HOKKAIDO UNIVERSITY

Title	Fauna of Akkeshi Bay : XXI. Pelecypoda and Scaphopoda (With Plates I-VII)
Author(s)	Habe, Tadashige
Citation	Publications from the Akkeshi Marine Biological Station, 4, 2-31
Issue Date	1955-02
Doc URL	http://hdl.handle.net/2115/67983
Type	bulletin (article)
File Information	Akkeshi_No04.pdf

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Faculty of Science.
MAY 11 1967
Hokkaido University

February, 1955 No. 4

PUBLICATIONS
FROM
THE AKKESHI MARINE BIOLOGICAL STATION

Fauna of Akkeshi Bay
XXI. Pelecypoda and Scaphopoda

By

Tadashige HABE

SAPPORO, JAPAN

Fauna of Akkeshi Bay
XXI. Pelecypoda and Scaphopoda[1)]

By

Tadashige HABE

(Zoological Institute, Kyoto University)

(With Plates I–VII)

Here I deal with the molluscan shells collected by myself in 1949 and by the late Dr. Shiro Okuda in 1950 in the neighbourhood of Akkeshi Bay, Nemuro, Hanasaki and some other localities on the south-east coast of Hokkaido. These collections contain 54 species of bivalves and one species of tooth shell, including 4 new species which have been previously identified in error as the species of Northwest coast of America to this day. On the gastropodous molluscs, I will express in the another paper now under preparation.

Before going further, I take pleasure to express my hearty thanks to Prof. Tohru Uchida, who is the Director of the Akkeshi Marine Biological Station of Hokkaido University and to the late Dr. Shiro Okuda who was a research member of that Laboratory and sent many materials at my disposal. Also I express my particular thanks to Dr. Tokubei Kuroda and Dr. Iwao Taki for their kind suggestions throughout the study.

Class Pelecypoda
Subclass Prionodesmacea
Order Taxodonta
Superfamily Nuculacea
Family Nuculidae

1. *Ennucula tenuis* (Montagu)

(Pl. 1, figs. 1, 2)

Arca tenuis Montagu 1808, Test. Brit. Suppl., p. 56, pl. 29, fig. 1.
Nucula tenuis Forbes et Hanley, Hist. Brit. Moll., 2, p. 223, pl. 47, fig. 6; Hanley 1860, p. 161, pl. 229, figs. 140, 141; Reeve 1870, sp. 20.; Oldroyd 1924, p. 13, pl. 5, fig. 12, pl. 37, fig. 4.; Grant et Gale 1931, p. 117.
Nucula (Ennucula) tenuis Kuroda et Kinoshita 1951, p. 23.

Material: 12 specimens collected by the dredging in Akkeshi Bay.

Distribution: Circumpolar; Saghalien; Hokkaido and Northern Honshu.

This small, light yellowish brown and highly glossy nuculid species is very common in the shallow water in Hokkaido. The larger size and less

1) Contributions from the Seto Marine Biological Laboratory No. 250.
Publ. Akkeshi Mar. Biol. Stat., No. 4, 1955.

flattened shape will differentiate *Ennucula niponica* (Smith) (="*Nucula*" *mirifica* Dall) from this species. The conjoined valves of the largest specimen of this species measure 7.5 mm. in length by 6.2 mm. in height by 4.0 mm. in breadth.

Family Nuculanidae

2. *Nuculana pernula* (Müller)

(Pl. 2, figs. 12, 13)

Arca pernula Müller 1779, Beschr. Ges. Naturf. Freunde Berlin, 4, p. 55.
Nuculana pernula Mörch 1853, p. 43; Grant et Gale 1931, p. 119; Kuroda et Kinoshita 1951, p. 23; Habe 1951, p. 24, figs. 20, 21.
Leda pernula H. et A. Adams 1858, p. 547, pl. 126, figs. 4a-b; Hanley 1860, p. 113, pl. 3, figs. 56–58; Sowerby 1871, sp. 5; Sars 1878, p. 35, pl. 5, figs. 7, 7a; Oldroyd 1924, p. 19, pl. 19, figs. 7, 7a.

Material: Only one specimen collected by the dredging in Akkeshi Bay.

Distribution: Circumpolar; Saghalien and Hokkaido.

This species is elongate posteriorly and terminating in the truncated rostrum. The conjoined valves of an immature specimen from Akkeshi Bay measures 13.6 mm. in length by 7.3 mm. in height by 4.5 mm. in breadth.

3. *Cnesterium johanni* (Dall)

(Pl. 2, fig. 9)

Yoldia (*Cnesterium*) *johanni* Dall 1925, p. 32, pl. 29, fig. 7; Kuroda et Kinoshita 1951, p. 24; Habe 1951, p. 28, fig. 27.

Material: Six valves from the dredging in Akkeshi Bay.

Distribution: Hokkaido and northern Honshu.

This species closely approaches *C. notabile* (Yokoyama), but the shell of the former is not so attenuate posteriorly and lacks the oblique striae in the anterior area of the shell surface. The measurement of a right valve is 23.5 mm. in length by 12.2 mm. in height by 2.8 mm. in breadth.

4. *Cnesterium notabile* (Yokoyama)

Yoldia lanceolata Sasaki 1933, p. 16; Tokunaga 1906, p. 57, pl. 3, fig. 18.
Yoldia notabilis Yokoyama 1922, p. 196, pl. 17, fig. 10; Kinoshita 1937, p. 19, pl. 6, fig. 36.
Yoldia (*Cnesterium*) *notabilis* Kuroda et Kinoshita 1951, p. 24.

This species has been reported from Akkeshi Bay, but I have not seen the specimen.

Distribution: Hokkaido and Honshu.

Superfamily Arcacea
Family Arcidae

5. *Arca miyatensis* (Oyama)

(Pl. 3, figs. 1, 3)

Arca kobeltiana Yokoyama 1920, p. 163, pl. 17, fig. 4, non Pilsbry.
Navicula boucardi Kinoshita et Isahaya 1934, p. 12, pl. 9, fig. 64, non Jousseaume.
Arca miyatensis Oyama 1951, p. 155.

Material: One specimen from the entrance of Akkeshi Bay.

Distribution: Northern Honshu and Hokkaido.

This species closely resembles *A. boucardi* Jousseaume (=*Arca kobeltiana* Pilsbry) which has been confused with the latter by some Japanese authors. The area between the umbones of this species is rhomboidal in shape as in that species, while the ligamental area is restricted to the anterior half, in the latter species covered the area all over. The specific name of this species has been established on the fossil specimens from the Kwanto District, but the recent specimens are frequently collected from various localities of Hokkaido and northern Honshu.

Family Glycymeridae

6. *Glycymeris yessoensis* (Sowerby)

(Pl. 2, figs. 1, 2)

Pectunculus yessoensis Sowerby 1888, p. 510, pl. 28, fig. 19; Pilsbry 1895, p. 150; Hatta et Sasaki 1910, p. 98.
Glycymeris yessoensis Kinoshita et Isahaya 1934, p. 12, pl. 9, fig. 63; Kuroda et Kinoshita 1951, p. 24; Habe 1951, p. 41, figs. 65, 66.

Material: Three specimens from Hashirikotan and five valves from Nemuro.

Distribution: Northern Honshu; Hokkaido; Saghalien and Korea.

A largest specimen from Hashirikotan measures 44.3 mm. in length by 42.6 mm. in height by 21.8 mm. in breadth and an odd valve from Nemuro measures 33 mm. in length by 30.4 mm. in height by 7.0 mm. in breadth. The shell of this species is characterized by the rather flattened valve with regularly and distantly arranged radial grooves.

Order Dysodonta
Superfamily Mytilacea
Family Mytilidae

7. *Volsella difficilis* Kuroda et Habe

(Pl. 4, figs. 1, 2)

Modiola modiolus Pilsbry 1895, p. 139; Tokunaga 1906, p. 63, pl. 3, fig. 24.
Modiola capax Hatta et Sasaki 1910, p. 98; Iwakawa 1919, p. 247; Sasaki 1933, p. 18.
Volsella modiolus Iw. Taki 1933, p. 411; Kinoshita et Isahaya 1934, p. 13, pl. 10, fig. 71; Kuroda et Koba 1934, p. 162; S. Hirase 1934, pl. 18, fig. 9; Keen 1941, p. 480.
Volsella difficilis Kuroda et Habe 1950, p. 30; Kuroda et Kinoshita 1951, p. 24; Habe 1951 p. 50, figs. 89, 90; Is. Taki 1951, pl. 18, fig. 9.

Material: Many specimens from Akkeshi, Nemuro and Hanasaki.

Distribution: Northern Honshu; Hokkaido; Saghalien and the Kuriles.

This species is common in Hokkaido and has been previously identified as the European *Volsella modiolus* Linné. The posterior area of the Japanese shell is covered with the long bristles which distinguish easily from *Volsella modiolus*.

8. *Brachidontes* (*Arcuatula*) *senhousia* (Benson)

(Pl. 3, fig. 9)

Modiola senhousia Benson 1842, Ann. Mag. Nat. Hist., 9, p. 499.
Modiola senhausii Reeve 1857, sp. 22.
Modiola bellardiana Tapparone-Canefri 1874, p. 144, pl. 4, figs. 4, a, b.
Modiola aff. *japonica* Tokunaga 1906, p. 63, pl. 3, figs. 25a, b.
Modiola aquarius Grabau et King 1928, p. 171, pl. 4, figs. 25a, b.
Brachidontes japonica Sasaki 1933, p. 18, pl. 3, fig. 6.
Brachidontes senhausi S. Hirase 1927, p. 1291, fig. 2484; Iw. Taki 1933, p. 412; Kinoshita et Isahaya 1934, p. 13, pl. 10, fig. 70; S. Hirase 1934, pl. 18, fig. 1.
Modiola senhausei Lamy 1937, p. 347.
Brachidontes senhousia Kuroda 1947, p. 1256, fig. 3573; Is. Taki 1951, pl. 18, fig. 1.
Brachidontes (*Arcuatula*) *senhousia* Habe, 1951, p. 52, fig. 91; Kuroda et Kinoshita 1951, p. 25.

Material: One specimen collected from Akkeshi Lake.

Distribution: China; Korea; Japan and Maritime Prov. of Russia.

This species is widely distributed all around the coast of Japan.

9. *Adula falcatoides* sp. nov.

Adula falcata Kinoshita 1937, p. 21, pl. 7, fig. 39.

Material: I have observed two specimens of this species in the collections of the Akkeshi Marine Biological Station.

Distribution: Hokkaido (Volcano Bay; Akkeshi Bay and Osatsube).

Shell medium in size, thin, narrowly oblong, compressed postero-dorsally and flattened at the postero-dorsal area and with an obtuse

angle from the umbo to the postero-ventral corner; umbo is a little prominent and situated at about the anterior third of the length of shell, covered by the vernicose, blackish periostracum, which is corrugated with minute vertical wrinkles at the compressed area of the surface.

Compared with the specimen of *Adula falcata* Gould which recieved from Dr. A. M. Keen of Stanford University, the Japanese specimen formerly identified as that species, differs in having the shell stouter and shorter, and less attenuated posteriorly and is covered with the blackish periostracum.

By the way, the Japanese representative of so called *Adula californiensis* differs also from the American species in having the shell which gradually increases its height posteriorly and having a smoother posterior area. Thus a new name, *Adula nipponica* (Pl. 3, fig. 5) is necessitated for this form with the following diagnosis.

Shell rather small, thin, narrowly oblong, dilated posteriorly, covered with the smooth and polished blackish brown periostracum which is paler towards the umbo; the umbo situating on the anterior fifth of the length of shell, moderately prominent and the apex is directed forward; anterior end short and rounded, posterior sloping, ventral margin almost straight, only slightly concave; the outer surface is marked by merely concentric browth lines; interior is pearly and bluish; imbedded ligament occupies a rather large area which reaches to the posterior half way in length between the umbo and the posterior end. Length 27.6 mm. height 9.4 mm (conjoined valves—type specimen).

Type locality: Akita Pref., northern Honshu (more exact locality unknown).

10. *Mytilus grayanus* Dunker

(Pl. 2, fig. 16; pl. 5, fig. 7)

Mytilus grayanus Dunker 1853, p. 84; Pilsbry 1895, p. 139; Hatta et Sasaki 1910, p. 98; Iwakawa 1919, p. 245; Kuroda 1932, p. 127; Iw. Taki 1933, p. 411; Kinoshita et Isahaya 1934, p. 13, pl. 9, fig. 68; S. Hirase 1934, pl. 17, fig. 4; Is. Taki 1951 pl. 17, fig. 4.

Mytilus coruscus Gould 1861, p. 38; Pilsbry 1895, p. 139.

Material: Three specimens from Akkeshi Bay.

Distribution: Hokkaido and Kurile Islands.

This large and solid mytilid species differs from the related species *M. crassitesta* Lischke in having the acute and strongly incurved apex. The conjoined valves of the specimen measure 67.7 mm. in height by 127 mm. in length by 47.2 mm. in breadth.

11. *Mytilus edulis* Linné

(Pl. 6, figs. 4, 5)

Mytilus edulis Linné 1758, p. 705; Middendorff 1844, p. 541, pl. 13, figs. 7–10; pl. 14, figs. 1–8; Reeve 1854, sp. 33; Iwakawa 1919, p. 245; Oldroyd 1924, p. 66, pl. 27, fig. 4; S. Hirase 1927, p. 1289, fig. 2480; Kuroda 1932, p. 126, fig. 137; Iw. Taki 1933, p. 410; Kinoshita et Isahaya 1934, p. 13, pl. 10, fig. 69; Kuroda et Koba 1934, p. 162; Keen 1941, p. 480; Kuroda 1947, p. 1258, fig. 3579; Is. Taki 1951, pl. 17, fig. 3; Habe 1951, p. 54, figs. 102, 103; Kuroda et Kinoshita 1951, p. 24.

Material: Several specimens from Akkeshi Bay and Nemuro.

Distribution: Europe; North America; Sea of Okhotsk and Japan (introduced).

The specimens from the two localities cited above seem to be a different race from those introduced forms which are inhabiting the various harbours in the mainland of Japan. The shell is elongate and somewhat cylindrical in form, curved ventrally and tinted by bluish black, not purplish black as in the introduced form.

12. *Musculus laevigatus* (Gray)

(Pl. 4, figs. 12, 13)

Modiola leavigata Gray 1824, App. Parry's Voy., 1819–20, p. 244.
Modiolaria laevigatus Leche 1883, p. 450, pl. 34, figs. 27, 28.
Modiolaria nigra Hatta et Sasaki 1910, p. 98; Sasaki. 1933, p. 18, pl. 3, figs. 27, 28.
Musculus laevigatus Kuroda 1933, p. 137, fig. 162; Habe 1951, p. 55, figs. 109, 110; Kuroda et Kinoshita 1951, p. 29.

Material: Several specimens from Akkeshi and many specimens from Nemuro.

Distribution: Northern Honshu; Hokkaido; Kuriles and Saghalien.

This is a black musculid shell, rather inflated laterally. An allied *Musculus nigra* (Gray) is a more elongate and less inflated species than in this and is brownish black in colour.

Superfamily Pectinacea
Family Pectinidae

13. *Chlamys swifti* (Bernardi)

(Pl. 2, fig. 7)

Pecten swifti Bernardi 1858, p. 90, pls. 1, 2, fig. 1; Schrenck 1867, p. 487, pl. 21, figs. 1–3; Pilsbry 1895, p. 144; Dall 1897, p. 708, pl. 37, figs. 14, 14a; Hatta et Sasaki 1910, p. 98; Yokoyama 1920, p. 154, pl. 14, fig. 11.
Livopecten swifti Iwakawa, 1919, p. 260.
Pecten tigerrima Yokoyama 1920, p. 155, pl. 14, figs. 5, 6.
Pecten (Pallium) swifti Grant et Gale 1931, p. 171, pl. 10, figs. 1, 2, 4, 5.

Chlamys swifti Iw. Taki, 1933, p. 402; Kinoshita et Isahaya 1934, p. 14, pl. 10, fig. 74; Kuroda et Koba 1934, p. 161; S. Hirase 1934, pl. 12, fig. 5; Is. Taki 1951, pl. 12, fig. 5; Habe 1951, p. 74, fig. 150; Kuroda et Kinoshita 1951, p. 25.
Pecten (Swiftopecten) swiftii Hertlein 1935, p. 24.

Material: Several specimens from Akkeshi and Hanasaki.

Distribution: Northern Honshu; Hokkaido; Kuriles and Alaska.

In having several strong radial cords on the surface, this is a very characteristic species apart from all other Japanese *Chlamys* members, for what the subgeneric name *Swiftopecten* was given by Hertlein for this species, but the characteristics can not be maintained by the decaying. This is one of the lovely shells in Japan in its colouration. It attains larger than 100 mm. in height.

14. *Patinopecten yessoensis* (Jay)

(Pl. 4, fig. 6)

Pecten yessoensis Jay 1850, p. 293, pl. 3, figs. 3, 4, pl. 4, figs. 1, 2; Lischke 1869, p. 165, pl. 10, figs. 3, 4; Pilsbry 1895, p. 144; Hatta et Sasaki 1910, p. 98; Iwakawa 1919, p. 257; Is. Taki 1951, pl. 14, fig. 1.
Pecten brandtii Schrenck 1861, p. 411,
Pecten (Patinopecten) yessoensis S. Hirase 1927, p. 1283, fig. 2467; Kuroda 1932, p. 99, fig. 110; Iw. Taki 1933, p. 404; Kinoshita et Isahaya 1934, p. 14, pl. 11, fig. 77; S. Hirase 1934, pl. 14, fig. 1; Kuroda 1947, p. 1249, fig. 3552.
Patinopecten yessoensis Habe 1951, p. 82, fig. 161.

Material: Many large and small specimens from Akkeshi and Nemuro.

Distribution: Northern Honshu; Hokkaido and Kurile Islands.

This is one of the economically important edible mussels in Japan. The related form *Patinopecten caurius* (Gould) can be easily distinguished from this in the shell with smaller ears. The dainty "Kaibashira" is made of the adductor muscles of this shellfish.

15. *Polynemamussium alaskense* (Dall)

Pecten (Pseudamussium) alaskensis Dall 1871, p. 155, pl. 16, fig. 4; Dall 1886, p. 215, pl. 5, figs. 7, 7a; Oldroyd 1924, p. 62, pl. 12, fig. 3, pl. 38, fig. 6.
Pecten alaskensis Kobelt 1888, Syst. Conchyl. Cab., p. 245, pl. 64, figs. 7, 8.
Pecten intuscostatus multicostata Yokoyama 1926, p. 305.
Pecten intuscostatus sawanensis Hertlein 1931, p. 367.
Propeamussium alaskense Kinoshita et Isahaya 1934, p. 14, pl. 11, fig. 78; Keen 1941, p. 480; Kuroda et Kinoshita 1951, p. 25.
Propeamussium (Squamamussium) alaskense Oyama 1944, p. 246.
Polynemamussium alaskense Habe 1951, p. 72.

Distribution: Northern Honshu: Hokkaido; Japan Sea and Alaska.

This species was reported from Nemuro by Kinoshita and Isahaya.

Superfamily Anomiacea
Family Anomiidae

16. *Monia macrochisma* (Deshayes)

(Pl. 7, figs. 16, 17)

Anomia macrochisma Deshayes 1839, Rev. Zool. Cuv., p. 356; Philippi 1851, p. 132, pl. 1, fig. 4.

Placunanomia macrochisma Gray 1950, p. 121; Reeve 1859, sp. 7; Hatta et Sasaki 1910, p. 98; Yokoyama 1930, p. 416, pl. 77, fig. 5.

Placunanomia macroschisma Pilsbry, 1895, p. 142; Iwakawa 1919, p. 238.

Pododesmus macroschisma Oldroyd 1924, p. 65, pl. 26, figs. 1a, b; Keen 1941, p. 480.

Anomia denticostulata Yokoyama 1925, p. 16, pl. 2, fig. 3.

Anomia ingens Yokoyama 1925, p. 16, pl. 4, fig. 1.

Monia macrochisma Kuroda 1932, p. 121, figs. 134, 135; Kuroda et Kinoshita 1951, p. 26; Habe 1951, p. 90.

Pododesmus (*Monia*) *macroshismus* Kinoshita et Isahaya 1934, p. 13, pl. 9, fig. 66.

Material: Three valves from Akkeshi.

Distribution: Hokkaido; Kuriles; Kamtschatka; Ochotsk Sea; Alaska and West coast of North America.

This large *Monia* species is greenish white in colour and has generally coarse radial cords, running from the umbo to the ventral margin and a large foramen on the right valve. *Anomia chinensis* Philippi which is found at Muroran Harbour, is closely related to this species. It bears two muscle scars and one byssal scar on the central area of the inside of left valve, but only one muscle and one byssal scars in this species.

Superfamily Ostracea
Family Ostreidae

17. *Ostrea* (*Crassostrea*) *gigas* Thunberg

(Pl. 4, figs. 15, 16)

Ostrea gigas Thunberg 1793, K. Vet. Ac. Nya. Handl., 14, p. 140; Pilsbry 1895, p. 145; Tokunaga 1906, p. 68, pl. 4, figs. 5a, b; Iwakawa 1919, p. 259; Is. Taki 1951, pl. 8, fig. 4.

Ostrea laperousii Schrenck 1861, p. 411.

Ostrea tailenwhanensis Crosse 1862, p. 149, pl. 6, fig. 6; Hatta et Sasaki 1910, p. 98; Grabou et King 1928, p. 163, pl. 2, fig. 12.

Ostrea cucullata Iwakawa 1919, p. 254 (in part).

Ostrea (*Crassostrea*) *gigas* S. Hirase 1927, p. 1278, fig. 2457; Kuroda 1931, p. 55, fig. 56; Iw. Taki 1933, p. 397; Kinoshita et Isahaya 1934, p. 14, pl. 10, fig. 73; S. Hirase 1934, pl. 8, fig. 4; Kuroda 1947, p. 1243, fig. 3535; Habe 1951, p. 95 fig. 192; Is. Taki 1951, pl. 8, fig. 4; Kuroda et Kinoshita 1951, p. 26.

Material: Several specimens from Akkeshi.

Distribution: China; Korea; Japan and Saghalien.

This is an important edible oyster in Japan and the seeds of this species are exported to the West Coast of U. S. A. The abundant dead oyster shells are deposited in Akkeshi Lake, forming a small Island named "Kaigarajima". These shells are very large in height attaining about 400 mm., so that we call them "Nagagaki" meaning a long oyster as a local race.

Subclass Teleodesmacea
Superfamily Carditacea
Family Carditidae

18. *Venericardia (Cyclocardia) paucicostata* (Krause)

(Pl. 2, figs. 3, 4)

Cardita borealis paucicostata Krause 1885, p. 30, pl. 3, fig. 5.
Venericardia borealis Sasaki 1933, p. 15, pl. 2, figs. 2a, b.
Venericardia crebricostata Kuroda et Koba 1934, p. 163.
Venericardia (Cyclocardia) paucicostata Kuroda et Kinoshita 1951, p. 26.
Venercardia (Cyclocardia) crebricostata Habe 1951, p. 108, figs. 210–212.

Material: Many specimens from Nemuro and several odd valves from Akkeshi Bay.

Distribution: Bering Sea; Kurile Islands and Hokkaido.

This is the commonest species in Nemuro and Akkeshi Bay and is also collected in Volcano Bay. In form *V. crebricostata* (Krause) closely resembles this species, but has more numerous radial cords on the surface. *V. ferruginea* (Clessin) is a small species and occurs in the southern Hokkaido. The largest specimen of this species measures 45 mm. in length by 42 mm. in height by 27 mm. in breadth (conjoined valves).

Superfamily Cyamiacea
Family Cyamiidae

19. *Turtonia minuta* (Fabricius)

(Pl. 1, fig. 16)

Venus minutus Fabricius 1780, Fauna Groenland, p. 412.
Cyanium minuta Sars 1878, p. 65, pl. 19, figs. 12a-c.

Material: Many specimens collected from Akkeshi Bay.

Distribution; Circumpolar; Alaska and Hokkaido.

This minute purple species are found on the sea weeds on the littoral zone.

Superfamily Lucinacea
Family Ungulinidae

20. *Felaniella usta* (Gould)

(Pl. 6, figs. 8, 9)

Mysia (*Felania*) *usta* Gould 1861, p. 32.
Diplodonta (*Felania*) *usta* Pilbry 1895, p. 133.
Diplodonta (*Felaniella*) *usta* Dall 1901, p. 792; Yamakawa 1909, p. 482, pl. 14, figs. 1–10; Kinoshita 1937, p. 25, pl. 8, fig. 46.
Diplodonta usta Yokoyama 1920, p. 130, pl. 9, figs. 14–16; Sasaki 1933, p. 15, pl. 2, figs. 13a, b.
Felaniella olivacea Bartsch 1929, p. 132, pl. 1, figs. 8–14.
Felaniella usta Kuroda et Kinoshita 1951; p. 26; Habe 1951, p. 124, figs. 256, 257.

Material: Several odd valves from Nemuro.

Distribution: Northern Honshu; Hokkaido; Saghalien and Maritime Prov. of Russia.

This is one of the dominant species characteristic in the cold water.

Family Thyasiridae

21. *Thyasira tokunagai* Kuroda et Habe

(Pl. 1, figs. 10, 11)

Thyasira gouldii Yabe et Nomura 1925, p. 94, pl. 23, figs. 6a, b, non Philippi; Kuroda et Kinoshita 1951, p. 26.
Thyasira tokunagai Kuroda et Habe 1951, p. 86; Habe 1951, p. 127, figs. 266–268.

Material: Several specimens from Akkeshi Bay.

Distribution: Northern Honshu and Hokkaido.

This species previously erroneously identified as *Thyasira gouldii* Philippi which was reported the West coast of North America, but may be differentiated in the smaller shell with a narrower posterior flexure on its postero-dorsal area.

22. *Axinopsida subquadrata* (A. Adams)

(Pl. 1, figs. 8, 9)

Cryptodon (*Clausina*) *subquadrata* A. Adams 1862, p. 227.
Axinopsis subquadrata Habe 1951, p. 128, figs. 269–271; Kuroda et Kinoshita 1951, p. 27.

Material: Two valves collected by the dredging in Akkeshi Bay.

Distribution; Maritime Prov. of Russia; Saghalien; Hokkaido and northern Honshu.

This small, white and suborbicular species is also characteristic in the cold water.

Superfamily Cardiacea
Family Cardiidae

23. *Clinocardium nuttallii* (Conrad)

Cardium nuttallii Conrad 1837, p. 229, pl. 17, fig. 3; Reeve 1845, sp. 66; Middendorff 1849, p. 555, pl. 16, figs. 1–5; Is. Taki 1951, pl. 29, fig. 5.
Cardium (Cerastoderma) corbis Dall 1901, p. 390; Kuroda et Koba 1934, p. 163; Kinoshita et Isahaya 1934, p. 16, pl. 12, fig. 85; S. Hirase 1934, pl. 29, fig. 5.
Cardium corbis Oldroyd 1924, p. 142, pl. 19, figs. 8, 8a.
Laevicardium (Cerastoderma) corbis Grant et Gale 1931, p. 307, pl. 19, figs. 14, 17.
Clinocardium nuttallii Keen 1941, p. 480; Kuroda et Kinoshita 1951, p. 27.

Distribution: Hokkaido; North Pacific and West coast of North America.

I have never seen the specimen of this species from Akkeshi, but it was reported from this bay by Oyama and from Kushiro by Hirase.

24. *Clinocardium californiense* (Deshayes)

(Pl. 1, fig. 5)

Cardium californiense Deshayes 1839, Rev. Zool. Soc. Curv., 2, p. 360; Middendorff 1849, p. 556, pl. 15, figs. 23–25; Pilsbry 1895, p. 131; Tokunaga 1906, p. 50, pl. 3, figs. 9a, b; Iwakawa 1919, p. 303; Yokoyama 1920, p. 127, pl. 9, fig. 10; Oldroyd 1924, p. 143, pl. 2, fig. 3.
Cardium pseudofossile Rolle 1896, p. 114, fig. a, non Reeve.
Cardium (Cerastoderma) californiense Dall 1901, p. 390; Grant et Gale 1931, p. 309; Kuroda et Koba 1934, p. 163; Kinoshita et Isahaya 1934, pl. 12, fig. 83; Nomura 1935, p. 111, pl. 6, fig. 4.
Clinocardium californiense Schenck et Keen 1940, p. 392; Keen 1941, p. 480; Schenck 1945, p. 517.
Cardium (Clinocardium) californiense Kuroda 1947, p. 1228, fig. 3490.

Material: Several odd valves from Akkeshi and Nemuro.

Distribution: Northern Honshu; Hokkaido; Kurile Islands; Saghalien and Kamtchatka.

25. *Clinocardium uchidai* sp. nov.

(Pl. 2, figs. 5, 6)

Cardium californiense Rolle 1896, p. 114, fig. b, non Deshayes.
Cardium (Cerastoderma) californiense S. Hirase 1927, p. 1306, figs. 2514; S. Hirase 1934, pl. 29, fig. 4.
Clinocardium californiense Habe 1951, p. 149, figs. 334, 335; Is. Taki 1951, pl. 29, fig. 3.

Shell moderate in size, ovate in shape, rounded anteriorly and somewhat elongate behind; ashy yellow in colour; valves rather compressed; umbo somewhat prominent; surface is sculptured with more than fifty radial cords which are separated by narrow and deep grooves between them; there is a distinct flexure from the umbo to the posterior corner; the surface is also roughened by a number of distinct undulations caused

by the resting of growth; inside of shell white and polished; umbonal cavity rather shallow; cardinal and lateral teeth small and week as in other *Clinocardium* species.

Length 51 mm. height 43.2 mm., breadth 26.9 mm. (type specimen).

Length 48.8 mm., height 43.4 mm., breadth 26 mm. (paratype specimen).

Length 48.8 mm., height 44.4 mm., breadth 27.9 mm. (paratype specimen).

Length 60.9 mm., height 54.3 mm., breadth 14.7 mm. (right valve) (the largest specimen from Nemuro).

Type locality: Akkeshi Bay, Hokkaido.

Material: Many specimens from Akkeshi Bay and several odd valves from Nemuro.

Distribution: South-eastern coast of Hokkaido.

Remarks: This new species formerly confused with *Cl. californiense*, but may be discriminated from that species in having a smaller shell tinted in ashy yellow and with much more radial ribs. *Cl. fuccanum* (Dall) is the most allied species in number of ribs on the surface, but the manner of ribs in that species is as in *Cl. californiense*, differing from this species.

The following key may easily distinguish five species belonging to this genus.

Shell brown, radial ribs low and about 35–45 in number .....*Cl. californiense*
Shell ashy yellow, radial ribs high and more than 50 in number .....*Cl. uchidai*
Shell yellow, radial ribs stout and high and about 35 in number.....*Cl. büllowi*
Shell ashy, radial ribs carinate at the top .....*Cl. ciliatum*
Shell ashy yellow, radial ribs nodulous .....*Cl. nuttallii*

Superfamily Veneracea
Family Veneridae

26. *Callista brevisiphonata* (Carpenter)

(Pl. 3, figs. 7, 8)

Saxidomus brevisiphonata Carpenter 1865, p. 203; Tomlin 1923, p. 26.
Macrocallista chishimana Pilsbry 1905, p. 118; Hatta et Sasaki 1910, p. 97.
Callista chishimana Iwakawa 1919, p. 294.
Callista brevisiphonata Iw. Taki 1933, p. 440; Kinoshita et Isahaya 1934, p. 16, pl. 12, fig. 87; S. Hirase 1934, pl. 34, fig. 4; Is. Taki 1951, pl. 34, fig. 4.

Material: Many specimens from Akkeshi and Nemuro.

Distribution: Northern Honshu; Hokkaido; Kurile Islands; Saghalien and Maritime Prov. of Russia.

This is a very large bivalve in Hokkaido, attaining 114.2 mm. in

length by 86 mm. in height by 55 mm. in breadth in the largest specimen from Nemuro.

27. *Mercenaria stimpsoni* (Gould)

(Pl. 5, figs. 10, 11)

Venus stimpsoni Gould 1861, p. 30; Tokunaga 1906, p. 46; Jukes-Browne 1911, p. 133, pl. 4; Iwakawa 1919, p. 290; S. Hirase 1927, p. 1313, fig. 2528.
Venus (*Mercenaria*) *stimpsoni* Pilsbry 1895, p. 127; Yokoyama 1922, p. 148, pl. 11, figs. 11, 12.
Chione histriorica Iwakawa, 1919, p. 292.
Mercenaria stimpsoni A. Adams 1869, p. 230; Iw. Taki 1933, p. 445; Kinoshita et Isahaya 1934, p. 16, pl. 12, fig. 89; S. Hirase 1934, pl. 38, fig. 3; Is. Taki 1951, pl. 38, fig. 3; Habe 1951, p. 172, figs. 387, 388; Kuroda et Kinoshita 1951, p. 27.

Material: One valve from Nemuro.

Distribution: Northern Honshu; Hokkaido; Saghalien and Korea.

This is also a large bivalve, the shell of which is very compressed and solid, attaining 90.8 mm. in length by 69.6 mm. in height by 39.5 mm. in breadth in the specimen from Kurile Islands.

28. *Liocyma aniwana* (Dall)

(Pl. 1, figs. 6, 7)

Venus astartoides Middendorff 1849, p. 56, non D'Archiac 1847.
Liocyma fluctuosa Dall 1870, p. 145; Dall 1902, p. 378; Iwakawa 1919, p. 301; Kuroda et Koba 1934, p. 164; S. Hirase 1934, pl. 41, fig. 4; Is. Taki 1951, pl. 41, fig. 4.
Liocyma aniwana Dall 1907, p. 172; Dall 1925, p. 18, pl. 28, figs. 4, 6; pl. 29, figs. 1, 2.
Liocyma hokkaidoensis Habe 1952, p. 179, figs. 412–414.

Material: Several specimens from Akkeshi Bay and three valves from Nemuro.

This form was previously confused with the American species, *Liocyma fluctuosa* Gould, which is a closely allied *L. astartoides* Middendorff. It is the earliest name, but unfortunately is preoccupied by D'Archiac. The second earlier name is *Liocyma aniwana* Dall which is also very close to *L.viridis* Dall. The last name *L. hokkaidoensis* Habe seems to be merely a local form of this species, which has the more elongate and straight posterior dorsal margin than in the typical form figured by Dall. *L. viridis* Dall has the shell more rounded posteriorly, which was reported from Japan by Dall. But I have not yet seen such a specimen agreed well with that species. *L. becki* Dall is a small form and dwells on the deeper bottom in the northern Japan. The specimen described as *L. hokkaidoensis* measures 34.8 mm. in length by 21.7 mm. in height by 5.4 mm. in breadth in the left valve.

29. *Protothaca (Novathaca) euglypta* (Sowerby)

(Pl. 2, figs. 14, 15)

Chione euglypta Sowerby 1914, p. 9 with textfig.
Chione adamsi Iwakawa 1919, p. 219.
Protothaca euglypta Nomura 1937, p. 7, pl. 3, figs. 1a, b; Keen 1941, p. 480; Kuroda et Kinoshita 1951, p. 27.
Protothaca straminea euglypta S. Hirase 1934, pl. 41, fig. 1; Kinoshita 1937, p. 27, pl. 8, fig. 48; Is. Taki 1951, pl. 41, fig. 1.
Protothaca (Novathaca) englypta Habe 1951, p. 180, fig. 400.

Material: Five valves from Akkeshi.

Distribution: Northern Honshu; Hokkaido and Saghalien.

This species is occasionally found in the holes on the mud stone bed on the tidal zone bored by *Barnea* or *Zirfaea*.

30. *Callithaca (Protocallithaca) adamsi* (Reeve)

(Pl. 5, figs. 1, 2)

Venus adamsi Reeve 1863, sp. 77.
Venus petitii Iwakawa 1919, p. 290.
Protothaca adamsi Iw. Taki 1933, p. 449; Kinoshita et Isahaya 1934, p. 17, pl. 13, fig. 92; S. Hirase 1934, pl. 41, fig. 2; Is. Taki 1951, pl. 41, fig. 2.
Protothaca (Protocallithaca) adamsi Nomura 1937, p. 10, pl. 3, figs. 4a, b.
Callithaca adamsi Habe 1951, p. 180, figs. 391, 392.

Material: Many specimens from Akkeshi and Nemuro.

Distribution: Northern Honshu; Hokkaido; Saghalien; Korea and Maritime Prov. of Russia.

This is a large shell, the suface of which is reticulated with lamellate growth lines crossed by many radial ribs.

31. *Venerupis (Amygdala) japonica* (Deshayes)

(Pl. 4, figs. 14, 17)

Tapes japonica Deshayes 1853, p. 18.
Tapes semidecussata Reeve 1864, sp. 64.
Tapes (Cuneus) japonica A. Adams, 1869, p. 235.
Tapes (Cuneus) philippinarum A. Adams 1869, p. 235.
Tapes philippinarum Pilsbry 1895, p. 130; Iwakawa 1919, p. 300.
Tapes decussata philippinarum Tokunaga 1906, p. 49, pl. 3, fig. 7.
Paphia (Ruditapes) philippinarum S. Hirase 1927, p. 1314, fig. 2530; S. Hirase 1934, pl. 40, fig. 5.
Paphia (Amygdala) philippinarum Iw. Taki 1933, p. 448.
Paphia (Amygdala) variegata Kinoshita et Isahaya 1934, p. 16, pl. 13, fig. 91.
Venerupis (Amygdala) philippinarum Kuroda 1947, p. 1224, fig. 3477.
Venerupis semidecussata Is. Taki 1951, pl. 40, fig. 5.
Venerupis (Amygdala) japonica Habe 1951, p. 183, figs. 419, 420.

Material: Many specimens from Akkeshi Bay, Nemuro and Kiritappu.

Distribution: China; Korea; Kyushu; Shikoku; Honshu; Hokkaido and Saghalien.

For this species the scientific name *Venerupis philippinarum* (A. Adams et Reeve) was used for a long time, but after the critical studies on the specimens from Philippines and Japan, Dr. A. Myra Keen has concluded that these two lots are not identical. Thus the scientific name of this Japanese specimen may be allochated *Tapes japonica* Deshayes by reason of the earliest name. The specimens from Akkeshi are very large and attain 53 mm. in length by 38.2 mm. in height by 27.6 mm. in breadth. The fishermen collect this mussel and prepare "Mukimi" (animal without shell) for food.

Superfamily Mactracea
Family Mesodesmatidae

32. *Caecella chinensis* Deshayes

(Pl. 1, figs. 17, 18)

Caecella chinensis Deshayes 1855, p. 334; Lischke 1869, p. 133, pl. 10, figs. 5, 6; Iw. Taki 1933, p. 461; Sasaki 1933, p. 10, pl. 2, figs. 2a, b, c; S. Hirase 1934, pl. 52, fig. 6; Kinoshita 1937, p. 27, pl. 9, fig. 50; Kuroda 1947, p. 1217, fig. 3458; Is. Taki 1951, pl. 52, fig. 6; Habe 1952, p. 169, pl. 23, figs. 6, 7.
Ervilia otsuensis Yokoyama 1920, p. 109, pl. 17, figs. 21, 22.

Distribution: China; Formosa and Japan.

This species was reported from Nemuro, but the writer has not examined the specimen from that locality.

Family Mactridae

33. *Spisula (Mactromeris) voyi* (Gabb)

(Pl. 2, fig. 8)

Callista voyi Gabb 1866, Geol. Surv. Calif. Paleont., 2, p. 24, pl. 5, fig. 41.
Mactra grayana Schrenck 1867, p. 572; Sasaki 1933 p. 10, pl. 1, figs. 3a, b.
Mactra polynympha alaskana Dall 1894, p. 40.
Spisula voyi Oldroyd 1924, p. 193, pl. 23, figs. 1, 2.
Spisula vladivostokensis Bartsch 1929, p. 132, pl. 1, figs. 1–7.
Mactra (Spisula) polynympha voyi Grant et Gale 1931, p. 395.
Mactra (Mactromeris) polynympha voyi Kinoshita et Isahaya 1934, p. 18, pl. 14, fig. 102.
Spisula (Mactromeris) polynympha voyi Kuroda et Koba 1934, p. 165, Kuroda et Kinoshita 1951, p. 29.
Spisula polynympha voyi Keen 1941, p. 480; Is Taki 1951, pl. 51, fig. 2.
Spisula (Mactromeris) voyi Habe 1951, p. 194, fig. 458.

Material: Several specimens from Nemuro and Akkeshi.

Distribution: Northern Honshu; Hokkaido; Saghalien; Maritime Prov. of Russia and Alaska.

This ovate and rather compressed shell often attains more than 100 mm. in length, and is characteristic in cold waters.

34. *Spisula sachalinensis* (Schrenck)

(Pl. 5, figs. 8, 9)

Mactra sachalinensis Schrenck 1862, p. 575, pl. 23, figs. 3–7; Tokunaga 1906, p. 39, pl. 2, figs. 25a, b; Hatta et Sasaki 1910, p. 97; Iwakawa 1919, p. 287; Iw. Taki 1933, p. 457; S. Hirase 1934, pl. 51, fig. 1; Kuroda 1947, p. 1216, fig. 3453.

Mactra luhdorfii Dunker, p. 60, pl. 20, figs. a. c.

Trigonella straminea Dunker 1882, p. 183, pl. 7, figs. 5, 6.

Mactra (Spisula) sachalinensis Kinoshita et Isahaya 1934, p. 18, pl. 14, fig. 101.

Mactra dunkeri Yokoyama 1922, p. 126, pl. 7, figs. 7, 8.

Mactra sachalinensis imperialis Yokoyama 1922, p. 129, pl. 7, figs. 9, 10.

Spisula sachalinensis S. Hirase 1927, p. 1326, fig. 2554; Is. Taki 1951 pl. 51. fig. 1; Habe 1951, p. 194, figs. 453, 454.

Material: Many specimens from Akkeshi, Hanasaki and Nemuro.

Distribution: Northern Honshu; Hokkaido and Saghalien.

This is one of the important edible mussels in Hokkaido, the shell of which attains a very large size and is very solid in fully grown specimen, and its life span is estimated to be more than 26 years.

35. *Mactra sulcataria* Reeve

(Pl. 6, figs. 6, 7)

Mactra sulcataria Reeve 1854, sp. 5; Pilsbry 1895, p. 118; S. Hirase 1927, p. 1326, fig. 2553; Tokunaga 1906, p. 40, pl. 2, figs. 26a, b; Iw. Taki 1933, p. 458; Kuroda 1947, p. 1214, fig. 3449; Habe 1952, p. 192, figs. 455, 456.

Mactra carneopicta Pilsbry 1904, p. 550, pl. 39, figs. 1–3; Hatta et Sasaki 1910, p. 97; Iwakawa 1919, p. 285.

Mactra sulcataria carneopicta Kinoshita et Isahaya 1934, p. 18, pl. 14, fig. 100; S. Hirase 1934, pl. 50, fig. 8; Is. Taki 1951, pl. 50, fig. 8.

Material: Several specimens from Akkeshi Bay.

Distribution: China; Korea; Kyushu; Shikoku; Honshu; Hokkaido; Kurile Islands and Saghalien.

The specimens from Hokkaido was referred to *Mactra carneopicta* by Pilsbry, but the writer can not find any distinction between *M. sulcataria* and *M. carneopicta* by the existence of the transitional forms.

36. *Raeta (Raetellops) pulchella* (A. Adams et Reeve)

(Pl. 4, figs. 10, 11)

Poromya pulchella A. Adams et Reeve 1850, p. 83, pl. 23, fig. 1.

Mactra rostralis Reeve 1864, sp. 119.
Raeta yokohamaensis Pilsbry 1895, p. 127, pl. 4, fig. 24.
Raeta pulchella Lynge 1909, p. 119, pl. 3, figs. 4, 5; Is. Taki 1951, pl. 51, fig. 4.
Raeta elliptica Yokoyama 1922, p. 131, pl. 8, fig. 7.
Raeta (Raetellops) pulchella Habe 1952, p. 197, figs. 468–470.

Material: Two conjoined valves and three odd valves collected by the dredging in Akkeshi Bay.

Distribution: Siam; Borneo; China; Kyushu; Shikoku; Honshu; Hokkaido and Maritime Prov. of Russia.

This species has a very wide distribution from Siam to Hokkaido with many varietal forms, which live in the muddy bottom.

Superfamily Tellinacea
Family Asaphidae

37. *Nuttallia ezonis* Kuroda et Habe sp. nov.

(Pl. 1, figs. 12, 13)

Soletellina olivacea Hatta et Sasaki 1910, p. 97, non Jay.
Sanguinolaria (Nuttallia) olivacea Kinoshita et Isahaya 1934, p. 17, pl. 13, fig. 97.
Soletellina (Nuttallia) nuttallii Habe 1952, p. 205, figs. 490–492.

Material: Many valves from Nemuro and several valves from Akkeshi.

Distribution: Hokkaido; Saghalien and Korea.

This species was erroneously recorded from Hokkaido by the Japanese authors as *Nuttallia nuttalli* (Conrad) which occurs in the North-west coast of America. Dr. A. Myra Keen who kindly sent the American specimens to us for comparison, states in her private communication that the Japanese specimens may be distinguished from the American specimens by the smaller and weaker nymph and the deeper mantle sinus.

Shell ovate in shape, rounded anteriorly and somewhat attenuate posteriorly, inequivalve, the left valve is more deeply convex than the right valve; surface covered with the vernicose, yellowish brown periostracum on which very weak growth lines together with a number of annual ring like undulations are seen; there are one or two whitish narrow radial patterns from the umbo to the posterior ventral margin; ligament blackish, very stout and situated behind the umbo; inside of the shell is light purplish white; anterior cardinal teeth in the left valve and posterior cardinal tooth in the right valve are strong and bifurcate; posterior cardinal teeth in the left valve and anterior cardinal tooth in the right valve are weak; nymph rather large and broad; anterior muscle scar is lanceolate and the posterior muscle scar ovate; mantle sinus deep

and reaches about the middle of the mantle line.

Length 71 mm., height 49 mm., breadth 19 mm. (type specimen)
Length 73 mm., height 51.5 mm., breadth 20 mm. (paratype specimen No. 1).
Length 72 mm., height 54.5 mm., breedth 20.8 mm. (paratype specimen No. 2).
Length 62 mm., height 46.5 mm., breadth 17.5 mm. (paratype specimen No. 3).

The nearest ally, *N. olivacea* (Jay) has a deeper mantle sinus and a narrower nymph than in this species. *N. japonica* Reeve may be a synonym of that species. *N. petri* Bartsch known from the coast of Maritime Prov. of Russia and Saghalien, attains very large in size and its shell is distinctly elongated posteriorly.

Family Tellinidae

38. *Macoma incongrua* (v. Martens)

(Pl. 3, fig. 6)

Tellina incongrua v. Martens 1865, Ann. Mag. Nat. Hist., (3) 16, p. 430; Iwakawa 1919, p. 283; Oldroyd 1924, p. 170, pl. 42, fig. 10.
Macoma incongrua Grant et Gale 1931, p. 373; Kinoshita et Isahaya 1934, p. 17, pl. 13, fig. 95; Keen 1941, p. 480; Kuroda 1947, p. 1210, fig. 3437; Kuroda et Kinoshita 1951, p. 29; Is. Taki 1951, pl. 45, fig. 3; Habe 1952, p. 220, fig. 546.
Macoma inquinata incongrua Sasaki 1933, p. 11, pl. 2, figs. 3a-d.

Material: Several odd valves from Akkeshi Lake.

Distribution: China; Korea; Kyushu; Shikoku; Honshu; Hokkaido; Saghalien; Maritime Prov. of Russia and Alaska.

This is one of the commonest species in bays of Japan.

39. *Macoma calcarea* (Gmelin)

(Pl. 1, figs. 14, 15)

Tellina calcarea Gmelin 1791, Syst. Nat., ed. 13, p. 3236.
Macoma calcarea Oldroyd 1924, p. 173, pl. 42, fig. 5; Keen 1941, p. 480; Kuroda et Kinoshita 1951, p. 29.

Material: Several specimens from Nemuro.

Distribution: Circumpolar; Hokkaido; Saghalien and also the deep bottom of Tosa Bay, Shikoku.

This is also a very common species on the muddy bottom in the boreal region.

40. *Peronidia venulosa* (Schrenck)

(Pl. 3, figs. 11, 12)

Tellina venulosa Schrenck 1861, p. 412; Schrenck 1867, p. 556, pl. 22, figs. 2–5; Hatta et

Sasaki 1910, p. 97; Iwakawa 1919, p. 281; Yokoyama 1922, p. 139, pl. 10, fig. 1; Oldroyd 1924, p. 169, pl. 1, fig. 11; Sasaki 1933, p. 11, pl. 1, figs. 2a-c; Is. Taki 1951, pl. 44, fig. 10.

Tellina alternata chibana Yokoyama 1922, p. 140, pl. 10, fig. 5 (not of fig. 6).

Tellina (Peronidia) venulosa Iw. Taki 1933, p. 451; Kuroda 1947, p. 1211, fig. 3440.

Tellina (Peronidia) lutea venulosa S. Hirase 1927, p. 1319, fig. 2540; S. Hirase 1934, pl. 44, fig. 10; Kinoshita et Isahaya 1934, p. 17, pl. 13, fig. 94.

Peronidia venulosa Habe 1952, p. 225, figs. 516, 517.

Material: Many specimens from Akkeshi, Nemuro and Hanasaki.

Distribution: Northern Honshu; Hokkaido; Saghalien; Kurile Islands and Korea.

41. *Peronidia lutea* (Wood)

(Pl. 3, fig. 14)

Tellina lutea Wood 1828, *Tellina* fig. 3; Hanley 1846, p. 306, pl. 59. fig. 103 and pl. 65, fig. 249; Sowerby 1867, sp. 97; Oldroyd 1924, p. 169, pl. 1, fig. 9; Iw. Taki 1933, p. 451; Sasaki 1933, pl. 11, pl. 1, figs. 1a-c; Is. Keen 1941, p. 480; Is. Taki 1951, pl. 44, fig. 9.

Tellina guildfordiae Gray 1834, Griffith's Cuvier, 12, pl, 19, fig. 2.

Tellina alternidentata Broderip et Sowerby 1829, Zool. Jour., p. 363; Sowerby 1939, p. 153, pl. 44, fig. 5.

Tellina (Peronidia) lutea Dall 1900, pp. 304, 322, pl. 4, figs. 15, 16; S. Hirase 1934, pl. 44, fig. 9; Kuroda et Koba 1934, p. 164; Kuroda et Kinoshita 1951, p. 29.

Material: Three valves from Nemuro.

Distribution: Northern Honshu; Hokkaido; Kurile Islands; Korea; Maritime Prov. of Russia and Bering Sea.

This species closely resembles *P. venulosa*. That the shell is generally covered with the distinct periostracum is a very characteristic feature apart from that species.

42. *Peronidia zyonoensis* (Hatai et Nisiyama)

(Pl. 3, fig. 13)

Tellina alternata chibana Yokoyama 1922, p. 140, pl. 10, fig. 6 (not of fig. 5).

Tellina zyonoensis Hatai et Nisiyama 1939, p. 150, pl. 9, fig. 3.

Tellina (Peronidia) zyonoensis Kuroda et Kinoshita 1951, p. 29.

Material: One specimen from Akkeshi Bay and two odd valves from Hanasaki.

Distribution: Hokkaido (Volcano Bay).

The preceding three species are closely allied to one another, but they may be easily distinguished by the following key:

Shell solid, orange yellow within, growth line medium ..... *P. venulosa*
Shell solid, purplish within, growth lines coarse ..... *P. zyonoensis*
Shell rather thin, rose within, growth lines weak ..... *P. lutea*

Order Adapedonta
Superfamily Solenacea
Family Solenidae

43. *Siliqua alta* (Broderip et Sowerby)

(Pl. 6, figs. 13, 14)

Solen altus Broderip et Sowerby 1829, Zool. Jour., 4, p. 362.
Cultellus costatus Sowerby 1874, sp. 20.
Siliqua (*patula* var.) *alta* Dall 1889, p. 109.
Siliqua sodalis Pilsbry 1895, p. 121; Hatta et Sasaki 1910, p. 97; Iwakawa 1919, p. 313.
Siliqua intuspurpurea Pilsbry 1905, p. 118, pl. 5, figs. 33, 34.
Siliqua patula alta Oldroyd 1924, p. 190, pl. 47, figs. 1, 2; S. Hirase 1927, p. 1324, fig. 2549; Iw. Taki 1933, p. 456; Kinoshita et Isahaya 1934, p. 17, pl. 14, fig. 98; S. Hirase 1934, pl. 48, fig. 5; Keen 1941, p. 480; Kuroda 1947, p. 1208, fig. 3430.
Siliqua alta Grant et Gale 1931, p. 388, pl. 21, fig. 1; Kuroda et Koba 1934, p. 165; Is. Taki 1951, pl. 48, fig. 5; Habe 1952, p. 230, figs. 583–585.

Material: Many specimens from Hanasaki and several specimens from Akkeshi and Nemuro.

Distribution: Hokkaido; Kurile Islands; Saghalien and Alaska.

The beak of this species is more anterior than in *S. patula*. The largest specimen from the Kurile Islands measures 126 mm. in length by 66 mm. in height by 30 mm. in breadth. The writer has never found so large specimens from Akkeshi and some other localities.

44. *Solen* (*Solenarius*) *krusensterni* Schrenck

(Pl. 6, figs. 1, 2)

Solen krusensterni Schrenck 1867, p. 594, pl. 25, figs. 9–12; Pilsbry 1895, p. 120; Tokunaga 1906, p. 36, pl. 2, fig. 19; Hatta et Sasaki 1910, p. 97; Iwakawa 1919. p. 312; Iw. Taki 1933, p. 456; Kinoshita et Isahaya 1934, p. 17, pl. 14, fig. 99; S. Hirase 1934, pl. 49, fig. 5; Is. Taki 1951, pl. 49, fig. 5; Habe 1952, pp. 230, 287, figs. 594, 595.

Material: Many specimens from Akkeshi and Nemuro.

Distribution: Honshu; Hokkaido and Saghalien.

This species is characteristic in that the dorsal margin of the shell is curved dorsally.

Superfamily Hiatellacea
Family Hiatellidae

45. *Hiatella orientalis* (Yokoyama)

(Pl. 4, figs. 4, 5)

Saxicava arctica Pilsbry 1895, p. 117; Tokunaga 1906, p. 36, pl. 2, figs. 21a, b; Hatta et Sasaki 1910, p. 97; Iwakawa 1919, p. 314; S. Hirase 1927, p. 1330, fig. 2561.

Saxicava orientalis Yokoyama 1920, p. 106, pl. 7, figs. 2, 3.
Trapezium nipponicum Yokoyama 1922, p. 170, pl. 6, figs. 2, 3.
Petricola awana Yokoyama 1924, p. 42, pl. 3, fig. 1.
Hiatella arctica Kuroda et Koba 1934, p. 166; Kinoshita et Isahaya 1934, p. 18, pl. 14, fig. 104.
Saxicava awana S. Hirase 1934, pl. 53, fig. 5; Keen 1941, p. 480.
Hiatella orientalis awana Kuroda 1947, p. 1207, fig. 3428.
Hiatella orientalis Habe 1952, p. 232, figs. 559, 560; Is. Taki et Oyama 1954, pl. 8 fig. 2.

Material: Many specimens collected on the roots of sea alga *Laminaria* or "Konbu" at Daikoku-jima, entrance of Akkeshi Bay and several specimens from Nemuro.

Distribution: Kurile Islands; Hokkaido; Honshu; Shikoku and Kyushu.

This species closely approaches and confused with the European species, *H. arctica* (Linné), but may be precisely distinguished from the latter in the shell with the decidedly weaker serrated ridges running from the umbo to the posterior edge even in the young stages.

46. *Panomya ampla* Dall

(Pl. 5, figs. 3, 4)

Panomya ampla Dall 1898, p. 883; Dall 1902, p. 560, pl. 40, figs. 3, 4; Oldroyd 1924, p. 207, pl. 10, fig. 3; Kuroda et Koba 1934, p. 166, pl. 14, figs. 1, 2.
Panomya turgida Dall 1916, p. 416; Habe 1952, p. 233, figs. 606, 607.
Panope (*Panomya*) *ampla* Grant et Gale 1931, p. 426, pl. 21, figs. 10a, b.
Panomya arctica turgida Dall 1921, p. 54, pl. 2, fig. 1; Kinoshita 1937, p. 30, pl. 9, fig. 53.
Panomya nipponica Nomura et Hatai 1935, p. 20, pl. 1, figs. 7a, b.

Material: Many odd valves from Nemuro and three valves from Akkeshi.

Distribution: As the writer observed all kinds of transitional forms among *P. ampla*, *P. turgida* and *P. nipponica* in many specimens from Nemuro and Akkeshi, those three species seem to be merely the local or individual forms of one species.

47. *Panope japonica* A. Adams

(Pl. 5, figs. 5, 6; pl. 6, fig. 12)

Panope japonica A. Adams 1850, p. 170, pl. 6, fig. 5; Iw. Taki 1933, p. 461; Kinoshita et Isahaya 1934, p. 18, pl. 15, fig. 105; S. Hirase 1934, pl. 53, fig. 6; Nomura et Hatai 1935, p. 20, pl. 15, figs. 2a, b; Iw. Taki 1951, pl. 53, fig. 6; Kuroda et Kinoshita 1951, p. 30; Habe 1952, p. 233, figs. 603, 608.
Panopea fragilis Gould 1861, p. 25.
Glycimeris japonica Pilsbry 1895, p. 117.
Panopea generosa Tokunaga 1906, p. 38.
Mya truncata Iwakawa 1919, p. 308.

Panopea norvegica Sasaki 1933, p. 9, pl. 2, figs. 1a, b.

Material: Two large valves from Nemuro.

Distribution: Honshu; Hokkaido; Saghalien and Kamchatka.

The larger specimen in the two measures 110 mm. in length by 79 mm. in height.

Family Corbulidae

48. *Potamocorbula amurensis* (Schrenck)

Corbula amurensis Schrenck 1862, p. 412; Schrenck 1867, p. 584, pl. 25, figs. 5–8; Jackel 1929, p. 201.
Corbula amplexa A. Adams 1862, p. 233.
Azara amurensis A. Adams 1868, p. 366.
Erodona amurensis Pilsbry 1895, p. 117; Kinoshita 1937, p. 30, pl. 10, fig. 56; Habe 1949, p. 6; Kuroda et Kinoshita 1951, p. 30; Habe 1952, p. 236, figs. 621, 622.
Corbula frequens Yokoyama 1922, p. 123, pl. 6, figs. 16, 17.
Corbula pustulosa Yokoyama 1922, p. 123, pl. 6, fig. 18.
Corbula sematensis Yokoyama 1922, p. 124, pl. 6, fig. 19.
Corbula vladivostokensis Bartsch 1929, p. 133, pl. 2, figs. 1–7.

Distribution: China; Korea; Siberia; Hokkaido and Northern Honshu.

Dr. Kinoshita had been reported this species from Nemuro, but I have never seen the specimens from that locality.

Superfamily Myacea
Family Myidae

49. *Mya truncata* Linné

(Pl. 6, figs. 10, 11)

Mya truncata Linné 1758, p. 670; Reeve 1875, sp. 4. Pilsbry 1895, p. 118; Oldroyd 1924, p. 197, pl. 10, fig. 4; Grant et Gale 1931, p. 414; Kuroda et Koba 1934, p. 165; Keen 1941, p. 480; Habe 1951, p. 74, figs. 1, 2; Habe 1952, p. 237, figs. 604, 605.
Mya praecisa Reeve 1875, sp. 7.

Material: One valve from Nemuro.

Distribution: Circumpolar in arctic waters; Kurile Islands; Saghalien and Hokkaido.

Recently the writer received the perfect specimens from Nemuro collected by Mr. T. Sasamori through Mr. R. Kawamura. The largest specimen in this lot measures 71 mm. in length by 65 mm. in height by 27.9 mm. in breadth.

50. *Mya (Arenomya) japonica* Jay

(Pl. 7, fig. 12)

Mya japonica Jay 1857, p. 292, pl. 1, figs. 7, 10; Makiyama 1935, p. 37; Keen 1941, p.

480; Kuroda 1947, p. 1206, fig. 3425; Is. Taki 1951, pl. 52, fig. 7; Habe 1951, p. 74, pl. 12, fig. 9, Habe 1952, p. 237, fig. 612.

Mya acuta Sowerby 1875, sp. 12.

Mya arenaria Tapparone-Canefri 1874, p. 119; S. Hirase 1934, pl. 52, fig. 7.

Mya arenaria japonica Pilsbry 1895, p. 118; Hatta et Sasaki 1910, p. 97; Iwakawa 1919, p. 307; S. Hirase 1927, p. 1329, fig. 2559; Grant et Gale 1931, p. 412; Iw. Taki 1933, p. 462; Kinoshita et Isahaya 1934, p. 18, pl. 14, fig. 103; Kuroda et Koba 1934, p. 165.

Mya (*Arenomya*) *japonica* Habe 1951, p. 74, pl. 12, fig. 9; Habe 1952, p. 237, fig. 612.

Material: Several odd valves from Akkeshi Bay.

Distribution: Kyushu; Shikoku; Honshu; Hokkaido; Kurile Islands and Saghalien.

This species was originally described and figured by the specimen from Volcano Bay, Hokkaido. The specimens from Akkeshi agree quite well with the topotype specimens in having the very solid shell covered with rough periostracum and rather widely gaped posterior end. The southern form of this species ranging from Honshu to Kyushu has a thin shell with the rather smooth surface and was named "*Mya oönogai*" (pl. 6, fig. 3) by Makiyama (1935). The valves from Akkeshi measure 92 mm. in length by 56 mm. in height by 15 mm. in breadth, and also 92.2 mm. in length by 62.2 mm. in height by 19.3 mm. in breadth.

51. *Cryptomya busoensis* Yokoyama

(Pl. 3, figs. 2, 4)

Cryptomya busoensis Yokoyama 1922, p. 126, pl. 7, figs. 1, 2; Habe 1951, p. 75, pl. 12, figs. 1, 2; Habe 1952, p. 237, figs. 623, 624.

Material: Twelve valves from Akkeshi Bay.

Distribution: Honshu and Hokkaido.

Cryptomya californica Conrad is a closely allied species, but has the faint radial threads on the shell in young stage. The two specimens from Akkeshi measure 12.7 mm. in length by 8.6 mm. in height by 2.9 mm. in breadth and also 10.6 mm. in length by 7.2 mm. in height by 2.0 mm. in breadth.

Superfamily Pholadiacea
Family Pholadidae

52. *Pholadidea (Penitella) chishimana* sp. nov.

(Pl. 7, figs. 8, 9)

Pholadidea (*Penitella*) *penita* Kinoshita 1937, p. 31, pl. 10, fig. 55.

The specimens from Kurile Islands and Akkeshi, Hokkaido do not agree with *Pholadidea* (*Penitella*) *penita* (Conrad) from the West Coast

of North America, to which the Japanese form has been erroneously referred to this day, in that the shell is attenuated posteriorly, but not abruptly truncated at the posterior end and provided with the undulate growth lines. *P. (P.) kamakurensis* Yokoyama (Pl. 7, figs. 5, 6) is an another allied one to this species, but has a distinctly narrower anterior area which is separating the posterior area by the grooves crossed by the transverse ridges. Thus a new name is required for this form as *Ph. (P.) chishimana.*

Length 51.7 mm., height 30.6 mm., breadth 16.7 mm. (right valve) (type specimen collected by Mr. K. Koba).

Length 29.9 mm., height 17.8 mm., breadth 16.7 mm. (Conjoined valves).

Type locality: Horomusir Island, Northern Kurile Islands.

Distribution: Hokkaido and Kurile Islands.

53. *Barnea (Anchomasa) manilensis inornata* (Pilsbry)

(Pl. 7, fig. 4.)

Pholas manilensis, inornata Pilsbry, 1895, p. 116; Is. Taki 1951, pl. 54, fig. 1.
Barnea fragilis S. Hirase 1927, p. 1330, fig. 2562.
Barnea (Anchomasa) fragilis S. Hirase 1934, pl. 54, fig. 1.
Barnea (Anchomasa) manilensis Kuroda 1947, p. 1205, fig. 3420.

Material: Eight valves from Akkeshi Bay in mud stone.

Distribution: Kyushu; Shikoku; Honshu and Hokkaido.

All specimens from Akkeshi are small in size, attaining less than 25 mm. in length. This varietal form differs from *Barnea manilensis* (pl. 7, figs. 10, 11), in having the shell with the less acutely denticulated and more concave frontal margin.

54. *Zirfaea subconstricta* (Yokoyama)

(Pl. 4, figs. 7, 8)

Pholas constricta Sowerby 1849, p. 489, pl. 104, figs. 27, 28, non Philippi.
Pholas subconstricta Yokoyama 1924, p. 38, pl. 2, fig. 13.
Zirfaea constricta S. Hirase 1934, pl. 54, fig. 3.
Zirfaea subconstricta Iw. Taki et Habe 1945, p. 109; Habe 1952, p. 243. figs. 637, 638.
Zirfaea crispata S. Hirase 1927, p. 1331, fig. 2563; Kuroda 1947, p. 1205, fig. 3422.
Zirfaea kamakurensis Is. Taki 1951, pl. 94, fig. 3.

Material: One specimen from Akkeshi in the mud stone.

Distribution: Formosa, Kyushu; Shikoku; Honshu and Hokkaido.

55. *Nettastomella japonica* (Yokoyama)

(Pl. 4, fig. 9; pl. 7, fig. 3)

Jouannetia japonica Yokoyama 1920, p. 105, pl. 7, fig. 1; Iw. Taki et Habe 1945, p. 111.
Nettostomella japonica Habe 1952, p. 244; Is. Taki et Oyama 1954, pl. 8, fig. 1.

Material: Three specimens from Akkeshi Bay.
Distribution: Honshu and Hokkaido.

Family Teredinidae

56. *Lyrodus yatsui* (Moll)

(Pl. 4, fig. 3)

Teredo yatsui Moll. 1929, p. 10, pl. 2, fig. 5; Minobe 1930, p. 266; Kuronuma 1931, p. 298, pl. 8, fig. 4; pl. 9, figs. 12–15.
Teredo hibicola Kuronuma 1931, p. 295, pl. 8, fig. 4; pl. 9, figs. 20, 22; Iw. Taki 1933, p. 464.
Teredo (Lyrodus) yatsui Iw. Taki et Habe 1945, p. 113; Habe 1952, p. 291, fig. 669.
Teredo siamensis Moll 1941, p. 16.

Material: Several specimens from Akkeshi Bay by Dr. S. Okuda.
Distridution: Kyushu; Shikoku; Honshu and Hokkaido.

57. *Bankia (Bankia) setacea* (Tryon)

Xylotrya setacea Tryon 1863, p. 144, pl. 1, figs. 2, 3; Kofoid 1921, p. 25, pls. 12–18.
Bankia (Bankia) setacea Bartsch 1922, p. 7, pls. 4, 5, 30, fig. 3; Roch et Moll 1929, p. 22; Moll 1940, p. 3; Iw. Taki et Habe 1945, p. 117.
Bankia setacea Moll 1931, p. 21, fig. 11; Moll 1934, p. 445.

Material: Several specimens collected by Dr. S. Okuda in Akkeshi Bay.

Distribution: North Pacific; Ochotsk Sea and Hokkaido.

This is a large marine wood borer in Japan. The shell attains 12.6 mm. in length by 11.7 mm. in height and the pallet is more than 47 mm. in length, consisting of more than 38 cups.

Subclass Anomalodesmacea
Superfamily Pandoracea
Family Lyonsiidae

58. *Lyonsia ventricosa* Gould

(Pl. 3, fig. 10)

Lyonsia ventricosa Gould 1861, p. 23; Pilsbry 1895, p. 137; Habe 1952, p. 256, fig. 693; Habe 1952, p. 153, pl. 22, fig. 11.
Lyonsia rostrata Lischke 1874, p. 102, pl. 9, fig. 13.
Lyonsia praetenuis Dunker 1882, p. 10, pl. 7, fig. 13; Is. Taki et Oyama 1954, pl. 34, figs. 10, 11.
Lyonsis arenaria ventricosa Is. Taki 1951, pl. 20, fig. 3.

Material: One specimen collected by the dredging in Akkeshi Bay.

Distribution: Kyushu; Shikoku; Honshu; Hokkaido and Maritime Prov. of Russia.

The shell of *Lyonsia arenaria sibirica* Leche is less rostrate posteriorly than in this species.

59. *Entodesma naviculoides* (Yokoyama)

(Pl. 2, figs. 10, 11)

Entodesma naviculoides Yokoyama 1922, p. 170, pl. 6, fig. 11; Habe 1952, p. 155, pl. 22, figs. 5, 6; Habe 1952, p. 259, figs. 684, 685.
Entodesma (*saxicola* ?) *truncatissima* Kinoshita 1937, p. 31, pl. 9, fig. 54.

Material: Many specimens from Akkeshi.

Distribution: Northern Honshu and Hokkaido.

This is a very large Entodesmid species, measuring 68 mm. in length by 40.6 mm. in height by 34·9 mm. in breadth. *Agriodesma* Dall 1909 does not differ from this genus except for the large size.

Family Thraciidae

60. *Thracia kakumana* (Yokoyama)

(Pl. 1, figs. 3, 4)

Tellina kakumana Yokoyama 1927, p. 177, pl. 47, fig. 14.
Thracia kakumana Kuroda et Kinoshita 1951, p. 31; Habe 1952, p. 262, figs. 708, 709.

Material: Many valves from Nemuro.

Distribution: Northern Honshu; Hokkaido; Saghalien and Korea.

This species was originally known as a Peistocene fossil, but it occurs rather commonly at Nemuro. This shell is white and rather flat.

Appendix

Crenella tamurai sp. nov.

(Pl. 7, figs. 1, 2)

Shell medium in size, thin, ovate, much inflated, rounded both at anterior and posterior ends, covered with a yellowish brown periostracum; umbo prominent, obliquely inclined forwards; posterior hinge rather straight with a well defined subinternal ligament groove; surface sculptured with radial intervening cords which are a little wider than the intervening sulci and are crossed by the resting undulations of growth lines; interior is pearly blue; margin minutely crenulated; very weak teeth present on the anterior dorsal margin under the umbo.

Length 20.0 mm., height 27.2 mm., breadth 15.7 mm. (conjoined valves) (figured type specimen).

Type locality: Volcano Bay, Hokkaido.

Crenella yokoyamai is found in Volcano Bay together with this species, but it is decidedly small and bears the divaricating radial cords on the surface. *C. delicatula* Yokoyama is an allied fossil species. This may also differ from *C. megas* Dall and *C. columbiana* Dall from the West Coast of America. I take pleasure to naming this in honour to Dr. Tadashi Tamura.

Class Scaphopoda
Family Siphonodentaliidae

61. *Siphonodentalium okudai* Habe

(Pl. 7, figs. 13, 14, 15)

Siphonodentalium okudai Habe, 1953, p. 299, figs. 745, 759, 760.

Material: Eight specimens from the dreging in Akkeshi Bay.

This small, white tooth shell known only from the type locality is less attenuate to the top than in *S. isaotakii* Habe from Honshu and southern Hokkaido. The measurement of the type specimen is 10.5 mm. in length by 1.2 mm. in the breadth of aperture.

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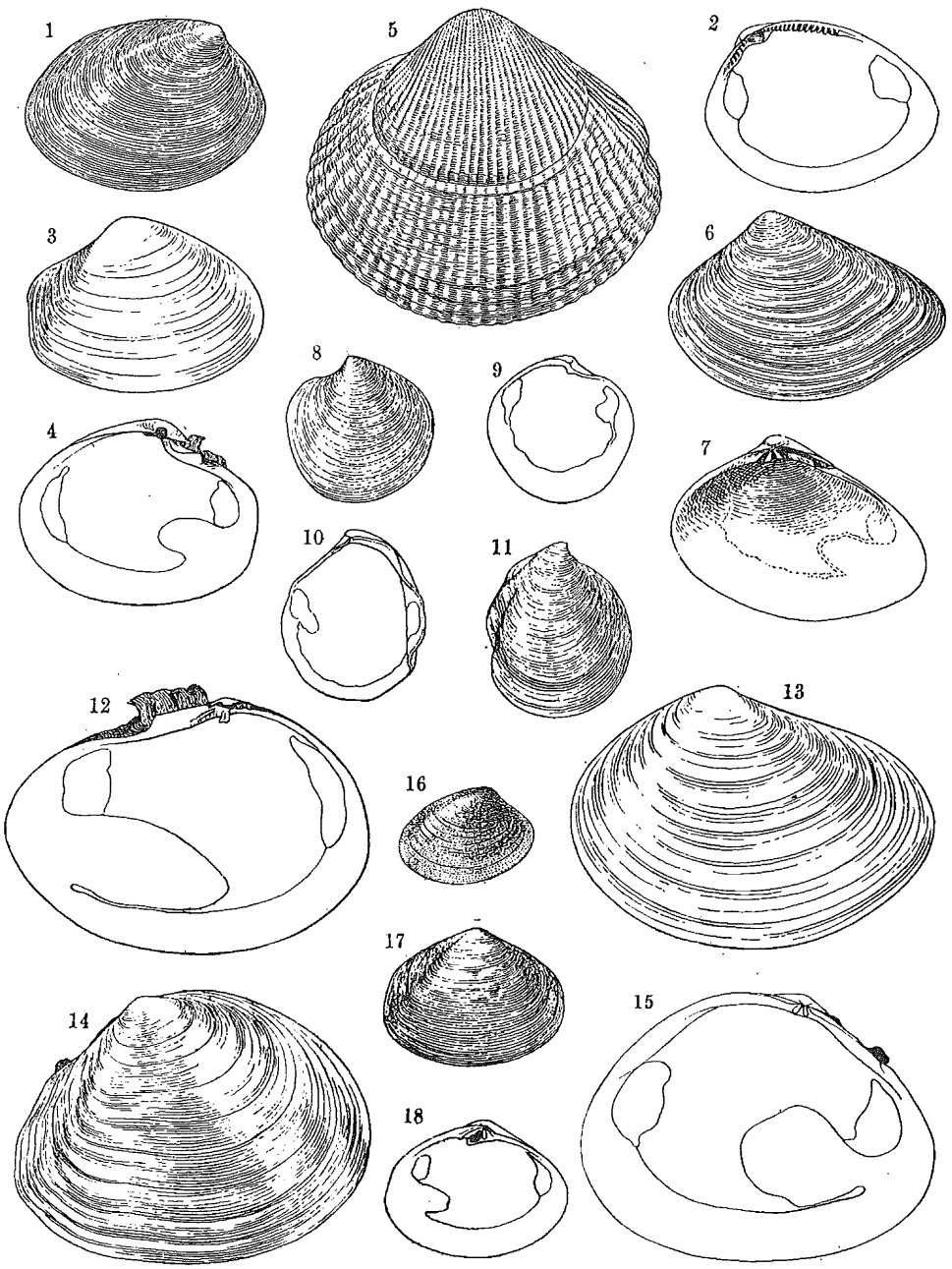
EXPLANATION OF PLATE I.

Figs. 1, 2. *Ennucula tenuis* (Montagu) from Akkeshi, Hokkaido. ×4
Figs. 3, 4. *Thracia kakumana* (Yokoyama) from Nemuro, Hokkaido. ×0.5
Fig. 5. *Clinocardium californiense* (Deshayes) from Iwate Pref., Honshu.
Figs. 6, 7. *Liocyma aniwana* Dall from Nemuro, Hokkaido.
Figs. 8, 9. *Axinopsida subquadratus* (A. Adams) from Akkeshi, Hokkaido. ×5
Figs. 10, 11. *Thyasira tokunagai* Kuroda et Habe from Akkeshi, Hokkaido. ×5
Figs. 12, 13. *Nuttallia ezonis* Kuroda et Habe sp. nov. from Nemuro, Hokkaido.
Figs. 14, 15. *Macoma calcarea* (Gmelin) from Volcano Bay, Hokkaido.
Fig. 16. *Turtonia minuta* (Fabricius) from Akkeshi, Hokkaido. ×5
Figs. 17, 18. *Caecella chinensis* Deshayes from Awaji Island, Honshu.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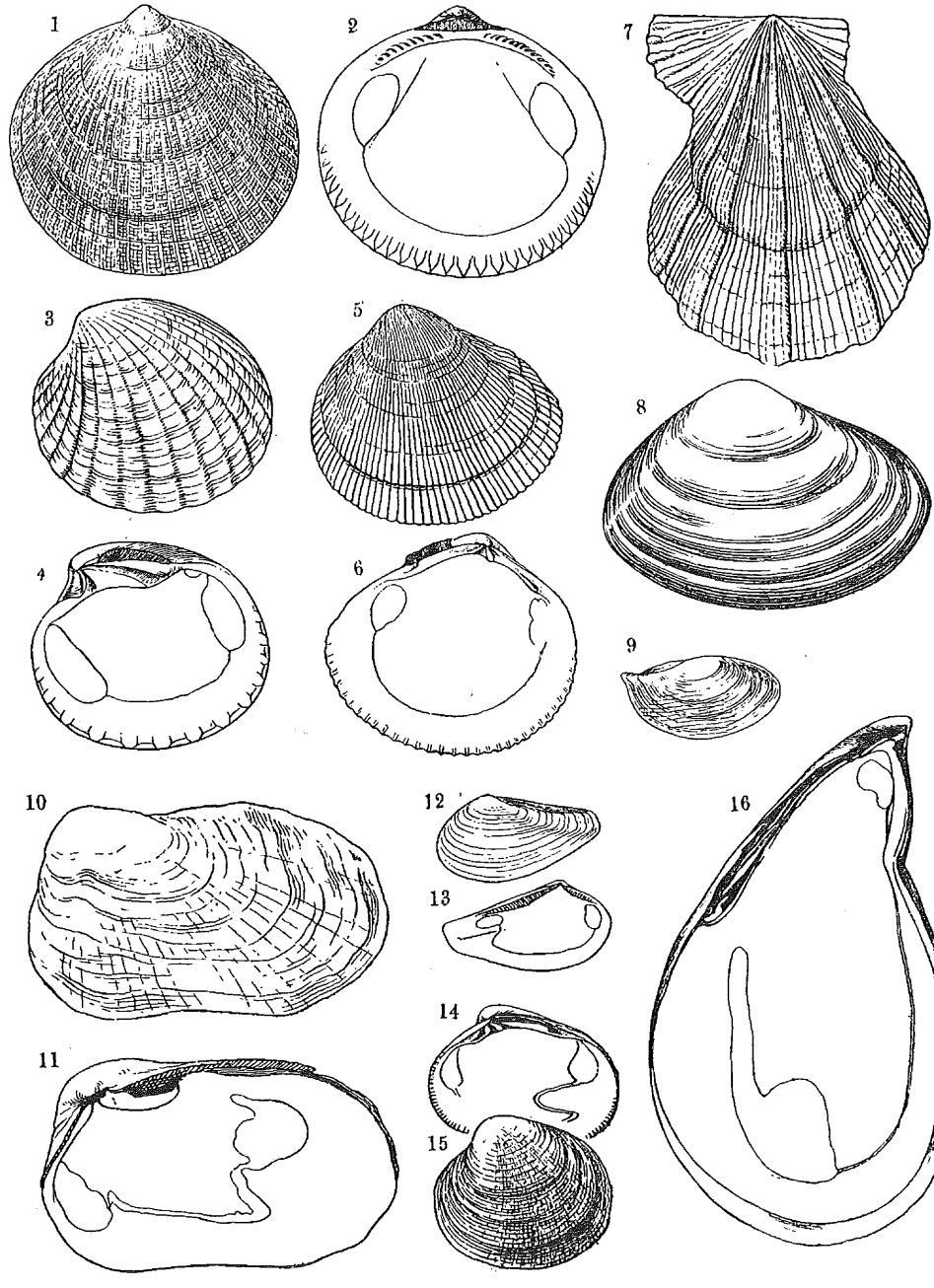
EXPLANATION OF PLATE II.

Figs. 1, 2. *Glycymeris yessoensis* Sowerby from Nemuro, Hokkaido.
Figs. 3, 4. *Venericardia* (*Cyclocardia*) *paucicostata* (Krause) from Nemuro, Hokkaido.
Figs. 5, 6. *Clinocardium uchidai* sp. nov. from Akkeshi, Hokkaido.
Fig. 7. *Chlamys swifti* (Bernardi) from Hanazaki, Hokkaido.
Fig. 8. *Spisula* (*Mactromeris*) *voyi* (Gabb) from Akkeshi, Hokkaido. ×0.5
Fig. 9. *Cnesterium johanni* (Dall) from Hakodate, Hokkaido.
Figs. 10, 11. *Entodesma naviculoides* (Yokoyama) from Akkeshi, Hokkaido. ×1.5
Figs. 12, 13. *Nuculana pernula* (Müller) from Akkeshi, Hokkaido.
Figs. 14, 15. *Protothaca* (*Novathaca*) *euglypta* (Sowerby) from Iwate Pref., Honshu.
Fig. 16. *Mytilus grayanus* Dunker from Akkeshi, Hokkaido.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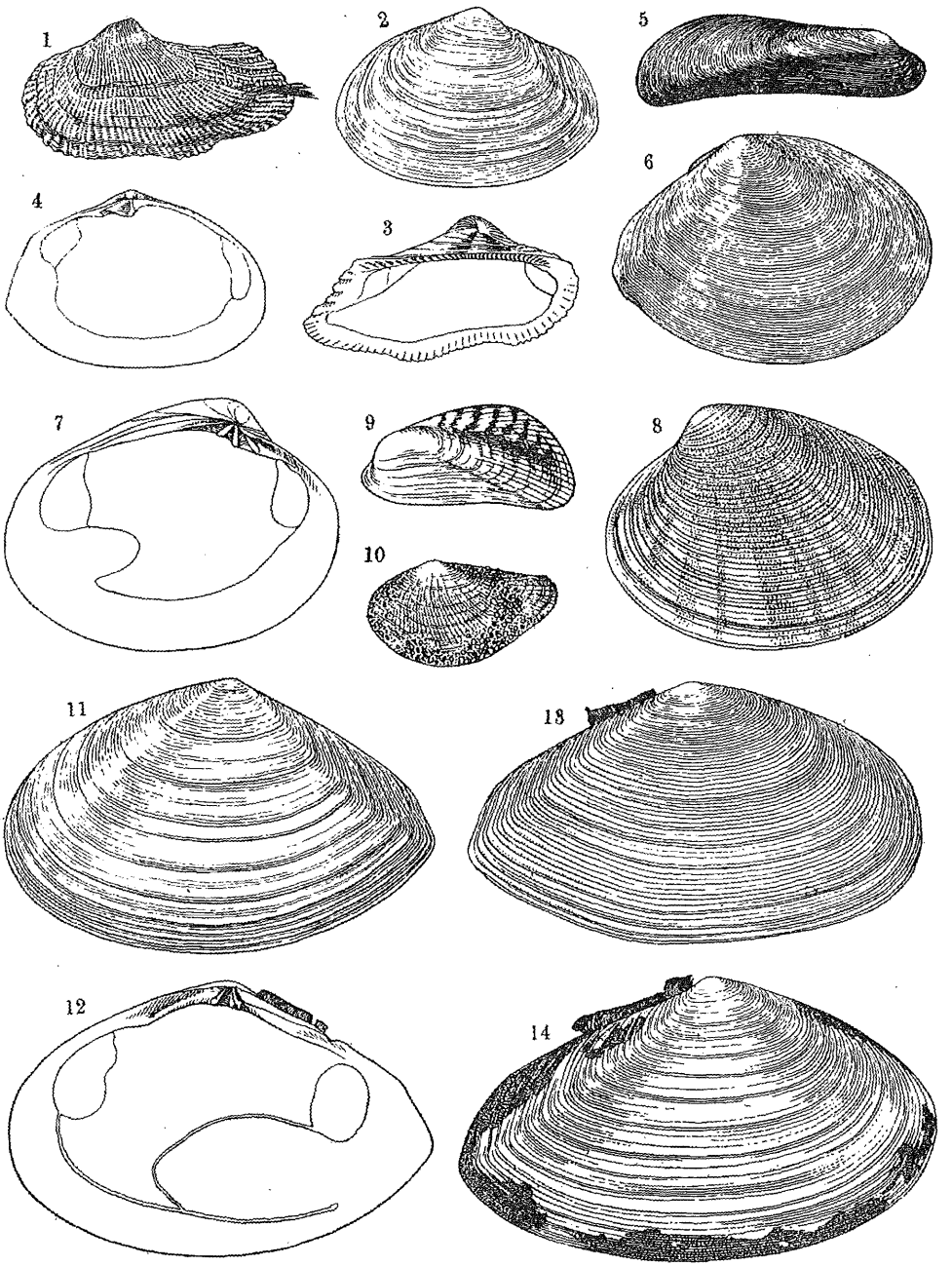
EXPLANATION OF PLATE III.

Figs. 1, 3. *Arca miyatensis* Oyama from Volcano Bay, Hokkaido.
Figs. 2, 4. *Cryptomya busoensis* Yokoyama from Akkeshi, Hokkaido. ×2
Fig. 5. *Adula nipponica* sp. nov. from Akita Pref., Honshu. ×2
Fig. 6. *Macoma incongrua* (v. Martens) from Kojima Bay, Honshu. ×1.5
Figs. 7, 8. *Callista brevisiphonata* (Carpenter) from Akkeshi, Hokkaido.
Fig. 9. *Brachidontes* (*Arcuatula*) *senhousia* (Benson) from Wakayama Pref., Honshu. ×1.5
Fig. 10. *Lyonsia ventricosa* Gould from Akkeshi, Hokkaido.
Figs. 11, 12. *Peronidia venulosa* (Schrenck) from Akkeshi, Hokkaido.
Fig. 13. *Peronidia zyonoensis* (Hatai et Nisiyama) from Hanazaki, Hokkaido.
Fig. 14. *Peronidia lutea* (Wood) from Nemuro, Hokkaido.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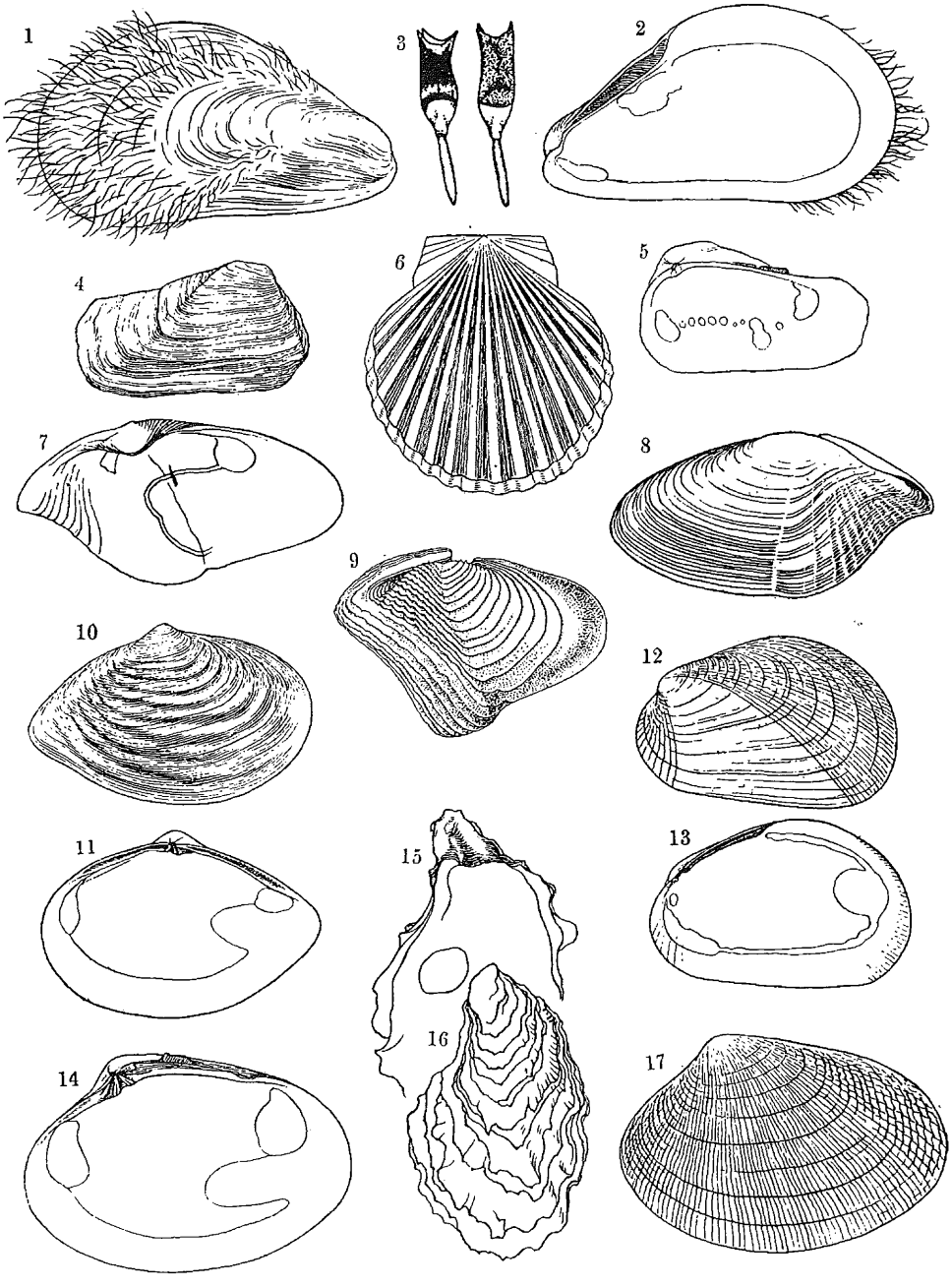
EXPLANATION OF PLATE IV.

Figs. 1, 2. *Volsella difficilis* Kuroda et Habe from Akkeshi, Hokkaido.
Fig. 3. *Lyrodus yatsui* (Moll) (after Kuronuma 1931). ×4
Figs. 4, 5. *Hiatella orientalis* (Yokoyama) from Nemuro, Hokkaido. ×1.5
Fig. 6. *Patinopecten yessoensis* (Jay) from Akkeshi, Hokkaido. ×0.3
Figs. 7, 8. *Zirfaea subconstricta* (Yokoyama) from Wakayama Pref., Honshu.
Fig. 9. *Nettastomella japonica* (Yokoyama) from Akkeshi, Hokkaido. ×2
Figs. 10, 11. *Raeta* (*Raetellops*) *pulchella* (Adams et Reeve) from Volcano Bay, Hokkaido. ×2
Figs. 12, 13. *Musculus laevigatus* (Gray) from Nemuro, Hokkaido. ×1.5
Figs. 14, 17. *Venerupis* (*Amygdala*) *japonica* (Deshayes) from Akkeshi Bay, Hokkaido.
Figs. 15, 16. *Ostrea* (*Crassostrea*) *gigas* Thunberg from Awaji Island, Honshu. ×0.5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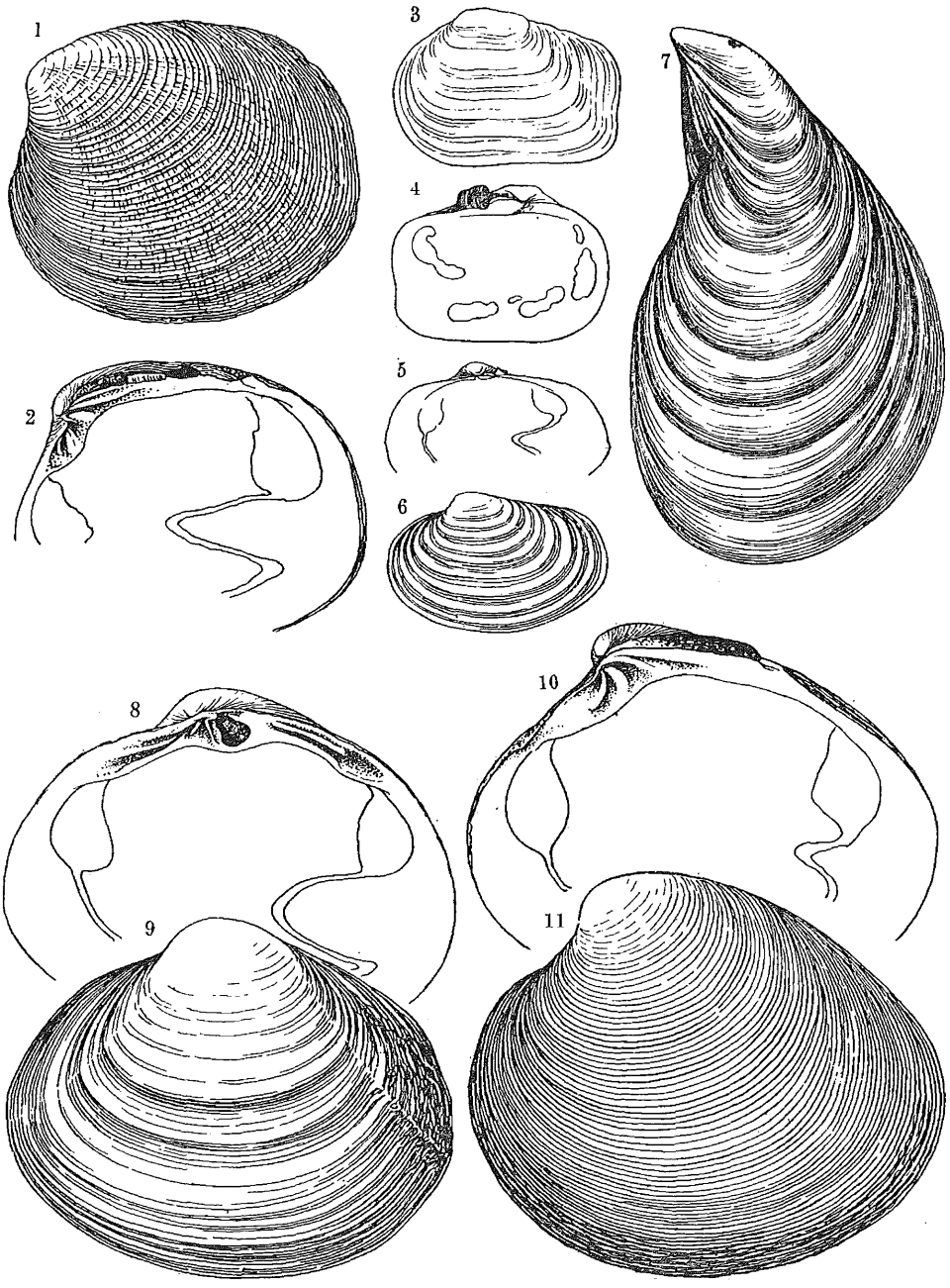
EXPLANATION OF PLATE V.

Figs. 1, 2. *Callithaca* (*Protocallithaca*) *adamsi* (Reeve) from Nemuro, Hokkaido.
Figs. 3, 4. *Panomya ampla* Dall from Nemuro, Hokkaido. ×0.5
Figs. 5, 6. *Panope japonica* A. Adams from Wakayama Pref., Honshu.
Fig. 7. *Mytilus grayanus* Dunker from Akkeshi, Hokkaido.
Figs. 8, 9. *Spisula sachalinensis* (Schrenck) from Akkeshi, Hokkaido.
Figs. 10, 11. *Mercenaria stimpsoni* (Gould) from Nemuro, Hokkaido.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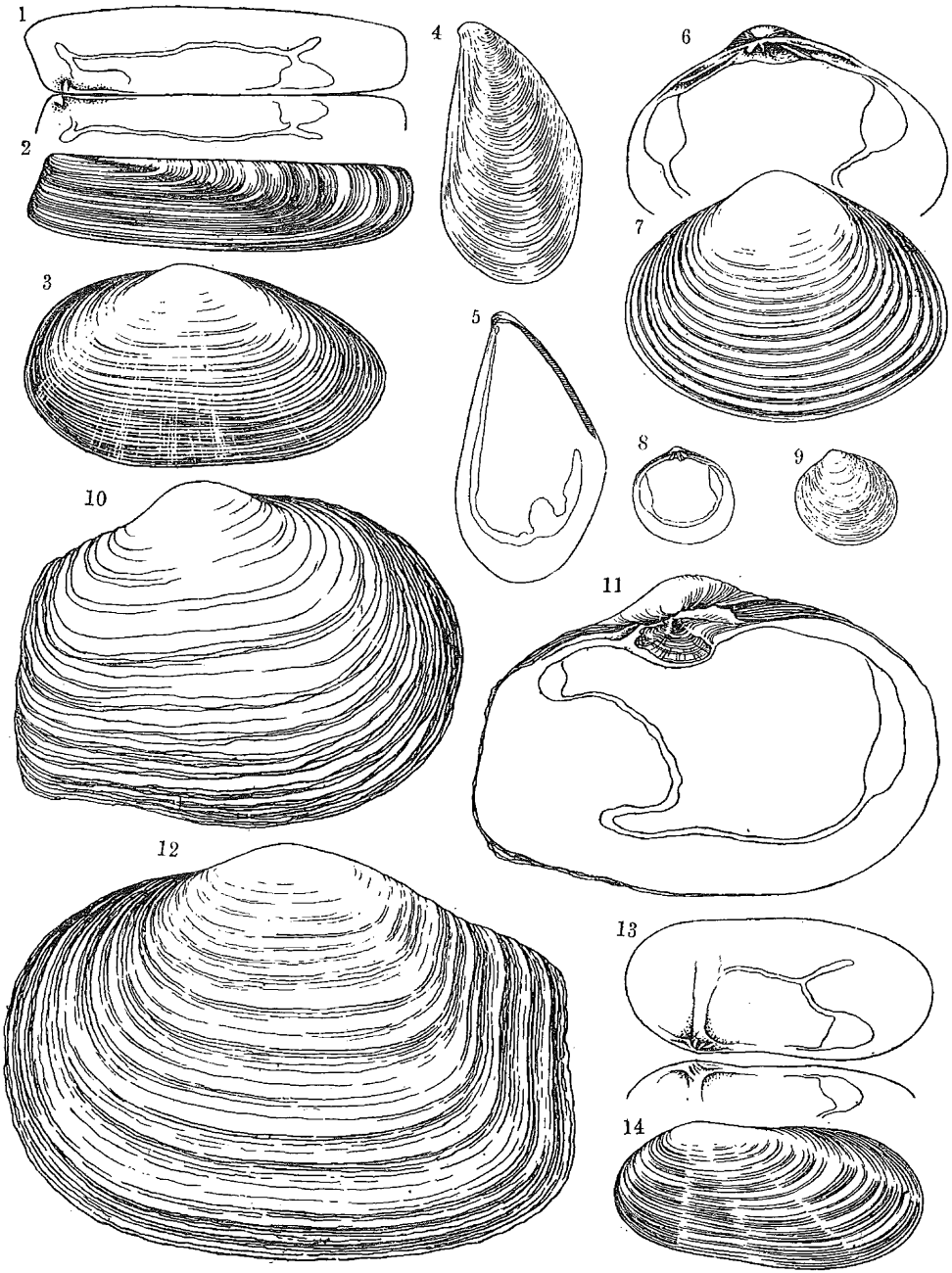
EXPLANATION OF PLATE VI.

Figs. 1, 2. *Solen* (*Solenarius*) *krusensterni* Schrenck from Hakodate, Hokkaido.
Fig. 3. *Mya* (*Arenomya*) *japonica oonogai* Makiyama from Ehime Pref., Shikoku.
Figs. 4, 5. *Mytilus edulis* Linné from Wakayama Pref., Honshu.
Figs. 6, 7. *Mactra sulcataria* Reeve from Kagoshima Pref., Kyushu.
Figs. 8, 9. *Felaniella usta* (Gould) from Nemuro, Hokkaido. ×0.5
Figs. 10, 11. *Mya truncata* Linné from Nemuro, Hokkaido.
Fig. 12. *Panope japonica* A. Adams from Nemuro, Hokkaido.
Figs. 13, 14. *Siliqua alta* (Broderip et Sowerby) from Hanazaki, Hokkaido.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