

The Marine Mollusca of Christmas Island, Indian Ocean.

By J. R. LE B. TOMLIN

A collection of marine Mollusca, made by Mr. M. W. F. Tweedie, Assistant Curator of the Raffles Museum, in August and September 1932, was sent to me for identification. This collection, numbering rather over 100 species, combined with others made in the past, gives us, for the first time, an adequate idea of the marine Mollusca to be found on the Christmas Island littoral. Including some half dozen species from deep water the total now reaches about 170, with fairly equal relationships to the areas on either side. Owing to the Equatorial Current there are probably very few items on the Christmas Island list which do not occur on one or other of the Mascarene Islands. The connection with the Pacific side is particularly emphasized by the occurrence of several small gastropods which seem mainly characteristic of the Pacific area—say, roughly, from the Philippines to Hawaii on the east, and to the Paumotus in the south-east. Such are *Rissoina ambigua*, *R. triticea* and *R. turricula*, *Royella sinon*, *Cerithium zebrum* and *C. egenum*, *Triphora rubra* and *T. violacea*, and several *Engina*. There are not a few others which will eventually prove to belong to this group, when material from a number of localities is available.

¹. Echinoderm Fauna of Torres Straits, Carnegie Inst., Washington, 1921, p. 59.

THE MARINE MOLLUSCA OF CHRISTMAS ISLAND

I have followed the systematic order of Thiele's *Handbuch*.
The letters *A* to *F* refer to the Bibliography.

CHITONIDAE

Onithochiton quercinus (Gld.) var. *scholvieni* Thiele.
Identified by J. S. Mackay. The typical form comes
from New South Wales.

HALIOTIDAE

Haliotis sp. juv. *D, E*.

FISSURELLIDAE

Diodora singaporensis (Reeve). *D, E*. Not taken by
Tweedie.

PATELLIDAE

Cellana profunda (Deshayes). Known from the Mascarene
Islands and the East African coast.

TROCHIDAE

Trochus (*Cardinalia*) *virgatus* Gmelin. Recorded from the
Red Sea to Japan.

T. (Rochia) niloticus L. *D, E*.

TURBINIDAE

Leptothyra filifera (Deshayes). Another Mascarene species.

Turbo petholatus L. A common oriental species.

T. (Senectus) lajonkairii Deshayes. *A, B, E*. Not a
common shell: taken also by Tweedie. Recorded from
Keeling Islands and from the "East Indies".

Astraea petrosa (Wood). A common Pacific species:
doubtful in the Indian Ocean.

NERITIDAE

Nerita albicilla L.

N. costata Gmelin. *B, E*.

N. plicata L. *A*.

N. polita L. *E*.

These four common Indo-Pacific species were all taken
alive by Tweedie.

N. maxima Gmelin. *A*. A not very common Pacific
species, taken also by Tweedie.

N. grossa L. *E*.

N. georgina Récluz. Described from King George Islands.
I have not seen any other locality mentioned.

N. pica Gould. Widely distributed in Japan and Polynesia.

NERITOPSIDAE

Neritopsis radula (L.). An Indo-Pacific species.

PHENACOLEPADIDAE

Phenacolepas elongata (A. Adams). I am doubtful whether this has ever been described, though examples are to be found so named in the British Museum. I have also one found by Miss McKinnon Wood at Mombasa.

LITTORINIDAE

Littorina undulata Gray. A. A very wide-spread Indo-Pacific species. Smith records it as *picta* Phil.

L. granocostata Reeve. A. Occurs throughout the Indian Ocean. Smith curiously enough described this as *granocostata* in A. p. 519 and altered it to *insularis* in P.Z.S. 1833 p. 536, on account of the priority of Reeve's name, but he never seems to have examined Reeve's types or to have discovered that *granocostata* and *granocostata* were identical species.

Tectarius malaccanus (Phil.). A. Both this and the last two taken alive by Tweedie.

RISSOIDAE

Amphithalamus (Anxietas) perplexus (Iredale). F. From 100 fathoms.

Zebina lis Tomlin. Found in shingle: described from Lifu and from Oshima.

Rissoina ambigua Gould.

R. triticea Pease.

R. turricula Pease.

All three are widely distributed in the Pacific, and sometimes extremely abundant in beach shingle.

ADEORIDAE

Sansonia sansonia Jousseume. F.

S. kirkpatricki (Iredale). F.

S. (Reynellona) natalis (Iredale). F.

All three from 100 fathoms. I have followed Bavay as regards the names of the first two: his very careful account of the genera *Sansonia* Jousseume, *Mecoliotia* Hedley and *Pickworthia* Iredale will be found in Journ. de Conch. LXVI, pp. 155-161. Thiele omits *Sansonia* from his *Handbuch* altogether and uses Hedley's name. The genotype of *Sansonia* must of course be *Iphitus tuberculatus* Watson, as it is the only example of *Sansonia* which Jousseume cites by name. *Pickworthia* hardly seems wanted even as a section.

PLANAXIDAE

Planaxis niger Q. & G. A Pacific species.

P. longispira Smith. D. Found also by Tweedie. Under the name of *virgatus* Smith recorded in great profusion at Lifu (Journ. of Conch. VIII, 117). I have examined Smith's types of these two species and cannot find any distinction between them, except that they exhibit slightly different stages of wear and tear. Compare Smith's remark in D, p. 372.

POTAMIDIDAE

Royella sinon (Bayle). For notes on this shell see Proc. Malac. Soc. X, 219.

CERITHIIDAE

Bittium glareosum (Gould).

B. hiloense Pilsbry and Vanatta.

These two Pacific species were found in shingle. The latter has been compared with topotypes from Hilo and is absolutely identical.

Cerithium echinatum Lamarck.

C. piperitum Sowerby.

C. nesioticum Pilsbry.

C. egenum Gould.

These are all four Pacific species with a wide range.

C. citrinum Sowerby. Mainly a Philippine species.

C. zebrum Kiener. D, E. A widespread and abundant Pacific shell with many named colour varieties. Tweedie found it in shingle.

Plesiotrochus fischeri Smith. D, E. This rare form was also found by Tweedie. Only known from Christmas Island.

CERITHIOPSISIDAE

Cerithiopsis catenaria Melvill and Standen. One small shell I refer rather doubtfully to this species, only known so far from Lifu.

TRIPHORIDAE

Triphora rubra (Hinds).

T. violacea (Q. & G.).

Both found in shingle: widely distributed in the Pacific.

T. triticea Pease. D, E. Figured by Smith. The type, which is in the British Museum, came from Hawaii.

MELANELLIDAE

Balcis vitrea (A. Adams). A Pacific species.

SHERBORNIIDAE

Sherbornia mirabilis Iredale. F. From 100 fathoms.

AMALTHEIDAE

- Cheilea diaphana* (Reeve). *D, E*. Probably a synonym of *C. equestris* (L.).
Amalthea australis (Deshayes). *D, E*. A common Pacific species.

STROMBIDAE

- Strombus lentiginosus* L. Common in the Indo-Pacific.

NATICIDAE

- Natica areolata* Récluz. Also an Indo-Pacific species.

CYPRAEIDAE

- Pustularia childreni* (Gray). An interesting and rather uncommon Cowry.
P. cicercula (L.). Common and very widely spread in the Indo-Pacific.
Cypraea helvola L.
C. mauritiana L. *E*.
C. vitellus L. *E, E*.
C. lynx L. *B, E*.
C. poraria L. *D, E*.
C. histrio Dillwyn. *E*.
C. arabica L. *B, E*; var. *gillei* Jousseume. *E*.
C. caput-serpentis L.
C. moneta L. *B, E*.
C. annulus L. *B, E*.
C. minoridens Melvill.

These are all more or less common Cowries of very wide range in the Indo-Pacific.

CASSIDIDAE

- Phalium vibex* (L.). Also Indo-Pacific.

CYMATIDAE

- Cymatium chlorostoma* (Lam.). *A*. Ranges from the Cape Verde Isles round S. Africa to the Red Sea, and over most of the Indo-Pacific.
Colubraria ceylonensis (Sow.).

BURSIDAE

- Bursa tuberculata* (Brod.).
 Both this and the last are Indo-Pacific species.
B. cruentata (Sow.). *A*. Recorded from Mauritius to the Philippines.

MURICIDAE

- Murex* (*Chicoreus*) *microphyllus* Lam. An Indian Ocean shell.
M. (Naquetia) triqueter Born. Known from the Red Sea eastwards to the Paumotus.

- Drupa ricinus* (L.). *A, B*.
D. rubus-idaeus Röding. *E*.
D. morum Röding. *E*.
D. uva Röding. *B, D, E*.

All four are well known Pacific forms.

- D. andrewsi* Smith. *D, E*. Peculiar to Christmas Island. All these species of *Drupa* were taken living by Tweedie.
D. martensi Dall? Two small, worn and somewhat doubtful specimens. It occurs not uncommonly in shingle from the Philippines but I have never seen it fresh.

Maculotriton bracteatus (Hinds).

- M. digitalis* (Reeve). These two have a very wide range throughout the Indo-Pacific.

- Nassa sertum* (Bruguière). *B*. Taken also by Tweedie. Ranges from the Red Sea to the Paumotus.

- Thais armigera* (Lam.). *E*. Taken alive by Tweedie. Pretty common in the Philippines.

- T. pseudohippocastanum* Dautz. For the change of name (from the more familiar *hippocastanum*) see Faune des Colonies Françaises vol. III, p. 427, 1929. The species occurs generally throughout the Indo-Pacific.

MAGILIDAE

- Coralliophila violacea* (Kiener). *D, E*. Taken also by Tweedie. An Indo-Pacific species.

PYRENIDAE

- Pyrene obtusa* (Sow.). A Pacific species, ranging eastwards from the Philippines.

- P. cumingii* (Reeve). Recorded hitherto from Mauritius and the Philippines.

- P. varians* (Sowerby). *D, E*. Smith records a variety of this: not found by Tweedie.

Seminella nanisca (Hervier).*S. hervieri* (Pace)?

Both so far only known from Lifu. I have recently detected *nanisca* in shingle from Cabra Island.

BUCCINIDAE

- Engina nodicostata* Pease. Recorded only from Fiji and one or two other Pacific groups.

E. lineata (Reeve).*E. melanozona* Tomlin.

Both common in the Philippines and eastwards.

- E. purpureocincta* Preston. Living specimens: described from Ceylon.

E. mendicaria (L.). *A, B, E.* Taken living by Tweedie. Thiele in his *Handbuch* considers *Pusiosstoma*, which was erected for this species by Swainson, a mere synonym of *Engina*.

Pisania crenilabrum A. Adams. Taken living.

Caducifer sculptilis (Reeve).

C. eximius (Reeve). Neither very common but known from the Mascarenes to Polynesia.

Pollia undosa (L.). *B, D, E.* Taken living by Tweedie. An Indo-Pacific species.

P. marmorata (Reeve).

P. gracilis (Reeve).

Both Pacific forms.

NASSARIIDAE

Nassarius papillosus (L.). *D, E.* Philippines and Polynesia.

N. concinnus (Powis). Common in Mauritius, the Philippines and Lifu.

N. pauper (Gould). A Pacific species, difficult to identify satisfactorily, but certainly very widely distributed.

N. marratii (Smith). *E.* Taken also by Tweedie. Smith's unique *Nassa exulata* is a rather worn and bleached *marratii*, which was described from the Solomon Is.

FASCIOLARIIDAE

Latirus nodatus (Gmelin). *E.* Taken also by Tweedie. A Pacific species.

L. turritus (Gmelin). Mascarene Is. to Polynesia.

Peristernia venusta Smith. *E.* Of this new species one only was dredged in Flying Fish Cove in 45 fathoms.

P. nassatula (Lam.). *D, E.* Taken alive by Tweedie. Red Sea, Mascarenes and Seychelles to the Paumotus.

Leucozonia smaragdula (L.). *B, E.* Taken by Tweedie. Mauritius and Madagascar to the Pacific.

OLIVIDAE

Oliva paxillus Reeve. Known from the Philippines, Japan and some of the Pacific islands.

MITRIDAE

Mitra (*Strigatella*) *litterata* Lam. *B, E.*

M. (S.) paupercula (L.). *B, E.*

M. (S.) retusa Lam. *D, E.*

These three were all taken living by Tweedie.

M. (S.) virgata Reeve. *A.* What this *Mitra* was it is hard to say. Reeve's *virgata*, in the *Conch. Icon. Monograph*, Vol. II, pl. 25, f. 197a, b was a composite species—f. 197a being in all probability *retusa* Lam. and 197b *paupercula* L. Moreover, in any case, the name *virgata* is preoccupied by Gmelin's *Voluta virgata*, which is also a *Mitra*. In *B. p.* 117 Smith speaks of "a short form like *virgata* Reeve (f. 197b) with spire transversely grooved and the white stripes on body whorl somewhat raised forming feeble costulations". This he calls *paupercula* var., but he makes no reference to the shell recorded as *virgata* in 1887. It would be best to omit *virgata* from the list.

M. (Chrysame) fulva Swainson. *E.*

M. (C.) tiarella A. Adams.

Both fairly common species from Mauritius to the Pacific.

M. (C.) turgida Reeve. Not very common in the Philippines and Polynesia.

M. (Callithea) aureolata Reeve. Ranges from Mauritius to the Pacific.

M. (Pusia) nodosa Reeve. Mauritius to the Philippines.

M. (Dibaphus) edentula Swainson. Mauritius to the Pacific.

M. (Thala) brevicula Souverbie. Known only from New Caledonia.

VASIDAE

Vasum ceramicum (L.). A common Pacific species.

MARGINELLIDAE

Marginella hirasei Bavay. Described from Japan: I have recently found it fairly common in shingle from Cabra Island.

CONIDAE

Drillia pulchella (Reeve).

D. bijubata (Reeve).

D. pica (Reeve).

Cythara gracilis (Reeve). These four Turrids are all known from Mauritius and from the Pacific.

Anarithma metula (Hinds). For a long note on the history and range of this shell see *Proc. Malac. Soc. London*, Vol. X, p. 27.

Pseudoraphitoma nexa (Reeve).

P. lutea (Pease).

P. papillosa (Garrett).

All three are known chiefly from the New Caledonia area.

Conus ebraeus L. *E, D, E.* var. *vermiculatus* Lam. *D, E*

C. coronatus Gmelin. *B, E.*

C. miles L.

C. catus Brug.

C. rattus Brug.

These Cones are all generally distributed species of the Indo-Pacific.

TEREBRIDAE

Terebra crenulata (L.) *B.*

T. undulata Gray. *E.*

Two fairly common Indo-Pacific species, not found by Tweedie.

T. interlineata Deshayes. Sometimes considered a Pacific variety of *crenulata* L.

ATYIDAE

Smaragdinella viridis (Rang). *B, D, E.*

CORAMBIDAE

Doris coriacea Abraham. *B.*

PHYLLIDIIDAE

Phyllidia varicosa (Lam.). *B.*

ONCIDIIDAE

Peronia peronii Fleming. *B.*

SIPHONARIIDAE

Siphonaria ferruginea Reeve. *D, E.*

Described from an unknown locality.

ARCIDAE

Barbatia decussata (Sowerby). *E.*

Has a very wide range in the Indo-Pacific.

B. maculata (Sowerby). *D, E.*

Probably Smith's *Arca imbricata* in his 1900 list is the same thing. In those of 1909 and 1911 he only records *maculata*, and probably changed his mind as to the identification of the species. There is much doubt as to whether the name *imbricata* Brug. should be applied to an oriental or an occidental form.

MYTILIDAE

Septifer bilocularis (L.). *B, D, E.*

Very common in the Indo-Pacific. I am quite unable to separate *S. excisus* (Wiegmann) from *bilocularis*.

Lithophaga lithura Pilsbry.

So far only known from Japan.

Brachidontes rufolineatus Smith.

Described from Christmas Island, not found by Tweedie.

VULSELLIDAE

Isognomon perna (L.).

Probably occurs throughout the Indo-Pacific. Baird described it as new under the name *samoënsis* from the cruise of the "Curacao."

I. legumen (Gmelin).

I. dentifera (Krauss).

Both Indian Ocean species whose range is imperfectly known.

Pinctada vulgaris (Schumacher).

This species is very fully discussed by Jameson in Proc. Zool. Soc. London, 1901, p. 384.

PECTINIDAE

Chlamys weberi Bavay.

A Japanese species.

Spondylus hystrix Röding.

S. pesasininum Röding.

Both known from Mauritius to the Philippines.

OSTREIDAE

Ostrea cucullata Born.

Universally distributed in the Indian Ocean.

CARDITIDAE

Mytilicardia variegata (Brug.).

A common Indo-Pacific species.

TRAPEZIDAE

Trapezium oblongum (L.). *D, E.*

Tweedie only took the next species; both are widely distributed in the Indian Ocean, and very probably in the Pacific as well.

T. angulatum (Lam.).

LUCINIDAE

Codakia divergens (Phil.).

Range probably Indo-Pacific.

CHAMIDAE

Chama brassica Reeve.

A common Indian Ocean shell.

CARDIIDAE

Cardium (*Trachycardium*) *philippinense* Deshayes.
Only known from the Philippines.

C. (*Fragum*) *rubescens* Smith. *E.*
Only known from Christmas Island; dredged in 30 fathoms.

TRIDACNIDAE

Tridacna *gigas* (L.). *B, E.*
Very young specimens. Tweedie only found the next species.

T. *compressa* Reeve.
This may be Smith's *Tridacna* sp. of the 1909 list.

VENERIDAE

Antigona *reticulata* (L.).

SEMELIDAE

Semele sp.

TELLINIDAE

Tellina (*Arcopagia*) *scobinata* L. *E.*
Taken also by Tweedie. Known from Mauritius to the Philippines.

PHOLADIDAE

Xylotrya, two spp. *D, E.*

TEREDINIDAE

Teredo sp. *D, E.*

OMMASTREPHIDAE

Ommastrephes sp. *B.*

OCTOPODIDAE

Octopus *rugosus* Bosc. *D, E.*
Recorded by Smith as *Polypus granulatus* Lam.
Possibly the *Octopus* sp. of the 1900 list was also this.

BIBLIOGRAPHY

- A. SMITH, E. A., Proc. Zool. Soc. London 1887, pp. 517-519.
- B. ———, Proc. Zool. Soc. London 1900, pp. 117-118.
- C. ———, Monograph of Christmas Island (Indian Ocean) by C. W. Andrews, 1900, pp. 54-59.
- D. ———, Proc. Malac. Soc. London, Vol. VIII, pp. 369-372, Oct., 1909.
- E. ———, Proc. Malac. Soc. London, Vol. IX, pp. 315-318, June, 1911.
- F. IREDALE, T., Proc. Malac. Soc. London, Vol. XII, pp. 331-334, Nov., 1917.