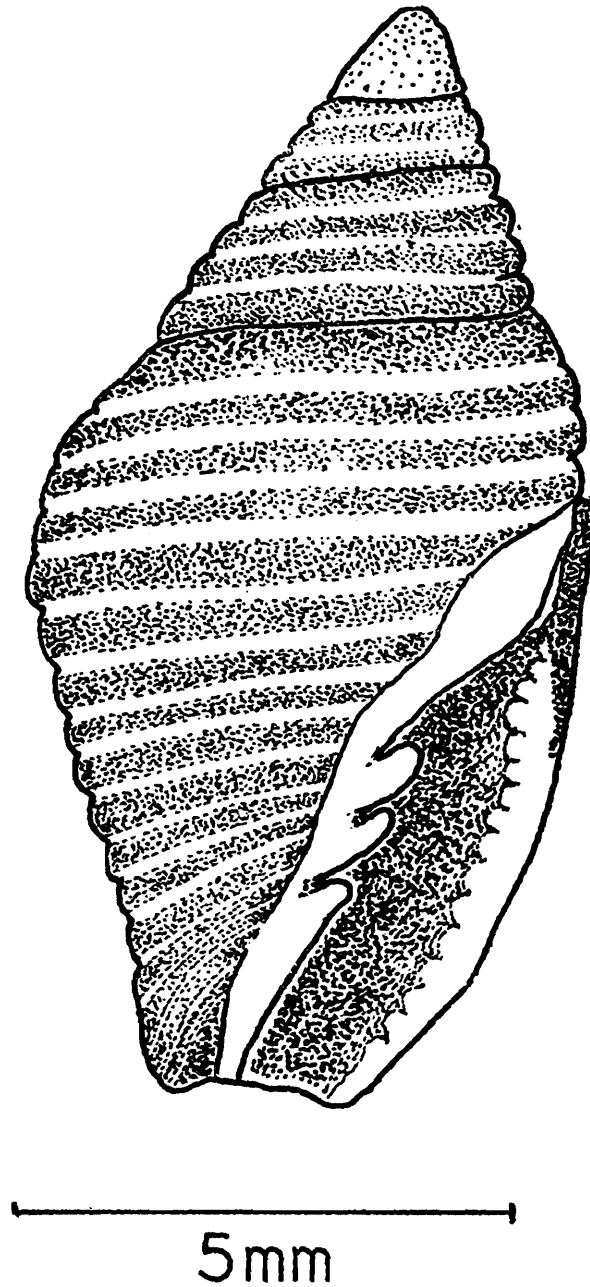


Fig. 2. *Mitra (Nebularia) chrysalis* Reeve.

Measurements (in mm) :

Length	Width	Height of the aperture
16.00	7.86	10.25
5.35	2.66	2.96

***Mitra (Nebularia) contracta* Swainson, 1820**

(Pl. I, fig. 9)

1820. *Mitra contracta* Swainson, *Zool. Illust.*, (1) 1 : pl. 8, top and bottom figs. (type locality, not given).

1976. *Mitra (Nebularia) chrysostoma* Broderip : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 306, pl.256, figs. 5, 6, pl. 33, figs. 8-10.
1978. *Mitra (Nebularia) contracta* Swainson : Cernohorsky, *Rec. Auckland Inst. Mus.*, 15 : 80, figs. 32-34.

Specimens studied : 2 exs., Andamans.

Distribution : India : Andaman and Nicobar Islands. East Africa to polynesia.

Description : Shell elongately ovate, spire acuminate, whitish ornamented with dark brown irregular blotches and streaks, whorls ribbed, ribs obsolete on the body whorl, spiral grooves shallow, aperture longer than the spire, collumella with five oblique folds, outer lip thick, smooth, and slightly reflected in the lower part.

Habitat : Under corals, from intertidal zone to a depth of 5 fathoms (Cernohorsky, 1976).

Measurements : (in mm) :

Length	Width	Height of the aperture
38.66	16.92	24.85
37.55	14.57	19.88

***Mitra (Nebularia) coronata* Lamarck, 1811**
(Fig. 3)

1811. *Mitra coronata* Lamarck, *Ann. Mus. d'Hist. Nat. Paris*, 17 : 214 (type locality, not given).
1976. *Mitra (Nebularia) coronata* Lamarck : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 437, pl. 257, figs. 16-18, pl. 386, figs. 1-6.

Specimens studied : 9 exs., Andamans.

Distribution : India : Goa, Andaman and Nicobar Islands. East Africa to India, Polynesia and Hawaiian Islands.

Description : Shell ovately fusiform, dark brown with narrow whitish band below the sutures with whitish coronations, transverse ridges on the body whorl with punctate spiral grooves, columella with 5-6 oblique folds, outer lip crenulated.

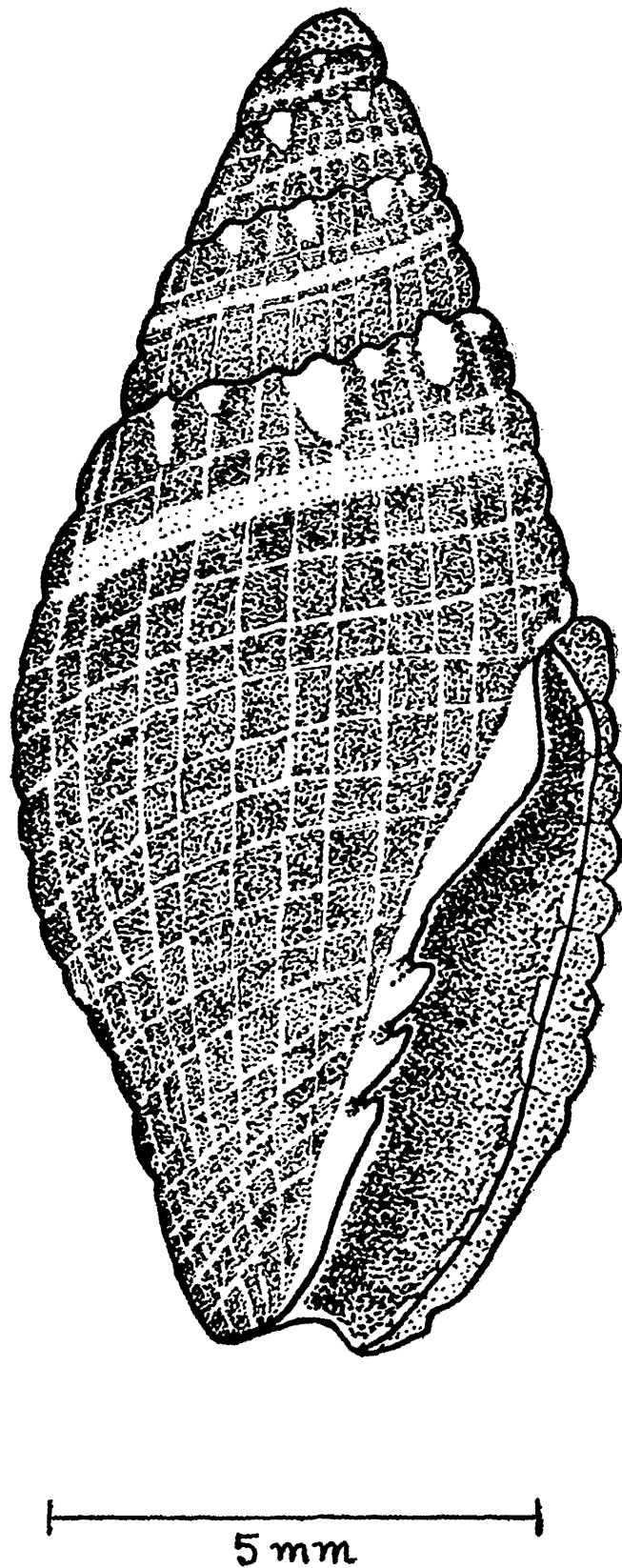


Fig. 3. *Mitra (Nebularia) coronata* Lamarck

Habitat: On reefs, in crevices, coralline algae, coral rubble and under coral rocks, from intertidal zone to 70 fathoms (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
31.84	11.85	14.46
13.96	7.42	10.23
12.45	5.86	6.78

Mitra (Nebulara) cucumerina Lamarck, 1811

(pl 1 fig. 10).

1811. *Mitra cucumerina* Lamarck, *Ann. Mus. d'Hist. Nat. Paris*, 17 : 215 (type-locality, not given).
1954. *Chrysame cucumerina* Lamarck : Ray, *Mem. Indian Mus.*, 14(1) : 17, pl. 1, fig. 5.
1976. *Mitra (Nebularia) cucumerina* Lamarck : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 400, pl. 256, figs. 13-15, pl. 338, fig. 1.

Specimens studied : 11 exs., Andamans.

Distribution : India : Tamil nadu, Andaman and Nicobar Islands. Red sea to Polynesia and Hawaiian Islands.

Description : Shell ovate, orange red usually, but reddish brown in some cases, surface with elevated keel-like revolving ridges with distinct grooves, spire usually shorter than the aperture, columella with four oblique folds, outer lip with 11-12 crenulations.

Habitat : Under coral reef and crevices from intertidal zone to a depth of 10 fathoms.

Measurements (in mm) :

Length	Width	Height of the aperture
28.00	14.90	17.87
18.94	9.46	11.45
10.72	6.17	6.82

Mitra (Nebularia) doliolum Kuester, 1839

(Pl. I, fig. 11).

1839. *Mitra doliolum* Kuester, *Syst. Conch. Cab.*, (2) 5 : 96, pl. 17, figs. 1-3 (type-locality, East Indies).
1976. *Mitra (Nebularia) doliolum* Kuester : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 413, pl. 256, figs. 23, 24, pl. 354, figs. 1-3.

Specimens studied : 1 ex., Andamans.

Distribution : India : Andaman and Nicobar Islands. Red Sea to Samoa and Tonga Islands.

Description : Shell elongately-ovate, attenuated at both the ends, yellowish, whorls seven, spiral ridges very prominent, raised and round, interstices broader than ridges, crested with narrow ridges, columella with four oblique folds, outer lip thickened, regularly convex and crenulated, aperture equal or longer than the spire, with a distinct sip-honal notch.

Habitat : On reefs, in crevices under coral rocks, from the inter-tidal zone to 8 fathoms (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
22.06	8.80	13.16

Mitra (Nebularia) luctuosa A. Adams, 1853

(Pl. I, fig. 12)

1853. *Mitra luctuosa* A. Adams, *Proc. Zool. Soc., Lond.*, p. 133,

Mitra sp. no. 9, (type locality, China voyage of H. M. S. Samarang).

1976. *Mitra (Nebularia) luctuosa* A. Adams : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 443, pl. 257, figs. 23, 24, pl. 392, figs. 1-7.

Specimens studied : 20 exs., Indian Seas.

Distribution : India : Gulf of Oman to Polynesia and Hawaiian Islands.

Description : Shell elongated, brownish with a white band slightly below the suture of each whorl. Spire elongated, longer than the aperture, body with revolving spiral ridges, spiral grooves shallow, punctated. whorls eight, columella with four oblique folds, outer lip thick and smooth.

Habitat : On reefs, under rocks and coral in crevices and on coral rubble, from intertidal zone to 30 fathoms.

Measurements (in mm) :

Length	Width	Height of the aperture
24.90	9.00	9.44
7.94	3.82	4.09

Mitra (Nebularia) maesta Reeve, 1845

(Pl. II, fig. 13)

1845. *Mitra maesta* Reeve, *Conch. Icon.*, 2 : *Mitra* sp. no. 323, pl. 38, fig. 323 (type-locality, Isle of Corrigator, Philippines, 10 fathoms).
 1908. *Mitra emiliae* Preston, *Rec. Indian Mus.*, 2 : 193, pl. 17, fig. 68, (type locality, Andamans).

Specimens studied : 1 ex., Andamans (Holotype).

Distribution : Andaman and Nicobar Islands. Andaman Islands to Admiralty Islands in Melanesia.

Description : Shell elongate, fusiform, spire acuminate, sculpture with spiral lines more prominent on the anterior portion of the spire, reddish brown with cream colour infra sutural band, whorls nine. sutures well impressed, apertural region smaller than the spiral region, aperture elongate, columella with four oblique folds, the first being prominent the rest gradually decreasing, columella slightly reflected.

Remark : The description is based on the holotype present in the National Zoological Collections. We could not see any recent collections of the species.

Habitats : On coral sands and mud, from 10 to 20 fathoms (Ray, 1954).

Measurements (in mm) :

Length	Width	Height of the aperture
19.20	6.84	8.58

Mitra (Nebularia) ruepellii Reeve, 1844

(Pl. II, fig. 14)

1844. *Mitra ruepellii* Reeve, *Conch. Icon.*, 2 : *Mitra* sp. no., 179, pl. 23, fig. 179 (type locality, Red Sea).
 1954. *Chrysame ruepellii* (Reeve) : Ray, *Mem. Indian Mus.*, 14 (1) : 27, pl. 1, fig. 10.
 1976. *Mitra (Nebularia) ruepellii* Reeve : Cernohorsky, *Indo-Pacific Mollusca*, 3(17) : 408, pl. 256, fig. 22, pl. 347, figs. 1-3.

Specimens studied : 1 ex., Andamans.

Distribution : India : Andaman and Nicobar Islands. Red sea to Gulf of Aden and Andamans.

Description : Shell small, fusiform, chestnut brown, sculpture with spiral grooves, whorls nine, spire sharp, acuminate, columella with 3 oblique folds, outer lip thin, crenulated.

Habitat : Under stones, in the intertidal zone.

Measurements (in mm) :

Length	Width	Height of the aperture
9.20	3.58	4.28

Mitra (Nebularia) tabanula Lamarck, 1811
(Pl. II, fig. 20)

1811. *Mitra tabanula* Lamarck, *Ann. Mus. d'Hist. Nat. Paris*, 17 : 222, no. 79, (type locality Great Indian Ocean).
1954. *Chrysame tabanula* (Lamarck) : Ray, *Rec. Indian Mus.*, 14 : 22 pl. 1, fig. 7.
1976. *Mitra (Nebularia) tabanula* Lamarck : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 408, pl. 256, fig. 22, pl. 347, figs. 1-3.

Specimens studied : 1 ex., Andamans.

Distribution : India : Andaman and Nicobar Islands. Gulf of Aden to Samoa and the Tonga Islands.

Description : Shell ovate oblong, reddish brown. Sculpture with angulated spiral ridges and fine axial striae in the interstices, whorls six, aperture longer than the spire, columella with 3 strong and one weak oblique folds, outer lip crenulated.

Remarks : The single specimen from Andamans was studied by Ray (1954). He mentioned the presence of nine rows of whitish spots on the surface, the more conspicuous one being on the middle of the body whorl. But now we do not see any such bands. Probably the colour might have faded due to long preservation in spirit.

Habitat : Under the rocks and crevices of coral from intertidal zone to 8 fathoms (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
10.85	5.32	6.74

Mitra (Nebularia) turgida Reeve, 1845

(Fig. 4)

1845. *Mitra turgida* Reeve, *Conch. Icon.*, 2 : *Mitra* sp. no. 273, pl. 33, fig. 273, (type locality, Isle of Capul, Philippines).
 1976. *Mitra (Nebularia) turgida* Reeve : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 409, pl. 349, figs. 1-4.

Specimens studied : 3 exs., Andamans.

Distribution : India : Andaman and Nicobar Islands. Gulf of Aden to Polynesia and the Hawaiian Islands.

Description : Shell ovate, swollen in the middle, contracted at the base, spire acuminate, body with moderately prominent and round spiral ridges, whorls seven, columella with four oblique folds and a small posterior canal.

Habitat : Under coral and crevices of porous coral in the intertidal zone (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
12.89	6.00	7.55
10.80	5.56	6.52

Mitra (Nebularia) ticaonica Reeve, 1844

(Pl. II, fig. 15)

1844. *Mitra ticaonica* Reeve, *Conch. Icon.*, 2 : *Mitra* sp. no. 181, pl. 23, fig. 181, (type locality Isle of Ticao, Philippines).
 1976. *Mitra (Nebularia) ticaonica* Reeve : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 429, pl. 257, figs. 4, 5, pl. 375, figs. 1, 2.

Specimens studied : 4 exs., Andamans.

Distribution : India : Andaman and Nicobar Islands. East Africa to Polynesia and Hawaiian Islands.

Description : Shell ovate, brown to darktan, with a few small white spots, body with spiral grooves, whorls five, aperture longer than the spire, columella with four oblique folds, outer lip with 12-13 crenulations.

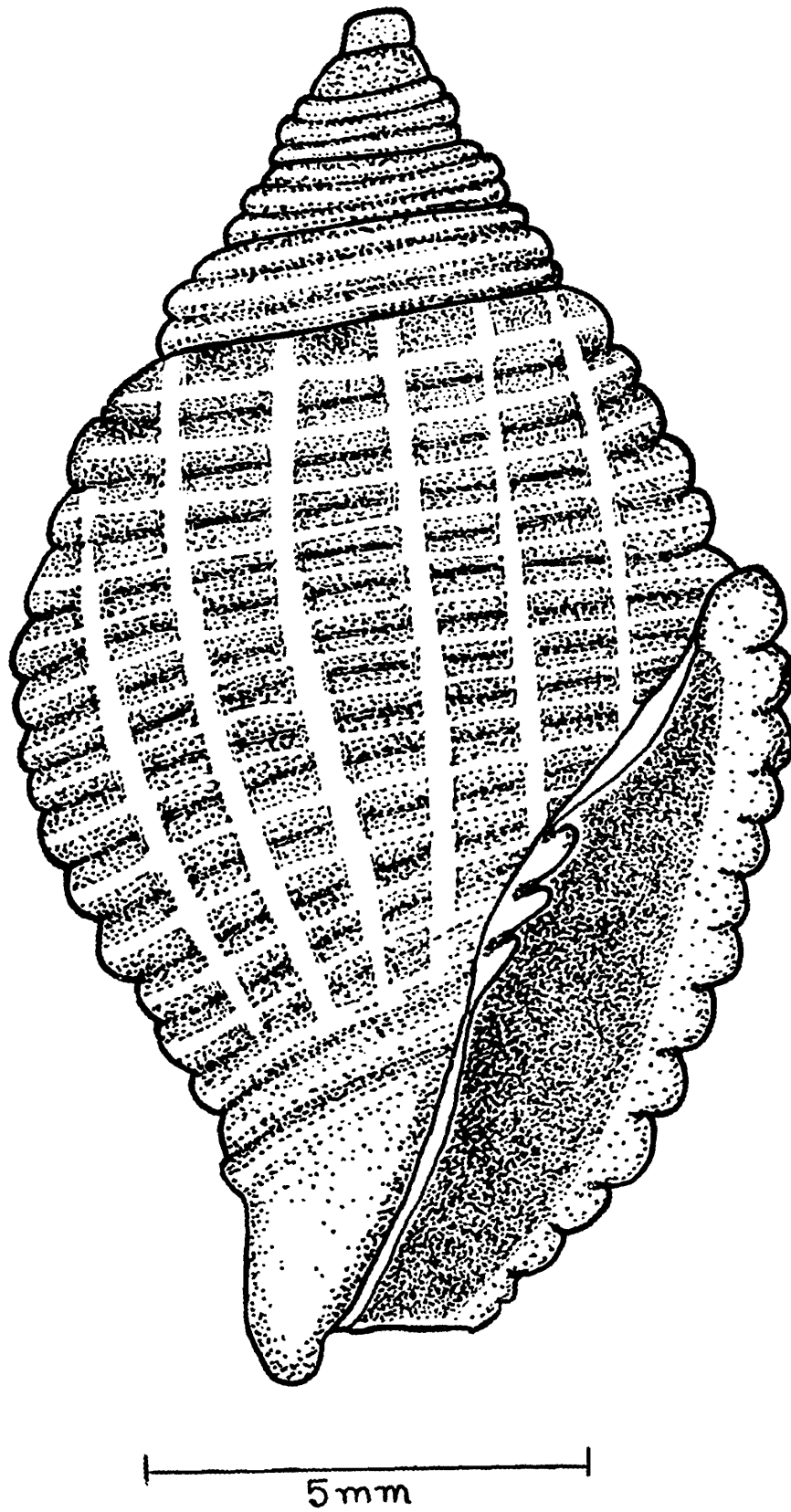


Fig. 4. *Mitra (Nebularia) turgida* Reeve

Habitat : On reefs, under rocks and corals and rubble substratum, from intertidal zone to 12 fathoms (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
19.40	9.36	12.22
16.66	7.74	9.06

Subgenus **Strigatella** Swainson, 1840

Type species : *Mitra zebra* Lamarck, 1811 = *Voluta paupercula* Linnaeus, 1758, Subsequent designation Gray (1847).

1840. *Strigatella* Swainson, *Treat. Malacology*, pp. 130, 131, 319.

1976. *Strigatella* Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 477.

Shell of moderate size, solid. Sculpture with spiral cords, striae or granules, outer lip thickened with a prominent but bluntly triangular denticles. Redula slightly modified, laterals cleaver shaped and denticles usually missing on the last 1/3rd of the plate.

Altogether 18 species are known (Cernohorsky, 1976) but 9 species are represented in Indian seas.

Key to the species

- | | |
|---|-----------------------------------|
| 1. Aperture nearly equal or longer than the spire | 2 |
| — Aperture nearly twice in length than the spire | 3 |
| 2. Sculpture smooth, spire acuminate, smooth sutures, and yellowish orange in colour | <i>M. acuminata</i> Swainson |
| — Sculpture with rows of small granules, spire acuminate impressed sutures, orange brown in colour | <i>M. pellisserpentis</i> Reeve |
| 3. Outer lip prominently crenulated | <i>M. retusa</i> Lamarck |
| — Outer lip not crenulated | 4 |
| 4. Outer lip smooth, convex or sometimes subangulated anteriorly, colour chestnut brown to black with white axial stripes or a pale subsutural zone on the body whorl | <i>M. scutulata</i> (Gmelin) |
| — Outer lip globose and calloused | 5 |
| 5. Spire more elongated, sculptured with axially striated spiral grooves giving rise to slightly elevated spiral thread, light olive brown colour | <i>M. colombelliformis</i> Kiener |
| — Spire less elongated, sculpture smooth, with distinct cord on the lower part of the body whorl | 6 |
| 6. Outer lip more calloused, inflated near the start | 7 |
| — Outer lip slightly calloused, not inflated near the start | <i>M. paupercula</i> (Linnaeus) |

7. Shell black coloured, ornamented with 1 or 2 very narrow orange, or pale yellow bands on the body whorl

M. decurtata Reeve

— Shell cream coloured, ornamented with irregular wavy brown or dark olive green axial streaks and blotches

M. litterata Lamarck

Mitra (Strigatella) acuminata Swainson, 1824

(Pl. II, fig. 16)

1824. *Mitra acuminata* Swainson, *Qrt. J. Sci. Art.*, 17 : 136 (type locality, Mauritius).
1954. *Strigatella acuminata* (Swainson) : Ray, *Mem. Indian Mus.*, 14 (1) : 54, pl. 2, figs. 9, 9a.
1976. *Mitra (Strigatella) acuminata* Swainson : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 492, pl. 258, figs. 26, 27, pl. 445, fig. 1.

Specimens studied : 2 exs., Fulandu Island.

Distribution : India : Andaman and Nicobar Islands. East Africa to Polynesia and the Hawaiian Islands.

Description : Shell ovately oblong, yellowish, marked with one spiral band of lighter colour on the body whorl, spire sharply acuminate, sculpture with fine spiral striae on the first whorls, whorls eight, aperture longer than the spire, white, columella with five oblique folds outer lip thickened and gibbose near the top.

Habitat : On reefs, under rocks. Coral and coral rubble, in the intertidal zone (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
26.04	9.93	12.48

Mitra (Strigatella) colombelliformis Kiener, 1838

(Pl. II, fig. 17)

1838. *Mitra colombelliformis* Kiener, *Conch. Coq. Viv.*, 3 : 47, pl. 15, fig. 46 (type locality, Madagascar).
1954. *Strigatella columbellaeformis* (Kiener) : Ray, *Mem. Indian Mus.*, 14 (1) : 52, pl. 2, fig. 8.
1976. *Mitra (Strigatella) colombelliformis* Kiener : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 491, pl. 258, figs. 23-25, pl. 441, fig. 2.

Specimens studied : 1 ex., Fulnadu Islands.

Distribution : India : Fulandu Island. Cocos-Keeling Islands, Indian Ocean to Polynesia.

Description : Shell ovate, thick, solid, brown in colour with white irregular spots, spire short and acute, sculpture with shallow spiral grooves, whorls six, aperture longer than the spire, columella with six oblique folds, outer lip thick, smooth and sinuate.

Habitat : On reefs, under rocks and coral in the intertidal zone (Cernohorsky, 1976.)

Measurements (in mm) :

Length	Width	Height of the aperture
30.02	13.81	15.85

Mitra (Strigatella) decurtata Reeve, 1844

(Pl. II, fig. 18).

1844. *Mitra decurtata* Reeve, *Conch. Icon.*, 2: *Mitra* sp. no. 154, pl. 20, fig. 154 (type locality, not given).
 1976. *Mitra (Strigatella) decurtata* Reeve : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 490, pl. 258, figs. 21, 22, pl. 441, fig. 1.

Specimens studied : 4 exs., Arong village, Car Nicobar.

Distribution : Shell ovate, thick, solid deep chocolate colour, with a conspicuous white band below the suture, spire short, body whorl smooth in the upper half but with broad spiral ridges on the lower part. Aperture white, longer than the spire, whorls five, columella with four oblique folds, outer lip sinuated and contracted at the upper part.

Habitat : On reef, under coral rocks and in crevices in the intertidal zone.

Measurements (in mm) :

Length	Width	Height of the aperture
31.83	17.42	18.10
28.50	17.11	17.40

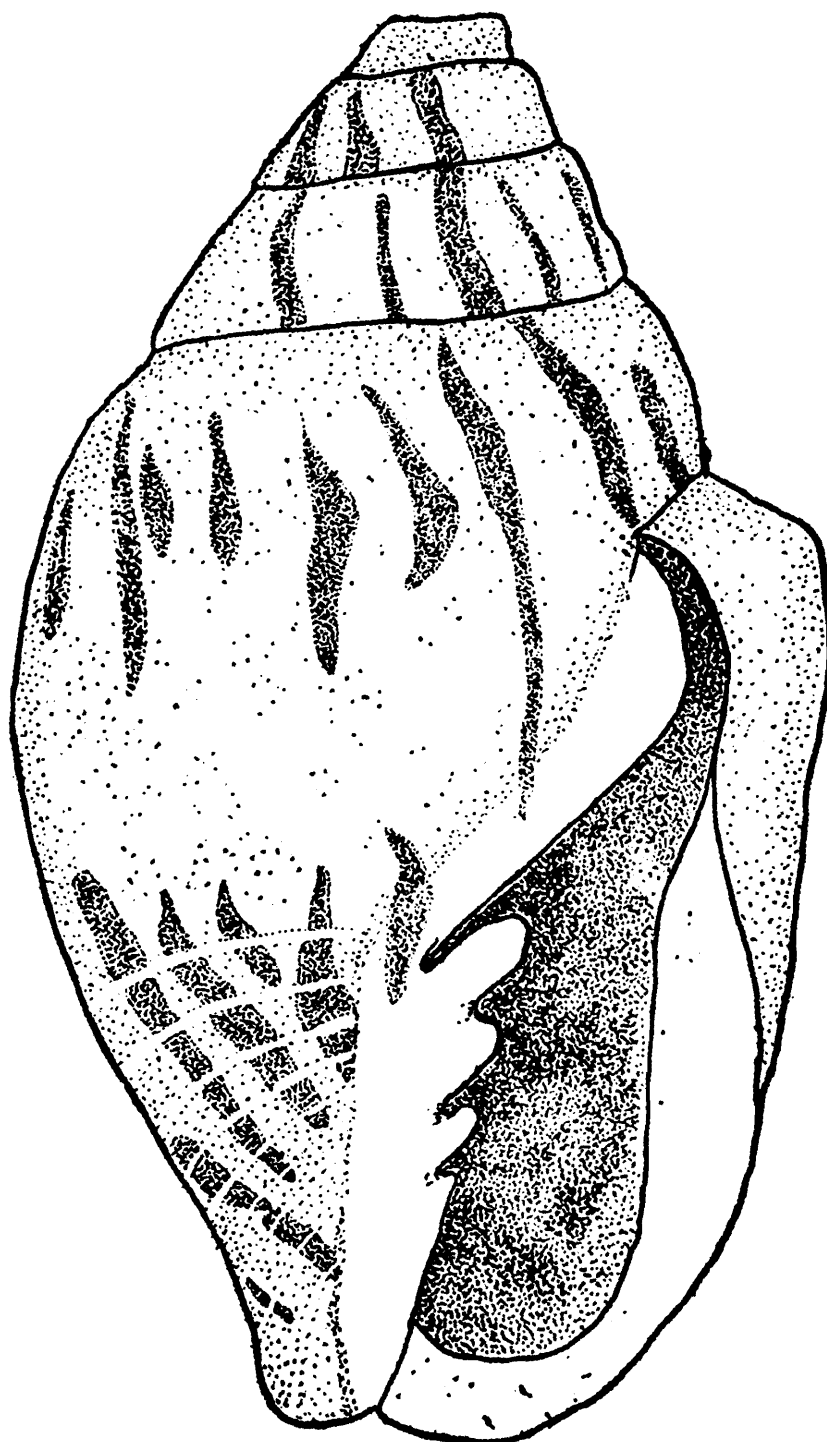
Mitra (Strigatella) litterata Lamarck, 1811

(Fig. 5).

1811. *Mitra litterata* Lamarck, *Ann. Mag. d'Hist. Nat. Paris*, 17 : 220 (type locality, Indian Ocean).

1954. *Strigatella litterata* (Lamarck) : Ray, *Mem. Indian Mus.*, 14 (1) : 48, pl. 2, figs. 7 and 7a.
1976. *Mitra (Strigatella) litterata* Lamarck : Cernohorsky, *Indo-pacific Mollusca*, 3 (17) : 482. pl. 258, figs. 9-11, pl. 433, figs. 1, 2.

Specimens studied : 25 exs., Andamans.



—|—————|
2mm

Fig. 5. *Mitra (Strigatella) litterata* Lamarck

Distribution : India : Andaman and Nicobar Islands. Red sea and Gulf of Oman to Polynesia and Hawaiian Islands.

Description : Shell ovate, irregular, wavy longitudinal plate, chocolate brown streaks and blotches, solid, sculpture with shallow spiral grooves, body with five whorls, aperture longer than the spire, columella with four oblique folds, outer lip smooth and depressed in the middle and more callous on the inner side.

Habitat : On reef, under rocks and coral, in crevices of coral and among algae in the intertidal zone.

Measurements (in mm) :

Length	Width	Height of the aperture
21.72	11.32	14.08
15.12	8.20	10.90

Mitra (Strigatella) paupercula (Linnaeus, 1758)

(Pl. II, fig. 19)

1758. *Voluta paupercula* Linnaeus, *Syst. Nat.* ed 10 : 731 (refers to Gaultieri, pl. 54, fig. 2).
 1954. *Strigatella paupercula* (Linnaeus) : Ray, *Mem. Indian Mus.*, 14 (1) : 61, pl. 3, fig. 3.
 1976. *Mitra (Strigatella) paupercula* (Linnaeus) : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 477, pl. 258, figs. 1-3, pl. 428, pl. 430, figs. 1-4.

Specimens studied : 36 exs., Andamans.

Distribution : India : Andaman and Nicobar Islands. Red sea to Polynesia and the Hawaiian Islands.

Description : Shell ovately-oblong, chocolate with wavy white axial streaks, body whorl smooth, corded at the base, whorls eight, spire acuminate, aperture as long as the spire, outer lip smooth, columella with four oblique folds.

Habitat : Under rocks and basal boulders, throughout the reef flat, but more frequently near the high tide mark, usually shallow water of the intertidal zone, but rarely upto 2 fathoms.

Measurements (in mm) :

Length	Width	Height of the aperture
25.41	11.08	15.73
18.42	9.08	11.13
12.24	6.45	7.73

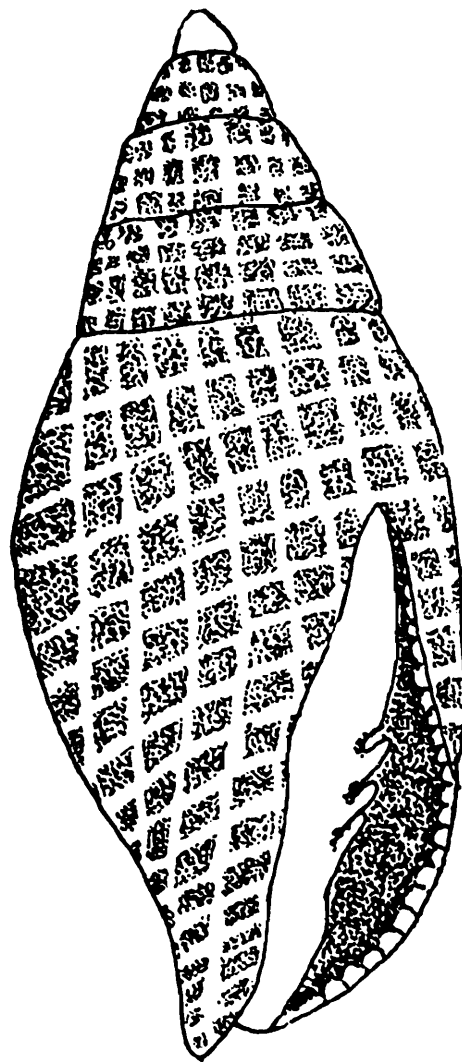
Mitra (Strigatella) pellisserpentis pellisserpentis Reeve, 1844
(Fig. 6)

1844. *Mitra pellisserpentis* Reeve, *Conch. Icon.*, 2: *Mitra* sp. no. 66, pl. 10, fig. 66 (type locality, Islands of Mindoro and Bohol, Philippines).
1976. *Mitra pellisserpentis pellisserpentis* Reeve : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 495, pl. 258, figs. 33-37, pl. 447, figs. 1-9.

Specimens studied : 3 exs., Madras.

Distribution : India : Tamil Nadu. Mauritius to Polynesia.

Description : Shell elongate-ovate, solid, orange brown or yellowish orange in colour, sutures impressed, spire acuminate, sculptured with spiral rows of small granules, weakly developed on the body whorl,



5 mm

Fig. 6. *Mitra (Strigatella) pellisserpentis pellisserpentis* Reeve

irregular and slender axial riblets, aperture longer than the spire, narrow and smooth, columella with 4 oblique folds, outer lip thickened and crenulated.

Habitat : On reefs, under rocks, coral, coral rubble and in crevices of living coral, from intertidal zone to 2 fathoms (Cernohorsky, 1976).

Measurements (in mm) :

Length	Width	Height of the aperture
22.46	9.23	11.75

Mitra (Strigatella) retusa Lamarck, 1811

(Fig. 7)

1811. *Mitra retusa* Lamarck, *Ann. Mus. d'Hist. Nat. Paris*, 17 : no. 61 (type locality, Indian Ocean).
 1976. *Mitra (Strigatella) retusa* Lamarck : Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 481, pl. 258, figs. 6-8, pl. 431, figs. 1, 2.

Specimens Studied : 4 exs., Andamans.

Distribution : India : Andaman and Nicobar Islands. Seychelles Island to Tonga and Samoa.

Description : Shell ovately-cylindrical, dark reddish brown, ornamented with longitudinal wavy white lines and a narrow white transverse band below the suture, spire shorter, blunt, whorls five, aperture longer than the spire, columella with four oblique folds, outer lip thick with 10-12 crenulations, slightly compressed in the middle.

Habitat : On reef, under rocks and coral, in the intertidal zone.

Measurements (in mm) :

Length	Width	Height of the aperture
19.85	10.70	12.65
16.17	9.50	10.78

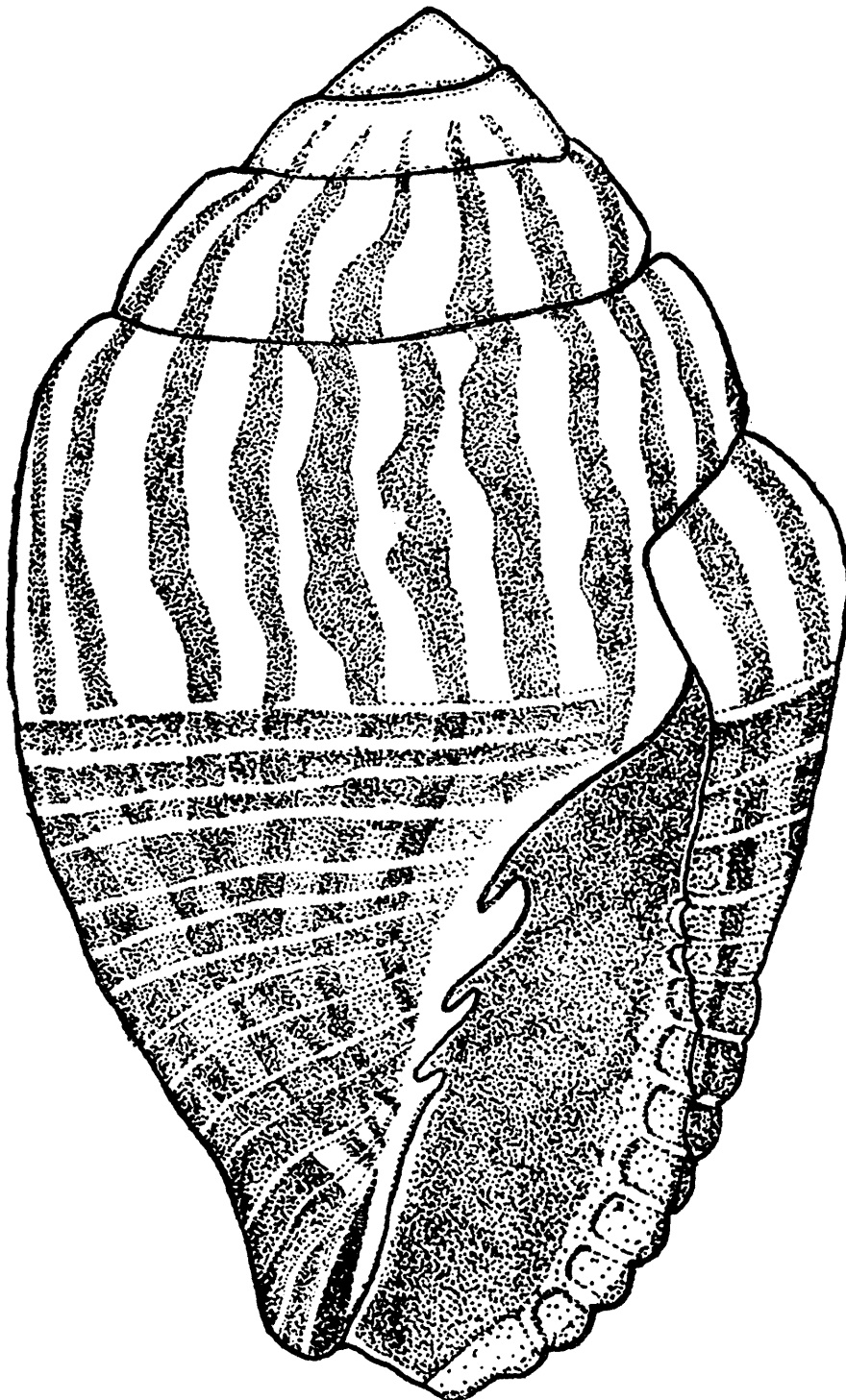
Mitra (Strigatella) scutulata (Gmelin, 1791)

(Pl. II, fig. 21)

1791. *Voluta scutulata* Gmelin, *Syst. Nat.* ed 13 : 3452 (refers to Chemnitz, *Conch. Cab.*, figs. 1428 and 1429).
 1954. *Strigatella scutulata* (Schroter) : Ray, *Mem. Indian Mus.*, 14 (1) : 65, pl. 3, figs. 1 and 1a.

1976. *Mitra (Strigatella) scutulata* (Gmelin): Cernohorsky, *Indo-Pacific Mollusca*, 3 (17) : 488 pl. 258, figs. 17-20, pl. 439, figs. 1, 2.

Specimens studied : i) 1 ex., Madras ii) 1 ex., Bombay iii) 14 exs., Gujarat iv) 6 exs., Goa v) 6 exs., Andamans.



5mm

Fig. 7. *Mitra (Strigatella) retusa* Lamarck

Distribution : India : Gujarat, Maharashtra, Goa, Tamil Nadu and Andaman and Nicobar Islands. Gulf of Aden to India and Polynesia.

Description : Shell thick, ovate, chocolate brown, interrupted with a yellowish band below the suture of each whorl, sculpture with spiral ridges, whorls 7 to 8, columella with four oblique folds, outer lip thick and smooth.

Remarks : The specimens from Goa are dark in colour.

Habitat : On reef, under rock and coral, from intertidal zone to 3 fathoms.

Measurements (in mm) :

Length	Width	Height of the aperture
49.05	22.05	27.98
38.08	17.16	21.50
31.08	14.12	16.87

Sub family IMBRICARIINAE Troschel, 1867

1867. *Imbricariinae* Troschel, *Geb. Schnecken*, 1: 86 (nom. corr. Gill 1871-ex *Imbricarina*).

Shell with variable outline, slender, elongated, fusiform, spire elongated, sculpture with annulated spiral ridges and bisect by axial grooves, aperture narrow and longer than the spire, outer lip thick, sometimes crenulated.

In the shell characters the sub family resembles mostly with the subfamily Mitrinae except in having prominent annulated spiral ridges.

Key to the Genera

1. Shell coniform, spire depressed, length of aperture more than twice that of the spire *Imbricaria* Schumacher
- Shell fusiform or elongately-ovate, spire not depressed, length of aperture twice or less than twice that of the spire 2
2. Sculptured without angulated spiral ridges 3
- Sculptured with angulated spiral ridges 4
3. Sculptured with deeply spaced punctated spiral grooves, but obsolete at the base *Scabricola* Swainson
- Sculptured with spiral ridges and bisect by axial grooves *Neocancilla* Cernohorsky
4. Columella upto 4 oblique folds *Subcancilla* Olsson and Harbison
- Columella with more than 4 oblique folds 5
5. Outer lip not crenulated *Domiporta* Cernohorsky
- Outer lip weakly crenulated *Cancilla* Swainson

Genus **Neocancilla** Cernohorsky, 1966
(Type species, *Voluta papilio* Link, 1807)

1966. *Neocancilla* Cernohorsky, *The Veliger*, 9 (2) : 110.

Shell elongated, fusiform, variously coloured and ornamented with few bands on the body whorl. Sculptured with spiral ridges and bisect by axial grooves, aperture narrow, longer than the spire, outer lip thick, sometimes crenulated, columella with 4-6 oblique folds.

Key to the Species

- | | |
|--|-------------------------------|
| 1. Sculptured with angulated spiral ridges | <i>N. circula</i> Kiener |
| — Sculptured with spiral ridges bisected by axial grooves | 2 |
| 2. Aperture twice longer than spire | <i>N. antoniae</i> H. Adams |
| — Aperture less than twice longer than spire | 3 |
| 3. Spiral ridges less elevated, axial grooves less prominent, shell without bluish black dots | 4 |
| — Spiral ridges more elevated, axial grooves less prominent, shell with bluish black dots on the body whorl | <i>N. papilio</i> (Link) |
| 4. Spiral ridges less than fifteen on the body whorl, spire almost of equal length as the body whorl, body with brownish bands | <i>N. clathrus</i> Gmelin |
| — Spiral ridges more than fifteen on the body whorl, spire longer than bodywhorl, body with reddish brown bands | <i>N. granatina</i> (Lamarck) |

Neocancilla antoniae (H. Adams, 1870)
(Pl. II, fig. 22)

1870. *Mitra Antoniae* H. Adams, *Proc Zool. Soc. Lond.*: p. 788 (type locality, not given).
1967. *Neocancilla antoniae* (H. Adams) : Cernohorsky, *Marine Shells of the Pacific*, p. 154, pl. 35, fig. 236.

Specimens studied : 1 ex. Andamans.

Distribution : India : Andaman and Nicobar Islands. Red Sea to Fiji.

Description : Shell fusiformly ovate, ornamented with small orange brown quadrate spots on the spiral ridges and faint rose coloured streaks, sutures impressed, broad spiral ridges alternating with narrow ones, axial spiral grooves bisect spiral ridges, whorls seven, columella with five oblique folds, outer lip weakly crenulated.

Habitat : On coral fragment substrate (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
28.00	11.58	16.92

***Neocancilla circula* (Kiener, 1838)**

(Pl. III, fig. 26)

1838. *Mitra circula* Kiener, *Icon. Coq. Viv.*, 3 : 21, pl. 5, fig. 13 (type locality, Unknown).
 1954. *Cancilla circula* (Kiener) : Ray, *Mem. Indian Mus.*, 14 (1) : 34, pl. 11, fig. 2.
 1967. *Cancilla circula* (Kiener) : Cernohorsky, *Marine Shells of the Pacific*, p. 155, pl. 35, fig. 24.
 1972. *Neocancilla circula* (Kiener) : Cernohorsky, *Rec. Auckland Inst. & Mus.*, 9 : 198, figs. 4, 10.

Specimens studied : i) 16 exs. Andamans ii) 3 exs. Madras.

Distribution : India : Tamil Nadu, Andaman and Nicobar Islands. Throughout Indo-pacific.

Description : Shell acuminate fusiform, brown, occasionally with orange lines on spiral ridges, spire sharp, sculptured with strong sharp elevated and distinctly placed spiral ridges, interstices distinctly cancellated with fine axial striae, the base contracted and slightly recurved, aperture longer, outer lip crenulated, columella with four oblique folds.

Remarks : This species shows the characters of the genus *Cancilla* in having angulated spiral ridges on the sculpture. The characteristic spiral ridges bisected by axial grooves which is a very common character for the genus *Neocancilla* is absent in the species. But the radula is a typical *Neocancilla* type (Cernohorsky, 1972) due to which it is placed under genus *Neocancilla*.

Habitat : In sand (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
33.00	7.10	13.32
13.64	4.41	7.34

Neocancilla clathrus (Gmelin, 1791)

(Pl. II, fig. 23)

1791. *Mitra clathrus* Gmelin, *Syst. Nat.* ed 13 : p. 3457 (type locality, Unknown).
 1967. *Neocancilla clathrus* (Gmelin) : Cernohorsky, *Marine Shells of the Pacific*, p. 154, pl. 35, fig. 238.

Specimens studied : 1 ex. Andamans.

Distribution : India : Andaman and Nicobar Islands. Red sea to Philippines and north to China sea.

Description : Shell elongately ovate, yellowish with two irregular rows of clouded bands of chocolate colour, whorls nine, sculpture with spiral ridges bisect by axial grooves, columella with 4 - 5 oblique folds, outer lip bluntly crenulated.

Habitat : In sand and weed (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
17.98	5.65	8.60

Neocancilla granatina (Lamarck, 1811)

(Pl. II, fig. 24)

1811. *Mitra granatina* Lamarck, *Ann. Mus. d'Hist. Nat. Paris*, 17 : no. 19 (type locality, Indian Ocean).
 1967. *Neocancilla granatina* : (Lamarck) : Cernohorsky, *Marine Shells of the Pacific*, p. 154, pl. 35, fig. 239.

Specimens studied : 7 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Throughout tropical Indo-pacific.

Description : Shell elongately ovate, whitish, encircled with lightbrown lines, body decussate, spire acuminate, whorls seven, columella with four oblique folds, outer lip crenulated.

Habitat : In sand (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
42.20	13.38	22.34
14.27	5.84	11.26

Neocancilla papilio (Link, 1807)

(Pl. II, fig. 25)

1807. *Voluta papilio* Link, *Beschr. Nat. Samml. Univ. Rostock*, p. 127 (type locality?).
 1967. *Neocancilla papilio* (Link) : Cernohorsky, *Marine Shells of the Pacific*, p. 155, pl. 32, fig. 210.

Specimens studied : 7 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Throughout Indo-pacific.

Description : Shell elongately ovate, whitish, encircled with light brown lines, body decussate, spire acuminate, whorls seven, columella with four oblique folds, outer lip crenulated.

Habitat : In sand (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
47.75	16.59	27.55
43.42	15.56	24.24

Genus *Cancilla* Swainson, 1840

(Type species, *Tiara isabella* Swainson, 1831 ; Subsequent designation, Herrmannsen, 1846)

1840. *Cancilla* Swainson, *Treat. Malac.* pp. 130, 320.
 1970. *Cancilla* Swainson : Cernohorsky, *Bull. Auckland Inst. & Mus.*, 8 : 47.

Shell slender, fusiform, elevated revolving ridges on whorls, axial ribs keel like, sculpture with narrow or angulated spiral ridges, outer lip thin, no teeth inside, inner lip with ridges.

Key to the Species

- | | |
|---|----------------------------------|
| 1. Sculptured with elevated spiral ridges and punctated spiral grooves | 2 |
| — Sculptured with keel like spiral ridges and non-punctated spiral grooves | <i>C. philippinarum</i> A. Adams |
| 2. Shell acuminately fusiform, spiral ridges more elevated | <i>C. interlirata</i> (Reeve) |
| — Shell elongately fusiform, spiral ridges less elevated white and brown colour | <i>C. isabella</i> (Swainson) |

***Cancilla interlirata* (Reeve, 1844)**
(Pl. III, fig. 28)

1844. *Mitra interlirata* Reeve, *Proc. Zool. Soc. Lond.*, pp. 172, 182.
 1954. *Cancilla interlirata* (Reeve) : Ray, *Mem. Indian Mus.*, **14** (1) : 36, pl. 2, fig. 3.
 1967. *Cancilla interlirata* (Reeve) : Cernohorsky, *Marine Shells of the Pacific*, p. 156, pl. 36, fig. 245.

Specimens studied : i) 1 ex. Sandheads ii) 3 exs. Andamans.

Distribution : India : Orissa, West Bengal, Andamans and Nicobar Islands. Mauritius to Polynesia and Hawaiian Islands.

Description : Shell elongate, white, with irregular brown patches, spire acuminate, sculptured with intermediate lirae in the interstices between the sharp raised spiral ridges, and distinct cancellations formed longitudinal striae, aperture longer than the spire, whorls seven, columella with five oblique folds, outer lip thin, weakly crenulated.

Habitat : In sand and weed (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
37.34	10.76	22.30
16.92	5.90	10.50

***Cancilla isabella* (Swainson, 1831)**
(Pl. III, fig. 29)

1831. *Tiara isabella* Swainson, *Zool. Illust.*, (2) **11** : pl. 5, fig. 1 (type locality, China).
 1954. *Cancilla isabella* (Swainson) : Ray, *Mem. Indian Mus.*, **14** (1) : 32, pl. 2, fig. 1.

Specimens studied : 3 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Andamans to Philippines and Japan.

Description : Shell elongately fusiform, light orange or brown, spire acuminate, suture deep, sculptured with numerous slender, close set elevated revolving ribs and fine longitudinal striae giving punctated appearance, body whorl contracted below, whorls seven, columella with five oblique folds, outer lip weakly crenulated.

Habitat : Unknown.

Measurements (in mm) :

Length	Width	Height of the aperture
46.14	14.16	27.26
33.58	10.38	21.00

***Cancilla philippinarum* (A. Adams, 1851)**

(Pl. 111, fig. 30)

1851. *Mitra philippinarum* A. Adams, *Proc. Zool. Soc. Lond.*, p. 141, sp. no. 52 (type locality, Philippines).
 1967. *Cancilla philippinarum* (A. Adams): Cernohorsky, *Marine Shells of the Pacific*, p. 158, pl. 36, fig. 247.

Specimens studied : 28 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Andamans to Polynesia and north to China sea.

Description : Shell elongately ovate, greyish white, spire acuminate, whorls nine, encircled with rounded ridges, aperture longer than the spire, columella with six oblique folds, outer lip crenulated.

Remarks : It is very similar to *S. flammea* but differs from it in having punctated axial grooves.

Cernohorsky (in litt.) informs us that it occurs only in China, Japan, Taiwan and Fiji. Our collection agrees well with the description and figures. The occurrence of the species is thus interesting and extends its distribution into Indian Ocean.

Habitat : In sand and weed (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
31.35	10.90	18.60
19.29	6.79	11.42

Genus *Subcancilla* Olsson and Harbison, 1953

(Type species, *Mitra sulcata* Swainson, 1825 ; Original designation)

1953. *Subcancilla* Olsson and Harbison, *Acad. Nat. Sci. Philad.*, Mon. No. 8 : 190.
 1972. *Subcancilla* Olsson and Harbison : Cernohorsky, *Rec. Auckland Inst. & Mus.*, 9 : 198.

Shell subfusiform, sculpture with sharp, regular ridges or keeled spiral between concave intervals, aperture almost equal to spire, columella with 3-4 folds, anterior canal present.

Subcancilla flammea (Quoy and Gaimard, 1833)

(Pl. III, fig.27)

1833. *Mitra flammea* Quoy and Gaimard, *Voy, Astrolabe*, 2 : 659, pl. 45, bis., figs. 23-25.
 1844. *Mitra flammigera* Reeve, *Coch. Icon*, 2 : *Mitra* sp. no. 173, pl. 22, figs. 17a, b.
 1967. *Cancilla flammea* (Quoy and Gaimard) : Cernohorsky, *Marine shells of the Pacific*, p. 155, pl. 36, fig. 242.
 1972. *Subcancilla flammea* (Quoy and Gaimard) : Cernohorsky, *Rec. Auckland Inst. & Mus.*, 9 : 198.

Specimens studied : 1 ex. Andamans.

Distribution : India : Andaman and Nicobar Islands. Mauritius to Fiji.

Description : Shell shortly fusiform, white, ornamented with chestnut brown axial flames, spire acuminate, sculpture with angulated spiral ridges and punctated spiral grooves, aperture longer than the spire, whorls eight, columella with four oblique folds, outer lip crenulated.

Remarks : This species is very much similar to that of the genus *Cancilla* but in the radula characters it resembles the genus *Subcancilla* (Cernohorsky, 1972).

Habitat : In sand (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
25.62	8.92	14.86

Genus Domiporta Cernohorsky, 1970

(Type species, *Voluta filiaris* Linnaeus, 1771)

1970. *Domiporta* Cernohorsky, *Bull. Auckland Inst. & Mus.*, 8 : 49.

Shell fusiform, white, ornamented with irregular patches or continuous brown spiral lines, spire elongated, axial grooves deep, interstices with transverse threads or with punctated lines ; aperture longer than the spire, columella with 4-6 oblique folds, outer lip thin, not crenulated.

Key to the Species

Elevated spiral ridges, bisected by punctated axial grooves, aperture longer than the spire *D. rufilirata* Adams & Reeve

Prominent spiral ridges, interrupted by brown spiral lines, axial grooves not punctated, aperture as long as the spire *D. praestantissima* Roeding

Domiporta praestantissima (Roeding, 1798)

(Pl. III, fig. 31)

1798. *Mitra praestantissima* Roeding, *Mus. Boltenianum*, p. 138.

1967. *Cancilla praestantissima* (Roeding) : Cernohorsky, *Marine Shells of the Pacific*, p. 158, pl. 37, fig. 250.

Specimens studied : 3 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Throughout the tropical Indo-pacific.

Description : Shell elongately fusiform, white, ornamented with continuous brown spiral lines on the ridges, axial grooves deep, interstices of spiral ridges with transverse threads, aperture white, long as spire, columella with 4 - 5 oblique folds.

Remarks : It is very much similar to another Indo pacific form *Cancilla filaris* (Linnaeus), but can be distinguished from it in having much elongated spire.

Habitat : In sand and weed (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
32.94	9.54	15.42
29.08	8.28	13.96

Domiporta rufilirata (Adams and Reeve, 1850)

(Pl. 111, fig. 32)

1850. *Mitra rufilirata* Adams and Reeve, *Zool. Voy. Samarang Moll.*, p. 26, pl. 10, fig. 26 (type locality, China Sea).

1954. *Cancilla rufilirata* (Adams and Reeve) : Ray, *Mem. Indian Mus.*, 14 (1) : 38, pl. 2. fig. 4.

Specimens studied : 8 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. From Andaman Islands to Buton and North to China Sea.

Description : Shell ovately fusiform, white with irregular brown patches, spire acuminate, sharp, surface nicely transversely lirated, the interstices of which appearing clathrate, suture impressed, whorls nine, ventricose, aperture longer than the spire, columella with six oblique folds, outer lip not crenulated.

Remarks : Tryon and Paetel unhesitatingly merged it with *Mitra flammea* as a synonym, but it is quite distinct in shell characters.

Measurements (in mm) :

Length	Width	Height of the aperture
25.32	8.55	15.35

Genus *Imbricaria* Schumacher, 1817

(Type species, *Imbricaria conica* Schumacher, 1817 = *Mitra conularis* Lamarck, 1811)

1817. *Imbricaria* Schumacher, *Ess. Nouv. Syst.*, pp. 71, 236.

1821. *Conohelix* Swainson, *Zool. Illust.*, ser I, 1 : pl. 24.

Shell coniform, often covered with epidermis, spire depressed, conical, apex mucronate, aperture linear, larger, columella straight with numerous transverse imbricated plaits in the middle, outer lip thickened.

Imbricaria punctata (Swainson, 1821)

(Text fig. 8)

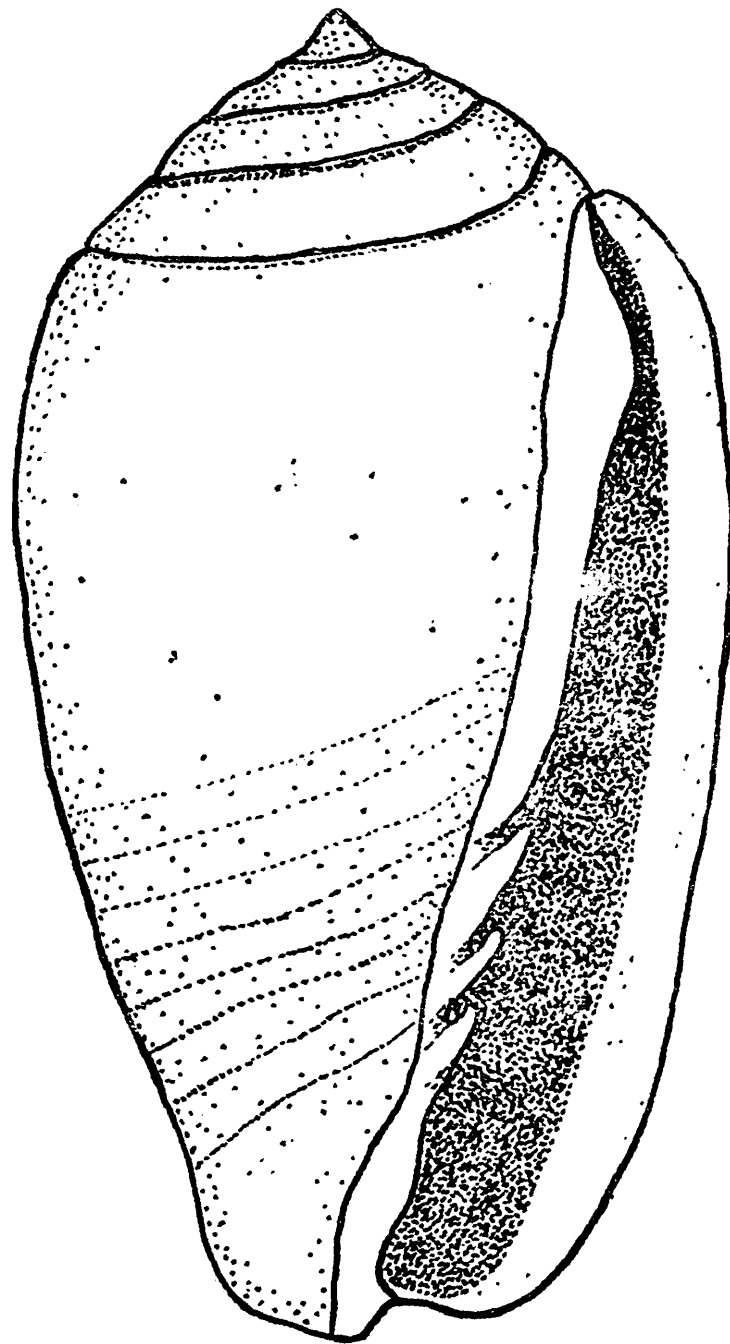
1821. *Conohelix punctata* Swainson, *Zool. Illust.*, 1st series, vol. 1, pl. 24 (type locality, "O Taheite").

1967. *Imbricaria punctata* Swainson : Cernohorsky, *Marine Shell of the Pacific*, p. 160, pl. 37, fig. 256.

Specimens studied : 1 ex. Andamans.

Distribution : India : Andaman and Nicobar Islands. Mauritius to Polynesia.

Description : Shell conical, with punctate spiral lines, upper part rounded, spire short, columella with six oblique folds, outer lip thin, smooth.



5 mm

Fig. 8. *Imbricaria punctata* (Swainson)

Habitat : Unknown.

Measurements (in mm) :

Length	Width	Height of the aperture
14.14	7.13	12.45

Genus **Scabricola** Swainson, 1840

(Type species, *Mitra serpantina* Lamarck = *Voluta variegata* Gmelin, 1741 ; subsequent designation Gray, 1847)

1840. *Scabricola* Swainson, *Treat. Malac.*, p. 130, 131.

1970. *Scabricola* Swainson : Cernohorsky, *Bull. Auckland Inst. & Mus.*, 8 : 44.

Mitra shaped, pyramidal or obiviform, granulated or smooth, sculpture with wide spaced deeply punctate spiral grooves, grooves obsolete at the base, outer lip thick.

Key to the Subgenera

Mitre shape or pyramidal, granulated or scabrous	<i>Scabricola</i> Swainson
Oliviform, smooth, polished	<i>Swainsonia</i> H. & A. Adams

Subgenus **Scabricola** Swainson, 1840

Mitra shape or pyramidal, granular or scabrous.

Scabricola (Scabricola) caerulea (Reeve)

(Pl. 1, fig. 2)

1844. *Mitra caerulea* Reeve, *Proc. Zool. Soc., Lond*, p. 176 part, 12 (type locality, Isle of Ticao, Philippines).

1882. *Mitra caerulea* Reeve : Tryon, *Man, Conch.*, 4 : 114, pl. 33, fig. 18.

Specimens studied : 11 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Andamans to Philippines.

Description : Shell fusiformly oblong, whitish with chestnut bands on the body whorls, grooves narrow and distinct, spiral whorls punctated with axial and spiral striae, whorls nine, spire acuminate, aperture longer than the spire, columella with five oblique folds, outer lip crenulated.

This species was not mentioned by Cernohorsky (1976).

Habitat : Unknown.

Measurements (in mm) :

Length	Width	Height of the aperture
24.86	9.27	14.88
15.38	6.25	9.16

Scabricola (Scabricola) coriacea (Reeve, 1845)

(Text fig. 9)

1845. *Mitra coriacea* Reeve, *Proc. Zool. Soc. Lond.*, p. 47 (type locality, Isle of Corrigator, Philippines).

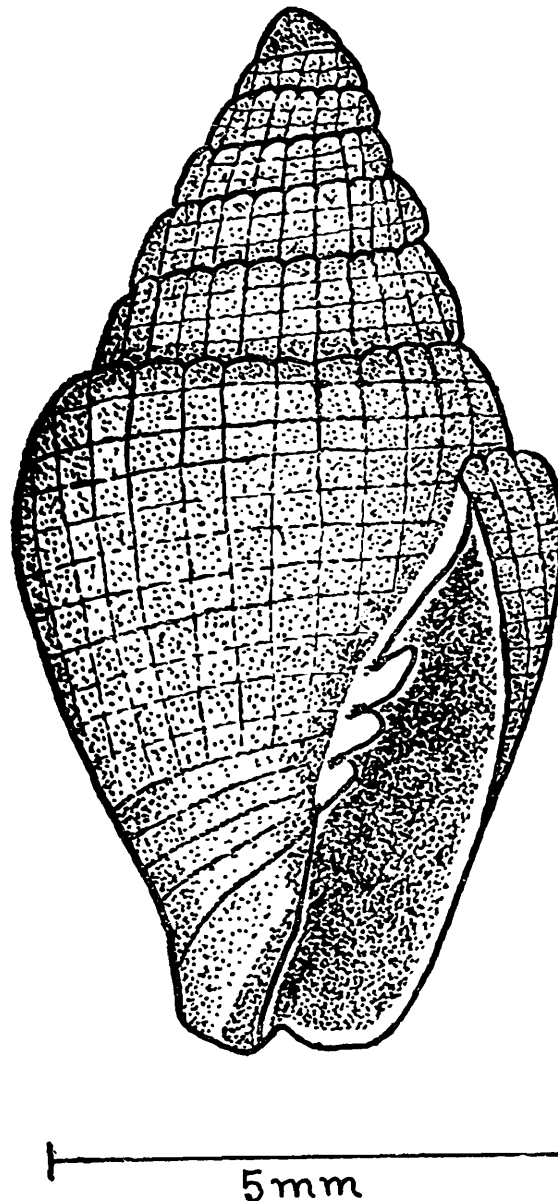


Fig. 9. *Scabricola (Scabricola) coriacea* (Reeve)

Specimens studied : 2 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Throughout Indo-pacific.

Description : Shell ovate, yellowish, spire acuminate, shorter than the aperture, body with eight whorls, spiral ridges transversely striated, striations on the spiral whorls and first two rows of the body whorls granular, rest continuous and distinct, columella with five oblique folds.

Habitat : Unknown

Measurements (in mm) :

Length	Width	Height of the aperture
10.80	5.16	6.36

Subgenus **Swainsonia** H. and A. Adams, 1853

(Type species, *Mitra fissurata* Lamarck art 67i of ICZN)

1831. *Mitrella* Swainson, *Zool. Illustr.*, ser. 2, vol. 2, pl. 54.

1853. *Swainsonia* H. & A. Adams, *Gen. Rec. Moll.*, 1 : 180.

1970. *Swainsonia* H. & A. Adams, Cernohorsky, *Bull. Auckland Inst. & Mus.*, 8 : 45.

Shell smooth, oliviform, polished, ornamented with whitish lines arranged in pattern. Sculptured with punctostriate grooves, aperture longer than the spire, columella with 4-6 folds.

Scabricola (Swainsonia) fusca (Swainson, 1831)

(Pl. 111 fig. 33)

1831. *Mitrella fusca* Swainson, *Zool. Illustr.*, 2nd series, Mitrinae pl. 6, (Type locality, not given).

Specimens studied : i) 1 ex. Pondicherry ii) 1 ex. Puri.

Distribution : India : Pondicherry, Orissa.

Description : Shell ovate, white, with pale white-flecked band, spiral grooves throughout the body, punctate, whorls six, columella with four oblique folds, aperture whitish, outer lip crenulated.

Habitat : Unknown.

Measurements (in mm) :

Length	Width	Height of the aperture
17.86	6.95	10.06
8.63	3.78	4.75

Subfamily **CYLINDROMITRINAE** Cossmann, 1899

1899. *Cylindromitrine* Cossmann, *Ess. Paleoc. Comp.*, 3 : 152 (art. 40, ICZN)

Shell cylindrical with depressed spire, sculptured with several spiral striae, columella straight and with several (more than five) oblique folds, aperture longer than the spire, outer lip thickened, smooth or crenulated.

Genus **Pterygia** Roeding, 1798

(Type species, *Pterygia nucella* Roeding, 1798 = *Voluta dactylus*,
Linnaeus ; Subsequent designation Dall, 1915)

1798. *Pterygia* Roeding., *Mus. Bolten.*, p. 51.
 1970. *Pterygia* Roeding : Cernohorsky, *Bull. Auckland Inst. & Mus.*, **8** : 41.
 1817. *Cylindra* Schumacher, *Ess. nouv. Syst.*, pp. 71, 236, (non *Cylindra* Illiger, 1902).
 1929. *Acuticylindra* Iredale, *Mem. Queensland Mus.*, **9** (3) : 287.

Shell cylindrical, spire conical, aperture linear, columella straight with several (more than five) oblique folds, outer lip thickened, smooth within, but sometimes crenulated.

Key to the Species

- | | |
|---|--------------------------------|
| 1. Shell elongated, oliviform | <i>P. crenulata</i> Gmelin |
| — Shell not elongated, cylindrical | 2 |
| 2. Sculptured with axial ribs only | <i>P. dactylus</i> (Linnaeus) |
| — Sculptured with step like spiral ridges and bisecting axial grooves | <i>P. fenestrata</i> (Lamarck) |

Pterygia crenulata (Gmelin, 1791)

(Pl. 111 fig. 34)

1817. *Voluta crenulata* Gmelin, *Syst. Nat.* ed 12, p. 3452, no. 130 (type locality, not given).
 1967. *Pterygia crenulata* (Gmelin) : Cernohorsky, *Marine Shells of the Pacific*, p. 161, pl. 38, fig. 259.

Specimens studied : 2 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Throughout Indo-pacific.

Description : Shell cylindrical-ovate, white, ornamented with irregular orange brown zones, sculptured with punctated spiral lines bisecting axial striae, whorls seven, spire short, aperture longer than the spire, columella with 7-9 oblique folds, outer lip thick and crenulated.

Habitat : In sand (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
28.70	11.06	24.35
20.30	7.25	15.74

***Pterygia dactylus* (Linnaeus, 1767)**

(Pl. 111 fig. 35)

1767. *Voluta dactylus* Linnaeus, *Syst. Nat.* ed 12 : p. 1188 (type locality, Bay of Bengal).
1954. *Cylindromitra dactylus* (Linnaeus) : Ray, *Mem. Indian Mus.*, 14 (1) : 70, pl. 57, fig 6.

Specimens studied : i) 5 exs. Andamans ii) 2 exs. Singapore.

Distribution : India : Andaman and Nicobar Islands. Throughout the tropical Indo-pacific.

Description : Shell ovate, white, banded with chestnut or dark brown colour, spiral striae shallow, spire decussated, conical, whorls seven, body whorls sometimes slightly slender, columella with six oblique folds, outer lip thick and crenulated.

Good synonymy and remarks were given by Ray (1954).

Habitat : In sand (Cernohorsky, 1967)

Measurements (in mm) :

Length	Width	Height of the aperture
39.16	20.10	30.40
26.45	14.34	21.94

***Pterygia fenestrata* (Lamarck, 1811)**

(Pl. 111 fig. 36).

1811. *Mitra fenestrata* Lamarck, *Ann. Mus. d'Hist. Nat. Paris*, 17 : no. 45 (type locality, Indian Ocean).
1967. *Pterygia fenestrata* Lamarck : Cernohorsky, *Marine Shells of the Pacific*, p. 162, pl. 38, fig. 261.

Specimens studied : 6 exs. Andamans.

Distribution : India : Andaman and Nicobar Islands. Extending up to Polynesia.

Description : Shell cylindrical-ovate, white, ornamented with reddish brown spiral bands, sculptured with sharp regular nodulose, spiral ridges bisecting obtuse, rude axial grooves, spire very short, aperture longer than the spire, whorls seven, columella with 8-9 oblique folds, outer lip thick and crenulated.

Habitat : In sand (Cernohorsky, 1967).

Measurements (in mm) :

Length	Width	Height of the aperture
21.42	11.51	18.10
17.51	8.72	13.85

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PLATE I

	Length (mm)	Width (mm)
1. <i>Mitra (Mitra) ambigua</i> Swainson	55.08	20.91
2. <i>Scabricola (Scabricola) caeruleas</i> Reeve	24.55	8.88
3. <i>Mitra (Mitra) cardinalis</i> Gmelin	59.65	23.03
4. <i>Mitra (Mitra) guttata</i> Swainson	34.84	12.50
5. <i>Mitra (Mitra) imperialis</i> Roeding	45.02	17.24
6. <i>Mitra (Mitra) mitra</i> Linnaeus	66.58	19.80
7. <i>Mitra (Mitra) stictica</i> Link	51.00	20.78
8. <i>Mitra (Nebularia) aurantia subruppeli</i> Finlay	31.28	14.60
9. <i>Mitra (Nebularia) contracta</i> Swainson	38.32	13.03
10. <i>Mitra (Nebularia) cucumerina</i> Lamarck	26.45	14.60
11. <i>Mitra (Nebularia) doliolum</i> Kuster	22.06	8.80
12. <i>Mitra (Nebularia) luctuosa</i> A. Adams	21.68	7.84

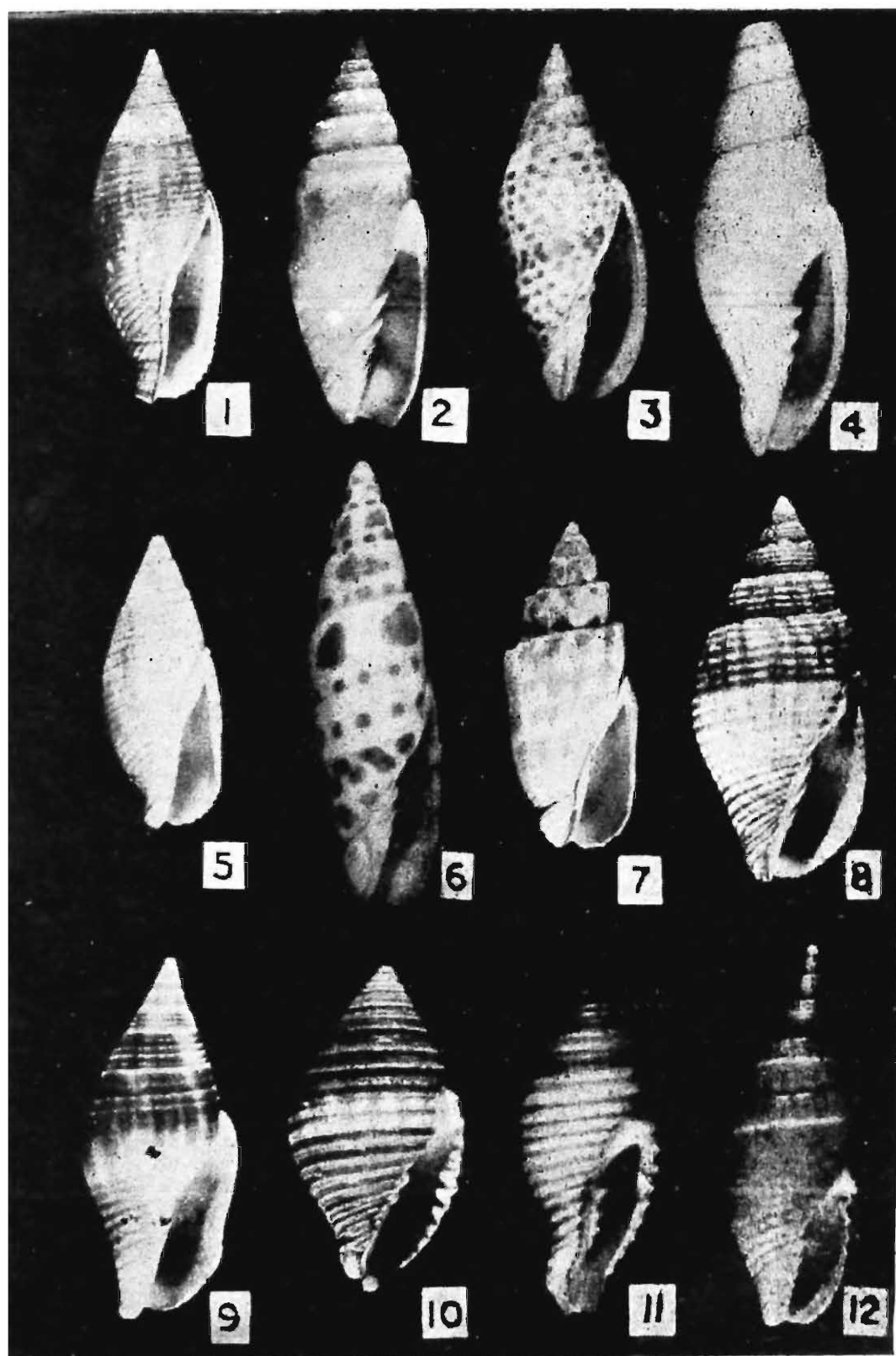


PLATE II

	Length (mm)	Width (mm)
13. <i>Mitra (Nebularia) maesta</i> Reeve	18.20	6.84
14. <i>Mitra (Nebularia) rupellii</i> Reeve	9.20	3.58
15. <i>Mitra (Nebularia) ticaonica</i> Reeve	22.35	10.14
16. <i>Mitra (Strigatella) acuminata</i> Swainson	25.79	10.24
17. <i>Mitra (Strigatella) colombelliformis</i> Kiener	30.16	13.25
18. <i>Mitra (Strigatella) decurtata</i> Reeve	30.95	17.18
19. <i>Mitra (Strigatella) paupercula</i> Linnaeus	22.88	10.76
20. <i>Mitra (Nebularia) tabanula</i> Lamarck	10.85	5.32
21. <i>Mitra (Strigatella) scutulata</i> Gmelin	36.10	15.38
22. <i>Neocancilla antoniae</i> H. Adams	27.80	10.28
23. <i>Neocancilla clathrus</i> Gmelin	17.98	5.65
24. <i>Neocancilla granatina</i> Lamarck	42.05	13.56

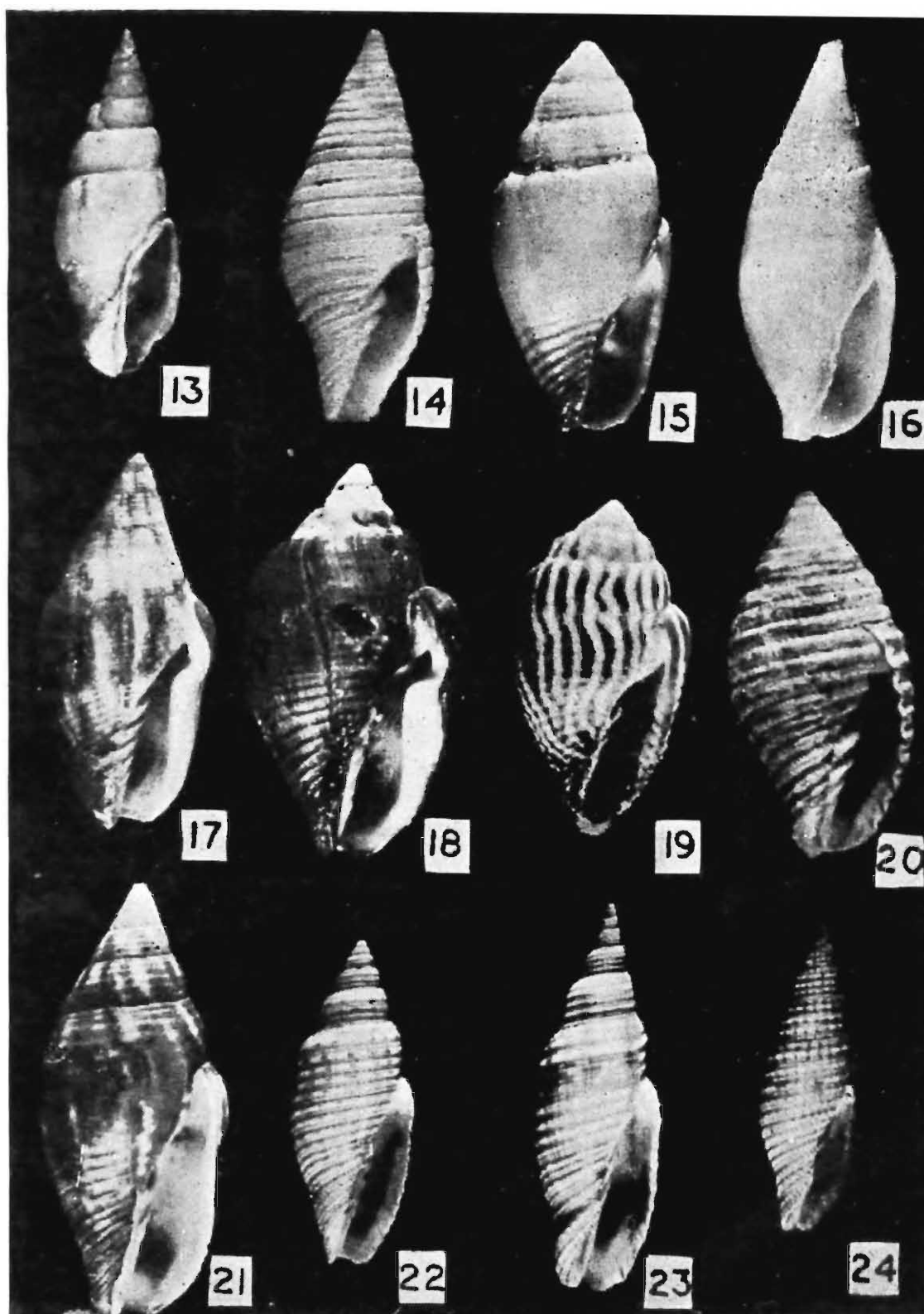


PLATE III

	Length (mm)	Width (mm)
25. <i>Neocancilla papilio</i> Link	47.06	15.90
26. <i>Neocancilla circula</i> Kiener	23.00	7.90
27. <i>Cancilla (Cancilla) flammea</i> Quoy & Gaimard	25.28	8.85
28. <i>Cancilla (Cancilla) interlirata</i> Reeve	37.03	10.75
29. <i>Cancilla (Cancilla) isabella</i> Swainson	46.06	15.90
30. <i>Cancilla (Cancilla) philippinarum</i> A. Adams	31.36	10.06
31. <i>Cancilla (Domiporta) praestantissima</i> Roeding	32.81	9.62
32. <i>Cancilla (Domiporta) rufilirata</i> Adams & Reeve	29.40	9.38
33. <i>Scabricola (Swainsonia) fusca</i> Swainson	8.63	3.78
34. <i>Pterygia crenulata</i> Gmelin	33.18	13.08
35. <i>Pterygia dactylus</i> Linnaeus	38.22	20.62
36. <i>Pterygia fenestata</i> Lamarck	21.44	12.15

