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THE MOLLUSCA OF FUNAFUTI.

Part II.—Pelecypoda and Brachiopoda.

By CHARLES HEDLEY,

Conchologist, Australian Museum.

THE MOLLUSCA.

Part II.—Pelecypoda and Brachiopoda.

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Conchologist, Australian Museum.

ANOMIA, sp.

A few disassociated upper valves, not specifically recognisable, were gathered on the lagoon beach of Funafuti.

ARCA ZEBRA, *Swainson*.

Reeve, *Conch. Icon.*, ii., 1844, *Arca*, pl. xi., sp. 69.

Abundant under stones at low water in the lagoon. In this Museum there are specimens from Trinity Bay, Queensland.

It is doubtful whether *A. occidentalis*, Philippi, is distinct. If not, the species has a circumequatorial range.

ARCA MACULATA *Sowerby*.

Reeve, *loc. cit.*, pl. xi., sp. 71.

One living specimen obtained in the lagoon.

First found by Cuming at Marutea, in the Paumotus. Specimens are in this Museum from Aneiteum, New Hebrides.

ARCA RETICULATA, *Gmelin*.

Reeve, *loc. cit.*, pl. xvi., spp. 108, 112 (as *A. divaricata*, Sowerby).

Several disassociated valves of this world-wide species were observed on the lagoon beach.

The synonymy and range of this species have been examined at length by Lischke.*

ARCA VELATA, *Sowerby*.

Reeve, *loc. cit.*, pl. xii., sp. 79.

Common in blocks of coral in shallow water in the lagoon.

First obtained at Marutea, Paumotus, by Cuming.

* Lischke—*Japan Meeres conchylien*, ii., 1871, p. 142, iii., 1874, p. 107. Smith adds *A. dubia*, Baird, to the list—*Proc. Zool. Soc.*, 1891, p. 431. Further notes will be found in the *Proc. Linn. Soc. N.S.W.* (2), ix., 1894, p. 180; *Trans. Roy. Soc. S.A.*, xix., 1895, p. 261; and *Trans. Wagner Free Inst. Sci.*, iii., 1898, p. 628.

ARCA TENELLA, *Reeve*.

Reeve, *loc. cit.*, pl. xiv., sp. 91.

One living and one dead specimen were taken in the lagoon.

SEPTIFER EXCISUS, *Wiegmann*.

Reeve, *Conch. Icon.*, x., 1857, *Mytilus*, pl. iv., sp. 13.

Separate valves were common on the lagoon beach. I once found it alive in a block of perforated dead coral. This species does not seem to have been reported from the Pacific.

MODIOLA AUSTRALIS, *Gray*.

Reeve, *loc. cit.*, *Modiola*, pl. v., sp. 21.

Attached to coral blocks in the lagoon.

The species I thus identify has a wide range. It occurs along the Australian coast south to Sydney. Museum examples show it from the Gilberts, Lifu, and New Caledonia.

LITHOPHAGA TERES, *Philippi*.

Reeve, *loc. cit.*, *Lithodomus*, pl. iii., sp. 13.

Abundant; boring coral with the following species.

Schmeltz records it from Rarotonga, and Smith from Bowen, Queensland. It is in this Museum from Port Mollen and Port Curtis, Queensland; and New Caledonia.

LITHOPHAGA LEVIGATA, *Quoy & Gaimard*.

Quoy and Gaimard, *Voy. "Astrolabe," Zool.* iii., 1835, p. 464, pl. lxxviii., figs. 17, 18.

Abundant at low water level, boring in coral blocks in the lagoon.

This species has been omitted from the Monographs of Reeve and Dunker, and indeed from subsequent literature generally. From the account quoted above, I have little doubt that it is the species commonly known as *Lithodomus malaccanus*, Reeve. It is a usual companion of the previous species. Under Reeve's name, Schmeltz quotes it from Tahiti, and Smith from Torres Straits. It is in this Museum from New Caledonia, and Tupuselei, British New Guinea.

PLICATULA IMBRICATA, *Menke*.

Sowerby, *Thesaurus Conch.*, i., 1847, p. 437, pl. xc., fig. 6, pl. xci., figs. 15-18.

A few small specimens found alive in shallow water in the lagoon, adhering to dead shells, are with doubt so identified.

SPONDYLUS OCELLATUS, *Reeve*.

Reeve, Conch. Icon., ix., Spondylus, 1856, pl. xii., sp. 43.

An odd and worn valve from the lagoon beach is referred to this species.

Melvill and Standen report it from Lifu.

LIMA BULLATA, *Sowerby*.

Sowerby, Thes. Conch., i., 1847, p. 84, pl. xx., figs. 32, 33.

A single valve of a young individual is ascribed to this species, which ranges along the east Australian coast to Tasmania.

LIMA TENERA, *Chemnitz*.

Sowerby, *loc. cit.*, p. 84, pl. xxi., figs. 2, 3, 10, 11, 13.

One valve, apparently the young of this species, was obtained by tangles at forty to eighty fathoms.

Pacific localities for this species, noted in the "Challenger" Report, are Fiji, and Sir C. Hardy Island, off North Queensland. Melvill and Standen mention it from Lifu.

LIMA SQUAMOSA, *Lamarck*.

Sowerby, *loc. cit.*, p. 84, pl. xxi., figs. 1, 18.

This world-wide species occurred alive in the lagoon.

LIMA ANGULATA, *Sowerby*.

Sowerby, *loc. cit.*, p. 86, pl. xxii., figs. 39, 40.

Several small specimens were found alive under stones in the lagoon.

Smith unites* with this *L. basilanica* and *L. orientalis*, both of Adams and Reeve, and *L. fasciata*, Sowerby (not Linne).

LIMA FRAGILIS, *Gmelin*.

Sowerby, *loc. cit.*, p. 86, pl. xxii., figs. 34–37.

Small specimens were of frequent occurrence under stones in the lagoon.

Sowerby records this from Tahiti; Von Martens† from New Guinea and the Gilberts; and Smith‡ from Port Essington, Port Molle, Torres Straits, and Fiji. It is in this Museum from New Caledonia and Queensland.

PECTEN SQUAMATUS, *Gmelin*.

Reeve, Conch. Icon., viii., 1853, pl. xxi, fig. 82.

A few broken valves were collected on the beach of the lagoon.

* Smith—Chal. Rep., Zool., xiii., 1885, p. 289.

† Von Martens—Journ. Linn. Soc., Zool., xxi., 1889, p. 202.

‡ Smith—Zool. Coll. "Alert," 1884, p. 116.

PECTEN PALLIUM, *Linne.*

Reeve, *loc. cit.*, pl. xvii., fig. 63.

One valve from the lagoon beach.

This species appears to be widespread through the tropical Pacific. Cuming found it at Marutea, Paumotus. It is represented in this Museum from San Christoval, Solomons; Erromanga, New Hebrides; New Caledonia; Tonga; and the Gilberts.

P. novæ-guineæ, T. Woods, a Pleistocene fossil from Hall Sound, British New Guinea, is reduced to a synonym of *P. pallium* by Prof. R. Tate.

PECTEN DISTANS, *Reeve.*

Kobelt, *Conch. Cab.*, Pecten, 1885, p. 228, pl. xli., fig. 2.

One valve from the lagoon beach.

New Caledonian specimens occur in the Museum series.

PECTEN MADREPORARUM, *Sowerby.*

Sowerby, *Thesaurus Conch.*, i., 1847, p. 68, pl. xiv., fig. 68.

One specimen from the lagoon beach.

Also represented in the Museum from Hood Lagoon and Tupuselei, British New Guinea; Cape York, Queensland; and New Caledonia. This species appears to be universally but erroneously ascribed to Petit. It is a perverse fate which credits an author, who was the first to energetically protest against manuscript names,† with indulging in the practice himself. Sowerby's locality, the Red Sea, as well as his authority, requires confirmation.

HINNITES, sp.

Attached to sheets of dead coral, and associated with the Brachiopod *Thecidea maxilla*, were several adherent valves of a species of *Hinnites*, too imperfect for specific determination.

PTERIA PEASEI, *Dunker.*

Dunker, *Conch. Cab.*, *Avicula*, 1872, p. 24, pl. viii., fig. 1.

Attached (as mentioned *ante* p. 308) in great numbers to the branches of *Plectaura antipathes*.

The species was described by Pease‡ under the thrice pre-occupied name of *Avicula radiata*, from the Gilberts. Schmeltz, who considers *A. cypsellus*, Dunker, a synonym,§ reports it from Samoa.

PTERIA CUMINGII, *Reeve.*

Reeve, *Conch. Icon.* x., 1857, *Avicula*, pl. iv., sp. 6.

* Tate—*Proc. Linn. Soc. N.S.W.* (2), ix., 1894, p. 214.

† Petit—*Revue Zool.*, ii., 1839, p. 346, and iii., 1840, p. 154.

‡ Pease—*Proc. Zool. Soc.*, 1862, p. 244.

§ Schmeltz—*Mus. Godeffroy Cat.*, v., 1874, p. 176.

This species is employed on Funafuti in the manufacture of fish-hooks (*ante* p. 268). I purchased a valve from a native on Nukulailai.

Cuming procured the type at Marutea, Paumotus.

MELINA SAMOENSIS, *Baird*.

Baird, in Brenchley, Cruise of the "Curaçoa," 1873, p. 454, pl. xlii., fig. 8.

Common; attached to the under surfaces of coral blocks on the ocean beach of Funafuti, at low water. My specimens exceed the type in size, being upwards of 50 mm. in length.

I suspect that the prior *P. lingueformis*, Reeve, from the Society Islands, is but a depauperated form of this. The "Challenger" collected *M. samoensis* on the reefs at Honolulu and Hawaii; the type came from Tutuila, Samoa.

Both Meek and Dall have pointed out* that the name of *Perna* must be superseded by that of *Melina*.

PINNA, sp.

Some fragments of a *Pinna*, perhaps *P. trigonalis*, Pease, were seen on the lagoon beach of Funafuti.

OSTREA HANLEYANA, *Sowerby*.

Sowerby, Conch. Icon., xviii., 1871, Ostrea, Pl. xxviii., sp. 72.

An oyster which occurred under stones beside *M. samoensis* is with much doubt so identified.

OSTREA CRISTAGALLI, *Linne*.

Sowerby, *loc. cit.*, pl. xi., sp. 22.

Obtained in eighteen fathoms, three miles south-west of the village (*ante* p. 328).

I collected this at Port Moresby, British New Guinea. It is represented in this Museum from Florida, Solomons; Havannah Harbour, New Hebrides; and Ouvea, Loyalties.

CARDITA SWEETI, sp. nov.

(Fig. 50).

Shell solid, oblong, slightly oblique, inequilateral, little inflated. Colour dull white, upon the beak pale yellow. Sculptured by about forty-five close, raised, radiating ribs, separated by deep interstices a quarter of their width. In the median area the ribs are smaller and closer together than at the sides, while at the extremities they rapidly enlarge and rather recurve. Upon

* Meek—Report U.S. Geol. Survey Territories, ix., 1876, p. 28, note; Dall—Trans. Wagner Free Inst. Sci., iii., 1898, p. 665.

the rays are crowded small transverse lunate gemmules. Lunule sharply impressed, narrow, lanceolate. Ligament large, external.

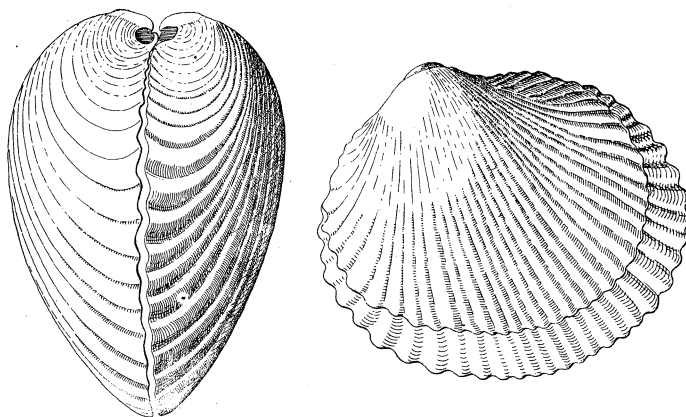


Fig. 50.

Hinge line short, straight, remainder of the margin evenly rounded. Internal margin sharply, finely crenulated. Length 14, breadth 12, diameter of conjoined valves 8 mm.

One entire shell, described above, was taken by Mr. G. Sweet; and a single, worn, slightly larger valve, by myself at Funafuti.

This species seems nearest to *C. dilecta*, Smith, but is distinguished from that and other members of the genus by more numerous ribs bearing closer packed grains.

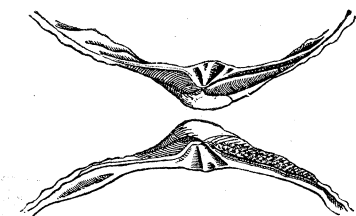


Fig. 50.

The specific name is in compliment to Mr. G. Sweet, the finder, who was a member of the second expedition to Funafuti.

The side view is drawn to a smaller scale than the other sketches.

LUCINA EXASPERATA, *Reeve*.

Reeve, *Conch. Icon.*, vi., 1850, *Lucina*, pl. i., sp. 4.

A few specimens from the lagoon.

Melvill and Standen notice this from Lifu. It is in this Museum from New Caledonia.

LUCINA PUNCTATA, *Linne*.

Pfeiffer, *Conch. Cab.*, *Veneracea*, 1869, p. 262, pl. xix., figs. 8, 9.

One specimen from the lagoon beach.

Reported by Schmeltz from Samoa, Fiji, and Rarotonga; by Melvill and Standen from Lifu; and represented in this Museum from New Caledonia.

LUCINA DIVERGENS, *Philippi*.

Reeve, Conch. Icon., vi., 1850, *Lucina*, pl. vii., spp. 33, 37, 38.

Common on the lagoon beach.

Prof. von Martens has pointed out* that Philippi's name enjoys two month's priority over the better known *L. fibula*, of Reeve. He refers to it from Samoa and Fiji, and Melvill and Standen from Lifu. Material in this Museum show it to extend south along the Australian coast to Newcastle, New South Wales, and also to the Ladrões, New Hebrides, and New Caledonia.

LUCINA OBLONGA, sp. nov.

(Fig. 51).

Shell small, but thick and strong, ovate, very inequilateral, inflated. Colour, one specimen is white, the other pink. Sculpture—the umbones are smooth, the remainder closely and rather

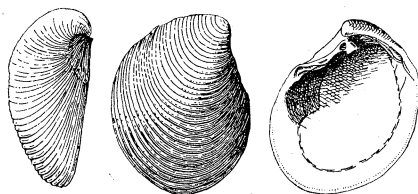


Fig. 51.

irregularly covered with numerous, raised, strong, concentric, ribs, narrower than their interstices; faint radiating sculpture is barely visible in these interstices. Beaks prominent and much incurved. Lunule large, sharply impressed, sculptured by a faint continuation of the concentric ribs. Dorsal surface wanting the depression which characterises *L. seminula* and its allies. Interiorly the margin is most minutely crenulated. Length 3; height 3.75 mm.

Two valves from the lagoon beach.

Allied to *L. congenita*, Smith,† from which it differs by being narrower in proportion to height, more densely ribbed, and more inequilateral.

CORBIS FIMBRIATA, *Linne*.

Sowerby, Conch. Icon., xviii., 1872, *Corbis*, pl. i., sp. 1.

A living specimen occurred under blocks of coral in the lagoon.

Schmeltz quotes this from Fiji and the Pelews; Melvill and Standen from Lifu. It is in this Museum from Port Curtis, Queensland; New Caledonia; and Tonga.

* Von Martens—Journ. Linn. Soc., Zool., xxi., 1889, p. 209.

† Smith—Chall. Rep., Zool., xiii., 1885, p. 182, pl. xiii., figs. 7, 7a.

CRYPTODON GLOBOSUM, *Forsk.*

Reeve, Conch. Icon., vi., 1850, pl. v., sp. 21 (as *L. ovum*).

Common as dead shells on the lagoon beach.

Ranges along the east Australian coast south to St. Vincent's Gulf. Is represented in this Museum from Tonga.

TELLINA RUGOSA, *Born.*

Sowerby, Conch. Icon., xvii., Tellina, 1866, pl. ix., sp. 36.

A few dead, subfossil valves were picked up around the raised *Heliopora* reef.

Reported by H. Cuming from Rapa, Austral Islands; by Melvill and Standen from Lifu; and by Schmeltz from Samoa, Fiji, Rarotonga, and Tahiti. In this Museum it is represented from Moreton Bay, Queensland; Pipon Islands, New Caledonia; Tonga; and Hawaii.

TELLINA SCOBINATA, *Linne.*

Sowerby, *loc. cit.*, pl. xiv., sp. 64.

Common on the lagoon beach.

Sowerby notes this from the Society Islands; Schmeltz from Samoa, Fiji, and Rarotonga; Melvill and Standen from Lifu. This Museum contains it from the Solomons, Gilberts, and Tonga.

TELLINA FLAMMULA, *Deshayes.*

Sowerby, *loc. cit.*, pl. lii, sp. 310.

A few valves from the lagoon beach.

Included in the Museum collection from Woodlark Island and New Caledonia.

TELLINA DISPAR, *Conrad.*

Sowerby, *loc. cit.*, pl. iii., sp. 10.

A few separate valves were noticed on the lagoon beach.

First described from Hawaii; noted by Schmeltz from Upolu and Tahiti; and by Melvill and Standen from Lifu. Represented in this Museum from Port Curtis and Moreton Bay, Queensland; and New Caledonia.

TELLINA OBLIQUARIA, *Deshayes.*

Sowerby, *loc. cit.*, pl. liv., sp. 321.

Several specimens from the beach of the lagoon, some rose, others lemon, others again lemon with rose stripes from the umbo.

Deshayes, in his original description,* records this species from the Pacific Ocean. Sowerby, in the reference quoted above,

* Deshayes—Proc. Zool. Soc., 1854, p. 356.

though actually mentioning the page of his predecessor's work, states that the habitat of the species is unknown. Such evidence of carelessness supports me in concluding that Sowerby again described this species as *T. obliquistriata*,* from "Kingsmill Island," by which the Kingsmill or Gilbert Group are doubtless intended. It is in this Museum from Aneiteum, New Hebrides.

TELLINA RHOMBOIDES, Quoy & Gaimard.

Smith, Chall. Rep., Zool., xiii., 1885, p. 103.

Abundant in the lagoon.

Reported by Smith, under various names, from Guam in the Ladrões; Cape York, Queensland; and Levuka, Fiji; and by Melvill and Standen from Lifu. It is in this Museum from Aneiteum, New Hebrides.

TELLINA ROBUSTA, Hanley.

Sowerby, *loc. cit.*, pl. xvi., sp. 77.

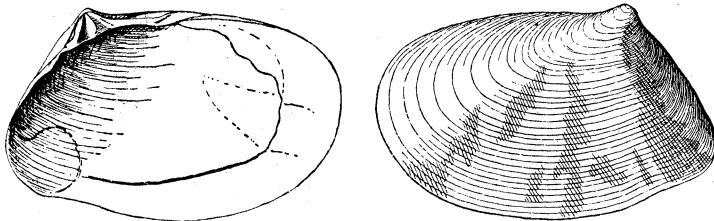
The yellow variety occurred in profusion in the lagoon.

Hanley reports this from Anaa, Paumotus; Schmeltz from Tahiti, Rarotonga, and Upolu. I have taken it at Hyenghien, New Caledonia. There are examples in the Museum from the Isle of Pines.

TELLINA OPALINA, Sowerby.

(Fig. 52).

Sowerby, *loc. cit.*, pl. xlv., sp. 258.



The paucity of information given by Sowerby permits no accurate determination, but suggests this name for a species of which I took a dozen odd valves on the beach of the lagoon. The species in question is in length 5·5, and in height 3·7 mm.; very glossy, radiately marked with translucent and opaque lines or dashes, the concentric sculpture almost effaced.

The original description gave no locality. Melvill and Standen supply† Madras and the Moluccas.

* Sowerby—Conch. Icon., xvii., 1866, pl. xlv., sp. 256.

† Melvill and Standen—Journ. Conch., ix., 1898, p. 85.

TELLINA FIJIENSIS, Sowerby.

Smith, *loc. cit.*, p. 107.

A few separate valves from the lagoon beach.

Previously reported from Marutea, Paumotus ; and Ngau and Levuka, Fiji.

TELLINA CREBRIMACULATA, Sowerby.

Sowerby, *loc. cit.*, pl. li., sp. 301.

A few separate valves from the lagoon beach.

Hitherto only recorded from Fiji.

TELLINA ELLICENSIS, sp. nov.

(Fig. 53).

Shell small, very solid, opaque, very inequilateral, rather inflated anteriorly, height two-thirds of the length, truncate posteriorly. Colour white, irregularly painted with small rose spots and streaks. Sculptured over the entire surface by fine, close, concentric threads.

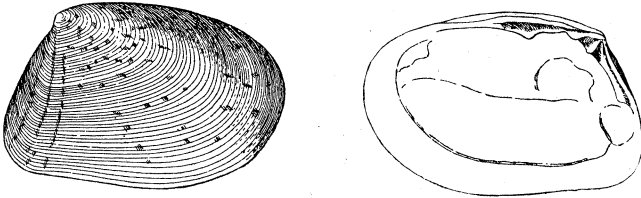


Fig. 53.

Umbo prominent. Fold almost obsolete. Dorsal margin straight, then curved anteriorly. Anterior margin curved the third of a circle. Ventral margin nearly straight, scarcely sinuated by the fold. Hinge composed of two cardinal teeth, a strong anterior lateral and a weaker posterior lateral tooth. Length 6, height 4 mm.

This species is allied by sculpture and contour to *T. tenuilirata*, Sowerby, from which a much shorter, broader outline clearly separates it.

One right valve was found on the beach of the Funafuti lagoon.

LIBITINA GUINAICA, Lamarck.

Reeve, *Conch. Icon.*, i., Cypricardia, 1843, pl. ii., species 13.

Plentiful dead on the beaches ; once found alive in a crevice in a block of coral in the lagoon.

The only other Pacific record seems to be the finding of it by Hugh Cuming at Marutea, Paumotus.

CIRCE PECTINATA, *Linne.*

Römer, *Mon. Veneridæ*, i., 1869, p. 174, pl. xlvii, figs. 1a–d.

Common in the Funafuti lagoon; collected alive among loose rocks.

Römer quotes this from Marutea, Paumotus; Fischer from New Caledonia; Schmeltz from Bowen, and Smith from Thursday Island, Queensland. It is in this Museum from Fiji; Port Moresby, British New Guinea; and Port Curtis, Queensland.

CIRCE PICTA, *Lamarck.*

Römer, *loc. cit.*, p. 164, pl. xlv., fig. 3.

Two valves from the lagoon beach.

Smith states* that the distinction between this and several admitted species is obscure. Schmeltz quotes it from Upolu, Samoa; and Melvill and Standen from Lifu.

CIRCE CASTRENSIS, *Linne.*

Römer, *loc. cit.*, p. 159, pl. xlv.

A few valves were found on the lagoon beach.

Smith has recorded this from Bowen, Queensland. In this Museum it is represented from New Caledonia; the Loyalties; Aneiteum, New Hebrides; Guadalcanar, Solomons; and Tongatabu, Tonga.

CYTHEREA OBLIQUATA, *Hanley*, var. *PRORA*, *Conrad.*

Römer, *loc. cit.*, p. 107, pl. xxix., fig. 1, pl. xxxiii., figs. 4, 5.

Very common on the lagoon beach.

Schmeltz quotes this from Fiji, Tahiti, and Rarotonga. The Museum series show it from Port Curtis, Queensland; and New Caledonia.

CYTHEREA SUBPELLUCIDA, *Sowerby.*

Römer, *loc. cit.*, p. 112, pl. xxx., fig. 4.

One specimen from the lagoon beach.

VENUS TOREUMA, *Gould.*

Reeve, *Conch. Icon.*, xiv., 1863, *Venus*, pl. xvi., sp. 64.

Several valves from the lagoon beach.

Smith records this from Port Mollé and Port Curtis, Queensland. Other Queensland localities shown by the Museum collection are Torres Straits, Bowen, and Moreton Bay.

* Smith—*Loc. cit.*, p. 146.

VENUS PUERPERA, L., var. *LISTERI*, Gray.

Reeve, *loc. cit.*, pl. v., sp. 14.

Several adult valves were taken on the lagoon beach; and what seems a very young shell was caught by the tangles in forty to eighty fathoms on the western slope of the atoll.

VENERUPIS MACROPHYLLA, Deshayes.

Sowerby, *Thes. Conch.*, ii., 1855, p. 763, pl. clxv., fig. 20.

One small specimen taken boring dead coral in the lagoon.

NARANIO LAPICIDA, Chemnitz.

Sowerby, *Thes. Conch.*, ii., 1855, p. 776, pl. clxvi., fig. 26.

Found boring loose coral blocks in the lagoon.

Schmeltz quotes this from Yap, Pelews. Sowerby mentions it from Australia; though no doubt it occurs on the Great Barrier Reef, I am not acquainted with Australian examples of the typical form with posterior radiating ribs. A thinner, smoother form, (var. *divaricata*) has been noticed in South Australia. A useful index to the genus is given by Tryon.*

KELLIA PACIFICA, sp. nov.

(Fig. 54).

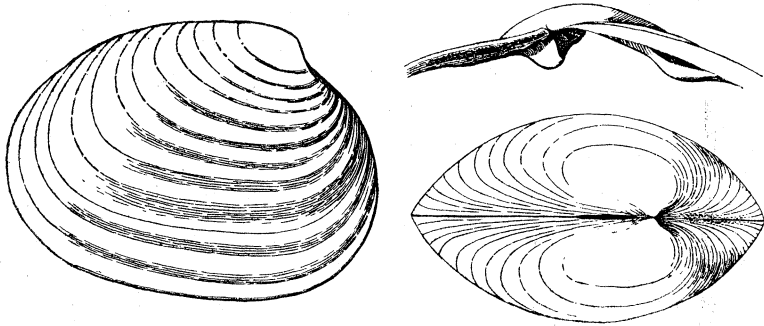


Fig. 54.

Shell oblong, inflated, most glossy, iridescent by reflected light. Equivalve, margins closed. Inequilateral to the extent of the posterior being twice the length of the anterior. Colour milky on the umbones, cream on the ventral margins, with concentric opaque and translucent zones. Sculptured by delicate unequal growth lines which grow coarser with age. Beaks small, almost touching, forwardly directed. Ventral margin straight, anteriorly truncated, posterior rounded and dorsal gently curved.

* Tryon—*Am. Journ. Conch.*, vii., 1872, p. 258.

Length 11, height 8, breadth of conjoined valves 5.5 mm.

Alive in the lagoon under loose blocks of dead coral. There is a specimen of this species in this Museum from New Caledonia, labelled by Mr. E. A. Smith, "*Scintilla ovulina*, Desh.," with the description and figure of which it does not agree.

SCINTILLA SEMICLAUSA, Sowerby.

Sowerby, Conch. Icon., xix., Scintilla, 1874, pl. ii., sp. 9.

One specimen alive in shallow water in the lagoon.

Recorded by Melvill and Standen from Lifu.

ATACTODEA STRIATA, Gmelin.

(Fig. 55).

Reeve, Conch. Icon., viii., Mesodesma, 1854, pl. ii., sp. 10.

Abundant alive in sand at low water along the margin of the lagoon. It was eaten by the children who called it "assouri." An enlarged drawing taken from life on the spot is here reproduced. The animal is extremely bold and active, it is cream colour with a vivid scarlet border to the anterior edge of the mantle.

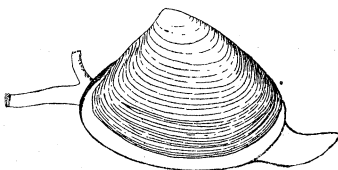


Fig. 55.

Unless slight difference of sculpture be regarded as of specific distinction, this species is shown by Museum material, under various names from Port Curtis, Eclipse Island, Queensland; Guam, Ladrões; Teste Island, Louisiade Archipelago; the Solomons; New Hebrides; Fiji; and Samoa.

ASAPHIS DEFLORATA, Linne.

Reeve, Conch. Icon., x., Capsa, 1856, pl. i.

This species is abundant on the Funafuti lagoon.

Reeve reports it from Tahiti, and Melvill and Standen from Lifu. It is represented in this Museum from Torres Straits and Port Curtis, Queensland; Woodlark Island, British New Guinea; Vate, New Hebrides; New Caledonia; and the Gilberts.

PSAMMOBIA SQUAMOSA, Lamarck.

Reeve, Conch. Icon., x., 1857, Psammobia, pl. vii., sp. 50.

One young and separate valve from the lagoon beach.

CARDIUM ANGULATUM, Lamarck.

Reeve, Conch. Icon., ii., 1845, Cardium, pl. xiv., sp. 70.

Single valves are not uncommon on the lagoon beaches.

Specimens of this species are contained in this Museum from New Caledonia and Uea or Wallis Island. It is represented by the above quoted illustration, and is also identical with specimens returned from the British Museum under the name of "*Cardium philippinense*, Deshayes"; this name I have been unable to trace in literature.

CARDIUM MACULOSUM, Wood.

Reeve, *loc. cit.*, pl. xvi., sp. 76.

A few separate valves were found on the lagoon beach.

CARDIUM CARDISSA, var. *DIONÆUM*, Sowerby.

Reeve, *loc. cit.*, pl. xxi., sp. 122.

Common on the lagoon beach.

This was first collected by Cuming on Anaa, Paumotus.

CARDIUM FRAGRUM, Linne.

Reeve, *loc. cit.*, pl. iv., sp. 23.

Common in the lagoon.

It is represented in this Museum from Port Curtis, Queensland, and New Caledonia.

C. FRAGRUM, var. *SUEZIENSE*, Issel.

Smith, Chall. Rep., Zool., xiii., 1885, p. 158, pl. viii., figs. 2, 2a, 2b.

Separate valves were abundant on the lagoon beach, and one was obtained outside the atoll at a depth of eighty to forty fathoms.

The four dozen odd valves before me exhibit much variation in contour, and they appear to pass by gradual transition into typical *C. fragrum*. Smith, who redescribes and refigures the species, rests his definition chiefly on form. The figure of Issel,* which he condemns, can in outline be exactly matched by Funafuti material. Possibly the species tends in deeper water to assume this form. The "Challenger" dredged it off Fiji, and this Museum possesses examples from Torres Straits.

TRIDACNA GIGAS, L., var. *SQUAMOSA*, Lamarck.

Reeve, Conch. Icon., xiv., Tridacna, 1862, pl. iii.

Not uncommon among the reefs of the lagoon.

Known to the natives of Funafuti as "Fasua tuka," (*ante* p. 67) and by them, as by other South Sea Islanders, esteemed for food.† It had a further economic value as material for ornaments and

* Issel—Malacologia del Mar Rosso, 1869, pl. iii., fig. 4.

† Hedley in Thomson—British New Guinea, 1892, p. 283.

axe heads.* The natives of the Solomon Islands prefer fossil to recent shells for this purpose.†

What information we have, suggests that the range of this species is almost co-extensive with that of the reef-building corals.

Weights and measures of sundry large individuals have lately been published by Smith,‡ his maximum record being five hundred and seven pounds weight, and fifty-four inches in length. This is almost reached by an unquoted record from the Isle of Pines, New Caledonia. Dr. T. Mialaret writes§:—"In the middle of the peninsula which encloses the Bay of Oupi on the east, there occurs, sunk in the coral, the edges of its valves level with the surface of the rock, a gigantic *Tridacna* measuring at least 1 metre 20 in length. At the request of Admiral Courbet, we attempted in 1882 to extract it, but all our efforts were in vain."

The genus *Tridacna* appears to suffer from a superfluity of specific names. No characters of permanent value separate *T. squamosa* from *T. gigas*. These forms are usually if not invariably free.|| On the contrary, the habit of *T. elongata* is to bury itself in rock, a habit always causing variability in shape.

Hanley states that it was upon what Lamarck called "*T. squamosa*" that Linne himself founded his *Chama gigas*.¶

TRIDACNA ELONGATA, Lamarck.

Reeve, *loc. cit.*, pl. ii. ; Valliant, *Ann. Sci. Nat.*, iv., 1865, pp. 65 - 172, pls. viii. - xii.

This species is abundant, perforating dead coral in the Funafuti lagoon. So firmly does the foot adhere, that when wrenching the shell out of its burrow, I have sometimes torn the animal asunder, leaving the foot attached to the rock. The position of the shells embedded in dead coral is well displayed in one of W. S. Kent's photographs.**

The natives, who distinguish it from the preceding as "*Fasua noa*," also use it as food.

The range of *T. elongata* appears to exceed that of *T. gigas*, the furthest southern point reached by it in the Pacific being Lord Howe Island.

* Valliant—*Bull. Soc. Geol. Fr.*, xxv., 1868, pp. 681 - 687.

† Willey—*Nature*, Oct. 1896, p. 523.

‡ Smith—*Proc. Malac. Soc.*, iii., 1898, p. 112.

§ Mialaret—*L'Île des Pins, son Passé, son Present, son Avenir*, 1897, p. 68.

|| Kent—*Great Barrier Reef*, 1893, pp. 44-45, pl. xxix.

¶ Hanley—*Ipsa Linnæi Conchylia*, 1855, p. 85.

** Kent—*Loc. cit.*, foreground of No. 1, pl. iv.

CHAMA IMBRICATA, *Broderip*.

Broderip, Trans. Zool. Soc., 1835, p. 304, pl. xxxix., fig. 2; Lischke, Jap. Meeres Conch., ii., 1871, p. 126, pl. ix., fig. 4.

Chama foliacea, Quoy and Gaimard, Voy. "Astrolabe," Zool., iii., 1835, p. 478, pl. lxxviii., fig. 19.

Abundant at low water in the Funafuti lagoon, a mile south of the village.

The foliations on the opercular valve are in my specimens all worn away, and for identification I have relied on the contour, the dark purple stain on the upper interior margin, and the absence of marginal crenulations. The *C. foliacea*, Q. & G., from Vanikoro, appears to me to be identical. As Broderip's preliminary description* did not appear till April 3rd, 1835,† I do not know whether it was in London or in Paris that the species was first published.

Hugh Cuming brought the type from Marutea, Paumotus; Melvill and Standen note it from Lifu. An example from Aneiteum, New Hebrides, is in this Museum.

CHAMA SPINOSA, *Broderip*.

Broderip, *loc. cit.*, p. 306, pl. xxxviii., figs. 8, 9.

Two specimens from the lagoon.

If I have correctly identified this species, the upper valve must have always been wrongly drawn. In a specimen before me, the umbo is at a third of the diameter of the valve from the hinge, and around it the valve has performed three spiral volutions.

Found by Cuming at Marutea, Paumotus.

CHAMA UNICORNIS, *Bruguiera*.

Clessin, Conch. Cab., Chama, 1888, p. 15, pl. ii., figs. 3, 4.

With doubt I so identify, from insufficient figures and description, a specimen with two revolutions, 15 mm. long from Funafuti.

CORBULA TAHEITENSIS, *Lamarck*.

Reeve, Conch. Icon., ii., Corbula, 1843, pl. ii., sp. 15.

One of the most abundant shells on the lagoon beach, but I did not meet with it alive.

To the original locality of Tahiti, Smith adds that of New Guinea.‡

GASTROCHÆNA LAMELLOSA, *Deshayes*.

Smith, Chall. Rep., Zool., xiii., 1885, p. 28, pl. vii., figs. 2, 2b.

Found alive, boring in coral blocks, in the lagoon.

* Broderip—Proc. Zool. Soc., 1834, p. 149.

† See Sclater—Proc. Zool. Soc., 1894, p. 436.

‡ Smith—Proc. Zool. Soc., 1891, p. 430.

Smith reports this from Torres Straits. In this Museum it is represented from Fiji; New Caledonia; Moreton Bay, Queensland; and St. Vincent's Gulf, South Australia.

NAUSITORIA AURITA, sp. nov.

(Fig. 56).

Shell distinguished by an auricle which is much recurved outwards and above; within, it is raised above the surface of the valve. This character is illustrated by Fig. 56, showing exterior and interior of the right valve. Ventral or median area rather broad. Apophyses short and broad. Hinge tubercle bifid. Length 9, breadth 9 mm. Palettes unknown.

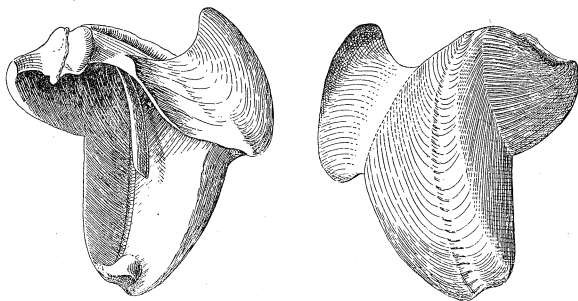


Fig 56.

A log, recognised by a bushman of our party as kauri (*ante* p. 40) which came ashore at Funafuti, had been bored by this mollusc. On breaking the wood up with an axe, I found the only vestiges left of the animal to be a pair of valves broken at the ventral tips, which I found in a burrow.

Mr. R. C. Rossiter afterwards generously presented me with a couple of perfect valves, specifically identical with these Funafuti shells, which he collected at Noumea, New Caledonia.

An ally of this seems to be a species of unknown origin named by Sowerby *Teredo campanulata*, that is however apparently narrower in the ventral portion, and even more produced and recurved in the auricle.

I recently examined* certain Australian shipworms, and remarked that they differed from *Teredo* generically. For their reception I selected the genus *Calobates*, Gould (1862), revised the characters of that genus, and subordinated to it *Nausitoria*, Wright (1864), and *Lyrodus*, Gould (1870). It unfortunately escaped my attention that Tapparone Canefri had already pointed out† that *Calobates*, as a generic term, had been twice preoccupied

* Hedley—Proc. Linn. Soc. N.S.W., xxiii., 1898, p. 91.

† Tapparone Canefri—Ann. Mus. Civ. Genoa, ix., 1877, p. 290.

for birds, and was therefore inadmissible. He proposed to substitute *Bactronophorus*, Tapparone Canefri (1877). As, however, the prior name of *Nausitoria* is available, that must come into use when *Calobates* is abandoned.

The Teredinidæ have been unfortunate in their monographers. The account in the last volume of the *Conchologia Iconia*, by Sowerby, is a slovenly production and full of errors. Even worse is an alleged Monograph by Clessin in the *Conchylien Cabinet*, of which the text and illustrations disgrace that serial. The latter memoir is absolutely the worst zoological monograph I have read.

POROMYA GRANULATA, *Nyst & Westendrop.*

Forbes and Hanley, *British Mollusca*, i., 1853, p. 204, pl. ix., figs. 4-6.

A single valve was collected on the Funafuti beach, which I refer with doubt to this species. It is more oblong than the figure quoted, but as I have no authentic specimen for comparison, and as Dall credits this species with great variation* in form and sculpture, I refrain from assigning specific value to the apparent difference. According to this writer, *P. australis*, Smith,† from Cape York, Queensland, is but a variety. The difference between this and such a figure as that of Sars‡ is great enough to include the form before me.

BRACHIOPODA.

THECIDEA MAXILLA, sp. nov.

(Fig. 57).

Shell small, of variable contour, somewhat boat shaped, attached to stones, shells, or the like, by the beak of the pedicle valve. Colour, dull pale yellow. Sculpture—both valves marked by delicate concentric growth lines and microscopically shagreened. Length of a large specimen, 6 mm.; breadth $3\frac{1}{2}$ mm.

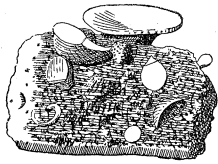


Fig. 57.

Pedicle valve deep, hinge line straight, cardinal area triangular, apex rather recurved. Margin finely granulate, frequently emarginate in front. Protruding from beneath the hinge are two slender prongs arising from a deep seated septum. External to these, and just beneath the hinge line, are two heavy, projecting, wedge-shaped cardinal teeth. The interior of the valve is irregularly studded with sharp points and tubercles arranged longitudinally, and varying in different individuals.

* Dall—*Bull. Mus. Comp. Zool.*, xii., 1886, p. 282.

† Smith—*Chall. Rep.*, *Zool.*, xiii., 1885, p. 54, pl. xi., figs. 2, 2a, 2b.

‡ Sars—*Mollusca regionis Arcticæ Norvegiæ*, 1878, pl. v., figs. 6a, 6b.

The brachial valve is externally horse-shoe shaped, and has a slight median boss. Internally it has a straight hinge line, from beneath which and in the plane of the valve, projects a stout cardinal process, whose transverse vertical section would form an omega, hollow downwards. On either side of the cardinal process, and corresponding to the teeth of the lower valve, are two deep triangular impressions, the sockets. All the free edge of the upper valve is granulated. The frontal emargination gradually passes into a funnel directed backwards; here originates the median septum which tapers distally to an acicular point before the hinge. The ventral face of the septum is hollow, on the right and left of it are produced curled flanges with serrate edges. These edges vary much; in some, presumably old, individuals they project irregular jagged lobes into the cavity.

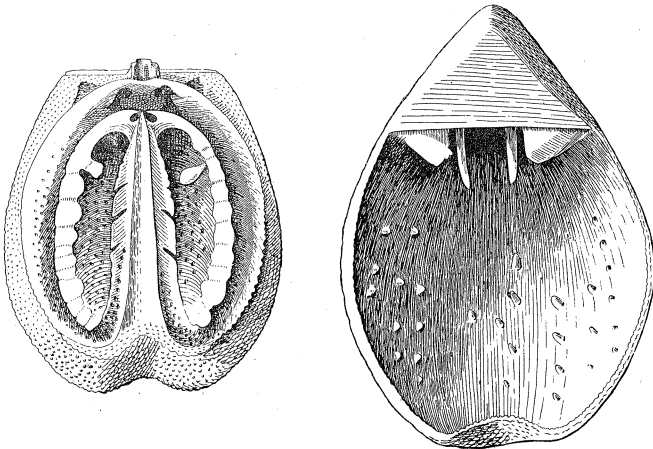


Fig. 57.

If this median septum be compared to the tongue, then the teeth of the human jaw would answer in position to the lateral lobes of the brachial lamellæ. Their development varies much; what I take to be a young stage is shown in my drawing. In other, presumably aged examples, the "canines" and "molars" project as tusks sideways and downwards, while the "incisors" coalesce and advance towards the hinge. The cavity of the valve, exclusive of the septum and lamellæ, has the surface densely perforated.

This species was attached in considerable numbers, horizontally, perpendicularly, or obliquely (Fig. 57) to loose sheets of dead coral which I pulled up by tangles in forty to eighty fathoms on the western slope of Funafuti. At first inspection I mistook them

for the young of a *Spondylus*, hence the erroneous statement on p. 402, that the Brachiopoda were absent from the Archipelago.

The genus *Thecidea* dates back from the opening of the Mesozoic, and is manifested in numerous species through a long range of formations. Like *Nautilus* and *Trigonia*, it now only survives in a few rare and restricted species. It is an interesting coincidence that a genus so intimately associated with fossil coral reefs in Europe, should recur alive on a Pacific Atoll. So far but two recent species, *T. mediterranea*, Risso, and *T. barretti*, Woodward, have been detected. The former, for which the subgenus *Lacazella* has been proposed by Munier Chalmas, is unlike the Pacific species; whereas the latter and the West Indian *T. barretti* are quite close. These conform neither to *Thecidea*, as restricted by Hall and Clarke,* nor to the various subgenera admitted by them. That generic term has been here used in the wider application of Davidson.

On comparing examples of *T. maxilla* with the published accounts of *T. barretti*, I conclude that the characters are so variable that a large series of each will be necessary to discriminate properly between them. At present I would point to the flanges of the median septum and to the greater development of the brachial lamellæ, as features possessed by *T. maxilla* but not by *T. barretti*.† The former, indeed, reminds one of a split walnut.

I am in doubt whether a pseudo-deltidium exists in *T. barretti*, for Davidson writes‡ that "in external shape it cannot be distinguished from the Mediterranean species," which has the pseudo-deltidium; and in a small drawing§ he indicates the pseudo-deltidium. But, on the other hand, in the enlarged drawing, || on which I place more reliance, it is not depicted. Again, it is not shown in his first illustration,¶ nor is it mentioned in either description. Should a pseudo-deltidium be absent in *T. barretti*, as it certainly is in *T. maxilla*, that would isolate these two from the remainder of the genus.

Another feature in common is the fork which projects in two slender prongs between the cardinal teeth in both species, and strikingly differs from the spoon-shaped processes of *T. mediterranea* and from the three prongs of *T. radiata*, the type of the genus.

* Hall and Clarke—47th Ann. Report New York State Mus., 1894, pp. 1091 - 1093.

† Dall—Bull. Mus. Comp. Zool., xii., 1886, pl. vi., fig. 2.

‡ Davidson—Trans. Linn. Soc., Zool. (2), iv., 1889, p. 162.

§ Davidson—*Loc. cit.*, pl. xxiii., fig. 9a.

|| Davidson—*Loc. cit.*, pl. xxiii., fig. 10.

¶ Davidson—Geol. Mag., i., 1864, pl. ii., fig. 1a.