

MARINE MOLLUSCA FROM THE "RYÛKYÛ LIMESTONE" OF KIKAI-ZIMA, RYÛKYÛ¹ GROUP

BY

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With 1 Plate

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I. INTRODUCTION

Through the courtesy of Prof. H. YABE and Mr. S. HANZAWA, of the Institute of Geology and Palaeontology, Sendai, we were given an opportunity to examine the fossil mollusca from the Ryûkyû Limestone of Kikai-zima. The specimens were collected by Mr. HANZAWA, a few years ago and are now preserved in that Institute. The locality is but one in the plateaux district near Kamikatetu², south-eastern part of the island.

According to Mr. HANZAWA, "the Ryûkyû Limestone is a stratified limestone formation and partially massive, composed of reef building corals; it is extensively developed not only in the islands of Ryûkyû but also along the south-western shore of Taiwan (Formosa). The deposits, though usually nearly horizontal, are considerably tilted in places. In Kikai-zima, it is underlaid unconformably by the Simaziri Group, a clastic Neogene Formation, and is decidedly elevated from the present sea level; the highest peak attains 208 m. and the total thickness may be roughly estimated at 100 m."

The fossils of the Ryûkyû Limestone has been studied to some extent. A valuable paper on the foraminifera remains in the formation of Ryûkyû and Taiwan, with a note on its geological feature was once reported by Prof. YABE and Mr. HANZAWA, in 1925³; corals by Prof. YABE and Mr. M. EGUCHI in 1932⁴; and brachiopods by Prof. YABE in 1932⁵ respectively.

Very little is known of the fossil mollusks of the present island; notwithstanding that more attention has been paid for collecting recent forms. In 1904-5, PILSBRY⁶ described five forms

¹Geographical names are spelt in "Nippon siki" (Japanese system).

²上嘉織.

³H. YABE and S. HANZAWA: A Geological Problem Concerning the Raised Coral-Reefs of the Riûkiû Islands and Taiwan: etc., Sci. Rep. Tôhoku Imp. Univ., 2nd. Ser. (Geology), Vol. 7, No. 2, 1925.

⁴H. YABE and M. EGUCHI: Deep-Water Corals from the Riûkiû Limestone of Kikai-jima, Riûkiû Islands, Proc. Imp. Acad., Vol. 8, No. 9, 1932.

⁵H. YABE: Brachiopods of the Genus *Pictothyris* THOMSON, 1927, Sci. Rep. Tôhoku Imp. Univ., 2nd. Ser. (Geology), Vol. 15, No. 3, 1932.

⁶PILSBRY: Proc. Acad. Nat. Sci. Philad., 1904, 1905.

of *Conus* from the island and suspected the deposit from which the material was obtained to be Pliocene in age. The species are:

<i>Conus kikaiensis</i> PILSBRY.	<i>C. comatosa</i> PILSBRY.
<i>C. aratispira</i> PILSBRY.	<i>C. gratacapi</i> PILSBRY.
<i>C. voluminaris avus</i> PILSBRY.	

His new species are hardly distinguished from their respective recent allies, though more or less evolutionary changes in them can be observed. In 1908, Y. HIRASE¹ described one species of *Siphonalia*, *S. kikaigashimana*, and two of *Lyrina*, *L. rex* and *L. mitraeformis kikaiensis* from the same deposit.

The present writers treated exclusively the marine mollusca in the collection and could distinguish 74 species of Pelecypoda, 1 species of Scaphopoda and 126 species of Gastropoda. Among these, 4 forms are specifically indeterminable, and 22 are new to science. Putting aside the extinct and specifically indeterminable forms, we find that the majority of them are still living in the seas adjacent to the fossil locality. A part of the species have hitherto been known only from regions lying to the south of the Ryûkyû Islands while not a single typical northern form is represented. The tropic forms are:

<i>Glycymeris pectinata</i> (LAMARCK)	Island of La Plata, Ecuador.
<i>Pecten</i> (<i>Pecten</i>) <i>fulvicostatus</i> ADAMS et REEVE	Sooloo Archipelago.
<i>Pecten</i> (<i>Aequipecten</i>) <i>nux</i> REEVE	"
<i>Pecten</i> (<i>Amusium</i>) <i>sibogai</i> (DAUTZENBERG et BAVAY)	Off the Island of Bali.
<i>Tridacna cumingii</i> REEVE	The Philippines.
<i>Cardium</i> (<i>Trachycardium</i>) <i>unicolor</i> SOWERBY	"
<i>Cardium</i> (<i>Acanthocardia</i>) <i>exasperatum</i> SOWERBY	New Holland.
<i>Venus</i> (<i>Chione</i>) <i>mindanensis</i> SMITH	The Philippines.
<i>Ringicula caron</i> HINDS	Strait of Molucca.
<i>Conus voluminalis</i> HINDS	"
<i>Daphnella lymneiformis</i> (KIENER)	The Philippines.
<i>Fusinus pyrulatus</i> (REEVE)	Van Diemen's Land.
<i>Nassarius micans</i> (A. ADAMS)	The Philippines.
<i>Erato gallinacea</i> HINDS	"
<i>Triphora</i> (<i>Inella</i>) <i>incisa</i> (PEASE)	Sandwich Islands.
<i>Siliquaria anguina</i> (LINNAEUS)	Molucca.
<i>Heliacus dilectus</i> (DESHAYES)	Isle of Bourbon.
<i>Astraea</i> (<i>Calcar</i>) <i>henica</i> (WATSON)	Fiji Island.
<i>Collonista globula</i> (PHILIPPI)	Antilles. Indian Ocean.
<i>Calliostoma ticanonicum</i> (A. ADAMS)	The Philippines.
<i>Liotina discoidea</i> (REEVE)	"
<i>Emarginula galericulata</i> A. ADAMS	"
<i>Emarginula retecosa</i> A. ADAMS	"

The forms supposed to be extinct or not yet known as living in the fauna amounts to 27 species. They are:

<i>Glycymeris subpectiniiformis</i> n. sp.	<i>Glycymeris hanzawai</i> n. sp.
<i>Arca</i> (<i>Arca</i>) <i>kikaizimana</i> n. sp.	<i>Pseudogrammatodon pacificus</i> n. sp.

¹ Y. HIRASE: Conch. Mag., Vol. 2, 1908.

<i>Pecten (Aequipecten) kikaiensis</i> n. sp.	<i>Lima (Limea) limopsis</i> n. sp.
<i>Venericardia millegrana</i> n. sp.	<i>Venericardia quadriangulata</i> n. sp.
<i>Cardium (Trachycardium) infantule</i> n. sp.	<i>Venus (Chione) yabei</i> n. sp.
<i>Tellina kikaizimana</i> n. sp.	<i>Mactra (Spisula) asperaeformis</i> n. sp.
<i>Cylichna totomiensis</i> (MAKIYAMA)	<i>Terebra orthoplicata</i> n. sp.
<i>Terebra hanzawai</i> n. sp.	<i>Conus kikaiensis</i> PILSBRY
<i>Conus comatosa</i> PILSBRY	<i>Conus gratacapi</i> PILSBRY
<i>Raphitoma granulidecussata</i> n. sp.	<i>Siphonalia kikaigashimana</i> HIRASE
<i>Siphonalia longicanalis</i> n. sp.	<i>Nassarius kikaizimanus</i> n. sp.
<i>Triphora solitaria</i> n. sp.	<i>Architectonica distinguenda</i> n. sp.
<i>Calliostoma (Astele) kikaianum</i> n. sp.	<i>Liotina pseudodiscoidea</i> n. sp.
<i>Epitonium (Cirsotrema) suboptimum</i> n. sp.	

From the above consideration, the percentage of living to the total, in strict sense, is 86.3, while that of the extinct is 13.7. As is always the case in Japan that the so-called extinct species from the Neogene deposits are very often found in the living fauna; this is perhaps also the case in our's, thus the percentage of extinct forms will probably be decreased by future study. In general, the Lyellian method plays an important role for the age determination of the Cenozoic subdivisions, but is not at all satisfactorily applicable until the recent fauna is fully studied.

On the evidence of the foraminifera remains, Prof. YABE and Mr. HANZAWA are in the opinion that the Ryûkyû Limestone was deposited in warm water, decidedly warmer than that of the present. This fact seems also be proved by the fossil mollusca.

The age of the deposits is a topic of discussion by several authors, and is not yet settled. Prof. YABE once stated that "it is certainly neither younger nor much older than the Pleistocene." The present writers from their study of fossil mollusca provisionally regard it as the lowest Pleistocene on the low percentage of the extinct forms.

Be the age as it may, the fauna, is characteristic in the following respects:

- 1) Abundant quantity and excellent preservation. Some appear quite fresh and are hardly distinguishable from those strewn along the present sea-shore.
- 2) Rich in number of species. The fauna contains 201 species of mollusca, 12 of which belong to Pteropoda, a noteworthy point.
- 3) The fauna is certainly tropic and no typical northern forms are intermingled. It is most similar to the fauna of the seas adjacent to the Ryûkyû Islands and farther south, hence the works on the recent Ryûkyû mollusca by Mr. T. KURODA and Mr. F. SUGITANI were always cited in reference in the following list.
- 4) Specimens are rather small in size. Dimensions of all the species are given in following pages for comparison with those of living ones.
- 5) Individual variation is rather great. Precise accounts will be given at a later date.

Our sincere thanks are due to Prof. H. YABE for his kind criticism given us during the present work; acknowledgments are also due to Mr. S. HANZAWA for his valuable information in regard to the Limestone.

II. SYSTEMATIC LIST OF THE SPECIES

Class Pelecypoda

Order Prionodesmacea

Family Arcidae

Genus *Limopsis* SASSO, 18271. *Limopsis multistriata* (FORSKÅL), 1775

Pectunculus cancellatus REEVE, Conch. Icon., Vol. 1, Pl. 7, sp. 39, 1843: *L. Woodwardii* DUNKER, Index Moll. Mar. Jap., p. 237, Pl. 16, figs. 5, 6, 1882: *L. multistriata* KURODA, The Venus, Vol. 1, No. 4, app. p. 15, fig. 26, 1929: Ibid., Vol. 1, No. 6, app. p. 17, 1930.

Numerous specimens, typical and varietal forms; a typical right valve 19 mm. in height, 20 mm. in length and 5 mm. in depth. Reg. No. 50192.

Living: Central Honsyû to Ryûkyû Islands; Japan Sea. Singapore.

Geological distribution: Post-Pleistocene of Awa (YOKOYAMA, NOMURA); Pleistocene of the Kwantô region (TOKUNAGA, YOKOYAMA); Pliocene of Tosa, Kaga, Hyûga and Taiwan (YOKOYAMA).

2. *Limopsis s-kinoshitai* KURODA, 1929

L. s-kinoshitai KURODA, the Venus, Vol. 1, No. 4, app. p. 15, figs. 24, 25, 1929: Ibid., Vol. 1, No. 6, app. p. 18, 1930.

3 specimens, the largest valve 4 mm. in height, 3 mm. in length and 1.5 mm. in depth. This species is apparently closely related to a full grown specimen of *L. nipponica* YOKOYAMA¹ from the Upper Musasino Formation of the Kwantô region. Reg. No. 50192.

Living: Western Honsyû.

Genus *Glycymeris* DA COSTA, 17783. *Glycymeris reevei* (MAYOR), 1868

Pectunculus angulatus REEVE, Conch. Icon., Vol. 1, Pl. 6, sp. 30, 1843, (non LAMARCK, 1819): *G. reevei* SUGITANI, Cat. Luchu shells, P. 43, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 1, No. 2, 1928.

Abundant and of usual form, though immature, the largest right valve 23 mm. in height, 25 mm. in length and 8 mm. in depth. Reg. No. 50194.

Living: Ryûkyû Islands. The Philippines. Molucca.

Geological distribution: Pliocene of Timor (FISCHER).

4. *Glycymeris pectinata* (LAMARCK), 1819 Pl. V (I), Figs. 1a, b.

Pectunculus pectinata REEVE, Conch. Icon., Vol. 1, Pl. 6, sp. 28, 1843.

Several specimens; the largest valve 23 mm. in height and length and 6 mm. in depth. Reg. No. 50195.

Living: Island of La Plata, Ecuador.

5. *Glycymeris subpectiniformis* n. sp.

[see p. 151 (43)]

6. *Glycymeris hanzawai* n. sp.

[see p. 152 (44)]

¹ M. YOKOYAMA: Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 195, Pl. 17, figs. 16, 17, 1922

Genus **Arca** LINNAEUS, 1758

Subgenus **Arca** s. s.

7. *Arca (Arca) adamsiana* DUNKER, 1858-70

A. (Arca) adamsiana KOBELT, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 8, Pt. 2, p. 126, Pl. 32, figs. 7, 8, 1891.

2 small specimens; the larger one 2.5 mm. in height, 5 mm. in length and 1.2 mm. in depth. Reg. No. 50343.

Living: Tyôsen and China.

Geological distribution: Pliocene of Taiwan.

8. *Arca (Arca) cornea* REEVE, 1844

A. cornea REEVE, Conch. Icon., Vol. 2, Pl. 3, sp. 16, 1844: *Anadara cornea* KURODA, The Venus, Vol. 2, No. 1, app. p. 30, 1930.

A single small left valve; 2.5 mm. in height, 3.5 mm. in length and 1 mm. in depth. This species very closely resembles *A. (Arca) subcrenata* LISCKE from Japan; the latter is conspecific with or at least of subspecific value of the former. Reg. No. 50197.

Living: Ryûkyû Islands and Taiwan. The Philippines. Indian Ocean.

Geological distribution: Pliocene of Taiwan. Post-Pliocene of Java (MARTIN); Post-Pliocene and Pliocene of Timor (TESCH); Pliocene and Miocene of the Philippines (DICKERSON).

9. *Arca (Arca) kikaizimana* n. sp.

[see p. 152 (44)]

Subgenus **Navicula** BLAINVILLE, 1818

10. *Arca (Navicula) navicularis* BRUGUIÈRE, 1789

A. (Arca) navicularis KOBELT, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 8, Pt. 2, p. 51, Pl. 4, fig. 7, Pl. 14, figs. 6, 7, 1891: *A. (Arca) linter* KOBELT, Ibid., p. 19, Pl. 6, figs. 1, 2, 1891: *A. (Arca) navicularis* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 1, No. 5, 1928.

A single left valve; 16 mm. in height, 37 mm. in length and 9 mm. in depth. Reg. No. 50342.

Living: Ryûkyû Islands. Indo-Pacific. Australia.

Geological distribution: Post-Pliocene of Billiton (MARTIN); Miocene of Java (MARTIN).

Subgenus **Barbatia** GRAY, 1847

11. *Arca (Barbatia) fusca* SOLANDER, 1786

A. fusca REEVE, Conch. Icon., Vol. 2, Pl. 12, sp. 82, 1844: *A. (Barbatia) fusca* SUGITANI, Cat. Luchu Shells, p. 42, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 2, No. 9, 1928.

Several isolated valves; a right valve, the largest of all 17 mm. in height, 33 mm. in length and 8 mm. in depth. Reg. No. 50199.

Living: Central Honsyû to Taiwan; Japan Sea. The Philippines. Indian Ocean. Red Sea.

Geological distribution: Post-Pleistocene of Awa (YOKOYAMA, NOMURA). Post-Pliocene of Celebes (SCHEPMAN), Billiton (MARTIN); Miocene of the Philippines (DICKERSON), Nias (ICKE and MARTIN).

12. *Arca (Barbatia) reticulata* GMELIN, 1792

A. (Barbatia) reticulata KOBELT, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 8, Pt. 2, p. 210, Pl. 4, fig. 5, 1891: *A. divaricata* KOBELT, Ibid., p. 111, Pl. 29, figs. 6-9, 1891: *A. domingensis* YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 45, Art. 1, p. 60, Pl. 5, fig. 6, 1924: *A. (Barbatia) reticulata* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 2, No. 13, 1928.

4 well preserved immature specimens; the largest 4 mm. in height. 7 mm. in length and 1.5 mm. in depth. Reg. No. 50339.

Living: Northern Honsyû to Ryûkyû Islands; Japan Sea. Polynesia. Indian Ocean. West Indies.

Geological distribution: Post-Pleistocene of Awa and Kazusa (YOKOYAMA, NOMURA).

13. *Arca (Barbatia) symmetrica* REEVE, 1844

Arca symmetrica REEVE, Conch. Icon., Vol. 2, Pl. 17, sp. 117, fig. 120, 1844: *A. (Arca) symmetrica* KOBELT, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 8, Pt. 2, p. 94, Pl. 25, figs. 7, 8, 1891.

4 immature specimens; the largest one 3.5 mm. in height, 5 mm. in length and 1.5 mm. in depth. This is not *Arca symmetrica* of YOKOYAMA¹ from the Lower Musasino Formation of Naganuma. Reg. No. 50338.

Living: Northern Honsyû to Kyûsyû; Japan Sea and Ogasawara-zima. The Philippines. Indian Ocean.

Geological distribution: Post-Pleistocene of Awa (NOMURA); Pleistocene and Pliocene of Japan.

Subgenus *Bathyarca* KOBELT, 1891

14. *Arca (Bathyarca) xenophoricola* (KURODA), 1929

Bathyarca (?) *xenophoricola* KURODA, The Venus, Vol. 1, No. 4, app. p. 16, figs. 38, 39, 1929: Ibid., Vol. 2, No. 1, app. p. 33, 1930.

Several well preserved specimens, some much larger than the type; the largest one 7.5 mm. in height, 16 mm. in length and 3.5 mm. in depth. Reg. No. 50340.

Living: Western Honsyû and Kyûsyû.

Genus *Pseudogrammatodon* ARKELL, 1930

15. *Pseudogrammatodon pacificus* n. sp.

[see p. 153 (45)]

Genus *Cucullaea* LAMARCK, 1801

16. *Cucullaea granulosa* (JONAS), 1846

¹ M. YOKOYAMA: Foss. Miura Penin. etc. Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 39, Art. 6, p. 166, Pl. 17, figs. 7, 8, 1920.

C. granulosa SOWERBY, in REEVE's Conch. Icon., Vol. 17, Pl. 1, figs. 2a, b, 1869: *C. pamotanensis* YOKOYAMA, Imp. Geol. Surv., Rep. 101, p. 107, Pl. 18, figs. 4, 5, 1928 (non MARTIN, 1909): *C. (labiata* SOLANDER var. ?) *granulosa* KURODA, The Venus, Vol. 2, No. 1, app. p. 34, 1930.

A single fractured left valve; about 33 mm. in height, 30 mm. in length and 13 mm. in depth. Reg. No. 50344.

Living: Central Honsyû to Kyûsyû. China.

Geological distribution: Pliocene of Tôtômi, Tosa and Taiwan (YOKOYAMA).

Family Pteriidae

Genus Pteria SCOPOLI, 1777

17. *Pteria loveni* (DUNKER), 1872

Avicula loveni DUNKER, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 7, Pt. 3, p. 67, Pl. 23, fig. 6, 1872: *P. loveni* SUGITANI, Cat. Luchu Shells, p. 44, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 3, No. 26, 1928.

2 fractured immature left valves; the larger one about 13 mm. in height, 22 mm. in length and 5 mm. in depth. Reg. No. 50345.

Living: Western Honsyû to Ryûkyû Islands.

Family Vulsellidae

Genus Vulsella BOLTEN, 1798

18. *Vulsella vulsella* (LINNAEUS), 1758

V. lingulata REEVE, Conch. Icon., Vol. 11, Pl. 1, sp. 6, 1858: *V. vulsella* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 4, No. 32, 1928: The Venus, Vol. 2, No. 2, app. p. 38, fig. 53, 1930: Ibid., Vol. 2, No. 3, app. p. 46, 1930.

A single immature right valve; about 32 mm. in height, 17 mm. in length and 6 mm. in depth. Reg. No. 50346.

Living: Central Honsyû to Taiwan. Red Sea.

Family Ostreidae

Genus Ostrea LINNAEUS, 1758

19. *Ostrea imbricata* LAMARCK, 1819

O. imbricata SOWERBY, in REEVE's Conch. Icon., Vol. 18, Pl. 17, sp. 36, 1871: *O. (Lopha) imbricata* SUGITANI, Cat. Luchu Shells, p. 46, 1927.

4 valves; the largest upper valve about 38 mm. in height, 28 mm. in length and 9 mm. in depth. Reg. No. 50347.

Living: Western Honsyû to Ryûkyû Islands. China.

Geological distribution: Post-Pleistocene of Awa (NOMURA).

20. *Ostrea musashiana* YOKOYAMA, 1920

O. musashiana YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 39, Art. 6, p. 163, Pl. 16, figs. 1-5, 1920: *O. (Pycnodonta) musashiana* KURODA, The Venus, Vol. 2, No. 3, app. p. 48, fig. 61, 1930: Ibid., Vol. 2, No. 5, app. p. 57, 1931.

Several specimens; the largest upper valve about 47 mm. in height, 42 mm. in length and 15 mm. in depth. Reg. No. 50348.

Living: Central Honsyû to Ryûkyû Islands.

Geological distribution: Pleistocene and Pliocene of the Kwantô region (YOKOYAMA); Pliocene of Tôtômi (YOKOYAMA, MAKIYAMA); Pliocene of Hyûga (YOKOYAMA).

Family Pectinidae

Genus *Pecten* OSBECK, 1765

Subgenus *Pecten* s. s.

21. *Pecten (Pecten) porphyreus* (GMELIN), 1792

P. porphyreus KÜSTER, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 7, Pt. 2, p. 88, Pl. 22, fig. 12, 1859: *P. splendidulus* KÜSTER, Ibid., p. 84, Pl. 21, fig. 6, Pl. 22, fig. 6, 1859: *Chlamys senatorius porphyreus* SUGITANI, Cat. Luchu Shells, p. 45, 1927: *P. (Chlamys) senatorius porphyreus* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 4, No. 41, 1928.

Several specimens, mostly in natural colouration; the largest valve 34 mm. in height, 32 mm. in length and 6 mm. in depth. Reg. No. 50350.

Living: Ryûkyû Islands and Taiwan. Singapore.

22. *Pecten (Pecten) irregularis* SOWERBY, 1842

P. irregularis SOWERBY, Thes. Conch., Vol. 1, p. 69, Pl. 18, figs. 51, 52, 1842: DUNKER, Index Moll. Mar. Jap., p. 246, Pl. 11, figs. 2, 15, 1882.

2 right and 1 left valves, one of the former is a varietal form. The left valve 21 mm. in height, 19 mm. in length and 4 mm. in depth. Reg. No. 50349.

Living: Central Honsyû to Ryûkyû Islands; Japan Sea. Timor.

Geological distribution: Post-Pleistocene of Awa (YOKOYAMA, NOMURA); Pleistocene and Pliocene of the Kwantô region (YOKOYAMA); Miocene of Idu (NOMURA and NIINO).

23. *Pecten (Pecten) fulvicostatus* ADAMS et REEVE, 1850

P. fulvicostatus REEVE, Conch. Icon., Vol. 8, Pl. 28, sp. 123, 1853.

A single right valve; 18 mm. in height, 15 mm. in length and 3 mm. in depth. The identification of the species is more or less questionable. Reg. No. 50351.

Living: Sooloo Archipelago.

Subgenus *Aequipecten* FISCHER, 1886

24. *Pecten (Aequipecten) reevei* ADAMS et REEVE, 1850 Pl. V (I), Fig. 8.

P. reevei REEVE, Conch. Icon., Vol. 8, Pl. 23, sp. 91, 1853: *Chlamys (Aequipecten) reevei* SUGITANI, Cat. Luchu Shells, p. 45, 1927: *P. (Chlamys) reevei* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 5, No. 48, 1928.

5 valves; a perfect right valve 46 mm. in height, 49 mm. in length and 7 mm. in depth. Reg. No. 50356.

Living: Western Honsyû to Ryûkyû Islands. China. Sooloo Archipelago.

25. *Pecten (Aequipecten) vesiculosus* DUNKER, 1877

P. vesiculosus DUNKER, Index Moll. Mar. Jap., p. 241, Pl. 11, fig. 1, 1882.

Several specimens of usual form, well preserved and nearly in natural colouration; the largest right valve 24 mm. in height, 25 mm. in length and 6 mm. in depth. Reg. No. 50353.

Living: Central Honsyû to Kyûsyû; Japan Sea. Indo-Pacific.

Geological distribution: Pleistocene and Pliocene of the Kwantô region (YOKOYAMA); Pliocene of Hyûga and Tosa (YOKOYAMA); Miocene of Izu (NOMURA and NIINO).

26. *Pecten (Aequipecten) spectabilis* REEVE, 1853

P. spectabilis REEVE, Conch. Icon., Vol. 8, Pl. 29, sp. 128, 1853: *P. (Chlamys) (historionicus* GMELIN var. ?) *spectabilis* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 5, No. 49, 1928.

A single left valve; 25 mm. in height, 24.5 mm. in length and 4 mm. in depth. Reg. No. 50352.

Living: Western Honsyû to Taiwan. Japan Sea. New Caledonia. Siam.

Geological distribution: Post-Pleistocene of Awa (YOKOYAMA, NOMURA). Post-Pliocene of Celebes (SCHEPMAN).

27. *Pecten (Aequipecten) nux* REEVE, 1853

P. nux REEVE, Conch. Icon., Vol. 8, Pl. 32, sp. 143, 1853: KOBELT, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 7, Pt. 2, p. 163, Pl. 45, figs. 5-8, 1888.

10 specimens; a right valve, the largest one, 19 mm. in height and length and 5 mm. in depth. Reg. No. 50355.

Living: Marquesas Islands. Sooloo Archipelago.

Geological distribution: Pliocene of Taiwan.

28. *Pecten (Aequipecten) inaequalis* SOWERBY, 1842

P. inaequalis SOWERBY, Thes. Conch., Vol. 1, p. 50, Pl. 19, figs. 193-5, 1842.

7 valves; a right valve, the largest of all, 13 mm. in height, 14 mm. in length and 3 mm. in depth. Reg. No. 50354.

Living: Western Honsyû to Kyûsyû. The Philippines.

Geological distribution: Pliocene of Taiwan.

29. *Pecten (Aequipecten) kikaiensis* n. sp.

[see p. 153 (45)]

Subgenus *Vola* H. et A. ADAMS, 1857

30. *Pecten (Vola) sinensis* SOWERBY, 1842

P. sinensis SOWERBY, Thes. Conch., Vol. 1, p. 48, Pl. 16, figs. 120, 121, 134, 1842.

A single left valve, fragmental, but very characteristic. This is not *Pecten (Vola) sinensis* of YOKOYAMA¹ from the Byôritu Beds of Taiwan. Reg. No. 50357.

Living: Western Honsyû. China.

¹ M. YOKOYAMA: Imp. Geol. Surv. Jap., Report No. 101, p. 97, Pl. 14, fig. 1, 1928.

31. *Pecten (Vola) tricarinatus* ANTON, 1839

P. asper SOWERBY, Thes. Conch., Vol. 1, p. 50, Pl. 19, figs. 196, 197, 1842: *P. tricarinatus* PHILIPPI, Abbild., Vol. 1, p. 99, Pl. 1, fig. 4, 1844.

4 valves; the largest right valve 34 mm. in height, 40 mm. in length and 9 mm. in depth. Reg. No. 50360.

Living: Western Honsyû. China. New Guinea.

Subgenus **Decadopecten** SOWERBY, 183732. *Pecten (Decadopecten) plicus* (LINNAEUS), 1758

P. plica SOWERBY, Thes. Conch., Vol. 1, p. 65, Pl. 20, figs. 237-239, 1842: *P. subplicatus* YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 181, Pl. 15, fig. 3, 1922 (non SOWERBY): *P. plica* YOKOYAMA, Ibid., Vol. 45, Art. 1, p. 56, Pl. 4, fig. 11, 1924.

Several specimens, mostly immature; the largest right valve 34 mm. in height, 32 mm. in length and 8 mm. in depth. Reg. No. 50358.

Living: Central Honsyû to Taiwan. Japan Sea. China. Indo-Pacific.

Geological distribution: Post-Pleistocene and Pleistocene of the Kwantô region (YOKOYAMA).

Subgenus **Amusium** BOLTEN, 179833. *Pecten (Amusium) japonicus* (GMELIN), 1792

P. japonicus SOWERBY, Thes. Conch., Vol. 1, p. 55, Pl. 15, figs. 109, 110, 1842: *Amusium japonicum* SUGITANI, Cat. Luchu Shells, p. 45, 1927.

Several specimens; the most perfect one, a right valve, 73 mm. in height, 71 mm. in length and 6 mm. in depth. This is not *Amusium japonicum* of YOKOYAMA¹ from the Byûritu Beds of Taiwan. Reg. No. 50361.

Living: Central Honsyû to Ryûkyû Islands. China. Gulf of Mexico.

Geological distribution: Pliocene of Taiwan; Pliocene of California.

34. *Pecten (Amusium) sibogai* (DAUTZENBERG et BAVAY), 1904

Amusium sibogai DAUTZENBERG et BAVAY, Siboga Exped., Vol. 53b, p. 31, Pl. 28, figs. 1-4, 1912.

3 left valves; the largest one 11 mm. in height, 13 mm. in length and 1.5 mm. in depth. The identification of the species is more or less questionable. Reg. No. 50362.

Living: East of Bali Island.

Subgenus **Propeamusium** GREGORIO, 188335. *Pecten (Propeamusium) emadoritinctus* (KURODA), 1931

Amusium (Propeamusium) emadoritinctum KURODA, The Venus, Vol. 2, No. 6, app. p. 72, figs. 81, 82, 1931: Ibid., Vol. 3, No. 1, app. p. 77, 1931.

¹ M. YOKOYAMA: Imp. Geol. Surv. Jap., Rep. No. 101, p. 95, Pl. 13, fig. 12, 1928.

Several valves; the largest left valve 9 mm. in height, 10 mm. in length and 1 mm. in depth. Reg. No. 50363.

Living: Ryûkyû Islands.

Family Spondylidae

Genus *Spondylus* LINNAEUS, 1758

36. *Spondylus regius* LINNAEUS, 1758 Pl. V (I), Fig. 10.

S. regius SOWERBY, Thes. Conch., Vol. 1, p. 424, Pl. 87, fig. 30, 1847: SUGITANI, Cat. Luchu Shells, p. 44, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 5, No. 54, 1928.

A single large and well preserved right valve; 77 mm. in height, 72 mm. in length and 21 mm. in depth. Reg. No. 50364.

Living: Western Honsyû to Ryûkyû Islands. Sooloo Archipelago.

Geological distribution: Post-Pleistocene of Awa (NOMURA).

37. *Spondylus nicobaricus* SCHRELBERS, 1793

S. nicobaricus SOWERBY, Thes. Conch., Vol. 1, p. 429, Pl. 88, fig. 48, 1847: *S. ciliatus* SOWERBY, Ibid., p. 429, Pl. 89, fig. 52, 1847: *S. coccineus* SOWERBY, Ibid., p. 430, Pl. 88, fig. 47, 1847: *S. ocellatus* REEVE, Conch. Icon., Vol. 9, Pl. 12, sp. 43, 1856: *S. histrix* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 5, No. 59, 1928.

Numerous specimens, typical and varietal forms; the largest, right valve 33 mm. in height, 30 mm. in length and 15 mm. in depth. Reg. No. 50365.

Living: Ryûkyû Islands and Taiwan. The Philippines. Lord Hoods Islands.

Genus *Plicatula* LAMARCK, 1801

38. *Plicatula australis* LAMARCK, 1819

P. australis SOWERBY, Thes. Conch., Vol. 1, p. 436, Pl. 91, figs. 20-22, 1847: REEVE, Conch. Icon., Vol. 19, Pl. 3, figs. 10a-c, 1873.

Numerous well preserved specimens in which several forms are found; the largest, right valve 29 mm. in height, 24 mm. in length and 3 mm. in depth. Reg. No. 50366.

Living: Ryûkyû Islands and Taiwan. The Philippines. Australia.

Geological distribution: Post-Pleistocene of Awa (NOMURA).

Family Limidae

Genus *Lima* BRUGUIÈRE, 1797

Subgenus *Ctenoides* H. et A. ADAMS, 1858

39. *Lima (Ctenoides) oshimensis* SOWERBY, 1914

L. (Ctenoides) oshimensis SUGITANI, Cat. Luchu Shells, p. 45, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 6, No. 70, 1928: The Venus, Vol. 3, No. 3, app. p. 106, fig. 125, 1932: Ibid., Vol. 3, No. 4, app. p. 116, 1932.

3 small valves; the largest one 17 mm. in height 15 mm. in length and 4 mm. in depth. Reg. No. 50367.

Living: Sikoku to Ryûkyû Islands.

Subgenus **Limatula** S. WOOD, 1837

40. *Lima* (*Limatula*) *japonica* A. ADAMS, 1863

L. japonica SOWERBY, in REEVE's Conch. Icon., Vol. 18, Pl. 5, sp. 21, 1872: *L. (Limatula) japonica* THIELE, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 7, Pt. 2a, p. 39, Pl. 8, figs. 7, 8, 1920.

Several well preserved specimens; the largest, right valve 12.5 mm. in height, 9 mm. in length and 4.5 mm. in depth. Reg. No. 50369.

Living: Central and Western Honsyû. Japan Sea.

Geological distribution: Pleistocene and Pliocene of the Kwantô region (YOKOYAMA, TOKUNAGA); Pliocene of Sado (YOKOYAMA).

41. *Lima* (*Limatula*) *bullata* (BORN), 1778

L. bullata SOWERBY, in REEVE's Conch. Icon., Vol. 18, Pl. 1, sp. 3, 1872: *L. strangeri* SOWERBY, Ibid., Pl. 3, sp. 15, 1872: *L. (Limatula) bullata* THIELE, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 7, Pt. 2a, p. 38, Pl. 1, fig. 6, Pl. 8, figs. 5, 6, 1920.

A single well preserved specimen; 21 mm. in height, 14 mm. in length and 6 mm. in depth. Reg. No. 50370.

Living: Sikoku. Indo-China. Indian Ocean.

42. *Lima* (*Limatula*) *jacksonensis* THIELE, 1920

L. (Limatula) jacksonensis THIELE, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 7, Pt. 2a, p. 51, Pl. 9, fig. 26, 1920: *L. (Limatula) sp.* KURODA, The Venus, Vol. 3, No. 3, app. p. 107, fig. 130, 1932: Ibid., Vol. 3, No. 4, app. p. 116, 1932.

4 valves; the largest one 5 mm. in height, 2.5 mm. in length and 1.5 mm. in depth. The identification of this species is somewhat questionable. Reg. No. 50371.

Living: Off the east coast of Japan. Australia.

Subgenus **Limea** BRONN, 1831

43. *Lima* (*Limea*) *limopsis* n. sp.

[see p. 154 (46)]

Family **Mytilidae**

Genus **Septifer** RECLUZ, 1848

44. *Septifer excisus* (WIEGMANN), 1837

Mytilus excisus REEVE, Conch. Icon., Vol. 10, Pl. 4, sp. 13, 1857: *S. excisus* SUGITANI, Cat. Luchu. Shells, p. 43, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 7, No. 74, 1928.

3 valves; the largest left valve 5.5 mm. in height, 3.5 mm. in length and 1.5 mm. in depth. Reg. No. 50372.

Living: Western Honsyû to Ryûkyû Islands. Madagascar.

Genus **Trichomya** v. IHERING, 1900

45. *Trichomya hirsuta* (LAMARCK), 1819

Mytilus hirsutus REEVE, Conch. Icon., Vol. 10, Pl. 3, sp. 8, 1857.

2 right valves, both nearly equal in size being 5 mm. in height, 3.5 mm. in length and 1.2 mm. in depth. This is not *Mytilus hirsutus* YOKOYAMA¹ from the Yokosuka Zone of Sagami. Reg. No. 50373.

Living: Central Honsyû to Kyûsyû. Japan Sea. New Zealand.

Order **Anomalodesmacea**

Family **Myochamidae**

Genus **Myodora** GRAY, 1840

46. *Myodora reeviana* SMITH, 1885

M. reeviana PILSBRY, Proc. Acad. Nat. Sci. Philad., p. 558, Pl. 41, figs. 7-10, 1904: YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 39, Art. 6, p. 143, Pl. 11, figs. 12, 13, 1920.

4 valves; the largest right valve 6.5 mm. in height, 9 mm. in length. Reg. No. 50374.

Living: Kyûsyû. China.

Geological distribution: Pleistocene and Pliocene of the Kwantô region (YOKOYAMA).

Order **Teleodesmacea**

Family **Carditidae**

Genus **Venericardia** LAMARCK, 1801

47. *Venericardia millegrana* n. sp.

[see p. 154 (46)]

48. *Venericardia quadriangulata* n. sp.

[see p. 155 (47)]

49. *Venericardia* sp. indet.

A single small specimen, indeterminable. Reg. No. 50611.

Family **Tridacnidae**

Genus **Tridacna** BRUGUIÈRE, 1769

50. *Tridacna cumingi* REEVE, 1862

T. cumingi REEVE, Conch. Icon., Vol. 14, Pl. 7, figs. 7a, b, 1862.

A large, heavy specimen, more or less fractured; about 110 mm. in height, 210 mm. in length and 80 mm. in depth. Reg. No. 49842.

Living: The Philippines. South Sea.

¹ M. YOKOYAMA: Jour. Coll. Sci. Tôkyô Imp. Univ. Vol. 39, Art. 6, p. 144, Pl. 11, fig. 16, 1926.

Family **Chamidae**Genus **Chama** LINNAEUS, 175851. *Chama lobata* BRODERIP, 1835

C. lobata REEVE, Conch. Icon., Vol. 4, Pl. 6, sp. 29, 1847: CLESSIN, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 8, Pt. 5, p. 13, Pl. 6, figs. 3, 4, Pl. 8, fig. 5, Pl. 14, fig. 4, 1889: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 9, No. 103, 1928.

Several well preserved specimens; the largest, upper valve 29 mm. in height, 30 mm. in length. Reg. No. 50376.

Living: Ryûkyû Islands. New Holland, etc.

Genus **Pseudochama** ODHNER, 191752. *Pseudochama retroversa* (LISCHKE), 1868

Chama retroversa LISCHKE, Jap. Meeres-Conch., Vol. 2, p. 131, Pl. 9, figs. 1-3, 1869.

3 specimens; the largest lower valve 41 mm. in height, 32 mm. in length and 19 mm. in depth. Reg. No. 50377.

Living: Central Honsyû to Kyûsyû. Japan Sea.

Geological distribution: Post-Pleistocene of Awa (YOKOYAMA, NOMURA).

Family **Lucinidae**Genus **Lucina** BRUGUIÈRE, 1797Subgenus **Parvilucina** DALL, 190153. *Lucina* (*Parvilucina*) *pisidium* DUNKER, 1860

Lucina pisidium DUNKER, Moll. Jap., p. 28, Pl. 3, fig. 9, 1861: *L. (Pillucina) pisidium* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 10, No. 107, 1928.

A single specimen; 14 mm. in height, 16 mm. in length and 5 mm. in depth. Reg. No. 50379.

Living: Northern Honsyû to Ryûkyû Islands. Tyôsen, etc.

Geological distribution: Post-Pleistocene and Pliocene of the Kwantô region (YOKOYAMA, NOMURA); Pliocene of Sado (YOKOYAMA).

Genus **Codakia** SCOPOLI, 1777Subgenus **Jagonia** RECLUZ, 186954. *Codakia* (*Jagonia*) *divergens* (PHILIPPI), 1850

Lucina divergens PHILIPPI, Abbild., Vol. 3, p. 103, Pl. 2, fig. 4, 1850: *Codakia (Jagonia) bella* SUGITANI, Cat. Luchu Shells, p. 47, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 10, No. 111, 1928.

A single immature specimen; 2.5 mm. in height, 3 mm. in length and 0.5 mm. in depth. Reg. No. 50378.

Living: Central Honsyû to Ryûkyû Islands. The Philippines. Indian Ocean.

Geological distribution: Post-Pleistocene of Awa (NOMURA).

Family **Cardiidae**

Genus **Cardium** LINNAEUS, 1758

Subgenus **Trachycardium** MÖRCH, 1853

55. *Cardium (Trachycardium) unicolor* SOWERBY, 1840

C. unicolor REEVE, Conch. Icon., Vol. 2, Pl. 18, sp. 88, 1845: RÖMER, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 10, Pt. 2, p. 64. Pl. 9, figs. 22-24, 1869.

A single well preserved right valve; 34 mm. in height, 27 mm. in length and 12 mm. in depth. Reg. No. 50383.

Living: The Philippines.

Geological distribution: Pliocene of the Philippines (DICKERSON).

56. *Cardium (Trachycardium) infantule* n. sp.

[see p. 156 (48)]

Subgenus **Laevicardium** SWAINSON, 1840

57. *Cardium (Laevicardium) biradiatum* BRUGUIÈRE, 1789

C. biradiatum REEVE, Conch. Icon., Vol. 2, Pl. 10, sp. 49, 1844: *C. (Laevicardium) biradiatum* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 11, No. 124, 1928.

7 well preserved valves; the largest one 40 mm. in height, 33 mm. in length and 10 mm. in depth. Reg. No. 50382.

Living: Ryûkyû Islands. The Philippines. Ceylon.

Subgenus **Acanthocardia** GRAY, 1851

58. *Cardium (Acanthocardia) exasperatum* SOWERBY, 1840

C. exasperatum REEVE, Conch. Icon., Vol. 2, Pl. 20, sp. 107, 1844: RÖMER, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 10, Pt. 2, p. 27, Pl. 9, figs. 2, 3, 1869.

5 valves; the largest right valve 21 mm. in height and length, and 6 mm. in depth. Reg. No. 50384.

Living: New Holland.

Subgenus **Nemocardium** MEEK, 1876

59. *Cardium (Nemocardium) beckeï* ADAMS et REEVE, 1848

C. beckeï DUNKER, Index Moll. Jap., p. 212, Pl. 15, figs. 1, 2, 3, 1882: *C. (Discors) beckeï* SUGITANI, Cat. Luchu Shells, p. 51, 1927.

3 valves; the most perfect right valve 40 mm. in height, 38 mm. in length and 15 mm. in depth. Reg. No. 50381.

Living: Western Honsyû and Ryûkyû Islands.

Subgenus **Discors** DESHAYES, 1858

60. *Cardium (Discors) lyratum* SOWERBY, 1841

C. lyratum REEVE, Conch. Icon., Vol. 2, Pl. 2, sp. 12, 1844: *C. (Discors) lyratum* SUGITANI, Cat. Luchu Shells, p. 51, 1927: Kuroda, Cat. Shell-bearing Moll. Amami-Ôsima, p. 11, No. 125, 1928.

A single right valve; 49 mm. in height, 45 mm. in length and 21 mm. in depth. Reg. No. 50380.

Living: Ryûkyû Islands. The Philippines.

Genus **Isocardia** LAMARCK, 1799

Subgenus **Miocardia** H. et A. ADAMS, 1858

61. *Isocardia (Miocardia) moltkiana* (LAMARCK), 1819.

I. Moltkiana REEVE, Conch. Icon., Vol. 2, Pl. 1, sp. 1, 1845: RÖMER, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 10, Pt. 2, p. 8, Pl. 1, figs. 4-7, 1869.

3 valves; the largest one 23 mm. in height, 29 mm. in length and 11 mm. in depth. Reg. No. 50387.

Living: Kyûsyû. The Philippines.

Geological distribution: Neogene of Java (MARTIN)?

Family **Veneridae**

Genus **Dosinia** SCOPOLI, 1777

62. *Dosinia histrio* (GMELIN), 1792

Arthemis variegata REEVE, Conch. Icon., Vol. 6, Pl. 6, figs. 33 a, b, 1850: *D. histrio* RÖMER, Mon. Venus, Vol. 2, p. 33, Pl. 6, figs. 2, 3, 1864: *D. variegata* SUGITANI, Cat. Luchu Shells, p. 48, 1927: *D. histrio* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 12, No. 131, 1928.

10 valves, in two forms; the largest right valve 29 mm. in height and length, and 9 mm. in depth. Reg. No. 50388.

Living: Central Honsyû to Ryûkyû Islands. The Philippines. Molucca. Australia.

Geological distribution: Miocene of the Philippines (DICKERSON).

Genus **Venus** LINNAEUS, 1758

Subgenus **Chione** MEGERLE VON MÜHLFELDT, 1811

63. *Venus (Chione) yabei* n. sp.

[see p. 156 (48)]

64. *Venus (Chione) foveolata* SOWERBY, 1855

V. foveolata SOWERBY, Thes. Conch., Vol. 2, p. 730, Pl. 154, fig. 46, 1855: *Chione casinaeformis* YOKOYAMA, Jour. Fac. Sci. Imp. Univ. Tôkyô, Sec. 2, Vol. 1, Pt. 9, p. 352, Pl. 39, figs. 7-9, 1926.

A single right valve; 31 mm. in height, 34 mm. in length and 9 mm. in depth. Reg. No. 50389.

Living: Central and Western Honsyû. Martinique.

Geological distribution: Pliocene of Tôtômi, Tosa, Hizen and Taiwan (YOKOYAMA); Miocene of Tôtômi (YOKOYAMA).

65. *Venus (Chione) mindanensis* SMITH, 1885

Venus (Chione) mindanensis SMITH, Challenger Rep., Lamellibr., p. 130, Pl. 3, figs. 4, 4b, 1885: *Chione mindanensis* YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 150, Pl. 11, figs. 2, 3, 1922.

Numerous well preserved specimens; the largest one 4.5 mm. in height, 5.5 mm. in length and 1.5 mm. in depth. The Musasino shell differs slightly from the type figured by SMITH in sculpture, and is perhaps varietal. Reg. No. 50390.

Living: Off Mindanao, the Philippines. ?Japan.

Geological distribution: Pleistocene of the Kwantô region (YOKOYAMA).

Subgenus **Callanaites** IREDALE, 1917

66. *Venus (Callanaites) hiraseana* (KURODA), 1930

Callanaites hiraseana KURODA, The Venus, Vol. 2, No. 1, p. 2, Text-fig. 1, 1930.

A single valve; 11 mm. in height, 14 mm. in length and 4 mm. in depth. Reg. No. 50391.

Living: Western Honsyû.

Genus **Gafrarium** BOLTEN, 1798

Subgenus **Circe** SCHUMACHER, 1817

67. *Gafrarium (Circe) scriptum* (LINNAEUS), 1758

Circe scripta REEVE, Conch. Icon., Vol. 14, Pl. 1, sp. 1, 1864: YOKOYAMA, Imp. Geol. Surv. Jap., Rep. No. 101, p. 81, Pl. 8, figs. 7, 8, 1928.

A single valve; 35 mm. in height, 34 mm. in length and 9 mm. in depth. This is not *Circe scripta* of YOKOYAMA¹ from the Lower Musasino Formation of Naganuma. Reg. No. 50392.

Living: Central Honsyû to Ryûkyû Islands. Molucca. Red Sea.

Geological distribution: Post-Pleistocene of Noto and Pliocene of Taiwan (YOKOYAMA). Post-Pliocene and Pliocene of Java (MARTIN); Pliocene of Timor (TESCH, FISCHER).

Genus **Pitar** RÖMER, 1857

Subgenus **Pitarina** JUKE-BROWNE, 1913

68. *Pitar (Pitarina) subpellucida* (SOWERBY), 1851

Cytherea subpellucida SOWERBY, Thes. Conch., Vol. 2, p. 60, Pl. 113, fig. 136, 1855: *Pitaria subpellucida* SUGITANI, Cat. Luchu Shells, p. 49, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 14, No. 148, 1928.

A single fractured valve; above 26 mm. in height and 10 mm. in depth. Reg. No. 50393.

Living: Central Honsyû to Ryûkyû Islands. The Philippines.

Geological distribution: Post-Pleistocene of Kadusa (NOMURA); Pliocene of Taiwan.

Family **Tellinidae**

Genus **Tellina** LINNAEUS, 1758

Subgenus **Angulus** MEGERLE VON MÜHLFELDT, 1811

69. *Tellina (Angulus) iridella* v. MARTENS, 1865

T. iridella RÖMER, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 10, Pt. 4, p. 256, Pl. 19, figs. 4-6, 1871.

¹ M. YOKOYAMA: Jour. Coll. Sci. Tôkyô Imp. Univ. Vol. 39, Art. 6, p. 123, Pl. 8, figs. 15, 16, 1920.

Numerous specimens; the largest valve 4 mm. in height, 7 mm. in length and 1.5 mm. in depth. Reg. No. 50394.

Living: Central Honsyû to Kyûsyû.

Geological distribution: Post-Pleistocene of Awa (YOKOYAMA, NOMURA); Pleistocene of Musasi (YOKOYAMA).

70. *Tellina kikaizimana* n. sp.

[see p. 157 (49)]

Family Corbulidae

Genus *Corbula* BRUGUIÈRE, 1797

71. *Corbula rotalis* HINDS, 1843

C. rotalis REEVE, Conch. Icon., Vol. 2, Pl. 5, sp. 34, 1844: *C. substriata* YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 125, Pl. 7, fig. 3, 1922.

Numerous specimens; the largest left valve 4.5 mm. in height, 5.5 mm. in length and 2.5 mm. in depth. Reg. No. 50397.

Living: Kyûsyû. The Philippines.

Geological distribution: Pleistocene of the Kwantô region (YOKOYAMA).

Family Psammobiidae

Genus *Psammosolen* RISSO, 1826

72. *Psammosolen divaricatus* (LISCHKE), 1868

Macha divaricata LISCHKE, Jap. Meeres-Conch., Vol. 1, p. 142, Pl. 10, figs. 1, 2, 1868: *Solecurtus divaricatus* CLESSIN, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 11, Pt. 3, p. 87, Pl. 21, fig. 4, 1888: *P. divaricatus* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 18, No. 193, 1923.

A single valve which is a varietal form; 16 mm. in height, 31 mm. in length and 4 mm. in depth. Reg. No. 50395.

Living: Northern Honsyû to Ryûkyû Islands.

Geological distribution: Post-Pleistocene, Pleistocene and Pliocene of the Kwantô region (YOKOYAMA, NOMURA).

Family Mactridae

Genus *Mactra* LAMARCK, 1799

Subgenus *Spisula* GRAY, 1838

73. *Mactra (Spisula) asperaeformis* n. sp.

[see p. 156 (48)]

Family Gastrochaenidae

Genus *Rocellaria* BLAINVILLE, 1828

74. *Rocellaria* (2 species?) indet.

Several fragmental tubes, among which two forms are distinguished, the one with agglutinating grains of sand, and the other wave-ringed on the entire surface. Reg. Nos. 50399, 50399a.

Class Scaphopoda

Family Dentaliidae

Genus *Dentalium* LINNAEUS, 1758

Subgenus *Laevidentalium* COSSMANN, 1888

75. *Dentalium* (*Laevidentalium*) *corseum* PILSBRY, 1905

D. (Laevidentalium) corseum PILSBRY, Proc. Acad. Nat. Sci. Philad., p. 117, Pl. 5, figs. 42, 43, 1905.

5 fractured specimens; the most perfect one 38 mm. in length, 3.8 mm. in diameter. Reg. No. 50400.

Living: Central Honsyū. Japan Sea.

Class Gastropoda

Order Pteropoda

Family Limacinidae

Genus *Limacina* (CUVIER, 1817) LAMARCK, 1819

76. *Limacina inflata* (D'ORBIGNY), 1836

Atlanta inflata SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 6, sp. 42, 1877: *L. inflata* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 2, Pl. 1, figs. 1a, 1b, 1912.

Numerous specimens; the largest one 2 mm. in diameter. Reg. No. 50442.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

76. *Limacina peronii* (LESUEUR), 1821

Atlanta peronii SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 3, figs. 20a, 20b, 1877.

3 fractured specimen; the most perfect one 5.5 mm. in diameter. Reg. No. 50443.

Living: Atlantic.? Pacific.

Family Cavolinidae

Genus *Clio* LINNAEUS, 1767

Subgenus *Clio* s. s.

78. *Clio* (*Clio*) *pyramidata* LINNAEUS, 1767

Cleodora pyramidata CROUCH, Illust. LAMARCK's Conch., p. 24, Pl. 13, fig. 8, 1827: *C. (s. s.) pyramidata* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 4, Pl. 1, figs. 5a, b, c, A, B, 1912.

Several specimens; the most perfect one 10 mm. in length and 8.5 mm. in breadth. Reg. No. 50446.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

Subgenus **Creseis** RANG, 182879. *Clio* (*Creseis*) *acicula* (RANG), 1828

Creseis aciculata SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 5, figs. 29a, b, 1877: *C. (Creseis) acicula* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 2, Pl. 1, figs. 2a, b, 1912.

4 specimens; the most perfect one 5.5 mm. in length. Reg. No. 50445.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

80. *Clio* (*Creseis*) *virgula* (RANG), 1828

Creseis virgula SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 5, figs. 32a, b, 1877: *C. (Creseis) virgula* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 3, Pl. 1, fig. 2, 1912.

3 specimens, the most perfect one 3 mm. in length. Reg. No. 50444.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

Genus **Cuvierina** BOAS, 188681. *Cuvierina columnella* (RANG), 1824

Triptera columnella SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 5, sp. 27, 1877: *C. columnella* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 8, Pl. 1, figs. 8a, b, 1912.

6 specimens; the largest one 10.5 mm. in length. Reg. No. 50447.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

Genus **Cavolina** ABILDGAARD, 1791Subgenus **Cavolina** s. s.82. *Cavolina* (*Cavolina*) *longirostris* (LESUEUR), 1821

Hyalaea longirostris SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 2, figs. 12a, b, 1877: *H. obtusa* SOWERBY, Ibid., Pl. 2, figs. 8a, b, 1877: *Cavolinia* (s. s.) *longirostris* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 19, Pl. 6, figs. 11a, b, c, 1912: *C. longirostris* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 83, No. 1084, 1928.

Numerous well preserved specimens; the largest one 6 mm. in length and 5 mm. in breadth. Reg. No. 50452.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

83. *Cavolina* (*Cavolina*) *globulosa* (RANG), 1850

Hyalaea globulosa SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 1, figs. 6a, b, 1877: *Cavolinia* (s. s.) *globulosa* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 20, Pl. 6, figs. 12a, b, 1912.

4 specimens; the largest one 5.5 mm. in length and 4.5 mm. in breadth. Reg. No. 50451.

Living: Pacific.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

84. *Cavolina (Cavolina) tridentata* (FORSKÅL), 1773

Hyalaea tridentata SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 1, figs. 4a, b, 1877: *Cavolinia* (s. s.) *tridentata* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 22, Pl. 6, fig. 14, 1912: *C. telemus* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 83, No. 1081, 1928.

Several specimens; the most perfect one 15 mm. in length and 10 mm. in breadth. Reg. No. 50450.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

85. *Cavolina (Cavolina) inflexa* (LESUEUR), 1813

Hyalaea (Diacria) inflexa SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 3, figs. 17a, b, 1877: *Cavolinia* (s. s.) *inflexa* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 23, Pl. 6, figs. 16a, b, c, 1912.

Several specimens; the largest one 5.5 mm. in length and 3.5 mm. in breadth. Reg. No. 50453.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

Subgenus *Diacria* GRAY, 1850

86. *Cavolina (Diacria) trispinosa* (LESUEUR), 1821

Hyalaea (Diacria) trispinosa SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 3, figs. 15a, b, 1877: *Cavolinia (Diacria) trispinosa* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 17, Pl. 6, figs. 9a, b, c, 1912: *C. (Diacria) trispinosa* SUGITANI, Cat. Luchu Shells, p. 35, 1927.

6 specimens; the most perfect one 9 mm. in length and 8 mm. in breadth. Reg. No. 50448.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

87. *Cavolina (Diacria) quadridentata* (LESUEUR), 1821

Hyalaea minuta SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 2, fig. 9, 1877: *H. intermedia* SOWERBY, Ibid., Pl. 2, fig. 10, 1877; *Cavolinia (Diacria) quadridentata* YAMAKAWA and ISHIKAWA, Jour. Geol. Soc. Tôkyô, Vol. 19, p. 18, Pl. 6, figs. 10a, b, c, 1912.

4 specimens; the largest one 3.5 mm. in length and 2.5 mm. in breadth. Reg. No. 50449.

Living: Pacific and Atlantic.

Geological distribution: Pleistocene of Kadusa (YAMAKAWA and ISHIKAWA).

Order *Opisthobranchiata*

Family *Retusidae*

Genus *Retusa* BROWN, 1827

88. *Retusa minima* YAMAKAWA, 1912

R. minima YAMAKAWA, Jour. Geol. Soc. Tôkyô, Vol. 18, p. 47, Pl. 11, figs. 21-24, 1912.

2 specimens; both nearly equal in size, 3 mm. in height and 1.5 mm. in diameter. Reg. No. 50435.

Living: Northern Honsyû. China.

Geological distribution: Post-Pleistocene and Pleistocene of the Kwantô region (YAMAKAWA, YOKOYAMA, NOMURA); Pliocene of Tôtômi (MAKIYAMA).

Family Trichidae

Genus *Cylichna* LOVÉN, 1846

89. *Cylichna arachis* (QUOY et GAIMARD), 1835

C. arachis CLESSIN, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 1, Pt. 8, p. 37, Pl. 7, figs. 10, 11, 1895.

Several specimens; the largest one 16 mm. in height, 5.5 mm. in diameter. *C. musashiensis* TOKUNAGA is probably the same species. Reg. No. 50436.

Living: Central Honsyû to Kyûsyû. Indian Ocean. New Holland.

90. *Cylichna totomiensis* (MAKIYAMA), 1927

Cylichnella (*Bullinella*) *totomiensis* MAKIYAMA, Mem. Coll. Sci. Kyôto Imp. Univ. Ser. B, Vol. 3, No. 1, Art. 1, p. 143, Pl. 6, figs. 15-19, 1927.

Several specimens; the largest one 4 mm. in height, 1.8 mm. in diameter. Reg. No. 50437.

Geological distribution: Pliocene of Tôtômi (MAKIYAMA).

Family Bullidae

Genus *Bullus* MONTFORT, 1810

91. *Bullus vernicosus* (GOULD), 1859

Bulla vernicosa CLESSIN, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 1, Pt. 8, p. 80, Pl. 12, fig. 14, 1896: *Bullaria vernicosa* SUGITANI, Cat. Luchu Shells, p. 34, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 63, No. 1075, 1928.

A single well preserved specimen in natural colouration; 23 mm. in height, 15 mm. in diameter. Reg. No. 50438.

Living: Northern Honsyû to Ryûkyû Islands. Australia.

Geological distribution: Pleistocene of the Kwantô region.

Family Ringiculidae

Genus *Ringicula* DESHAYES, 1838

92. *Ringicula caron* HINDS, 1844

R. caron PILSBRY, in Tryon's Man. Conch., Vol. 15, p. 407, Pl. 47, figs. 63, 64, 68, 1893.

A single well preserved specimen; 4.5 mm. in height and 2.5 mm. in diameter. Reg. No. 50434.

Living: Strait of Molucca. Australia. Torres Strait.

Geological distribution: Pliocene of Timor (TESCH, FISCHER).

Order Ctenobranchiata

Family Terebridae

Genus *Terebra* BRUGUIÈRE, 1789

93. *Terebra subulata* (LINNAEUS), 1767

T. subulata HINDS, in SOWERBY's Thes. Conch., Vol. 1, p. 156, Pl. 41, fig. 16, Pl. 42, figs. 38, 39, 1847: SUGITANI, Cat. Luchu Shells, p. 32, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 77, No. 994, 1928.

A single fractured specimen; 10 mm. in diameter. Reg. No. 50698.

Living: Ryûkyû Islands and Ogasawara-zima. The Philippines. Molucca. Society Islands.

94. *Terebra orthoplicata* n. sp.

[see p. 161 (53)]

95. *Terebra triseriata* GRAY, 1843

T. triseriata HINDS, in SOWERBY's Thes. Conch., Vol. 1, p. 171, Pl. 45, fig. 119, 1847.

A single fractured specimen; 31 mm. in height and 4 mm. in diameter. Reg. No. 50699.

Living: Western Honsyû. The Philippines. Australia.

96. *Terebra loebbeckiana* DUNKER, 1859

T. loebbeckiana DUNKER, Index Moll. Mar. Jap., p. 72, Pl. 5, figs. 17, 18, 1882.

A single well preserved specimen which is a varietal form; 40 mm. in height and 6 mm. in diameter. Reg. No. 50700.

Living: Central and Western Honsyû.

97. *Terebra hanzawai* n. sp.

[see p. 160 (52)]

Family Conidae

Genus *Conus* LINNAEUS, 1758

98. *Conus kikaiensis* PILSBRY, 1904

C. kikaiensis PILSBRY, Proc. Acad. Nat. Sci. Philad., p. 6, Pl. 1, figs. 8, 8a, 1904.

Several specimens, the typical and varietal forms; the latter larger than the former; the largest typical one 57 mm. in height and 19 mm. in diameter; that of the varietal 71 mm. in height and 27 mm. in diameter.

This species is closely related to *C. australis* LAMARCK from which it is hardly distinguished. Reg. No. 50689.

Geological distribution: Pliocene of Taiwan (YOKOYAMA).

99. *Conus comatosa* PILSBRY, 1904

C. dormitor PILSBRY, Proc. Acad. Nat. Sci. Philad., p. 6, Pl. 1, figs. 9, 9a, 1904: *C. comatosa* PILSBRY, Ibid., p. 550, 1904.

Several well preserved specimens; the largest one 46 mm. in height and 17 mm. in diameter. This species seems to be only a varietal form of *C. dorbignyi*. Reg. No. 50690.

100. *Conus gratacapî* PILSBRY, 1904

C. gratacapî PILSBRY, Proc. Acad. Nat. Sci. Philad., p. 6, Pl. 1, figs. 10, 10a, 1904.

Several specimens; the typical and varietal forms; the former smaller than the latter and 30 mm. in height and 12 mm. in diameter. Reg. No. 50691.

101. *Conus mucronatus* REEVE, 1843

C. mucronatus REEVE, Conch. Icon., Vol. 1, Pl. 37, sp. 204, 1843: *C. alabater* REEVE, Ibid., Suppl. Pl. 6, sp. 257, 1843.

2 specimens; the larger one 32 mm. in height and 14 mm. in diameter. Reg. No. 50692.

Living: China. The Philippines.

102. *Conus voluminalis* HINDS, 1844

C. voluminalis SOWERBY, Thes. Conch., Vol. 3, p. 13, Pl. 202, fig. 378, 1866.

Several specimens, typical and varietal forms; the largest of the typical one 40 mm. in height and 20 mm. in diameter. *C. voluminalis avus* PILSBRY¹ seems to have no good subspecific distinction. Reg. No. 50694.

Living: Strait of Molucca.

103. *Conus lignarius* REEVE, 1843

C. lignarius REEVE, Conch. Icon., Vol. 1, Pl. 24, sp. 136, 1843: SOWERBY, Thes. Conch., Vol. 3, p. 22, Pl. 198, figs. 269, 270, 1866.

3 specimens; the largest one 43 mm. in height and 20 mm. in diameter. Reg. No. 50693.

Living: China. The Philippines.

Family **Turridae**Genus **Turris** BOLTON, 1798Subgenus **Gemmula** WEINKAUFF, 1875104. *Turris* (*Gemmula*) *granosa* (HEBLING), 1779

Pleurotoma carinata REEVE, Conch. Icon., Vol. 1, Pl. 7, sp. 56, 1843: *P. (s.s.) carinata* GRAY var. *woodwardi* MARTIN, Foss. von Java, p. 37, Pl. 6, figs. 91-92, 1895.

3 small specimens; the largest one 37 mm. in height and 9 mm. in diameter. Reg. No. 50695.

Living: Central to Western Honsyû. Indian Ocean.

Geological distribution: Pliocene of Tôtômi (MAKIYAMA), Tosa and Taiwan (YOKOYAMA). Timor (TESCH); Pliocene and Miocene of Java (MARTIN); Miocene of the Philippines (DICKERSON).

Genus **Daphnella** HINDS, 1844105. *Daphnella lymneiformis* (KIENER), 1845 Pl. V (I), fig. 23.

Pleurotoma lymneiformis KIENER, Coq. viv. Vol. 5, *Pleurotoma*, p. 62, Pl. 22, fig. 3.

¹ PILSBRY: Proc. Acad. Nat. Sci. Philad., p. 101, Pl. 2, fig. 4, 1905.

A single well preserved specimen; 18 mm. in height and 6.5 mm. in diameter. Reg. No. 50697.

Living: The Philippines.

Genus **Clavus** MONTFORT, 1810

106. *Clavus pica* (REEVE), 1843 Pl. V (I), Fig. 24.

Pleurotoma pica REEVE, Conch. Icon., Vol. 1, Pl. 8, sp. 61, 1843: *C. pica* (REEVE) var. KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 73, No. 924, 1928.

A single well preserved specimen of a varietal form; 25 mm. in height and 11 mm. in diameter. Reg. No. 50696.

Living: Ryûkyû Islands. The Philippines.

Genus **Cytharella** MONTEROSATO, 1875

107. *Cytharella semicarinata* (PILSBRY), 1904

Mangilia semicarinata PILSBRY, Proc. Acad. Nat. Sci., Philad., p. 9, Pl. 2, figs. 16, 16a, 1904: *C. semicarinata* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 73, No. 932, 1928.

A single specimen; 3.8 mm. in height and 2 mm. in diameter. Reg. No. 50455.

Living: Western Honsyû to Ryûkyû Islands.

Geological distribution: Post-Pleistocene of Awa (NOMURA).

Genus **Raphitoma** BELLARDI, 1848

108. *Raphitoma granulidecussata* n. sp.

[see p. ()]

Family **Cancellaridae**

Genus **Cancellaria** LAMARCK, 1799

109. *Cancellaria reeveana* CROSSE, 1861

C. reeveana KOBELT, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 4, Pt. 4, p. 12, Pl. 2, figs. 1-9, 1887.

A single well preserved specimen; 29 mm. in height and 16 mm. in diameter. Reg. No. 50684.

Living: Central Honsyû to Kyûsyû. The Philippines.

Family **Olividae**

Genus **Ancilla** LAMARCK, 1799

110. *Ancilla rubiginosa* (SWAINSON), 1840

Ancillaria rubiginosa SOWERBY, Spec. Conchyl., Vol. 1, Pt. 1, p. 8, figs. 49-52, 1830: *Ancilla* (*Baryspira*) *rubiginosa* var. KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 69, No. 864, 1928.

4 specimen; the largest one 28 mm. in height and 13 mm. in diameter. Reg. No. 50685.

Living: Ryûkyû Islands. China. Madagascar.

Geological distribution: Pliocene of Tôtômi (YOKOYAMA).

111. *Ancilla albocallosa* (LISCHKE), 1873

Ancillaria albocallosa LISCHKE, Jap. Meeres-Conch., Vol. 3, p. 44, Pl. 2, figs. 24, 25, 1874.

Numerous specimens, several of the typical form and the others of varietals; the typical one 40 mm. in height and 18 mm. in diameter. This and the preceding species are closely related to each other and sometimes they are hardly distinguishable. *A. hinomotoensis* YOKOYAMA¹ is perhaps the same species.

Living: Central Honsyû and Kyûsyû.

Geological distribution: Pliocene of Tôtômi (YOKOYAMA, MAKIYAMA); Pliocene of Tosa (YOKOYAMA).

Family **Marginellidae**

Genus **Marginella** LAMARCK, 1799

112. *Marginella cotamago* YOKOYAMA, 1922

M. cotamago YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 49, Pl. 2, fig. 6, 1922.

2 specimens; the larger one 2 mm. in height and 1.5 mm. in diameter. Reg. No. 50687.

Living: Northern Honsyû. Probably it extends farther south in Japan.

Geological distribution: Post-Pleistocene of Kadusa (NOMURA); Pleistocene of the Kwantô region (YOKOYAMA).

113. *Marginella sandwicensis* PEASE, 1860

M. sandwicensis TRYON, Man. Conch., Vol. 5, p. 45, Pl. 12, fig. 69, 1883: *Cysticus sandwicensis* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 68, No. 843, 1928.

A single specimen; 2.5 mm. in height and 1.5 mm. in diameter. Reg. No. 50688.

Living: Ryûkyû Islands. Sandwich and Viti Islands.

Family **Mitridae**

Genus **Vexillum** BOLTEN, 1798

Subgenus **Costellaria** SWAINSON, 1840

114. *Vexillum (Costellaria) fuscoapicatum* (SMITH), 1879

Mitra (Costellaria) fuscoapicata SMITH, Proc. Zool. Soc. London, p. 214, Pl. 20, fig. 49, 1879: *Turricula (Costellaria) collinsoni* TRYON, Man. Conch., Vol. 4, Pl. 51, fig. 460 only, 1882.

A single well preserved specimen; 16 mm. in height and 6 mm. in diameter. Reg. No. 50670.

Living: Western Honsyû and Kyûsyû.

¹M. YOKOYAMA: Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 48, Pl. 2, fig. 5, 1922.

115. *Vexillum (Costellaria) subtruncatum* (SOWERBY), 1874

Mitra subtruncata SOWERBY, Thes. Conch., Vol. 4, p. 34, Pl. 371, fig. 405, 1880: *V. (Costellaria) crebrilirata subtruncata* (?) KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 56, No. 670, 1928: *V. (Costellaria) crebrilirata* var. *subtruncata* YOKOYAMA, Cat. Mar. Fresh-Water Land Moll. Jap., p. 39, 1931.

A single specimen; 18 mm. in height and 6.5 mm. in diameter. Reg. No. 50672.

Living: Ryûkyû Islands. The Philippines.

116. *Vexillum (Costellaria) obeliscum* (REEVE), 1844

Mitra obeliscus REEVE, Conch. Icon., Vol. 2, Pl. 15, sp. 107, 1844.

3 specimens; the largest one 17 mm. in height and 5 mm. in diameter. Reg. No. 50671.

Living: Western Honsyû and Ryûkyû Islands. The Philippines.

Geological distribution: Pliocene of Timor (TESCH); Pliocene and Miocene of Java (MARTIN).

Family Fasciolaridae

Genus *Latirus* MONTFORT, 1810Subgenus *Peristernia* MÖRCH, 1852117. *Latirus (Peristernia) coreanicus* (SMITH), 1879

Fusus coreanicus SMITH, Proc. Zool. Soc. London, p. 204, Pl. 20, fig. 36, 1879.

2 specimens; the larger one 24 mm. in height and 11 mm. in diameter. Reg. No. 50669.

Living: Central Honsyû to Ryûkyû Islands and Ogasawara-zima.

Geological distribution: Pleistocene of the Kwantô region (YOKOYAMA); Pliocene of Sado (YOKOYAMA).

Genus *Fusinus* RAFINESQUE, 1815118. *Fusinus nicobaricus* (LAMARCK), 1822

Fusus nicobaricus REEVE, Conch. Icon., Vol. 4, Pl. 9, figs. 37a, b, 1847: *Fusinus nicobaricus* SUGITANI, Cat. Luchu Shells, p. 21, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 53, No. 616, 1928.

Several specimens in the typical form and varietal forms; the largest typical one 120 mm. in height and 32 mm. in diameter. Reg. No. 50666.

Living: Western Honsyû to Ryûkyû Islands. The Philippines.

Geological distribution: Post-Pleistocene of Awa (NOMURA).

119. *Fusinus simplex* (SMITH), 1879

Fusus simplex SMITH, Proc. Zool. Soc. London, p. 204, Pl. 20, fig. 35, 1879.

A single specimen; 22 mm. in height and 9 mm. in diameter. Reg. No. 50667.

Living: Kyûsyû and Tyôsen.

Geological distribution: Pliocene of Etigo (YOKOYAMA).

120. *Fusinus pygmaeus* (REEVE), 1847

Fusus pygmaeus REEVE, Conch. Icon., Vol. 4, Pl. 13, figs. 50a, b, 1847.

A single small specimen; 11 mm. in height and 4.5 mm. in diameter. The identification of this species is more or less doubtful. Reg. No. 50668.

Living: Van Diemen's Land (Tasmania).

Family **Buccinidae**

Genus **Siphonalia** A. ADAMS, 1863

121. *Siphonalia kikaigashimana* HIRASE, 1908

S. kikaigashimana HIRASE, Conch. Mag., Vol. 2, pp. 73, 400, Pl. 42, figs. 260-262, 1908.

Numerous well preserved specimens; the largest one 33 mm. in height and 15 mm. in diameter. Reg. No. 50673.

122. *Siphonalia longicanalis* n. sp. [see p. 159 (51)]

Family **Nassariidae**

Genus **Nassarius** (FRORIEP) DUMERIL, 1806

123. *Nassarius kikaizimanus* n. sp. [see p. 160 (52)]

124. *Nassarius micans* (A. ADAMS), 1851 Pl. V (I), Fig. 28.

Nassa micans REEVE, Conch. Icon., Vol. 8, Pl. 12, sp. 140, 1853.

2 specimens; the larger one 26 mm. in height and 12 mm. in diameter. Reg. No. 50675.

Living: The Philippines.

Family **Pyrenidae**

Genus **Pyrene** BOLTEN, 1798

Subgenus **Columbella** LAMARCK, 1799

125. *Pyrene* (*Columbella*) *liocyma* (PILSBRY), 1904

C. liocyma PILSBRY, Proc. Acad. Nat. Sci. Philad., p. 14, Pl. 3, fig. 24, 1904: *C. (Euplica?) liocyma* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 61, No. 751, 1928.

A single specimen; 4.5 mm. in height and 2.5 mm. in diameter. Reg. No. 50677.

Living: Ryûkyû Islands and Hatidyô-zima.

Genus **Mitrella** RISSO, 1826

126. *Mitrella varians* (DUNKER), 1860

Amycla varians DUNKER, Moll. Jap., p. 6, Pl. 1, fig. 17, 1861.

A single specimen; 4 mm. in height and 2 mm. in diameter. Reg. No. 50678.

Living: Northern Honsyû to Kyûsyû; Japan Sea.

Geological distribution: Post-Pleistocene and Pleistocene of the Kwantô region (YOKOYAMA, NOMURA); Pliocene of Tôtômi and Harima (MAKIYAMA).

Family **Muricidae**

Genus **Murex** LINNAEUS, 1758

127. *Murex sobrinus* A. ADAMS, 1862 Pl. V (I), Fig. 29.

M. sobrinus TRYON, Man. Conch., Vol. 2, p. 79, Suppl. Pl. 70, fig. 536, 1880.

Several specimens, typical and varietals; a typical one 46 mm. in height and 16 mm. in diameter being smaller than its varietals. Reg. No. 50679.

Living: Western Honsyû to Kyûsyû.

Genus **Chicoreus** MONTFORT, 1810

128. *Chicoreus saulii* (SOWERBY), 1840

Murex saulii SOWERBY, Thes. Conch., Vol. 4, p. 3, Pl. 383, fig. 44, Pl. 401, fig. 212, 1888: *C. saulii* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 63, No. 778, 1928.

3 specimens; the largest one 56 mm. in height and 27 mm. in diameter. Reg. No. 50680.

Living: Ryûkyû Islands. The Philippines.

Genus **Latiaxis** SWAINSON, 1840

129. *Latiaxis mawae* (GRAY) Pl. V (I), Fig. 30.

Pyrula mawae REEVE, Conch. Icon., Vol. 4, Pl. 8, sp. 25, 1847.

A single well preserved specimen; 33 mm. in height and 34 mm. in diameter. Reg. No. 50681.

Living: Western Honsyû. China. The Philippines.

130. *Latiaxis deburghiae* (REEVE), 1857 Pl. V (I), Fig. 31.

Rapana de Burghiae DUNKER, Index, Moll. Mar. Jap., p. 43, Pl. 1, figs. 5, 6, 7, 1882.

3 well preserved specimens; the largest one 16 mm. in height and 11 mm. in diameter. Reg. No. 50682.

Living: Central and Western Honsyû.

131. *Latiaxis tosanus* HIRASE, 1908 Pl. V (I), Fig. 32.

L. tosanus, HIRASE, Conch. Mag., Vol. 2, pp. 71, 393, Pl. 42, figs. 255, 256, 1908.

2 varietal specimens with whorls slightly higher having shorter scales than in the type; the larger one 32 mm. in height and 16 mm. in diameter. Reg. No. 50683.

Living: Western Honsyû and Sikoku.

Family **Bursidae**

Genus **Bursa** BOLTON, 1798

132. *Bursa nobilis* (REEVE), 1844

Ranella nobilis REEVE, Conch. Icon., Vol. 2, Pl. 4, sp. 16, 1844: *R. (Lampas) bufonia* var. PILSBRY, Cat. Mar. Moll. Jap. p. 170, 1895.

A single immature specimen; 25 mm. in height and 15 mm. in diameter. Reg. No. 50657.

Living: Ryûkyû Islands. The Philippines.

Geological distribution: Pliocene of Timor (TESCH); Pliocene and Miocene of Java (MARTIN), Sumatra (ZYIERZYCKI).

Subgenus **Bufonaria** SCHUMACHER, 1817

133. *Bursa (Bufonaria) ranelloides* (REEVE), 1844

Triton ranelloides REEVE, Conch. Icon., Vol. 2, Pl. 3, figs. 10a, b, 1844: KOBELT, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 3, Pt. 2, p. 206, Pl. 58, fig. 17, 1878.

6 well preserved specimens; the largest one 44 mm. in height and 27 mm. in diameter. Reg. No. 50658.

Living: Central and Western Honsyû. The Philippines.

Geological distribution: Pliocene of Tôtômi (MAKIYAMA).

Family **Cymatiidae**

Genus **Cymatium** BOLTEN, 1798

134. *Cymatium testudinarium* (ADAMS et REEVE), 1848

Triton testudinarius ADAMS et REEVE, Zool. Voy. Samarang Moll., Pt. 1. Pl. 9, figs. 3a, b, 1848.

A single fractured specimen; about 38 mm. in height and 17 mm. in diameter. Reg. No. 50654.

Living: China.

135. *Cymatium dunkeri* (LISCHKE), 1868

Triton dunkeri LISCHKE, Jap. Meeres-Conch., Vol. 1, p. 49, Pl. 3, figs. 1, 2, 1868.

A single fragmental specimen somewhat doubtfully belongs to the present species. Reg. No. 50655.

Living: Central Honsyû and Kyûsyû.

Genus **Distorsio** BOLTEN, 1798

136. *Distorsio reticulata* (LINK), 1807

Triton constrictus REEVE, Conch. Icon., Vol. 2, Pl. 12, sp. 41: *T. cancellatus* REEVE, Ibid., Pl. 12, sp. 45, 1844: *T. ridens* REEVE, Ibid., Pl. 12, sp. 46, 1844: *T. decipiens* REEVE, Ibid., Pl. 20, sp. 102, 1844: *Distortrix reticulata* PILSBRY, Cat. Mar. Moll. Jap., p. 47, 1895: SUGITANI, Cat. Luchu Shells, p. 18, 1927: *Distorsio reticulata* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 49, No. 567, 1928.

A single well preserved specimen; 27 mm. in height and 16 mm. in diameter. Reg. No. 50656.

Living: Western Honsyû to Ryûkyû Islands. China.

Geological distribution: Pleistocene and Pliocene of Timor (TESCH); Pliocene and Miocene of Java (MARTIN).

Family **Cassidae**

Genus **Phalium** LINK, 1807

137. *Phalium torquatum* (REEVE), 1847

Cassis torquata REEVE, Conch. Icon., Vol. 5, Pl. 1, figs. 1a, b, 1848: *P. (Casmaria) nodulosum torquatum* SUGITANI, Cat. Luchu Shells, p. 19, 1927.

2 immature specimens; the larger one 22 mm. in height and 12 mm. in diameter. Mr. T. KURODA united this with *P. ponderosum quadratum* LINK, 1807. Reg. No. 50659.

Living: Central Honsyû to Ryûkyû Islands. New Holland. Australia.

Genus **Morum** BOLTEN, 1798

138. *Morum cancellatum* (SOWERBY), 1824

Onisia cancellata REEVE, Conch. Icon., Vol. 5, Pl. 1, sp. 4, 1849: *M. cancellatum* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 50, No. 581, 1928.

A single specimen; 41 mm. in height and 23 mm. in diameter. Reg. No. 50660.

Living: Western Honsyû to Ryûkyû Islands. China. Indian Ocean.

Family **Tonnidae**

Genus **Tonna** BRÜNNICH, 1772

139. *Tonna luteostoma* (KÜSTER), 1857

Dolium luteostoma KÜSTER, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 3, Pt. 1, p. 66, Pl. 58, fig. 2, 1857: *T. luteostoma* SUGITANI, Cat. Luchu Shells, p. 19, 1927.

A single fractured specimen; about 38 mm. in height. Reg. No. 50661.

Living: Hokkaidô to Ryûkyû Islands; Japan Sea. Indian Ocean.

Geological distribution: Post-Pleistocene and Pleistocene of the Kwantô region (TOKUNAGA, YOKOYAMA, NOMURA); Pliocene of Hitati and Tosa (YOKOYAMA); Pliocene of Tôtômi (YOKOYAMA, MAKIYAMA); Miocene of Idu (NOMURA and NIINO).

140. *Tonna* sp. indet.

A single small specimen differs from the preceding, but specifically indeterminable; 15 mm. in height and 9 mm. in diameter. Reg. No. 50662.

Family **Cypraeidae**

Genus **Cypraea** LINNAEUS, 1758

141. *Cypraea vitellus* LINNAEUS, 1758

C. vitellus REEVE, Conch. Icon., Vol. 3, Pl. 5, sp. 14, 1845: SUGITANI, Cat. Luchu Shells, p. 16, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 44, No. 492, 1928.

A single specimen ; 38 mm. in height and 26 mm. in diameter. This is *C. carneola* YOKOYAMA¹, (non LINNAEUS). Reg. No. 50644.

Living : Central Honsyû to Ryûkyû Islands. Indian Ocean.

Geological distribution : Post-Pleistocene of Awa (YOKOYAMA, NOMURA) ; Miocene of Java (MARTIN) ; Pliocene of Sumatra (MARTIN).

142. *Cypraea fimbriata* GMELIN, 1792

C. fimbriata REEVE, Conch. Icon., Vol. 3, Pl. 3, Pl. 18, sp. 92, 1846 : SUGITANI, Cat. Luchu Shells, p. 16, 1927 :

C. (Erronea) fimbriata KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 45, No. 514, 1928.

A single specimen ; 13 mm. in height and 7.5 mm. in diameter. Reg. No. 50647.

Living : Western Honsyû to Ryûkyû Islands. The Philippines. Mauritius. Australia.

143. *Cypraea helvola* LINNAEUS, 1758

C. helvola, REEVE, Conch. Icon., Vol. 3, Pl. 15, sp. 72, 1845 : SUGITANI, Cat. Luchu Shells, p. 17, 1927 : *C. (Erosaria) helvola* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 46, No. 526, 1928.

A single specimen ; 20 mm. in height 13 mm. in diameter. Reg. No. 50646.

Living : Central Honsyû to Ryûkyû Islands and Ogasawara-zima. Ceylon. Sandwich Islands.

144. *Cypraea caputserpentis* LINNAEUS, 1758

C. caputserpentis REEVE, Conch. Icon., Vol. 3, Pl. 11, sp. 44, 1845 : SUGITANI, Cat. Luchus Shells, p. 16, 1927 :

C. (Erosaria) caputserpentis KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 46, No. 527, 1928.

2 specimens, one immature and the other fragmental ; the latter nearly in natural colouration. Reg. No. 50645.

Living : Central Honsyû to Taiwan ; Japan Sea. Pacific Islands.

Genus *Trivia* (GRAY) BRODERIP, 1837

145. *Trivia insecta* (MICHAELS), 1845

Cypraea (Trivia) insecta SOWERBY, Thes. Conch., Vol. 4, p. 46, Pl. 326, figs. 477-479, 1880 : *T. insecta* SUGITANI,

Cat. Luchu Shells, p. 17, 1927 : KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 47, No. 542, 1928.

2 specimens ; both nearly equal in size, 5 mm. in height and 3 mm. in diameter. Reg. No. 50648.

Living : Central Honsyû to Ryûkyû Islands and Ogasawara-zima. Sandwich Islands.

146. *Trivia edgari* SHAW, 1909

Cypraea (Trivia) grando SOWERBY, Thes. Conch., Vol. 4, p. 46, Pl. 326, figs. 470, 471, 1880 : *T. edgari* KURODA,

Cat. Shell-bearing Moll. Amami-Ôsima, p. 47, No. 541, 1928.

2 specimens ; both nearly equal in size, 6 mm. in height and 4 mm. in diameter. Reg. No. 50649.

Living : Central Honsyû and Ryûkyû Islands. The Philippines.

¹ M. YOKOYAMA : Jour. Coll. Sci. Tôkyô Imp. Univ. Vol. 45, Art. 1, p. 18, Pl. 1, fig. 11, 1922.

147. *Trivia pilula* (KIENER), 1845

Cypraea pilula WEINKAUFF, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 5, Pt. 3, p. 159, Pl. 42, figs. 13, 16, 1881: *T. pilula* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 47, No. 543, 1928.

A single specimen; 4 mm. in height and 3.5 mm. in diameter. Reg. No. 50650.

Living: Central Honsyû and Ryûkyû Islands. Indian Ocean.

Genus *Erato* RISSO, 1826148. *Erato gallinacea* HINDS, 1844

E. gallinacea WEINKAUFF, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 5, Pt. 4, p. 150, Pl. 25, figs. 14, 15, 1881.

4 specimens; the largest one 5.5 mm. in height and 3.5 mm. in diameter. Reg. No. 50652.

Living: The Philippines. Strait of Molucca. New Caledonia.

Subgenus *Eratopsis* HOERNES et AUINGER, 1880149. *Erato (Eratopsis) nana* REEVE, 1865

E. nana REEVE, Conch. Icon., Vol. 15, Pl. 3, sp. 18, 1865: *E. (Eratopsis) nana* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 47, No. 545, 1928.

2 specimens; both nearly equal in size, 3.5 mm. in height and 2.5 mm. in diameter. Reg. No. 50653.

Living: Ryûkyû Islands and Ogasawara-zima.

Family Cerithiidae

Genus *Bittium* LEACH, 1847150. *Bittium perpusillum* TRYON, 1887

B. pusillum DUNKER, Moll. Jap., p. 11, Pl. 2, fig. 6, 1861: *B. perpusillum* TRYON, Man. Conch., Vol. 9, p. 154, Pl. 30, fig. 17, 1887.

A single specimen; 4 mm. in height and 1.5 mm. in diameter. Reg. No. 50625.

Living: Kyûsyû and Ryûkyû Islands.

Geological distribution: Post-Pleistocene of Awa (YOKOYAMA, NOMURA); Pliocene of the Kwantô region (YOKOYAMA).

Family Cerithiopsidae

Genus *Royella* IREDALE, 1912151. *Royella sinon* (BAYLE), 1880

Cerithium clathratum SOWERBY, Thes. Conch., Vol. 2, p. 883, Pl. 185, fig. 258, 1855: *Potamides (Pirenella) clathrata* TRYON, Man. Conch. Vol. 9, p. 165, Pl. 27, fig. 18, 1888: *R. sinon* SUGITANI, Cat. Luchu Shells, p. 12, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 38, No. 410, 1928.

A single well preserved small specimen; 4.5 mm. in height and 2 mm. in diameter. Reg. No. 50626.

Living: Ryûkyû Islands. The Philippines.

Family **Triphoridae**Genus **Triphora** BLAINVILLE, 1828

- 152.
- Triphora solitaria*
- n. sp.

[see p. 158 (50)]

- 153.
- Triphora exilis*
- (DUNKER), 1860

Triforis exilis DUNKER, Moll. Jap., p. 10, Pl. 2, fig. 9, 1861.

A single well preserved specimen; 4 mm. in height and 1.5 mm. in diameter. Reg. No. 50628.

Living: Central Honsyû to Kyûsyû.

Geological distribution: Post-Pleistocene and Pleistocene of the Kwantô region (YOKOYAMA, NOMURA).

- 154.
- Triphora granulata*
- (ADAMS et REEVE), 1848

Triforis granulata DUNKER, Moll. Jap., p. 10, Pl. 2, fig. 7, 1861.

A single fractured specimen; 2 mm. in diameter. Reg. No. 50629.

Living: Kyûsyû. China.

- 155.
- Triphora limosa*
- (JOUSSEAUME), 1884

Triforis limosa TRYON, Man. Conch., Vol. 9, p. 186, Pl. 39, fig. 30, 1887: *T. limosa* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 39, No. 420, 1928.

A single fractured specimen; 1.5 mm. in diameter. Reg. No. 50631.

Living: Central Honsyû to Ryûkyû Islands. New Caledonia.

- 156.
- Triphora fusca*
- (DUNKER), 1860

Triforis fusca DUNKER, Moll. Jap., p. 10, Pl. 2, fig. 22, 1861: *T. fusca* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 39, No. 422, 1928.

A single well preserved specimen; 9 mm. in height and 2.5 mm. in diameter. Reg. No. 50627.

Living: Inland Sea to Ryûkyû Islands and Ogasawara-zima.

- 157.
- Triphora concors*
- (HINDS), 1843

Triforis concors TRYON, Man. Conch., Vol. 9, p. 178, Pl. 37, fig. 80 only, 1887: *T. concors* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 30, No. 424, 1928.

A single well preserved specimen; 6 mm. in height and 1.5 mm. in diameter. Reg. No. 50632.

Living: Kyûkyû Islands. Strait of Molucca.

Subgenus **Inella** BAYLE, 1879

- 158.
- Triphora (Inella) incisa*
- (PEASE), 1860

Triforis (Viriola) incisus TRYON, Man. Conch., Vol. 9, p. 190, Pl. 39, fig. 65, 1887.

A single specimen; 7 mm. in height and 2.5 mm. in diameter. The identification of this species is somewhat questionable. Reg. No. 50630.

Living: Sandwich Islands. Isle of Bourbon.

Family Rissoinidae

Genus *Rissoina* D'ORBIGNY, 1840

Subgenus *Rissolina* GOULD, 1851

159. *Rissoina (Rissolina) plicata* A. ADAMS, 1851

R. plicata TRYON, Man. Conch., Vol. 9, p. 375, Pl. 56, figs. 58-60, 68, 1887: *R. (Rissolina) plicata* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 35, No. 364, 1928.

2 specimens; both nearly in equal size, 4 mm. in height and 1.5 mm. in diameter. Reg. No. 50623.

Living: Ryûkyû Islands. The Philippines.

Subgenus *Zebina* H. et A. ADAMS, 1854

160. *Rissoina (Zebina) affinis* GARRET, 1873

R. affinis TRYON, Man. Conch., Vol. 9, p. 389, Pl. 59, fig. 62, 1887: *R. (Zebina) affinis* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 35, No. 372, 1928.

A single well preserved specimen; 5.5 mm. in height and 2.5 mm. in diameter. Reg. No. 50624.

Living: Ryûkyû Islands and Ogasawara-zima. Viti Islands.

Family Vermiculariidae

Genus *Vermicularia* LAMARCK, 1799

161. *Vermicularia imbricata* (DUNKER), 1860

Vermetus imbricatus DUNKER, Moll. Jap., p. 17, Pl. 2, fig. 18, 1861: *Thylacodes imbricatus* SUGITANI, Cat. Luchu Shells, p. 12, 1927.

A single fractured specimen; 7 mm. in diameter. *Thylacodes medusae* PILSBRY¹ is perhaps the same species. Reg. No. 50634.

Living: Northern Honsyû to Ryûkyû Islands and Ogasawara-zima; Japan Sea. Tyôsen.

Geological distribution: Post-Pleistocene of the Kwantô region (YOKOYAMA, NOMURA).

Genus *Siliquaria* (BRUGUIÈRE) LAMARCK, 1799

Subgenus *Agathirsres* MONTFORT, 1810

162. *Siliquaria (Agathirsres) cumingii* MÖRCH, 1860

S. cumingii SOWERBY, in REEVE'S Conch. Icon., Vol. 20, Pl. 1, sp. 2, 1878: SUGITANI, Cat. Luchu Shells, p. 13, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 40, No. 434, 1928.

¹ PILSBRY: Cat. Mar. Moll. Japan, p. 59, Pls. 4, 5, 1895.

Several fractured specimens; the largest one 7 mm. in diameter. Reg. No. 50635.

Living: Western Honsyû to Ryûkyû Islands; Japan Sea. The Philippines.

Geological distribution: Post-Pleistocene of Kadusa (NOMURA).

163. *Siliquaria anguina* (LINNAEUS), 1758

S. anguina SOWERBY, in REEVE's Conch. Icon., Vol. 20, Pl. 3, figs. 7a-c, 1878.

A single fragmental specimen; 4 mm. in diameter. Reg. No. 50636.

Living: Molucca. Ceylon.

Geological distribution: Miocene of Java (MARTIN).

Family **Architectonicidae**

Genus **Architectonica** BOLTEN, 1798

164. *Architectonica perspectiva* (LINNAEUS), 1758

Solarium perspectivum REEVE, Conch. Icon., Vol. 15, Pl. 2, figs. 11a, b, 1864: *A. perspectiva* SUGITANI, Cat.

Luchu Shells, p. 34, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 81, No. 1057, 1928.

2 specimens; the larger one 10 mm. in height and 23 mm. in diameter. Reg. No. 50431.

Living: Ryûkyû Islands. China. Indian Ocean. Australia.

Geological distribution. Pliocene of Taiwan (YOKOYAMA). Post-Pliocene and Pliocene of Timor (TESCH); Pliocene and Miocene of Java (MARTIN); Neogene of New Guinea (SIEMON).

165. *Architectonica distinguenda* n. sp.

[see p. ()]

Genus **Heliacus** D'ORBIGNY, 1842

166. *Heliacus dilectus* (DESHAYES), 1863 Pl. V (I), Figs. 35a, b.

Solarium dilectum HANLEY, in SOWERBY's Thes. Conch., Vol. 3, p. 241, Pl. 253, figs. 51, 52, 1863.

A single well preserved specimen; 4.5 mm. in height and 10 mm. in diameter. Reg. No. 50433.

Living: Isle of Bourbon.

Family **Hipponicidae**

Genus **Hipponix** DEFRANCE, 1819

167. *Hipponix foliaceus* QUOY et GAIMARD, 1835

H. antiquatus TRYON, Man. Conch., Vol. 8, p. 134, Pl. 40, fig. 98 only, 1886: *H. foliaceus* SUGITANI, Cat. Luchu

Shells, p. 14, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 42, No. 456, 1928.

Numerous well preserved specimens; the largest one 7 mm. in height and 10 mm. in diameter. Reg. No. 50637.

Living: Central Honsyû to Ryûkyû Islands. Polynesia.

Geological distribution: Post-Pleistocene of Kadusa (NOMURA).

Family Calyptraeidae

Genus *Cheilea* MODEER, 1793

168. *Cheilea equestris* (LINNAEUS), 1758

Calyptraea equestris REEVE, Conch. Icon., Vol. 2, Pl. 1, figs. 1a-c, 1858: *C. equestris* SUGITANI, Cat. Luchu Shells, p. 14, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 42, No. 459, 1928.

A single well preserved specimen; 11 mm. in height, 19 mm. in length and 17.5 mm. in breadth. Reg. No. 50638.

Living: Ryûkyû Islands. The Philippines. Indian Ocean.

Family Xenophoridae

Genus *Xenophora* FISCHER, 1807

169. *Xenophora pallidula* (REEVE), 1842

Phorus pallidulus REEVE, Conch. Icon., Vol. 1, Pl. 1, sp. 4, 1843: *X. pallidula* SUGITANI, Cat. Luchu Shells, p. 14, 1927.

5 well preserved specimens; the largest one 25 mm. in height and 37 mm. in diameter. Reg. No. 50639.

Living: Central Honsyû to Ryûkyû Islands.

Geological distribution: Miocene of Java (MARTIN); Sumatra (ZYIERZYCKI).

Family Naticidae

Genus *Natica* SCOPOLI, 1777

170. *Natica alapapilionis* (BOLTEN), 1798 Pl. V (I), Fig. 36.

N. alapapilionis REEVE, Conch. Icon., Vol. 9, Pl. 14, figs. 60a, b, 1855: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 43, No. 468, 1928.

Several well preserved specimens; the largest one 23 mm. in height and 24 mm. in diameter. Reg. No. 50640.

Living: Central Honsyû to Ryûkyû Islands. The Philippines.

Geological distribution: Pliocene of Java and Sumatra (MARTIN); Timor (TESCH); Seran (FISCHER).

Genus *Polinices* MONTFORT, 1810

171. *Polinices melanostoma* (GMELIN), 1792

Natica melanostoma REEVE, Conch. Icon., Vol. 9, Pl. 8, figs. 30a, b, 1855: *P. melanostoma* SUGITANI, Cat. Luchu Shells, p. 15, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 43, No. 477, 1928.

2 specimens; the larger one 22 mm. in height and 17 mm. in diameter. *Sigaretus oblongus* YOKOYAMA¹ (non REEVE) from the Upper Musasino Formation of Kadusa seems to be an allied species. Reg. No. 50641.

¹ M. YOKOYAMA: Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 85, Pl. 4, fig. 11, 1922.

Living: Central Honsyû to Ryûkyû Islands and Ogasawara-zima, also Seychelle Islands.

Geological distribution: Pliocene and Miocene of Java (MARTIN); Pliocene of Timor (TESCH); Pliocene of Sumatra (MARTIN); Post-Pliocene of Celebes (SCHEPMAN).

172. *Polinices flemingiana* (RÉCLUZ), 1844

Natica flemingiana REEVE, Conch. Icon., Vol. 9, Pl. 18, figs. 80a, b, 1855: *P. flemingiana* SUGITANI, Cat. Luchu Shells, p. 15, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 43, No. 484, 1928.

A single specimen; 15 mm. in height and 13 mm. in diameter. Reg. No. 50642.

Living: Ryûkyû Islands. The Philippines.

Geological distribution: Lower Tertiary of Borneo (BOETTGER).

173. *Polinices columnaris* (RÉCLUZ), 1850

Natica columnaris REEVE, Conch. Icon., Vol. 9, Pl. 5, figs. 19a, b, 1855: *P. columnaris* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 34, No. 485, 1928.

7 specimens; the largest one 29 mm. in height and 28 mm. in diameter. Reg. No. 50643.

Living: Ryûkyû Islands. The Philippines.

Family Turbinidae

Genus *Astraea* BOLTEN, 1798

Subgenus *Bolma* RISSO, 1826

174. *Astraea (Bolma) modesta* (REEVE), 1842 Pl. V (I), Fig. 37.

Trochus modestus REEVE, Conch. Icon., Vol. 13, Pl. 10, sp. 56, 1861: *Astralium (Bolma) modestum* PILSBRY, in TRYON's Man. Conch., Vol. 10, p. 229, Pl. 55, figs. 63, 64, 1888.

3 well preserved specimens; the largest one 45 mm. in height and 46 mm. in diameter. Reg. No. 50615.

Living: Northern Honsyû to Kyûsyû.

Subgenus *Calcar* MONTFORT, 1810

175. *Astraea (Calcar) henica* (WATSON), 1886

Astralium (Cyclocantha) henica PILSBRY, in TRYON's Man. Conch., Vol. 10, p. 235, Pl. 52, figs. 25, 26, 1888.

A single well preserved specimen nearly in natural colouration; 10 mm. in height and 11 mm. in diameter. Reg. No. 50616.

Living: Fiji Island.

Genus *Collonista* IREDALE, 1918

176. *Collonista pilula* (DUNKER), 1860

Liotina pilula DUNKER, Moll. Jap., p. 19, Pl. 2, fig. 7, 1861.

2 specimens; the larger one 2.5 mm. in height and diameter. Reg. No. 50621.

Living: Central Honsyû to Kyûsyû.

Geological distribution: Post-Pleistocene of Awa (YOKOYAMA, NOMURA).

177. *Collonista laeta* (MONTROUZIEUR), 1863

Leptothyra (*Collonia*) *laeta* PILSBRY, in TRYON's Man. Conch., Vol. 10, p. 258, Pl. 63, figs. 29, 30, 1888: *C. laeta* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 29, No. 299, 1928.

3 specimens; the largest one 3.5 mm. in height and 4 mm. in diameter. Reg. No. 50620.

Living: Ryûkyû Islands. New Caledonia. Viti and Solomon Islands. Australia.

178. *Collonista globula* (PHILIPPI), 1848

Trochus globulus PHILIPPI, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 2, Pt. 3, p. 231, Pl. 35, fig. 3, 1851.

A single specimen; 2.5 mm. in height and diameter. The identification of the species is more or less doubtful. Reg. No. 50619.

Living: Antilles. Indian Ocean.

Family Trochidae

Genus *Clanculus* MONTFORT, 1810

179. *Clanculus clanguloides* (WOOD), 1828

Trochus (*Clanculus*) *clanguloides* PILSBRY, in TRYON's Man. Conch., Vol. 11, p. 65, Pl. 10, figs. 10, 11, 1889: *C. clanguloides* SUGITANI, Cat. Luchu Shells, p. 3, 1927: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 25, No. 255, 1928.

A single well preserved specimen, nearly in natural colouration; 12 mm. in height and diameter. Reg. No. 50607.

Living: Ryûkyû Islands. New Caledonia. Australia.

Genus *Cantharidus* MONTFORT, 1810

Subgenus *Thalotia* GRAY, 1847

180. *Cantharidus* (*Thalotia*) *japonicus* (A. ADAMS), 1851

Zyzyphinus japonicus REEVE, Conch. Icon., Vol. 14, Pl. 7, sp. 49, 1863: *Calliostoma japonicum* PILSBRY, in TRYON's Man. Conch., Vol. 11, p. 355, Pl. 17, fig. 25, 1889.

A single immature specimen: 4 mm. in height and 2.5 mm. in diameter. Reg. No. 50612.

Living: Central Honsyû to Kyûsyû; Japan Sea.

Geological distribution: Post-Pleistocene and Pliocene of the Kwantô region (YOKOYAMA, NOMURA).

Genus *Calliostoma* SWAINSON, 1840

181. *Calliostoma ticanonicum* (A. ADAMS), 1851

Zyzyphinus ticanonicum REEVE, Conch. Icon., Vol. 14, Pl. 6, sp. 43, 1863: *C. ticanonicum* PILSBRY, in TRYON's Man. Conch., Vol. 11, p. 354, Pl. 1, fig. 4, 1889.

A single specimen; 9 mm. in height and 8.5 mm. in diameter. Reg. No. 50608.

Living: The Philippines.

182. *Calliostoma multiliratum* (SOWERBY), 1875

C. multiliratum PILSBRY, in TRYON's Man. Conch., Vol. 11, p. 342, Pl. 15, figs. 45, 46, 1889.

2 specimens; the larger one fractured, 10 mm. in diameter. Reg. No. 50609.

Living: Northern to Central Honsyû. China. Cape of Good Hope.

Subgenus *Astele* SWAINSON, 1855

183. *Calliostoma (Astele) kikaianum* n. sp.

[see p. 158 (50)]

Family **Angariidae**

Genus *Angaria* BOLTEN, 1798

184. *Angaria distorta* (LINNAEUS), 1758

Delphinula distorta REEVE, Conch. Icon., Vol. 1, Pl. 2, sp. 7, 1843: *A. distorta* SUGITANI, Cat. Luchus Shells, p. 5, 1927: *A. delphinus distorta* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 27, No. 287, 1928.

A single well preserved specimen in natural colouration; 21 mm. in height and 24 mm. in diameter. Reg. No. 50617.

Living: Western Honsyû to Ryûkyû Islands. The Philippines. Indian Ocean.

185. *Angaria formosa* (REEVE), 1842

Delphinula formosa REEVE, Conch. Icon., Vol. 1, Pl. 1, fig. 2, ? Pl. 3, fig. 26, 1843: *A. delphinus formosa*, KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 27, No. 285, 1928.

A single well preserved specimen nearly in natural colouration; 16 mm. in height and 22 mm. in diameter. Reg. No. 50618.

Living: Ryûkyû Islands. The Philippines. Indian Ocean.

Family **Cyclostrematidae**

Genus *Cyclostrema* MARRYATT, 1818

186. *Cyclostrema sulcatum* A. ADAMS, 1850

C. sulcata A. ADAMS, in SOWERBY's Thes. Conch., Vol. 3, p. 250, Pl. 255, figs. 11, 12, 1858: SOWERBY, in REEVE's Conch. Icon., Vol. 19, Pl. 1, sp. 3, 1874.

A well preserved single specimen; 3.5 mm. in height and 2 mm. in diameter. Reg. No. 50613.

Living: Japan. China. The Philippines.

Family **Liotinidae**

Genus *Liotina* FISCHER, 1885

187. *Liotina discoidea* (REEVE), 1843

Delphinula discoidea REEVE, Conch. Icon., Vol. 1, Pl. 4, figs. 15a, b, 1843.

A single well preserved specimen; 1 mm. in height and 2.5 mm. in diameter. Reg. No. 50454.

Living: The Philippines.

188. *Liotina pseudodiscoidea* n. sp.
[see p. 157 (49)]

Family **Skeneidae**

Genus **Skenea** FLEMING, 1828

189. *Skenea planorboides* YOKOYAMA, 1922

S. planorboides YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 81, Pl. 41, fig. 8, 1922.

3 specimens; the larger two fractured and the most perfect, smallest one 2.5 mm. in height and 3.5 mm. in diameter. The identification of this species is somewhat questionable. Reg. No. 50622.

Living: Central Japan.

Geological distribution: Pleistocene of the Kwantô region (YOKOYAMA).

Family **Fissurellidae**

Genus **Diodora** GRAY, 1821

190. *Diodora sieboldii* (REEVE), 1850

Fissurella sieboldii REEVE, Conch. Icon., Vol. 6, Pl. 14, sp. 102, 1850: *D. sieboldii* KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 23, No. 233, 1928.

2 well preserved specimens; the larger one 7.5 mm. in height, 20 mm. in length and 16 mm. in breadth. Reg. No. 50601.

Living: Central Honsyû to Ryûkyû Islands. ? Singapore.

Geological distribution: Post-Pleistocene of Noto (YOKOYAMA).

Genus **Emarginula** LAMARCK, 1801

191. *Emarginula galericulata* A. ADAMS, 1851

E. galericulata A. ADAMS et SOWERBY, Thes. Conch., Vol. 3, p. 215, Pl. 246, fig. 24, 1866: THIELE, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 2, Pt. 4a, p. 66, Pl. 8, figs. 5, 6, 1913.

5 specimens; the largest one 4 mm. in height, 6 mm. in length and 4 mm. in breadth. Reg. No. 50602.

Living: The Philippines.

192. *Emarginula crassicosata* SOWERBY, 1866

E. crassicosata A. ADAMS and SOWERBY, Thes. Conch., Vol. 3, p. 214, Pl. 246, figs. 41, 42, 1866: THIELE, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 2, Pt. 4a, p. 68, Pl. 8, fig. 10, 1913.

A single fractured specimen; 3 mm. in height, 8 mm. in length and 5 mm. in breadth. Reg. No. 50604.

Living: Exact locality unknown.

193. *Emarginula retecosa* A. ADAMS, 1851

E. reticulata ADAMS and SOWERBY, Thes. Conch., Vol. 3, p. 214, Pl. 246, figs. 37, 38, 49, 1866: *E. retecosa* THIELE, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 2, Pt. 4a, p. 71, Pl. 9, fig. 1, 1915.

A single fractured specimen; 6 mm. in height, 9 mm. in length and 6.5 mm in breadth.
Reg. No. 50603.

Living: The Philippines.

194. *Emarginula japonica* A. ADAMS, 1866

E. japonica ADAMS and SOWERBY, Thes. Conch., Vol. 3, p. 216, Pl. 246, figs. 43, 44, 1866: THIELE, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 2, Pt. 4a, p. 94, Pl. 11, figs. 14, 15, 1915.

A single specimen; 3.5 mm. in height, 7 mm. in length and 5 mm. in breadth. Reg. No. 50605.

Living: Japan.

195. *Emarginula maculata* A. ADAMS, 1866

E. maculata ADAMS and SOWERBY, Thes. Conch., Vol. 3, p. 214, Pl. 246, figs. 31, 32, 1866: THIELE, in MARTINI und CHEMNITZ's Syst. Conch. Cab., Vol. 2, Pt. 4a, p. 95, Pl. 11, figs. 18, 19, 1915.

A single fractured specimen; 2.5 mm. in height, 5.5 mm. in length and 4 mm. in breadth.
Reg. No. 50606.

Living: Kyûsyû.

Family Epitoniidae

Genus *Epitonium* BOLTEN, 1798196. *Epitonium replicatum* (SOWERBY), 1844

Scalaria replicata SOWERBY, Thes. Conch., Vol. 1, p. 84, Pl. 32, figs. 23, 24, 1844: *E. replicatum* SUGITANI, Cat. Luchu Shells, p. 20, 1927.

3 specimens; the largest one 13 mm. in height and 7.5 mm. in diameter. Reg. No. 50663.

Living: Inland Sea to Ryûkyû Islands. Lord Hood's and Kingsmill Islands.

Geological distribution: Pleistocene of Musasi (YOKOYAMA).

197. *Epitonium azumana* (YOKOYAMA), 1922

Scalaria azumana YOKOYAMA, Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 44, Art. 1, p. 86, Pl. 4, fig. 20, 1922.

A single fractured specimen, questionably referred to the named species; 2.5 mm. in diameter. Reg. No. 50664.

Living: Central Japan.

Geological distribution: Pleistocene of the Kwantô region (YOKOYAMA).

Subgenus *Cirsotrema* MÖRCH, 1852198. *Epitonium (Cirsotrema) suboptima* n. sp.

[see p. 159 (51)]

Genus *Eglisia* GRAY, 1840

199. *Eglisia tricarinata* ADAMS et REEVE, 1845 Pl. V (I), Fig. 41.

E. tricarinata REEVE, Conch. Icon., Vol. 5, Pl. 1, sp. 3, 1849: TRYON, Man. Conch., Vol. 9, p. 86, Pl. 18, fig. 60, 1887.

A single specimen; 10 mm. in height and 2.5 mm. in diameter. Reg. No. 50439.

Living: China.

Family Melanellidae

Genus *Melanella* BOWDICH, 1822

200. *Melanella thaanumi* PILSBRY, 1917

M. thaanumi PILSBRY, Proc. Acad. Nat. Sci. Philad., p. 220, Pl. 14, figs. 5, 5a, 6, 6a, 1917: KURODA, Cat. Shell-bearing Moll. Amami-Ôsima, p. 80, No. 1041, 1928.

A single specimen; 29 mm. in height and 9 mm. in diameter. Reg. No. 50430.

Living: Ryûkyû Islands. Sandwich Islands.

Family Pyramidellidae

Genus *Turbonilla* RISSO, 1826

Subgenus *Careliopsis* MÖRCH, 1874

201. *Turbonilla* (*Careliopsis*) sp. indet.

A single fractured specimen. Reg. No. 50440.

IV. DESCRIPTION OF THE NEW SPECIES

Glycymeris subpectiniformis n. sp.

Pl. V (I), Figs. 2a, b.

Shell moderate in size, outline orbicular, compressed, subequilateral, almost as long as high; test solid. Beak very small, pointed, situated nearly central and slightly raised. Dorsal margin straight, with its extremities rounded. Surface radially ribbed; ribs rather low, subequal, rounded on top, 21 in number, crossed by distinct lines of growth; interspaces nearly equal to ribs themselves in breadth, concave at bottom. Hinge with an arcuate row of small, uninterrupted teeth, numbering 23; area very narrow, ornamented by four triangular ligamental grooves. Interior finely, radially, striated and its margin coarsely crenulated. Muscular impression distinct, the posterior being slightly larger than the anterior.

Only a single right valve was examined. It measures 31.5 mm. in length, 30.5 mm. in height and 7 mm. in depth. Reg. No. 50200.

Glycymeris pectiniformis (LAMARCK)¹ is closely related to the present species in form, but distinguished from that species in having a longer hinge-line and narrower radiating ribs. The ribs seem to be fewer in this species than in *G. vitrea* (LAMARCK)².

¹ REEVE: Conch. Icon., Vol. 1, Pl. 3, figs. 11a, a, b, 1843.

² REEVE: Ibid., Pl. 8, figs. 45a, b, 1843.

Glycymeris hanzawai n. sp.

Pl. V (I), Figs. 3a, b.

Shell small, inflated, outline subcircular, more or less oblique, higher than long, anterior part being slightly shorter than the posterior, narrowed towards the beak; test solid. Beak small, rather obtuse. Surface radially ribbed; ribs about 25 in number, rounded, distinct in the middle part of the disk and obsolete on both extremities; interspaces nearly equal to ribs themselves in breadth; entire surface closely and finely decussated throughout by concentric lines of growth. Hinge rather delicate with an arcuate row of small teeth which number 8 on anterior side, and 9 on the posterior; area narrow, and sloped, sculptured with four divaricating ligamental grooves; interior smooth except for a few radial lines along the pallial line and crenulated margin.

Only a single left valve was examined. It measures 15 mm. in length, 16 mm. in height and 5 mm. in depth. Reg. No. 50196.

This species somewhat resembles in form a certain species of *Venericardia*; no species of *Glycymeris* are found in Japan that are closely allied to this fossil.

Arca (Arca) kikaizimana n. sp.

Pl. V (I), Figs. 4a, b, 5a, b.

Shell medium in size, outline oblong-subsquare, oblique, inflated; test very thick. Anterior end rounded, the posterior obliquely truncated and its lower angle being produced; dorsal margin rather long and straight, angulated at each end; ventral margin well curved in front, nearly straight behind, not gaping. Surface is divided into two unequal parts by posterior ridge; area behind the ridge rather abruptly sloped and much narrower than in front. Radiately ribbed; ribs prominent, 18 in number, squarish in cross-section, these are subequal and are largest in front of the posterior ridge; interspaces nearly equal to ribs themselves in breadth, deep and channeled. Besides, concentrically coarsely striated, and the surface is more or less granulated. Beaks small, pointed, strongly incurved, remote and situated at the anterior third of shell-length. Area of the ligament broad and flat, marked by a few diamond shaped ligamental grooves. Teeth small, numerous, subequal, almost vertical and uninterrupted. Muscular impressions distinct, the posterior elongately subsquare in form and much larger than the anterior. Interior radially striated along the pallial line; ventral margin crenulated in harmony with the external ribs.

Several specimens were examined. A right valve measuring 39 mm. in length, 27 mm. in height, 16 mm. in depth and 30 mm. in length of dorsal margin was chosen for the type. Reg. No. 50198.

The dimensions of some paratype specimens are:

Length	Height	Depth	Length of dorsal margin	
50 mm.	29 mm.	20 mm.	36 mm.	(left valve)
45 mm.	29 mm.	19 mm.	37 mm.	(right valve)
43 mm.	28 mm.	16 mm.	34 mm.	(,,)
40 mm.	27 mm.	17 mm.	31 mm.	(,,)
28 mm.	18 mm.	10 mm.	22 mm.	(left valve)
25 mm.	17 mm.	9 mm.	19 mm.	(,,)
22 mm.	15 mm.	8 mm.	16 mm.	(right valve)
19 mm.	12 mm.	7 mm.	14 mm.	(,,)

There are no species of *Arca* in Japan that are closely allied to this type.

***Pseudogrammatodon pacificus* n. sp.**

Pl. V (I), Figs. 6a, b, 7a, b.

Shell small, oblong, moderately inflated, very inequilateral, posterior part being much longer than the anterior; anterior end rounded, the posterior obtusely truncated and its lower corner more or less produced, dorsal margin long and straight being subangulated at each end; base slightly contracted in the middle. Beak small, prosogyrate, scarcely raised from the dorsal margin, situated within the anterior fourth. Surface with distant, subequal concentric ridges, crossed by fine and regular radial lines; interspaces narrower than ridges and sometimes with faint concentric striae as well as radial lines. Cardinal area exceedingly narrow, almost linear; anteriorly with four oblique, small teeth, posteriorly with four, elongated teeth arranged almost parallel to the hinge line; both anterior and posterior teeth finely and minutely corrugated. Interior with fine radial lines and its margin quite smooth. Test rather thin.

A right valve measuring 20 mm. in length, 8.5 mm. in height, 4 mm. depth was chosen for the type. Reg. No. 50341.

Two valves, a right and a left belonging to different individuals were examined. The left valve which is a paratype specimen measures 17 mm. in length, 7.5 mm. in height and 3.5 mm. in depth being slightly smaller than the type.

Pseudogrammatodon dalli (SMITH), the geno-type, differs from the present fossil in the shell being larger, more compressed and less elongated; further the external sculpture is decidedly unlike in the two.

***Pecten* (*Aequiptecten*) *kikaiensis* n. sp.**

Pl. V (I), Figs. 9a, b.

Shell small, inflated, nearly circular in outline, more or less oblique being slightly produced posteriorly; sides of the disk sloping, the anterior being shorter than the posterior; apical angle about 110° ; test rather solid. Right valve sculptured with 18 radiating ribs which are in general subsequently divided into three riblets by longitudinal furrows; interspaces narrower than ribs and rarely provided with one or two interstitial riblets; entire surface of disk covered with minute, close-set scales. Ears rather small, very unequal, the anterior narrower but much longer than the posterior and ornamented with five radial, subnodose riblets with a deep bysyal notch below. Interior of valve radially ribbed in harmony with the external sculpture. Left valve nearly similar to the right, but seemingly less convex and with less unequal ears.

Several specimens assigned to this species were examined. A right valve measuring 16 mm. in length, 16.5 mm. in height, 5.5 mm. in depth and 9.5 mm. in length of ears was chosen for the type. Reg. No. 50357.

The dimensions of some paratype specimens are:

Length	Height	Depth	Length of ears	
14 mm.	14.5 mm.	4.5 mm.	7.5 mm.	(right valve)
13.5 mm.	14 mm.	4.8 mm.	8 mm.	(,,)
12.5 mm.	12.5 mm.	4 mm.	7 mm.	(,,)
4.8 mm.	4.8 mm.	1.8 mm.	3.5 mm.	(,,)
4.5 mm.	4.8 mm.	1.5 mm.	3 mm.	(left valve)

This species is closely related to *Aequipecten martini* COSSMANN¹ from the Pliocene of Karikal, but distinguished from that species in having a more inflated beak and higher disk.

Lima (Limea) limopsis n. sp.

Pl. V (I), Figs. 11a, b, 12a, b.

Shell very small, moderately convex, obliquely ovate in outline, anterior end rounded, the posterior nearly straight. Test rather solid. Beak small, pointed and slightly raised from the dorsal margin. Sculptured with about 16 to 20, rather strong subsquarish ribs, which are separated by slightly wider interspaces; submargins radially obsolete sculptured; entire surface covered by fine but rather distinct concentric lines of growth. Hinge-margin straight with a central triangular pit. Teeth small, about 10 in number on each side of the hinge; internal surface radially obsolete grooved; ventral margin crenulated.

A right valve measuring 4 mm. in length, 4.5 mm. in height and 1.5 mm. in depth was chosen for the type. Reg. No. 50368.

Several well preserved isolated valves assigned to this species were examined. The following are the measurements of some paratype specimens:

Length	Height	Depth	
3.5 mm.	4 mm.	1.5 mm.	(right valve)
3 mm.	3.7 mm.	1.5 mm.	(left valve)
3 mm.	3.7 mm.	1.2 mm.	(,,)
3 mm.	3.5 mm.	1.5 mm.	(right valve)
3 mm.	3.5 mm.	1.2 mm.	(left valve)
2.5 mm.	3 mm.	1 mm.	(,,)
2.5 mm.	3 mm.	1 mm.	(,,)
2.5 mm.	3 mm.	1 mm.	(right valve)

Similar in form to *L. (Limea) pectinata* (H. ADAMS)² from the Red Sea, but the two may be distinguished mainly by ribs. In *L. pectinata*, ribs are said to be rounded, while in our fossil, they are roundly square in cross-section.

Venericardia millegrana n. sp.

Pl. V (I), Figs. 13a, b, 14a, b.

Shell small, suborbicular or roundly trigonal in outline, strongly inflated, very inequilateral; anterior end rounded, the posterior roundly truncated, ventral margin evenly arcuated. Beak small, prominent, pointed at end and situated much anteriorly. Test moderately solid. Surface ornamented with about 20 radiating ribs which are minutely and closely granulated rather than crenulated by the intersection of coarse concentric lines. Interspaces as wide as the ribs themselves, deep, subchanneled and concentrically striated. Lunule cordate, impressed, bounded behind by a sharp ridge and striated internally. Hinge-teeth two in each valve, anterior teeth broad, flat on top and elongate-triangular in form; the posterior long and arcuated being more elongated in the left valve than in the right. Internal margin crenulated in harmony with the external ribs. Muscular impressions distinct, unequal in form, the anterior elongated while the posterior almost rounded.

¹ COSSMANN: Jour. de Conchyl. Vol. 68, p. 90, Pl. 3, figs. 13, 14; Pl. 4, figs. 1, 2, 1923.

² J. THIELE: Syst. Conch. Cab., Vol. 7, Pt. 2, p. 60, Pl. 10, fig. 17, 1920.

Two valves, one left and one right belonging to different individuals were examined and the right valve measuring 12 mm. in length, 12.5 mm. in height and 5.5 mm. in depth was chosen for the type. Reg. No. 50375. The left valve which is a paratype specimen measures 12.5 mm. in length, 13 mm. in height and 6 mm. in depth.

This species is similar to *V. bonneti* COSSMANN¹ from the Pliocene of Karikal in form, but is distinguished from that species by having a greater number of radiating ribs.

Venericardia quadriangulata n. sp.

Pl. V (I), Figs. 15a, b, 16a, b.

Shell small, inflated, roundly quadrate in outline, inequilateral, anterior part being much shorter than the posterior; rounded in front, broadly truncated behind; antero-dorsal margin excavated in front of the beak, postero-dorsal as well as ventral margins nearly straight, and subparallel. Beak small, rather prominent, abruptly turned forward, situated at the anterior third. Test solid, but not very thick. Surface radially ribbed; ribs 22 in number, subequal, minutely and closely granulated, which are often more or less spiny. Interstitial grooves almost equal to ribs themselves, rather deep, subchanneled and transversely coarsely striated. An obtuse ridge runs from beak to the lower posterior angle, by which the surface is divided into two unequal parts, area behind the ridge narrow and sloped. Lunule impressed, well defined by a distinct ridge behind and coarsely striated internally. Hinge with two teeth in each valve; the anterior in the left valve being smaller than that of the right, while the posterior in the left valve is larger and more elongated than in the right. Interior smooth with its margin crenulated. Muscular impressions distinct, the anterior quadratic in outline, the posterior ovately rounded.

A right valve measuring 12 mm. in length, 11 mm. in height and 5 mm. in depth was chosen for the type. Reg. No. 50385.

Several specimens assigned to the species were examined. The measurements of paratype specimens are:

Length	Height	Depth	
12 mm.	11 mm.	4.5 mm.	(right valve)
11 mm.	10 mm.	4.2 mm.	(left valve)
10.5 mm.	10 mm.	4 mm.	(right valve)
9.5 mm.	8.7 mm.	4 mm.	(left valve)
9 mm.	8.5 mm.	4 mm.	(,,)
8 mm.	7.8 mm.	3.5 mm.	(,,)
7.5 mm.	7 mm.	3 mm.	(right valve)
7 mm.	6.5 mm.	2.5 mm.	(,,)

This shell somewhat resembles *V. solitaria* COSSMANN² from the Pliocene of Karikal, but it may be distinguished from that species by having a greater number of radial ribs and a more quadratic outline.

¹ COSSMANN: op. cit., p. 112, Pl. 5, figs. 37-40, 1923.

² COSSMANN: Ibid., p. 111, Pl. 5, figs. 21-23, 1923.

Cardium (Trachycardium) infantule n. sp.

Pl. V (I), Figs. 17a, b,

Shell small, ovate-orbicular in outline, inflated, inequilateral, somewhat higher than long; test thin. Beak small, pointed. Surface radially ribbed; ribs numerous, about 50 in number, flat on top, and ornamented with a few small A-shaped scales which seem to be closer at the ventral border; interspaces nearly half the width of ribs themselves, rather deep, subchanneled, crossed by fine concentric lines. No defined lunule. Hinge delicate, and arcuated; teeth composed of one cardinal and two laterals in each valve, the latter being obsolete in the left valve; interior radially grooved in harmony with the external sculpture; ventral margin crenulated; muscular impressions ill-defined.

A right valve which is 6 mm. long, 6.2 mm. high and 3 mm. deep was chosen for the type. Reg. No. 50386.

One left and three right valves are represented in the collection. The measurements of paratype specimens are:

Length	Height	Depth	
4.5 mm.	4.8 mm.	2.5 mm.	(right valve)
4 mm.	4.2 mm.	2.2 mm.	(left valve)
3.8 mm.	4 mm.	2 mm.	(right valve)

The characteristic form and sculpture of this new species removes its affinity from its allied forms.

Venus (Chione) yabei n. sp.

Pl. V (I), Figs. 18a, b.

Shell medium in size, inflated, orbicularly ovate in outline, inequilateral, anterior part about half the length of the posterior; postero-dorsal margin sloping and almost straight, antero-dorsal margin short, and excavated in front of the beak, ventral margin evenly rounded. Test thick. Beak moderate, pointed at end, abruptly turned forwardly. Surface concentrically ridged; ridges lamellar, distantly spaced, about 20 in number, reflected especially on the anterior half of the disk; interspaces much wider than ridges themselves, concave-bottomed with a few regular concentric lines having no trace of radial sculpture. Lunule shortly cordate, considerably impressed, bounded behind by a ridge, and striated internally. Hinge stout and broad; teeth as in *V. (Chione) foveolata* SOWERBY. Interior smooth, margin finely crenulated; muscular impressions distinct, subequal in size.

Only a right valve is represented in the collection. It measures 49 mm. in length, 45 mm. in height and 17 mm. in depth. Reg. No. 50651.

This shell closely resembles *V. pilula* REEVE¹ from an unknown locality in form, but it is distinguished from that species in having a more elevated lamellae, and with more distinct interstitial lines.

Macra (Spisula) asperaeformis n. sp.

Pl. V (I), Figs. 20a, b.

Shell rather long, compressed, somewhat trigonally elliptical, being nearly twice as long as high. Test thin. Beak small, situated anteriorly. Sculpture: anterior surface with irregular

¹ REEVE: Conch. Icon., Vol. 14, Pl. 15, fig. 58, 1864.

concentric wrinkles and grooves which are exposed along the ventral border, otherwise smooth; the posterior with many scales or granules developed on the small area. Lunule narrow, elongated slightly impressed, feebly bounded from the remaining part. Hinge rather delicate; teeth normal, finely corrugated laterally; interior quite smooth; muscular impressions well exposed; pallial sinus very large, almost horizontal, rounded at end and extending a trifle beyond the middle of the shell-length.

Only a single left valve was examined. It measures 32 mm. in length, 18.5 mm. height and 5.5 mm. in depth. Reg. No. 50396.

The present shell strongly resembles *Mactra aspersa* SOWERBY¹ from the Philippines in form, but the two species are easily distinguished by having a different posterior sculpture.

Tellina kikaizimana n. sp.

Pl. V (I), Figs. 19a, b.

Shell very small, elongated, transversely ovate in outline, moderately inflated, inequilateral, anterior part slightly broader and shorter than the posterior, rounded at both ends, ventral and dorsal margins arcuated; test thin. Beak small, pointed, slightly raised from the dorsal margin, situated somewhat anteriorly. Surface with numerous, fine and regular concentric raised lines. Lunule narrow, elongated, feebly bounded from the remaining part. Hinge delicate with two cardinal teeth and two laterals in each valve, the anterior lateral in the right valve being almost obsolete; muscular impressions as well as pallial sinus are not well marked.

A right valve measuring 4 mm. in length, 2.5 mm. in height and 0.8 mm. in depth was chosen for the type. Reg. No. 50398.

Several isolated valves assigned to this species were examined. The measurements of paratype specimens are:

Length	Height	Depth	
4.5 mm.	3 mm.	1 mm.	(left valve)
4 mm.	2.5 mm.	0.8 mm.	(right valve)
4 mm.	2.5 mm.	0.8 mm.	(left valve)
3.8 mm.	2.3 mm.	0.8 mm.	(right valve)
3.5 mm.	2.2 mm.	0.8 mm.	(left valve)
3.5 mm.	2.2 mm.	0.8 mm.	(, ,)
3.5 mm.	2.2 mm.	0.7 mm.	(right valve)

This species resembles *Tellina pallidula* LISCHKE² in form and sculpture; however, the two may be distinguished by the hinge-teeth. In *T. pallidula*, the posterior lateral is close to the posterior cardinal, but in the present fossil, it is considerably separated. From the consideration of the hinge character, this species seems to belong to the section *Moerella*.

Liotina pseudodiscoidea n. sp.

Pl. V (I), Figs. 40a, b, c.

Shell very small, discoidal with flattened or somewhat depressed spire. Whorls four, separated by deep and well defined sutures whose outer margins are crenulated. Periphery

¹ REEVE: Conch. Icon., Vol. 8, Pl. 14, fig. 65, 1854.

² LISCHKE: Jap. Meeres-Conch., Vol. 2, p. 114, Pl. 10, figs. 6, 7, 7a, 1871.

strongly angulated with 16 prominent spines; above and below the peripheral keel there are two small revolving ridges which are somewhat granular. Surface radially and closely striated throughout. Base sloping inwardly; umbilicus deep and wide, encircled by a row of crenulations; aperture roundly pentagonal in form.

Only a single specimen is represented in the collection. Height, 1 mm.; diameter, 2.5 mm. Reg. No. 50454.

This species closely resembles *L. discoides* cited in this paper, but may be distinguished by having more pronounced spines which are not continuous from the upper keel to the lower.

Calliostoma (Astele) kikaianum n. sp.

Pl. V (I), Figs. 38a, b, 39a, b.

Shell small, turbinately conical, perforated; test solid. Whorls about 6 in number, the first two embryonic, smooth and convex; the rest sharply angulated by a spiral cord, the area above the angle being flat and smooth, below very steep and almost vertical or somewhat concave with four spiral lirae on a whorl. The lirae subequal, separated by much wider grooves. Entire surface covered by fine growth lines. Periphery angulated; base plano-convex with 7 or 8, nearly equally spaced spiral grooves; umbilicus narrow and deep, with its inner wall sculptured by fine longitudinal striae. Aperture more or less quadratic; thin and continuous callous covers the inner lip. Columella short, simple and slightly arcuated.

Six well preserved specimens are at hand. Reg. No. 50610.

The measurements of the specimens are:

Height	Diameter
4 mm.	3.7 mm.
3.5 mm.	3.2 mm.
3.2 mm.	?
3 mm.	2.8 mm. (type)
2.7 mm.	2.5 mm.
2.7 mm.	2.5 mm.

Similar in form to "*Gibbula*" *coxi* ANGAS¹ from Australia, but it is distinguished from that species by having coarser sculpture and a more flattened base.

Triphora solitaria n. sp.

Pl. V (I), Fig. 33.

Shell large, subulate, subcylindrical. Whorls many, flat, about 20 in number (a few upper ones missing), separated by distinctly defined sutures. Test rather solid. Sculpture consists of axial riblets, crossed by revolving ridges giving the surface a granular appearance; riblets rounded, slightly oblique, about 22 in number on the last whorl, separated by much narrower intervals; the spirals generally 3 on the upper whorls, increasing their number to six on the lower part of whorls, two or three spirals are larger and more prominently tuberculated than the others, the uppermost one is close to the upper suture and the lowest to the lower. Periphery angulated by a revolving ridge, base flattened with spiral grooves, one of which is

¹ PILSBRY, in TRYON's *Man. Conch.*, Vol. 11, p. 231, Pl. 31, figs. 34, 35; Pl. 32, fig. 69, 1889.

situated near the periphery is the largest. Aperture ovate; canal short, narrow, recurved, and its end pointed. Columella oblique on the lower part, straight on the upper; outer-lip unfortunately fractured.

Only a single, more or less imperfect specimen is represented in the collection. Reg. No. 50633.

Dimension of the preserved portion; height, 27 mm. diameter, 4 mm.

There are no species that are closely allied to this characteristically large one.

Epitonium (Cirsotrema) suboptima n. sp.

Pl. V (I), Fig. 41.

Shell rather large, turriculated; test thin. Whorls about 15, the first two embryonic, smooth and rounded; the remaining convex, decussated by longitudinal lamellae and spiral striae giving the surface a regularly cancellated appearance; lamellae thin, oblique, subequal, much narrower than their intervals and about 45 in number on the last whorl; the spirals nearly equal in breadth to lamellae themselves, subequal, usually accompanied by a single thread in each interval. Periphery decidedly angulated by a revolving ridge. Base flattened or somewhat convex with longitudinal lamellae as well as concentric striae, the latter much finer than the former. Umbilicus perfectly closed. Aperture rounded with a narrow and continuous callous deposit along the inner lip; columella short, slightly arcuated; outer lip thin and smooth.

Several well preserved specimens were examined. Reg. No. 50665.

The dimensions of some specimens are:

Height	Diameter
33 mm.	9 mm. (type)
27 mm.	7.5 mm.
22 mm.	6.5 mm.
17 mm.	7 mm.
15 mm.	4.5 mm.

This species closely resembles "*Scala*" *optima* MELVILL and STANDEN¹ from Maskat, Persian Sea, but is distinguished from that species by having a slightly coarser sculpture. *Epitonium kieneri* (TAPP.—CAN.) is said to be narrowly shouldered, though similar in form and sculpture.

Siphonalia longicanalis n. sp.

Pl. V (I), Fig. 26.

Shell medium in size, narrowly fusiform; test solid. Spire conical, much shorter than the body-whorl. Whorls 8 in number; two embryonic ones smooth and globose, the remaining convex and more or less shouldered by longitudinal plicae. The plicae rounded, rather prominent, about 9 or 10 on a whorl; interstitial valleys nearly equal to plicae themselves. Area above the plicae sloped, or slightly concave and smooth, below steep and nearly vertical. Surface of whorls finely spirally lirate. The lirae unequal being obsolete on the spire. Suture impressed. Aperture semilunar, nearly as long as the spire and acutely sinuated posteriorly. Inner lip

¹ J. C. MELVILL and R. STANDEN: Jour. Conch., Vol. 10, No. 12, p. 350, Pl. 7, fig. 16, 1930

smooth with moderate callosity; outer lip thin, transversely lirate within; anterior canal exceedingly long and recurved with a slightly raised edge.

Several specimens are represented in the collection. Reg. No. 50674. Annexed are some of the measurements:

Height	Diameter
46 mm.	19 mm.
45 mm.	18 mm.
43 mm.	17 mm. (type)
30 mm.	12.5 mm.
21 mm.	8.5 mm.

This species is similar to *S. cassidariaeformis* (REEVE)¹ in sculpture, but has a narrower, and much more elongated anterior canal. *S. fusoides* (REEVE)² and *S. longirostris* DUNKER³ are also somewhat allied to this shell, but our's is distinguished from those species by having stronger longitudinal plications.

Nassarius kikaizimanus n. sp.

Pl. V (I), Fig. 27.

Shell rather large, turreted, ovately pyramidal; test thin. Whorls 10 in number, the first three embryonic, and smooth; the remaining ones convex or feebly shouldered, separated by an impressed suture. Sculpture consists of longitudinal ribs and spiral lirae; ribs rounded, nearly vertical, about 16 on a whorl, much narrower than the interspaces; lirae rather distinct, about 7 on the penultimate whorl, and 15 on the ultimate and somewhat granulated at the intersections of ribs and lirae. Aperture ovate, occupying a trifle less than half the entire shell-length; inner lip covered with thin, narrow and continuous callous deposits and an obsolete fold near the posterior angle; outer lip thin and transversely lirate within. Columella short, slightly curved; canal short and widely open. Base truncated.

Only a single specimen is represented in the collection. It measures 28 mm. in height, 11.5 mm. in diameter. Reg. No. 50676.

This species is so characteristic that no closely allied species of *Nassarius* are known from Japan or eastern Asia.

Terebra hanzawai n. sp.

Pl. V (I), Fig. 22.

Shell small, slender, turriculate. Whorls 13 or 14 in number, the nuclear whorls three, smooth and convex; post-nuclear ones flatly convex with the sculpture of axial ribs and concentric lines. Ribs rounded, rather strong, somewhat tuberculated at their summits, about 12 upon the body-whorl, separated by subequal interspaces. Revolving lines rather weak, obsolete upon the upper whorl, 4 upon the penultimate and 5 upon the ultimate. Sutures well marked by the presence of suprasutural revolving lines. Periphery angulated by a distinct ridge. Base more or less concave and provided with 5 spiral lines which are separated by broader grooves. Aperture

¹ REEVE: *Conch. Icon.*, Vol. 3, Pl. 2, fig. 11, 1846.

² REEVE: *Ibid.*, fig. 9, 1846.

³ DUNKER: *Index Moll. Mar. Jap.*, p. 16, Pl. 1, figs. 13, 14, 1882.

ovate-quadrate in outline; outer lip thin; inner lip smooth and evenly concave; the canal short, shallow, oblique and widely open.

Three rather well preserved specimens are found in the collection. Reg. No. 50441. The measurements of the specimens are:

Height	Diameter
6.5 mm.	1.8 mm. (type)
6.5 mm.	1.8 mm.
5.5 mm.	1.8 mm.

This species closely resembles a certain species of *Turbonilla* in form; there are no species of *Terebra* known from Japan or eastern Asia that are closely allied to the present fossil.

Terebra orthoplicata n. sp.

Pl. V (I), Fig. 21.

Shell rather small, narrow and slender, subcylindrical; test moderately solid. Whorls 15, the first two embryonic being smooth and convex; the remaining regularly and slowly enlarging, almost flat, and longitudinally plicated; the plicae vertical or slightly oblique extending from the upper suture to the lower, rounded or bluntly roof-shaped, about 25 on the last whorl, separated by excavated interspaces of equal breadth; plicae interrupted by a distinct revolving groove which is situated at about one-third of the whorl from the upper suture; incremental lines fine and numerous being well developed upon the interspaces. Base convex with rounded periphery where the axial plicae are obsolete. Aperture small, oblong-ovate in outline; canal short, recurved and truncated at its termination; inner lip smooth with moderate callosity which is more or less raised at the lower edge, outer lip broken in all specimens; columella short, straight at the upper part, oblique at the lower.

Three specimens were examined. Reg. No. 50429. The dimensions of the specimens are:

Height	Diameter
26 mm.	5 mm. (type)
25.5 mm.	5 mm.
25 mm.	4.5 mm.

Similar to *T. gotoensis* SMITH¹ in form, but has the subsutural sulcus more distinct and straighter axial plicae.

Architectonica distinguenda n. sp.

Pl. V (I), Figs. 34a, b, c.

Shell rather small, depressed conical; test rather thin. Whorls 6 in number, the uppermost one being embryonic, smooth and globular; the remaining ones slightly convex, separated by well defined sutures. Surface ornamented with spiral threads crossed by fine incremental lines. The spirals are numerous, about 7 on the penultimate whorl, very unequal; two spirals which are close to the lower suture are rather strong, and separated by deeper grooves; the upper ones are fine and nearly obsolete. Periphery sharply angulated by a revolving cord. Base plano-convex with a peripheral groove. Umbilicus large, deep and its margin as well as inner

¹ SMITH: Proc. Zool. Soc. London, p. 183, Pl. 19, figs. 1-1a, 1879.

wall crenulated. Aperture irregularly pentagonal, acutely angular at the middle part of the outer lip. Columella short and straight with thin continuous callous deposits along the inner lip.

Only a single specimen was examined. Height, 7.5 mm.: diameter, 16.5 mm. Reg. No. 50432.

The original colouration of the shell is still preserved as yellowish revolving lines.

Very similar to "*Solarium*" *lenticulatum* YOKOYAMA¹ from the Pliocene of Kosiba, near YOKOHAMA, but it is distinguished from that species by having a different sculpture; the umbilicus of our species also somewhat differs from YOKOYAMA's.

Raphitoma granulidecussata n. sp.

Pl. V (I), Fig. 25.

Shell small, fusiform. Whorls 6, the upper-most one embryonic, globular and smooth; the remaining strongly granulated by the intersection of spiral and longitudinal cords. Spirals 8 on the body-whorl, 4 on the penultimate, among which the lowest one is slightly weaker than the other; the longitudinals extending from the upper suture to the lower, about 18 on the body whorl, separated by wider interspaces. Aperture narrow, elongated, nearly as long as the length of spire. Outer lip thickened and coarsely dentate within; inner lip with thin callosity and tridentate below; anal notch shallow and pointed at its end.

Only a single well preserved specimen is represented in the collection. Height, 5.5 mm. Diameter, 2 mm. Reg. No. 50428.

"*Philbertia*" *pustulosa* (FOLIN) is closely allied to this new species in form and sculpture; but the latter may be distinguished from the former by having a greater number of spirals and by the dentation of the inner lip.

IV. APPENDIX

Molluscan remains were collected last year by Assistant-Professor R. AOKI in a thick limestone formation apparently similar to the Ryûkyû Limestone at several localities on the Islands of Minami-Daitô-zima and Kita-Daitô-zima, 300 km. east of Okinawa-zima, Ryûkyû. They are listed below for reference. Specific determination is practically impossible owing to the specimens being moulds.

Species	Minami-Daitô-zima	Kita-Daitô-zima
<i>Cardium (Fragum) unedo</i> LINNAEUS	(3 localities)	(1 locality)
<i>Cardium (Fragum?)</i> sp.	(1 loc.)	
<i>Cardium (Trachycardium?)</i> sp.		(1 loc.)
<i>Chama</i> sp.	(2 locs.)	(2 locs.)
<i>Codakia</i> sp. (a)	(1 loc.)	
<i>Codakia</i> sp. (b)	(1 loc.)	
<i>Conus</i> sp. (a)	(1 loc.)	(2 locs.)
<i>Conus</i> sp. (b)	(1 loc.)	
<i>Fusinus</i> sp.		(1 loc.)
<i>Gafrarium pectinatum</i> (LINNAEUS)	(1 loc.)	
<i>Lithophaga</i> sp.		(1 loc.)

¹ M. YOKOYAMA: Jour. Coll. Sci. Tôkyô Imp. Univ., Vol. 39, Art. 6, p. 72, Pl. 4, fig. 21, 1920.

² TRYON: Man. Conch., Vol. 6, p. 298, Pl. 30, fig. 73, 1884.

Species.	Minami-Daitō-zima	Kita-Daitō-zima
<i>Lucina</i> cf. <i>tigerina</i> (LINNAEUS)	(1 loc.)	
<i>Cerithium</i> cf. <i>parungpontenensis</i> MARTIN	(1 loc.)	
<i>Pitar</i> sp.	(1 loc.)	
<i>Tellina</i> sp.	(2 locs.)	
<i>Tonna canaliculata</i> (LINNAEUS)	(1 loc.)	
<i>Tonna perdix</i> (LINNAEUS)	(1 loc.)	
<i>Tridacna gigas</i> LINNAEUS	(3 locs.)	(3 locs.)
<i>Tridacna</i> cf. <i>squamosa</i> LAMARCK	(1 loc.)	
<i>Iridacna</i> sp.		(1 loc.)
<i>Trochus</i> sp.	(1 loc.)	(3 locs.)
<i>Trochus</i> (?) sp.		(1 loc.)
<i>Venus</i> (<i>Antigona</i>) <i>reticulata</i> LINNAEUS	(3 locs.)	(3 locs.)
<i>Venus</i> (<i>Antigona</i> ?) sp.	(1 loc.)	(1 loc.)
<i>Venus</i> (<i>Chione</i>) sp.	(1 loc.)	

V. INDEX

Genus and Subgenus	No. of Spec.	
<i>Acanthocardia</i>	58	<i>Chama</i> 51
<i>Aequipecten</i>	24-29	<i>Cheilea</i> 168
<i>Agathirses</i>	162	<i>Chicoreus</i> 128
<i>Amusium</i>	33, 34	<i>Chione</i> 63-65
<i>Ancilla</i>	110, 111	<i>Circe</i> 67
<i>Angaria</i>	184, 185	<i>Cirsotrema</i> 198
<i>Angulus</i>	69	<i>Clanculus</i> 179
<i>Arca</i>	7-14	<i>Clavus</i> 106
<i>Arca</i> s. s.	7-9	<i>Clio</i> 78-80
<i>Architectonica</i>	164, 165	<i>Clio</i> s. s. 78
<i>Astele</i>	183	<i>Codakia</i> 54
<i>Astraea</i>	174, 175	<i>Collonista</i> 176-178
<i>Barbatia</i>	11-13	<i>Columbella</i> 125
<i>Bathyarca</i>	14	<i>Conus</i> 98-103
<i>Bittium</i>	150	<i>Corbula</i> 71
<i>Bolma</i>	174	<i>Costellaria</i> 114-116
<i>Bufonaria</i>	133	<i>Creseis</i> 79, 80
<i>Bullus</i>	91	<i>Ctenoides</i> 39
<i>Bursa</i>	132, 133	<i>Cucullaea</i> 16
<i>Calcar</i>	175	<i>Cuvierina</i> 81
<i>Callanaites</i>	66	<i>Cyclostrema</i> 186
<i>Calliostoma</i>	181-183	<i>Cylichna</i> 89, 90
<i>Cancellaria</i>	109	<i>Cymatium</i> 134, 135
<i>Cantharidus</i>	180	<i>Cypraea</i> 141-144
<i>Cardium</i>	55-60	<i>Cytharella</i> 107
<i>Careliopsis</i>	201	<i>Daphnella</i> 105
<i>Cavolina</i>	82-87	<i>Decadopecten</i> 32
<i>Cavolina</i> s. s.	82-85	<i>Dentalium</i> 75
		<i>Diacria</i> 86, 87

Genus and Subgenus	No. of Spec.		
<i>Diodora</i>	190	<i>Peristernia</i>	117
<i>Discors</i>	60	<i>Phalium</i>	137
<i>Distorsio</i>	136	<i>Pitar</i>	68
<i>Dosinia</i>	62	<i>Pitarina</i>	68
<i>Eglisia</i>	199	<i>Plicatula</i>	38
<i>Emarginula</i>	191-195	<i>Polinices</i>	171-173
<i>Epitonium</i>	196-198	<i>Propeamusium</i>	35
<i>Erato</i>	148, 149	<i>Psammosolen</i>	72
<i>Eratopsis</i>	149	<i>Pseudochama</i>	52
<i>Fusinus</i>	118-120	<i>Pseudogrammatodon</i>	15
<i>Gafrarium</i>	67	<i>Pteria</i>	17
<i>Gemmula</i>	104	<i>Pyrene</i>	125
<i>Glycymeris</i>	3-6	<i>Raphitoma</i>	108
<i>Heliacus</i>	166	<i>Retusa</i>	88
<i>Hipponix</i>	167	<i>Ringicula</i>	92
<i>Isocardia</i>	61	<i>Rissoina</i>	159, 160
<i>Jagonia</i>	54	<i>Rissolina</i>	159
<i>Laevicardium</i>	57	<i>Rocellaria</i>	74
<i>Laevidentalium</i>	76	<i>Royella</i>	151
<i>Latiaxis</i>	129-131	<i>Septifer</i>	44
<i>Latirus</i>	117	<i>Siliquaria</i>	162, 163
<i>Lima</i>	39-43	<i>Siphonalia</i>	121, 122
<i>Limacina</i>	76-77	<i>Skenea</i>	189
<i>Limatula</i>	40-42	<i>Spisula</i>	73
<i>Limea</i>	43	<i>Spondylus</i>	36, 37
<i>Limopsis</i>	1, 2	<i>Tellina</i>	69, 70
<i>Liotina</i>	187, 188	<i>Terebra</i>	93-97
<i>Lucina</i>	53	<i>Thalotia</i>	180
<i>Mactra</i>	73	<i>Tonna</i>	139, 140
<i>Marginella</i>	112, 113	<i>Trachycardium</i>	55, 56
<i>Melanella</i>	200	<i>Trichomya</i>	45
<i>Miocardia</i>	61	<i>Tridacna</i>	50
<i>Mitrella</i>	126	<i>Triphora</i>	152-158
<i>Morum</i>	138	<i>Trivia</i>	145-147
<i>Murex</i>	127	<i>Turbonilla</i>	201
<i>Myodora</i>	46	<i>Turris</i>	104
<i>Nassarius</i>	123, 124	<i>Venericardia</i>	47-49
<i>Natica</i>	170	<i>Venus</i>	63-66
<i>Navicula</i>	10	<i>Vermicularia</i>	161
<i>Nemocardium</i>	59	<i>Vexillum</i>	114-116
<i>Ostrea</i>	19, 20	<i>Vola</i>	30, 31
<i>Parvilucina</i>	53	<i>Vulsella</i>	18
<i>Pecten</i>	21-35	<i>Xenophora</i>	169
<i>Pecten s. s.</i>	21-23	<i>Zebina</i>	160

PLATE V (I)

Figs. 1a, b. <i>Glycymeris pectinata</i> (LAMARCK). Sp. No. 4.	× 1
Figs. 2a, b. <i>Glycymeris subpectiniformis</i> n. sp. A right valve; holotype. Sp. No. 5.	× 1
Figs. 3a, b. <i>Glycymeris hanzawai</i> n. sp. A left valve; holotype. Sp. No. 6.	× 1
Figs. 4a, b, 5a, b. <i>Arca</i> (<i>Arca</i>) <i>kikaizimana</i> n. sp. 4, right valve; holotype. 5, left valve; paratype. Sp. No. 9.	× 1
Figs. 6a, b, 7a, b. <i>Pseudogrammatodon pacificus</i> n. sp. 6, right valve; holotype. 7, left valve; paratype. Sp. No. 15.	× 1
Fig. 8. <i>Pecten</i> (<i>Aequipecten</i>) <i>reevei</i> ADAMS et REEVE. Sp. No. 24.	× 1
Figs. 9a, b. <i>Pecten</i> (<i>Aequipecten</i>) <i>kikaizensis</i> n. sp. A right valve; holotype. Sp. No. 29.	× 1
Fig. 10. <i>Spondylus regius</i> LINNAEUS. Sp. No. 36.	× 3/4
Figs. 11a, b, 12a, b. <i>Lima</i> (<i>Limea</i>) <i>limopsis</i> n. sp. 11, right valve; holotype. 12, left valve; paratype. Sp. No. 43.	× 5
Figs. 13a, b, 14a, b. <i>Venericardia millegrana</i> n. sp. 13, right valve; holotype. 14, left valve; paratype. Sp. No. 47.	× 1
Figs. 15a, b, 16a, b. <i>Venericardia quadriangulata</i> n. sp. 15, right valve; holotype. 16, left valve; paratype. Sp. No. 48.	× 1
Figs. 17a, b. <i>Cardium</i> (<i>Trachycardium</i>) <i>infantule</i> n. sp. A right valve; holotype. Sp. No. 56.	× 1
Figs. 18a, b. <i>Venus</i> (<i>Chione</i>) <i>yabei</i> n. sp. A right valve; holotype. Sp. No. 63.	× 1
Figs. 19a, b. <i>Tellina kikaizimana</i> n. sp. A right valve; holotype. Sp. No. 70.	× 1
Figs. 20a, b. <i>Mactra</i> (<i>Spisula</i>) <i>asperaeformis</i> n. sp. A left valve; holotype. Sp. No. 73.	× 1
Fig. 21. <i>Terebra orthoplicata</i> n. sp. Holotype. Sp. No. 94.	× 1
Fig. 22. <i>Terebra hanzawai</i> n. sp. Holotype. Sp. No. 97.	× 4
Fig. 23. <i>Daphnella lymneiformis</i> (KIENER). Sp. No. 105.	× 2
Fig. 24. <i>Clavus pica</i> (REEVE). Sp. No. 106.	× 1
Fig. 25. <i>Raphitoma granulidecussata</i> n. sp. Holotype. Sp. No. 108.	× 4
Fig. 26. <i>Siphonalia longicanalis</i> n. sp. Holotype. Sp. No. 122.	× 1
Fig. 27. <i>Nassarius kikaizimana</i> n. sp. Holotype. Sp. No. 123.	× 1
Fig. 28. <i>Nassarius micans</i> (A. ADAMS). Sp. No. 124.	× 1
Fig. 29. <i>Murex sobrinus</i> A. ADAMS. The figure represents a varietal form which is less spiny. Sp. No. 127.	× 1
Fig. 30. <i>Latiaxis mawae</i> (GRAY). Sp. No. 129.	× 1
Fig. 31. <i>Latiaxis deburghiae</i> (REEVE). Sp. No. 130.	× 1
Fig. 32. <i>Latiaxis tosanus</i> HIRASE. Sp. No. 131.	× 1
Fig. 33. <i>Triphora solitaria</i> n. sp. Holotype. Sp. No. 152.	× 1
Figs. 34a, b, c. <i>Architectonica distinguenda</i> n. sp. Holotype. Sp. No. 165.	× 1
Figs. 35a, b. <i>Heliculus dilectus</i> (DESHAYES). Sp. No. 166.	× 2
Fig. 36. <i>Natica alapapilionis</i> (BOLTEN). Sp. No. 170.	× 1
Fig. 37. <i>Astraea</i> (<i>Bolma</i>) <i>modesta</i> (REEVE). Sp. No. 174.	× 1
Figs. 38a, b, 39a, b. <i>Calliostoma</i> (<i>Astele</i>) <i>kikaianum</i> n. sp. 38, holotype. 39, paratype. Sp. No. 183.	× 4
Figs. 40a, b, c. <i>Liotina pseudodiscoidea</i> n. sp. Holotype. Sp. No. 188.	a, b, × 5. c × 4
Fig. 41. <i>Epitonium</i> (<i>Cirsotrema</i>) <i>suboptimum</i> n. sp. Sp. No. 198.	× 1
Fig. 42. <i>Eglisia tricarinata</i> ADAMS et REEVE. Sp. No. 199.	× 4

