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The Fauna of Akkeshi Bay XXV. Gastropoda

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The Fauna of Akkeshi Bay XXV. Gastropoda

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(With Plates I-V)

In 1955, the writer reported the bivalves and a tooth shell from Akkeshi Bay and its adjacent region. This is a report on the gastropodous species from the same region in which sixty-eight species are contained, including four new genera and six new species.

The molluscan fauna of this area is characterized by the elements dwelling in the cold current and none of indicators of the warm current is found. But, some of them, such as *Batillaria cumingii*, *Mitrella bella*, *Littorina brevicula* and *Ocenebra adunca*, may be regarded as the elements of the continental coastal fauna as they widely range from the southern China to Saghalien and Kuriles in the north along the coast of the continent, without the influence by the oceanic currents, both warm and cold.

Before going further, the writer wishes to express his hearty thanks to Prof. Tohru Uchida, Director of the Akkeshi Marine Biological Station and the late Dr. Shiro Okuda and Mr. Fumio Iwata who have kindly sent the material at his disposal. Thanks also are due to Dr. Tokubei Kuroda under whose kind guidance this study has been carried out and to Prof. Iwao Taki who gave him valuable advices.

Class Gastropoda
Subclass Prosobranchia (Streptoneura)
Order Archaeogastropoda (Aspidobranchia)
Superfamily Patellacea (Docoglossa)
Family Acmaeidae

1. *Acmaea (Niveotectura) pallida* (Gould)

(Pl. 1, figs. 4, 5; Pl. 4, fig. 19)

Patella pallida Gould 1859, p. 162.

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Patella lamanonii Schrenck 1867, p. 303, pl. 14, figs. 6-9.

Helcioniscus pallida Pilsbry 1891, p. 133, pl. 67, figs. 9, 10.

Patelloida pallida S. Hirase 1927, p. 1339, fig. 2571; Luroda 1947, p. 1192, fig. 3395.

Patelloida (Tectura) pallida Kinoshita et Isahaya 1934, p. 4, pl. 2, fig. 8; Kinoshita 1937, p. 4.

Patelloida dorsuosa Yen 1936, p. 174, pl. 14, fig. 4.

Tectura (Niveotectura) pallida Habe 1944, p. 185, fig. 7.

Acmaea (Niveotectura) pallida Kuroda et Kinoshita 1951, p. 8; Kira 1954, pl. 5, fig. 11.

Material: Many specimens from Akkeshi and Hanazaki.

Distribution: Northern Honshu (south to Sagami Bay); Hokkaido; Kuriles; Maritime Prov. of Siberia; Saghalien; Korea and Shantung, China.

This white solid limpet differs from *Acmaea mitra* Eschscholtz which distributes from Aleutians to North-west coast of America, in having the strong radial ribs, on the interspaces between them are usually added one to three secondary finer riblets. The radular formula of this species is 0-3-0-3-0, agreeing well with that of the genus *Acmaea* as figured by Dall. The largest specimen collected from Akkeshi measures 28.8 mm. in height and 58.6 mm. in length.

2. *Collisella pelta* (Eschscholtz)

(Pl. 1, figs. 1, 2; pl. 4, fig. 15)

Acmaea pelta Eschscholtz 1833, p. 19; Middendorff 1851, p. 186, pl. 16, figs. 4, 5; Pilsbry 1891, p. 17, pl. 8, figs. 86, 95.

Acmaea (Collisella) pelta Dall 1871, p. 246, pl. 14, fig. 6; Abbott 1954, p. 102, pl. 18, fig. n.

Patella (Acmaea) patina Schrenck 1867, p. 259.

Patella leucophaea Reeve 1855, Conch. Icon., sp. 101.

Patelloida (Tectura) cassis pelta Oldroyd 1927, p. 146; Kuroda et Koba 1934, p. 153; Hirase 1927, pl. 56, fig. 7; Kinoshita et Isahaya 1934, p. 4, pl. 1, fig. 7.

Collisella pelta Habe 1944, p. 178; Kuroda et Kinoshita 1951, p. 9.

Material: Many specimens from Akkeshi and Nemuro.

Distribution: Northern Honshu; Hokkaido; Kuriles; Siberia and Alaska to Lower California.

The specimens from Akkeshi and Nemuro are generally smaller than the typical form in size and coloured in bluish black outside and whitish inside except the brown muscle scar. *Collisella heroldi* (Dunker) found in Volcano Bay, Hokkaido is the nearest ally, but may be distinguished from this species by its smaller size and more elevated conical shell on which radial riblets are sculptured distinctly. The figured specimen measures 6.8 mm. in height and 16.6 mm. in breadth and 20.8 mm. in length.

3. *Collisella emydia* (Dall)

Patella (Acmaea) testudinialis Schrenck (non Müller) 1867, p. 294.

Acmaea (Collisella) testudinialis Dall 1871, p. 249, pl. 14, fig. 13.

Acmaea testudinialis Pilsbry 1891, p. 10, pl. 9, figs. 25-29.

Acmaea emydia Dall 1914, p. 13.

Patelloida cassis tessellata Yokoyama 1931, p. 17.

Notoacmaea? emydia Habe 1944, p. 184.

Material: Only one specimen collected from Akkeshi Bay.

Distribution: Hokkaido; Kuriles and Aleutians.

The Pacific species is frequently confused with the European form, *C. testudinialis* by the similar tortoise-shell marking on the surface, but the former may differ from the latter in a more elongate ellipsoidal outline of the shell which is thin and low conical. The radular formula shows to be a member of the genus *Collisella* in having a small marginal tooth on each side of a transverse row, though the writer had placed this in the genus *Notoacmaea* in doubt, the species of which range chiefly in the tropic region of the Pacific.

4. *Collisella* (?) *sybaritica* (Dall)

(Pl. 1, fig. 3)

Acmaea (Collisella) sybaritica Dall 1871, p. 257, pl. 17, fig. 34.

Acmaea sybaritica Pilsbry 1891, p. 22, pl. 9, figs. 22-24; Oldroyd 1927, p. 154.

Collisella? sybaritica Habe 1944, p. 185.

Material: Three small dead specimens collected with the dredging in Akkeshi Bay.

Distribution: Hokkaido; Kuriles and Alaska.

The exact generic position of this pretty species is now quite uncertain, unless the animal be observed. The figured specimen measures only 2.4 mm. in height by 7.2 mm. in length.

Family Lepetidae

5. *Cryptobranchia lima* (Dall)

(Pl. 5, figs. 1, 2, 4)

Lepeta (Cryptoctenidia) lima Dall 1918, p. 233.

Lepeta lima S. Hirase et Is. Taki 1947, pl. 58, fig. 7.
Cryptobranchia lima Habe 1955, no. 18.

Distribution: Hokkaido, northern Honshu and Korea.

This white limpet with many radial serrated ribs on the shell surface, was reported by Dall from Nemuro, based on the materials of Japanese shells sent by Y. Hirase, but has never been collected from this region since. The figured specimen collected from northern Honshu measures 10.9 mm. in height, 35 mm. in length and 27.7 mm. in breadth. *Cryptobranchia* established by Gray was not a generic name in use, so that *Cryptoctenidia* created by Dall as a substitute name is not necessary. Therefore *Cryptobranchia* of Middendorff is not antedated that of Gray. Another species, *Cryptobranchia alba* Dall (Pl. 3, figs. 9, 10) has been also reported from the east of Siberia, the paratype specimen of which deposited in the Zoological Institute of the Kyoto University through the U. S. National Museum is here figured, which measures 13.2 mm. in length and 9.5 mm. in breadth. The shell surface without any distinct radial threads is characteristic.

Superfamily Trochacea
 Family Trochidae

6. *Margarites pilsbryi* Kuroda et Habe

(Pl. 1, fig. 10)

Phorcus borealis Pilsbry (non Philippi) 1905, p. 112, pl. 4, figs. 29, 30.
Margarites borealis Kinoshita 1937, p. 4, pl. 1, fig. 4.
Margarites pilsbryi Kuroda et Habe 1952, p. 65.
Margarites (Margarites) helicina tenuistriata Galkins 1955, p. 78.

Material: Many specimens from the neighbourhood of the Akkeshi Marine Biological Station.

Distribution: Hokkaido; Saghalien and Maritime Prov. of Siberia.

This little helicoid shell is very common in the eel-grass meadow on the fine sandy botton. The radula of this species is of *Margarites*-type, bearing a central tooth and five cuspidate lateral teeth, each of which is quite similar in shape. *Margarites helicina tenuistriata* described by Galkin from the adjacent seas of Hokkaido may be the same as this species. *Lirularia iridescens* (Schrenck) (Pl. 1, fig. 12; pl. 4, fig. 10) with *Gibbula derjugini* Bartsch as a synonym is one of the commonest trochid species in the south-western region of Hokkaido, but not yet been reported from Akkeshi and Nemuro.

Family Turbinidae

7. *Homalopoma amussitatum* (Schrenck)

(Pl. 1, fig. 13)

Turbo amussitata Gould 1861, p. 22.*Trochus (Gibbula) corallinus* Smith 1875, p. 109.*Collonia purpurascens* Dunker 1882, p. 129, pl. 12, figs. 1-3.*Leptothyra amussitata* Pilsbry 1891, p. 250, pl. 55, figs. 71, 72; Pilsbry 1895, p. 90; Kuroda et Habe 1952, p. 62; Is. Taki et Oyama 1954, pl. 6, fig. 22.*Homalopoma amussitatum* Kinoshita 1937, p. 6; Kuroda et Kinoshita 1951, p. 11; Kira 1954, pl. 11, fig. 6.

Material: Two specimens collected from Daikoku-jima at the mouth of Akkeshi Bay by Mr. Iwata.

Distribution: Hokkaido and northern Honshu.

This red coloured form is found in the laminarian zone. A specimen from Muroran is figured herein, which measures 16.6 mm. in height and 13.2 mm. in breadth.

8. *Homalopoma sangarensis* (Schrenck)

(Pl. 2, fig. 1)

Turbo sangarensis Schrenck 1867, p. 363, pl. 16, figs. 6-11.*Leptothyra sangarensis* Pilsbry 1891, p. 250, pl. 64, fig. 59; Pilsbry 1895, p. 89; Kuroda et Habe 1952, p. 62; Is. Taki et Oyama 1954, pl. 6, fig. 21.*Homalopoma sangarensis* Kuroda et Kinoshita 1951, p. 11.

Material: Only one dead specimen obtained at the neighbourhood of this station.

Distribution: Hokkaido; northern Honshu; Maritime Prov. of Siberia and Korea.

This is a black coloured *Homalopoma* with several strong spiral cords on the surface. The figured specimen measures 8.0 mm. in height and 6.8 mm. in breadth.

Cocculina japonica Dall (Pl. 3, fig. 14) of the family Cocculinidae was reported from off Cape Erimo, southern most of Hokkaido proper.

Order Mesogastropoda
Superfamily Rissoacea
Family Rissoidae

9. *Falsicingula* (n. gen.) *kurilensis* (Pilsbry)

(Pl. 2, fig. 7; pl. 3, fig. 21)

Cingula kurilensis Pilsbry 1905, p. 106, pl. 4, fig. 31; S. Hirase 1927, pl. 80, fig. 12.

Material: Many specimens collected from Akkeshi Bay on the leaves of eel-grass.

Distribution: Hokkaido and Kuriles.

The nearest ally *Cingula martyni* Dall from Alaska has a more ventricose body whorl than this species. *Cingula aleutica* Dall is a slender form. The figured specimen is unicoloured in brown and measures 3.7 mm. in height and 2.5 mm. in breadth. The central tooth of the radula of this species has nine cusps in which the median one is the largest, and two basal cusps on each side.

This species, with the next species and several Alaskan species, makes a species group which quite differs from the real *Cingula* in lacking the striation on the surface. Therefore a new generic name *Falsicingula* is proposed for this group, *Cingula kurilensis* Pilsbry being the type.

10. *Falsicingula angustata* (Pilsbry)

(Pl. 1, fig. 7)

Assimineea angustata Pilsbry 1901, p. 396; Habe 1942, p. 41, pl. 1, fig. 6; Habe 1943, p. 104.

Material: Many specimens collected from Akkeshi on the leaves of eel-grass.

Distribution: Hokkaido and northern Honshu.

All specimens obtained are immature, measuring 2.4 mm. in height and 1.5 mm. in breadth in the largest specimen, but the writer believes to be identical with *Assimineea angustata*, the shell of which is unicoloured in chestnut brown and has an obtuse peripheral keel on the body whorl. This is not a member of assimineid species but of the rissoid in the radular features and it lives together with the preceding species.

Superfamily Littorinacea
Family Lacunidae

11. *Epheria decorata* (A. Adams)

(Pl. 2, fig. 20; pl. 4, fig. 18)

Lacuna (Epheria) decorata A. Adams 1861, p. 304.

Lacuna (Epheria) inflata A. Adams 1861, p. 304.

Lacuna divaricata vineta Kinoshita et Isahaya 1934, p. 6, pl. 3, fig. 20.

Epheria decorata Habe 1953, p. 207, textfig. 1.

Material: Several specimens collected from the neighbourhood of this station.

Distribution: Hokkaido and northern Honshu.

This lacunid species dwells on the sea weeds. The figured specimen measures 8.3 mm. in height and 5.7 mm. in breadth. Another species *Temanelia turrita* A. Adams (Pl. 1, fig. 9) ranges in the southern region of Hokkaido.

12. *Stenotis uchidai* Habe

(Pl. 2, fig. 19; pl. 4, fig. 16)

Stenotis uchidai Habe 1953, pp. 136, 144, textfig. 19; Habe 1953, p. 211.

Material: Specimens collected abundantly from Akkeshi Bay on the leaves of eel-grass.

This small lacunid species, measuring 1.8 mm. in height and 2.6 mm. in breadth, is characteristic by its neritid appearance. The central tooth of this species is close to that of the preceding species, but has five distinct cusps. Another species *Stenotis carinifera* A. Adams (Pl. 1, fig. 6) which has a sharp keel on the periphery of whorls is collected at Hakodate rather commonly.

Family Littorinidae

13. *Littorina brevicula* (Philippi)

(Pl. 2, fig. 24)

Turbo (Littorina) brevicula Philippi 1844, p. 166.

- Littorina brevicula* Philippi 1847, pl. 3, fig. 10; Schrenck 1867, p. 330.
Littorina castanea A. Adams et Reeve 1850, p. 49, pl. 11, fig. 8.
Littorina balteata Reeve 1857, sp. 71.
Littorina souverbiana Crosse 1862, p. 53, pl. 1, figs. 7, 8.
Littorina (Littorivaga) brevicula S. Hirase et Kuroda 1947, p. 1158, fig. 3295; Kuroda et Kinoshita 1951, p. 12.
Littorivaga brevicula Habe 1951, p. 88, pl. 14, figs. 15, 17, 18; Kira 1954, pl. 11, fig. 27; Kojima 1957, p. 59.

Material: Many specimens collected at the entrance of Lake Akkeshi.

Distribution: China; Japan; Korea; Maritime Prov. of Siberia.

This is one of the commonest periwinkles in all round coast of Japan. The floating egg capsule of this species is of the helmet type of Abbott. Therefore, this species is not a member of the genus *Littorivaga* which may be a synonym of the European genus *Neritrema*, but of the genus *Littorina*. *L. mandshurica* Schrenck (Pl. 2, fig. 6) closely resembles this species in the shell features and distributes in northern Honshu and west coast of Hokkaido. The southern form *Nodilittorina granularis* (Gray) (Pl. 1, fig. 8) is common in Volcano Bay, but does not attain to Akkeshi Bay.

14. *Neritrema sitkana* (Philippi)

(Pl. 2, figs. 21, 25)

- Littorina sitkana* Philippi 1846, p. 140; Middendorff 1849, p. 392, pl. 8, figs. 13-15; Oldroyd 1927, p. 60.
Littorina kurila Middendorff 1849, p. 392; Middendorff 1851, p. 201, pl. 11, figs. 13, 14.
Littorina subtenebrosa Middendorff 1849, p. 393; Middendorff 1851, p. 202, pl. 11, figs. 11, 12.
Littorina atkana Dall 1886, p. 211; Dall 1902, p. 551, pl. 39, fig. 11.
Littorina (Littorivaga) atkana Oldroyd 1927, p. 60; S. Hirase 1927, pl. 79, fig. 9; Kinoshita et Isahaya 1934, p. 5, pl. 2, fig. 18; Kuroda et Kinoshita 1951, p. 12.
Littorina (Littorivaga) sitkana Kuroda et Kinoshita 1951, p. 12.
Littorivaga sitkana Habe 1951, p. 87, pl. 14, textfig. 4.
Littorivaga atkana Habe 1951, p. 88, pl. 14, figs. 2, 9.

Material: Many specimens collected from the neighbourhood of this station.

Distribution: Northern Honshu; Hokkaido; Kuriles and Alaska.

All specimens from Akkeshi, on the shell surface of which are found evanescent spiral cords, are formerly considered a distinct species *L. atkana*. But according to the observation on the specimens from various localities the spiral cords on the surface are quite unstable with all kinds of

transitional forms between the spiral cordless *L. atkana* and *L. sitkana* with the spiral cords all over the surface. Therefore, it seems that *L. atkana* is only a local or individual form of *L. sitkana*. This species spawns out the egg-mass which is adhered on stones. The figured specimens measure 15.5 mm. in height by 11.5 mm. in breadth and 17.0 mm. in height by 13.5 mm. in breadth.

15. *Exolittorina* (n. gen.) *squalida* (Broderip et Sowerby)

(Pl. 1, fig. 22; pl. 4, fig. 9)

Littorina sqaubida Broderip et Sowerby 1829, Zool. Jour., 4, p. 370; Philippi 1846, p. 101, pl. 1, fig. Kinoshita et Ishhaya 1934, p. 5, pl. 2, fig. 17; S. Hirase 1927, pl. 79, fig. 7; Habe 1951, p. 87, pl. 14, fig. 6; Kuroda et Kinoshita 1951, p. 11.

Littorina grandis Middendorff 1849, p. 385; 1851, p. 198, pl. 11, figs. 4-10; Schrenck 1867, p. 319.

Littorina (Argaroda) squalida Oldroyd 1927, p. 57.

Material: Many specimens collected from the lower tide mark at Akkeshi Bay.

Distribution: Hokkaido; Kuriles and Aleutians.

This is the largest periwinkle in Japan, the figured specimen attaining 27.8 mm. in height and 24.3 mm. in breadth. The spawning nature of this species has been studied by Mr. Kojima (1958) of the Asamushi Marine Biological Laboratory. The radular formula of this species quite resembles that of *L. brevicula*. The new generic name may be proposed for this species based on the large, convexo-convex egg capsule containing about 14 eggs.

Superfamily Cerithiacea

Family Turritellidae

16. *Haustator* (*Neohaustator*) *fortilirata* (Sowerby)

(Pl. 5, fig. 16)

Turritella fortilirata Sowerby 1914, p. 36, pl. 2, fig. 12; Kinoshita et Isahaya 1935, p. 6, pl. 3, fig. 21; Otuka 1938, p. 39, fig. 29; Ida 1952, p. 53, pl. 4, fig. 1.

Turritella fortilirata multilirata Kotaka 1951, p. 6, pl. 1, figs. 2, 3.

Turritella fortilirata habei Kotaka 1952, p. 87.

Turritella (Neohaustator) luziokai Ida 1952, p. 54, pl. 4, figs. 2-4.

Turritella (Neohaustator) fortilirata Kira, 1954, pl. 12, fig. 2.

Distribution: Northern Honshu; Hokkaido and Saghalien.

This species was collected from off Kushiro near Akkeshi, but no specimen present in our collection from this region. But the writer had collected abundant specimens from Volcano Bay with the dredging on the deep sea bottom. They were named *multilirata* and later renamed *habei* as a variety of this species by reason of having more numerous spiral cords on the whorls than the real species. *T. huziokai* is the same as *T. f. habei*. These names are not necessary, because the spiral cords are very variable in this species individually and locally, the transitional forms between them occur. *Neohaustator* was established for *T. nipponica* Yokoyanma, including this species by Ida, but it seems that the distinguishing characters are too feeble to be divided into two genera, *Hastator* and *Neohaustator*. Therefore the writer *Neohaustator* is here assigned subgeneric status under *Haustator*. The figured specimen measures 80.0 mm. in height and 21.2 mm. in breadth.

Family Potamididae

17. *Batillaria cumingii* (Crosse)

(Pl. 1, fig. 15)

Lampania cumingii Crosse 1862, p. 54, pl. 1, figs. 10, 11.

Cerithium cumingii Schrenck 1867, p. 313.

Batillaria cumingii S. Hirase 1927, pl. 84, fig. 16; Kinoshita et Isahaya 1934, p. 6, pl. 3, fig. 23; Kuroda et Kinoshita 1951, p. 13.

Material: Many specimens from Lake Akkeshi.

Distribution: Formosa to Hokkaido; China and Korea.

This species resembles *B. multiformis* (Lischke) (Pl. 1, figs. 20, 21), but has a rather small slender shell with less prominent surface sculpture. The figured specimen measures 25.4 mm. in height and 8.5 mm. in breadth.

Superfamily Calyptraeacea

Family Trichotropidae

18. *Trichotropis bicarinata* (Sowerby)

(Pl. 3, fig. 12; pl. 4, fig. 11)

Trichotropis bicarinata Sowerby 1825, XII, pl. 9, fig.; Middendorff 1851, p. 436; A. Adams, 1863, p. 92; Oldroyd 1927, p. 39; S. Hirase 1934, pl. 91, fig. 14; Kinoshita et Isahaya 1934, p. 7, pl. 4, fig. 29; Abbott 1954, p. 163, pl. 24, fig. a; Kira 1954, pl. 13, fig. 13.

Material: Many specimens from Nemuro and several specimens from Akkeshi and Volcano Bay.

Distribution: Northern Honshu (south to Noto Peninsula); Hokkaido to Arctic Sea.

The shell of this strange northern species is rather thin and chalky white, the surface of which is covered with a thick but deciduous brown periostracum, and has two strong carinae at the periphery on which series of hairy spicules due to projection of the periostracum are set. The central and lateral teeth of this species have a large cusp only. Very common on the muddy bottom in the inshore waters of Nemuro.

19. *Ariadna insignis* (Middendorff)

(Pl. 2, fig. 9)

Trichotropis (Ariadna) insignis Middendorff 1849, p. 436, pl. 10, figs. 7-9; Oldroyd 1927, p. 41, pl. 31, figs. 9, 9a.

Trichotropis insignis A. Adams 1863, p. 93; Abbott 1954, p. 167, pl. 24, fig. c.

Material: Three specimens from Hanazaki and one specimen from Akkeshi.

Distribution: Hokkaido to Alaska.

This is a white shell with the thin light cream coloured periostracum, and with three primary spiral cords and secondary ones between each two and on the base. Furthermore numerous low axial ribs intersect the spiral cords, resulting a cancellate sculpture. The figured specimen measures 14.9 mm. in height and 12.8 mm. in breadth.

Family Calyptraeidae

20. *Crepidula grandis* Middendorff

(Pl. 3, fig. 17; pl. 5, figs. 5, 6)

Crepidula grandis Middendorff 1849, p. 429, pl. 11, figs. 8-10; Schrenck 1867, p. 382; Oldroyd 1927, p. 116; S. Hirase pl. 89, fig. 15; Kinoshita et Isahaya 1934, p. 6, pl. 3, fig. 25; Is. Taki 1938, p. 140, textfig. 1; Kira 1954, pl. 14, fig. 3.

Material: Many specimens from Akkeshi, Nemuro and Hanazaki.

Distribution: Northern Honshu; Hokkaido; Saghalien; Alaska and Arctic sea.

This giant slipper shell chiefly attached on the scallop, *Patinopecten*

yessoensis, is covered with a thick rough brownish periostracum on its shell surface. The largest specimen measures 51.2 mm. in length, 41.0 mm. in breadth and 19.0 mm. in height. The lateral tooth is very broad, while the central is rather small.

Superfamily Naticacea
Family Naticidae

21. *Bulbus smithii* (Brown)

(Pl. 2, fig. 18)

Acrybia smithii Brown 1838 (fide Harmer 1915, Proc. Moll. Great Brit., 2, p. 699, pl. 55, fig. 6).

Natica flava Gould 1840, p. 196; Odhner 1931, p. 46, pl. 4, figs. 26-28.

Natica aperta Middendorff 1849, p. 419; Middendorff 1851, p. 209, pl. 11, figs. 1-3.

Ampullina smithii Sars 1878, p. 155, pl. 12, figs. 2, a-b; pl. 21, fig. 18.

Natica (Polinices) tenuiculus Sowerby 1915, p. 166, pl. 10, fig. 3.

Bulbus fragilis aperta Kuroda et Kinoshita 1951, p. 14.

Bulbus tenuiculus Kuroda et Kinoshita 1951, p. 14.

Material: One large specimen from Nemuro and two small specimens from Akkeshi.

Distribution: Hokkaido; Kuriles and Arctic Sea.

This species has the thin yellowish brown shell with a rather glossy and smooth periostracum, but the shape of shell is variable, the spire being elevated or low. The figured large specimen measures 52.2 mm. in height and 35.8 mm. in breadth.

22. *Euspira pila* (Pilsbry)

(Pl. 5, fig. 8)

Polinices pila Pilsbry 1911, p. 32.

Natica ovata Sowerby 1914, p. 35, pl. 2, fig. 3.

Euspira pila Kuroda et Kinoshita 1951, p. 14.

Material: Many specimens from Akkeshi, Nemuro and also Yoichi.

Distribution: Hokkaido; Kuriles; Saghalien and Korea.

This brown shell varies from globose to ovate in shape individually and is covered with a thin polished periostracum on the surface. The umbilicus of this shell which is mostly covered with the columellar callus is small, perforated narrowly and deeply. Collected commonly with the

fishing net of herring. The figured specimen measures 58.8 mm. in height and 48.0 mm. in breadth.

23. *Tectonatica janthostoma* (Deshayes)

(Pl. 1, fig. 23; pl. 3, fig. 20)

Natica janthostoma Deshayes 1841, Guerin Mag. Zool. Moll., pl. 45; Philippi 1853, p. 53, pl. 8, fig. 8; Reeve 1855, sp. 79; Sowerby 1883, p. 82, pl. 457, fig. 52; Tryon 1886, p. 31, pl. 9, fig. 68; Oldroyd 1927, p. 123, pl. 97, fig. 5.

Cryptonatica janthostoma Dall 1921, p. 164, pl. 14, fig. 12.

Natica (Tectonatica) janthostoma Kinoshita et Isahaya 1934, p. 7, pl. 4, fig. 27.

Tectonatica janthostoma Kuroda et Habe 1949, p. 71, textfigs. a, b.

Material: Many specimens from Akkeshi and Nemuro.

Distribution: Hokkaido to Alaska and Korea.

This northern species was confused with *Tectonatica severa* (Gould) (Pl. 5, fig. 3), *T. janthostomoides* Kuroda et Habe being a synonym of this species, of the south, but may be easily distinguished from the latter by the operculum, on the surface of which there is a very fine groove along the outer margin instead of two conspicuous grooves in that species. The radula of this species has the tricuspidate central tooth, the outer one on each side being quite smaller than the median. The lateral tooth with one large cusp has sometimes one or two small cusps outside and one inside. Figured specimen measures 35.0 mm. in height and 32.0 mm. in breadth.

24. *Tectonatica russa* (Gould)

(Pl. 5, fig. 7)

Natica russa Gould 1859, p. 43; Oldroyd 1927, p. 123; Grant et Gale 1931, p. 798.

Natica aleutica Dall 1919, p. 2.

Cryptonatica aleutica Dall 1919, p. 251; Dall 1921, p. 164, pl. 14, fig. 10.

Cryptonatica russa Dall 1921, p. 163.

Tectonatica russa Kuroda et Kinoshita 1951, p. 14.

Material: Two specimens from Nemuro and one specimen from Volcano Bay.

Distribution: Northern Honshu; Hokkaido; Saghalien to Bering Sea.

This species differs from the preceding in having the closed umbilicus

with a white umbilical pad and the aperture is white within, not coloured in purple. The figured specimen measures 56.2 mm. in height and 50.6 mm. in breadth. *Tectonatica clausa* (Broderip et Sowerby) was reported from Nemuro but the writer has never seen any specimen from this region.

25. *Tectonatica hirasei* (Pilsbry)

(Pl. 2, fig. 2; pl. 3, fig. 19)

Natica bicincta Schrenck 1867, p. 377, pl. 17, figs. 1-3 (non Brown).

Natica (Halocoencha) hirasei Pilsbry 1905, p. 105, pl. 2, figs. 5, 6.

Tectonatic hirasei Kuroda et Kinoshita 1951, p. 14.

Material: Many specimens from the sandy bottom of shallow waters at Akkeshi.

Distribution: Northern Honshu; Hokkaido and Kuriles.

This is easily distinguished from the northern naticids in having the white shell ornamented with two brown bands interrupted into oblique streaks on the body whorl. Umbilical pad is small and wholly covered the umbilicus. Operculum has a faint impressed line along the outer margin on the surface. The central tooth of radula has three cusps on the frontal margin as in *T. janthostoma* and *T. severa*. Akkeshi is the type locality of this species. The figured specimen measures 19.2 mm. in height and 17.2 mm. in breadth.

Superfamily Lamellariacea Family Lamellariidae

26. *Lamellaria uchidai* n. sp.

(Pl. 1, fig. 11)

Material: Only one dead specimen obtained at the neighbourhood of this station in the eel-grass meadow of shallow waters.

The spire of this fragile white shell is very low and rapidly increases with about three whorls. The surface marks only weak growth lines with the thin periostracum. Body whorl is very large and so the aperture is also ample and obliques downwards. The columellar margin is roundly arcuate and a little thickened. Height 10.0 mm and breadth 13.7 mm.

This form is the nearest ally to *L. kiensis* Habe from the Pacific

coast of Honshu, but the former has the shell with a decidedly more depressed spire than that species. The European species *L. levigata* also found in the northern Pacific has the more globose body whorl definitely.

27. *Velutina (Velutella) cryptospira* Middendorff

(Pl. 2, figs. 11, 12; pl. 3, figs. 16, 18)

Velutina cryptospira Middendorff 1849, p. 106, 435; Middendorff 1851, p. 216, pl. 25, figs. 8-10; Kinoshita 1937, p. 9, pl. 3, fig. 13.

Velutina plicatilis Odhner 1913, p. 67.

Philine takatensis Yokoyama 1922, p. 28, pl. 5, fig. 4.

Material: Several specimens from Akkeshi by Mr. F. Iwata and one dead specimen also from Akkeshi by the writer.

Distribution: Honshu; Hokkaido; Kuriles and Saghalien.

This is a large thin velutid species, the shell surface of which is covered with a thick wrinkled periostracum. The fossil species, *Philine takatensis* may be an immature specimen of this species. The radula of this species has seven cuspidate central tooth, the median cusp being the largest.

28. *Velutina (Limmeria) conica* Dall

(Pl. 2, fig. 22; pl. 3, fig. 15)

Velutina conica Dall 1886, p. 305, pl. 3, fig. 10; Dall 1921, p. 167; Kuroda et Kinoshita 1951, p. 15.

Material: Only one specimen from Hanazaki.

Distribution: Hokkaido to Alaska.

In comparison with the paratype specimen of this species preserved in the Zoological Institute of the Kyoto University, the specimen from Hanazaki has a somewhat more elevated spire but it seems to be a local varietal form of this species. The radula of this species has five cuspidate central tooth the median cusp being the largest and the cusp on each side of it the smallest.

After the observation on the animal of "*Stomatella bulla* (Pilsbry, MS)" n. sp. (Pl. 2, fig. 10) from Yoichi, southern Hokkaido, this species seems to be a member of the genus *Velutina* with the close relationships

to the preceding species. But the shell is very thin, bullid without the nacreous layer on the inside of whorls and shows the taenioglossate radular formula (Pl. 4, fig. 7, 8). Thus the writer transfers this species from the trochid genus *Stomatella* to this genus. The immature specimen from Yoichi is very globose, occupied largely by the body whorl and with a very low spire. The surface of the shell marks many weak incised spiral grooves all over. The figured specimen measures 2.8 mm. in height and 3.2 mm. in breadth. This species is also found in northern Honshu.

Superfamily Tonnacea
Family Cymatiidae

29. *Fusitriton oregonensis* (Redfield)

(Pl. 2, fig. 8; pl. 5, fig. 21)

- Triton oregonensis* Redfield 1848, Ann. Lyceum Nat. Hist. N. Y., 4, p. 165, pl. 11, fig. 2.
Tritonium (Buccinum) cancellatum Middendorff 1849, p. 493, pl. 3, figs. 1-4.
Priene oregonensis A. Adams 1863, p. 106.
Priene cancellata A. Adams 1863, p. 106.
Triton (Priene) cancellatus Y. Hirase 1907, p. 242, pl. 13, fig. 91.
Argobuccinum (Fusitriton) oregonense Dall 1921, p. 141; Oldroyd 1927, p. 242, pl. 37, figs. 1-3; S. Hirase 1934, pl. 96, fig. 6; Abbott 1954, p. 194, pl. 24, fig. g.
Fusitriton oregonensis Kinoshita et Isahaya 1934, p. 7, pl. 4, fig. 30; Kuroda et Kinoshita 1951, p. 15; Kira 1954, pl. 21, fig. 9.

Material: Abundant specimens from Akkeshi, Hanazaki and Nemuro.

Distribution: Northern Honshu; Hokkaido to California through Alaska.

This is a northern triton the surface of which is covered with a thick and bristle-like brownish periostracum. The aperture of this species is white within and provided with a prominent siphonal canal and a tooth on the parietal wall near the posterior end. The extremely young specimen of this species of about three brownish embryonic whorls is covered with a thin periostracum bearing several hirsute series on the surface. The figured specimen measures 126 mm. in height and 62 mm. in breadth.

Order Neogastropoda
Superfamily Muricacea
Family Muricidae

30. *Polytropha lamellosa* (Gmelin)

(Pl. 4, fig. 17; pl. 5, fig. 12)

- Buccinum lamellosum* Gmelin 1792, p. 3498; Dillwyn 1817, p. 612.

- Murex crispatus* Lamarek 1822, p. 174.
Murex ferrugineus Eschscholtz 1829, p. 10, pl. 9, figs. 2a, b.
Murex lactuosus Eschscholtz 1829, p. 11, pl. 9, fig. 3a, b; Middendorff 1849, p. 446.
Polytropa crispata Swainson 1840, p. 305.
Purpura septentrionalis Reeve 1846, sp. 50; Middendorff 1849, p. 446.
Purpura plicata v. Martens 1882, p. 86.
Purpura (Trochida) succincta Y. Hirase 1907, p. 137, pl. 5, figs. 39-40.
Thais (Nucella) lamellosa hormica Dall 1915, p. 565, pl. 74, fig. 8.
Thais lamellosa Oldroyd 1927, p. 42, pl. 38, figs. 1, 2, 4; pl. 35, fig. 7.
Polytropa lamellosa hormica Kuroda et Kinoshita 1951, p. 15.
Thais (Polytropa) lamellosa Abbott 1954, p. 215, figs. 48e-h.

Material: Many specimens from Akkeshi with the fishing net for herring.

Distribution: Hokkaido to California through Alaska.

This species is very variable in shape and in surface sculpture, thus many names were given to this species. The specimen from Akkeshi mostly belongs to a form *hormica*. This species dwells rather on the submarine reefs while the next species dwells on the rocky shore of tidal zone. The radula of this species is of *Ocenebra*-type. The figured specimen measures 51.3 mm. in height and 31.2 mm. in breadth.

31. *Polytropa freycinetii* (Deshayes)

(Pl. 5, fig. 11)

- Purpura freycinetii* Deshayes 1841, pl. 26; Reeve 1846, sp. 51; Middendorff 1849, p. 446; Middendorff 1851, p. 219, pl. 12, figs. 1-9; Schrenck 1867, p. 388; Lischke 1871, p. 40, pl. 4, figs. 15-19; Y. Hirase 1907, pl. 6, figs. 41-43.
Polytropa lapillus A. Adams 1870, p. 423.
Purpura heyseana Dunker 1882, p. 40, pl. 13, figs. 10, 11.
Purpura freycinetii alabaster Pilsbry 1907, p. 246, pl. 20, fig. 2; Y. Hirase 1907, p. 138, pl. 6, fig. 44.
Thais (Nucella) freycinetii Dall 1915, p. 571.
Nucella lima freycinetii Kinoshita et Isahaya 1927, p. 8, pl. 5, fig. 35; S. Hirase 1934, pl. 110, fig. 1.
Thais (Nucella) lima Oldroyd 1927, p. 44, pl. 36, figs. 4-6.
Polytropa freycinetii heyseana Is. Taki 1947, pl. 110, fig. 1.
Polytropa freycineti Kuroda et Kinoshita 1951, p. 16.
Thais (Polytropa) lima Abbott 1954, p. 216, fig. 48d.

Material: Abundant specimens from Akkeshi and Nemuro.

Distribution: Northern Honshu; Hokkaido to Alaska and northern California.

This is one of the common rock dogwinkle of the north and is not confused with *P. lamellosa* either conchologically or ecologically. This

thick brownish shell is entirely sculptured with numerous cords alternate in size. The figured specimen measures 48.3 mm. in height and 34.9 mm. in breadth.

32. *Boreotrophon beringi* Dall

(Pl. 2, fig. 5)

Boreotrophon beringi Dall, 1902, p. 544.

Neptunea beringi Dall 1921, p. 109, pl. 10, fig. 6.

Trophon beringi Oldroyd 1927, p. 33, pl. 30, fig. 6; pl. 18, fig. 8.

Material: Four specimens from Akkeshi Bay collected by the late Dr. Okuda.

Distribution: Hokkaido to Alaska.

This chalky white species with ten lamellate axial ribs on the body whorl shows the shoulder angle and interspaces between them are marked with very weak spiral threads. The aperture of this species is tinted brown within and with a rather long canal. The figured specimen measures 14.5 mm in height and 18.3 mm. in breadth.

33. *Boreotrophon alaskanus* Dall

Boreotrophon alaskanus Dall 1902, p. 545.

Neptunea alaskana Dall 1921, p. 110; Dall 1925, p. 22, pl. 22, fig. 3.

Trophon (Boreotrophon) clathratus Kinoshita et Isahaya 1934, p. 8, pl. 5, fig. 40; Kinoshita 1937, p. 11.

Material: Only one dead specimen from off Kushiro.

Distribution: Hokkaido to Alaska.

This is the creamy white shell with eight or nine narrow, distant varices on the body whorl, which are only prominent at the shoulder where they rise into long blunt spines which curve backwards. The aperture with the slender long and curved canal, is subovate, white and polished within, the outer lip of which is thick and expands. The specimen measures 52.2 mm. in height and 27.3 mm. in breadth. This species has a resemblance to *B. vestra* Dall, but differs from the latter in having the less numerous but more prominent shoulder spines.

34. *Ocenebra (Ocinebrellus) adunca* (Sowerby)

(Pl. 3, fig. 13; pl. 4, fig. 13)

- Murex aduncus* Sowerby 1834, Conch. Illustr. (62), fig. 35; Sowerby 1879, p. 45, fig. 216.
Murex falcatus Sowerby 1841, p. 145.
Murex eurypteron A. Adams et Reeve 1850, p. 38, pl. 8, figs. 1a, b.
Murex acanthophora A. Admams 1863, p. 375.
Murex falcatus aduncus Lischke 1871, p. 30.
Murex (Cerostoma) eurypteron Y. Hirase 1907, p. 57, pl. 3, fig. 15.
Murex (Cerostoma) falcatus Y. Hirase 1907, pp. 59, 68, pl. 3, fig. 1, textfigs. 13A-F.
Ocenebra spectata Yokoyama 1922, p. 65, pl. 3, fig. 5.
Ocenebra falcata Yokoyama 1922, p. 65, p. 3, fig. 4.
Tritonalia (Ocinebrellus) adunca Kinoshita et Isahaya 1934, p. 8, pl. 5, fig. 39; Otuka 1936, p. 733, pl. 41, figs. 9a, b, 14, 15a, b.
Ocinebrellus falcatus aduncus Yen 1936, p. 235, pl. 20, fig. 50.
Ocenebra (Ocinebrellus) adunca Kinoshita 1937, p. 11.
Ceratostoma aduncum Is. Taki 1951, pl. 109, fig. 11.
Ceratostoma eurypteron Is. Taki 1951, pl. 109, figs. 7, 12.
Ocenebra adunca Kuroda et Kinoshita 1951, p. 16.
Ocenebra adunca acanthophora Kuropa et Kinoshita 1951, p. 16.
Ceratostoma (Ocinebra) aduncum Kira 1954, pl. 24, fig. 9; Is. Taki et Oyama 1954, pl. 23, figs. 4, 5.

Material: Two specimens from Nemuro and Akkeshi.

Distribution: China; Korea; Japan.

The examined specimens have chalky white shell with four or five winged axial lamellae on the body whorl, but on the early whorls with more than five and marginating the serrated cords alternate strong and weak. In the radula of this species the central tooth bears three main cusps in the centre and several smaller ones on the outside, with a horn-shaped marginal tooth each side of it. This species is so variable in shape locally that many specific names were proposed, but there are complete integradation among them.

35. *Ocenebra japonica* (Dunker)

(Pl. 3, figs. 8, 11)

- Murex japonica* Dunker 1860, p. 230; Dunker 1861, p. 4, pl. 1, fig. 14.
Murex talienvhanensis Crosse 1862, p. 56, pl. 1, fig. 9.
Murex unifasciatus A. Adams 1863, p. 372 (1862).
Ocenebra endermonis Smith 1875, p. 420.
Murex japonicus Y. Hirase 1907, p. 66, fig. 27.

- Murex endermonis* Y. Hirase 1907, p. 69, figs. 32, 32.
Tritonalia inornata endermonis Kinoshita et Isahaya 1934, p. 8, pl. 5, fig. 36.
Tritonalia talienwhanensis Yen 1936, p. 234, pl. 20, figs. 49, a, b.
Ceratostoma japonicum endermonis Is. Taki 1951, pl. 109, fig. 10.
Ocenebra japonica Kuroda et Kinoshita 1951, p. 16.
Ocenebra endermonis Kuroda et Kinoshita 1951, p. 16.
Ceratostoma (Ocenebra) endermonis Kira 1954, pl. 24, fig. 1.
Ceratostoma (Ocenebra) japonicum Kira 1954, pl. 24, fig. 7.

Material: Several specimens from Akkeshi.

Distribution: China; Korea; Japan.

This is one of the common rocky shore dweller, but the specimens collected from the neighbourhood of this station are all immature. They are evidently identical with this species in having the shell with a coarsely reticulated sculpture of about ten axial ribs crossed by many spiral cords. The figured specimen (fig. 8) is identical with the local form, *endermonis*, of this species (fig. 11) and measures 30.6 mm. in height and 17.2 mm. in breadth. *O. lurida* (Middendorff) is an allied species, but the shell is small in size and is cancellated on the spire distinctly.

Superfamily Buccinacea
 Family Buccinidae

36. *Plicifusus (Retifusus) brunneus* (Dall)

(Pl. 1, fig. 18)

- Chrysodomus brunneus* Dall 1877, p. 1.
Tritonofusus (Plicifusus) brunneus Dall 1902, p. 525, pl. 34, fig. 1.
Plicifusus (Retifusus) brunneus Dall 1921, p. 93; Oldroyd 1927, p. 210, pl. 28, fig. 1.

Material: Two specimens from Akkeshi Bay with the dredging.

Distribution: Hokkaido to Bering Sea.

This small shell is covered with an olivaceous thick periostracum and provided with axial ribs, the number of which is 14 to 17 on the body whorl crossing the incised spiral grooves. *P. olivaceus* Bartsch has less numerous axial ribs on the body whorl, but may be an individual variety of this species. The figured specimen measures 19.9 mm. in height and 9.6 mm. in breadth.

37. *Plicifusus (Retifusus) plicatus* (A. Admas)

(Pl. 1, fig. 16; pl. 4, fig. 6)

- Sipho plicatus* A. Adams 1863, p. 107.

Neptunea plicata Dunker 1882, p. 14, pl. 3, figs. 1, 2.

Plicifusus scissuratus Dall 1918, p. 226.

Plicifusus polypleuratus Kinoshita et Isahaya 1934, p. 9, pl. 6, fig. 46.

Plicifusus (Retifusus) plicatus Kuroda 1936, p. 182.

Material: Eight specimens from Hanazaki and Akkeshi.

Distribution: Northern Honshu; Hokkaido and Saghalien.

This fusoid shell has 15 strong axial ribs on the body whorl. Interspaces between two ribs are twice as wide as an axial rib. The operculum of this species is thin and corneous the nucleus of which is excentric, situated near the lower end. The central tooth has small cusps of equal size and the marginal has three large cusps the outer one being the largest. The figured specimen measures 44.7 mm. in height and 19.3 mm. in breadth. *P. polypleuratus* reported from Akkeshi by Kinoshita and Isahaya may be identical with this species.

38. *Plicifusus (Helicofusus) rhyssus* (Dall)

Tritonofusus (Plicifusus) rhyssus Dall 1907, p. 160.

Plicifusus (Retifusus) rhyssoides Dall 1918, p. 227.

Plicifusus rhyssus Dall 1925, p. 25, pl. 33, fig. 7.

Plicifusus (Retifusus) rhyssus Kuroda 1936, p. 183.

Material: Many specimens from off Kushiro.

Distribution: Northern Honshu; Hokkaido and Saghalien.

The shell is fusiform, with the olivaceous periostracum and with the obtuse plications in the early whorls but becoming gradually obsolete on the body whorl. The spiral sculpture of numerous equal close-set threads covers evenly whole surface. The aperture is white within and with the recurved short canal. The radula of this species has three small cusps on the central tooth and three large cusps on the marginal as in the preceding two species. The examined specimens measures 40.0 mm. in height and 27.5 mm. on breadth. This species was considered a member of the genus *Retifusus*, but there is no sharply incised spiral grooves on the whorls. Therefore the writer transfers this species from the *Retifusus* to the *Helicofusus* in which *Plicifusus aurantius* Dall and *P. wakasanus* Dall are included.

39. *Jumala frielei* (Dall)

Beringius frielei Dall 1895, p. 711, pl. 27, fig. 8.

Beringius polynematicus Pilsbry 1907, p. 243, pl. 19, fig. 1; Y. Hirase 1908, pl. 43, fig. 266.
Beringius frielei Kuroda 1936, p. 177; Kinoshita 1937, p. 12, pl. 3, fig. 16.

Material: Only one very imperfect fragmental specimen from Nemuro.

Distribution: Northern Honshu; Hokkaido to Bering Sea.

Though this is a fragmental specimen of three earlier whorls, it seems to be referable to this species by shell features. An allied species *J. kennicotti* Dall was ever collected from Nemuro, but the present specimen has more slender whorls than this species. *Jumala (Japelion) pericochlion* (Schrenck) was reported from Akkeshi, but the writer has never received any specimen from that locality.

40. *Neptunea (Barbitonia) arthritica* (Bernardi)

(Pl. 2, figs. 16, pl. 4, fig. 5, pl. 5, fig. 13)

Fusus arthritica Bernardi 1858, p. 386, pl. 12, figs. 3a, b.

Fusus bulbosa Bernardi 1858, p. 183, pl. 7, fig. 1.

Neptunea lurida A. Adams 1863, p. 107; Dunker 1881, p. 14, pl. 3, figs. 3, 4.

Neptunea despecta Y. Hirase 1907, pl. 20, fig. 131c.

Neptunea (Barbitonia) arthritica Iw. Taki 1933, p. 516; Kinoshita et Isahaya 1934, p. 9, pl. 6, fig. 45; Kuroda 1936, p. 186.

Material: Abundant specimens from Akkeshi.

Distribution: Korea; northern Honshu; Hokkaido; Kuriles and Saghalien.

This whelk is very commonly collected with the fishing net of herring in summer. The shell is solid, dull purplish brown in colour and with the nodules on the shoulder of the body whorl. The aperture lirates within. The central tooth has five-equal cusps and the marginal also has three large cusps. The figured specimen measures 53 mm. in height and 20 mm. in breadth. The fishermen collect this whelk for food.

41. *Neptunea soluta* (Hermann)

(Pl. 5, fig. 20)

Buccinum soluta Hermann 1781, Der Naturforsch., 16, p. 53, pl. 2, figs. 3, 4.

Chrysodomus heros Gray 1850, p. 14, pl. 7.

Neptunea despecta Y. Hirase 1907, pl. 20, fig. 131a.

Crysodomus solutus Dall 1921, p. 97; Oldroyd 1927, p. 236.

Neptunea viosa Kinoshita et Isahaya 1934, pl. 6, fig. 43 (non *vinosa* Dall).

Neptunea soluta Kuroda 1936, p. 184; Kuroda et Kinoshita 1951, p. 18; Kira 1954, pl. 27, fig. 18.

Material: Twenty specimens collected from Akkeshi together with *N. arthritica*.

Distribution: Korea; Hokkaido and Saghalien to Bering Sea.

This shell somewhat resembles *N. arthritica*, but the whorls are strongly margined with the peripheral cord in the young stage, sometimes the weak ones bearing beneath it. Aperture is also large and yellowish within by which it is easily distinguished from the preceding species. The figured specimen measures 100 mm. in height.

42. *Neptunea intersculpta* (Sowerby)

Chrysodomus intersculpta Sowerby 1899, p. 371, textfig. 2.

Neptunea intersculpta Y. Hirase 1907, pl. 19, fig. 129; Iw. Taki 1933, p. 516; Kinoshita et Isahaya 1934, pl. 6, fig. 44; S. Hirase 1934, pl. 102, fig. 2; Kuroda 1936, p. 185; Kuroda et Kinoshita 1951, p. 18; Kira 1954, pl. 27, fig. 13.

Neptunea antiqua japonica Dautzenberg et Fischer 1912, p. 77, pl. 2, fig. 2.

Material: Two immature specimens from off Kushiro.

Distribution: Northern Honshu; Korea; Hokkaido and Saghalien.

This species has the elevated spire of about eight whorls, on the body whorl the spiral cords present, of which the shoulder one is the strongest and between these cords are three or five less elevated close-set threads. The radula of this species has tricuspidate central tooth and also tricuspidate marginal tooth on each side of it. *N. pribiloffensis* from Bering Sea has the inflated and short spired shell, but may be a local form of this species by the nature of surface sculpture. The examined specimen measures 68 mm. in height.

43. *Neptunea lyrata* (Gmelin)

(Pl. 5, fig. 19)

Murex lyratus Gmelin 1791, 13, p. 3531.

Neptunea despecta Y. Hirase 1907, p. 20, figs. 131b, d (not od a, c).

Neptunea lyratus Iw. Taki 1933, p. 514; S. Hirase 1934, pl. 102, fig. 1; Kinoshita et Isahaya 1934, p. 9, pl. 5, fig. 42; Kuroda 1936, p. 186; Abbott 1954, p. 230, fig. 24q.

Chrysodomus lyratus Dall 1921, p. 98; Oldroyd 1927, p. 237.

Material: Only one imperfect specimen from Akkeshi Bay by the late Dr. S. Okuda.

Distribution: Northern Honshu to Bering Sea.

This species is characterized by the distantly placed spiral cords and lamellate varices. The preceding species is provided with more numerous spiral cords only and lacks the lamellate varices. *N. vinosa* is also an allied form, but its aperture is purplish within and no lamellate varices bears on the shell surface. The figured specimen measures 108.2 mm. in breadth.

44. *Volutharpa ampullacea* (Middendorff)

(Pl. 4, fig. 12; pl. 5, fig. 17)

Bullia ampullaceum Middendorff 1849, p. 508; 1851, p. 237, pl. 8, figs. 3, 4.

Tritonium (Volutharpa) ampullaceum Schrenck 1867, p. 437.

Volutharpa ampullacea Kobelt 1883, p. 96, pl. 93, figs. 7, 8; Y. Hirase 1908, pl. 28, fig. 52;

Oldroyd 1937, p. 262; Dall 1921, p. 102.

Buccinum (Volutharpa) ampullaceum S. Hirase 1934, pl. 104, fig. 5; Kuroda 1935, p. 160.

Material: Only one specimen collected from Akkeshi by the late Dr. S. Okuda.

Distribution: Hokkaido to Bering Sea.

The shell of this species is thin and globose, with a large aperture which is characteristic. The radula of this species has four cusps on the central tooth. *V. perryi* Jay is larger in size with a more elevated spire and the aperture is so ample, but this may be only a local form of this species. The shell measures 35.0 mm. in height and 25.0 mm. in breadth.

45. *Buccinum rossicum* Dall

Buccinum rossicum Dall 1907, p. 150; Dall 1925, p. 8, pl. 31, fig. 5; Kuroda 1936, p. 158;

Kuroda et Kinoshita 1951, p. 19.

Material: Several young specimens from off Kushiro.

Distribution: Hokkaido and Saghalien.

This is a thin white buccinid, on the shell of which the thick hirsute olivaceous periostracum covers and the suture is deeply constricted. The radula of this species has the central tooth with six cusps and tricuspidate marginal tooth. The largest specimen examined measures 66.6 mm. in height and 37.2 mm. in breadth.

46. *Buccinum chishimanum* Pilsbry

(Pl. 4, fig. 4; pl. 5, fig. 18)

Buccinum chishimanum Pilsbry 1904, p. 87; Pilsbry 1907, p. 107, pl. 3, fig. 12; Y. Hirase 1908, p. 75, pl. 26, figs. 40, 41; Dall 1921, p. 102; Oldroyd 1927, p. 260; Iw. Taki 1933, p. 514; Kuroda 1935, p. 157; Kinoshita 1937, p. 14, pl. 4, fig. 24; Kuroda et Kinoshita 1951, p. 19.

Material: Many specimens from Akkeshi and Hanazaki.

Distribution: Hokkaido; Kuriles and Bering Sea.

This is characteristic in the small globose shell with a rather smooth surface, sometimes bearing distantly arranged spiral cords and with a large ovate aperture. The central tooth has five cusps on the hind margin, which are equal in size in each other. The figured specimen measures 36.2 mm. in height and 27.0 mm. in breadth.

47. *Buccinum zelotes* Dall

Buccinum zelotes Dall 1907, p. 141; Dall 1925, p. 9, pl. 32, fig. 5; Kuroda 1936, p. 150.
Buccinum derjugini Bartsch 1929, p. 136, pl. 4, fig. 4.

Material: Two specimens from Hanazaki.

Distribution; Japan Sea and Hokkaido.

This species somewhat approaches *B. inclytum* Pilsbry from Nemuro and Kuriles which seems to be a form of *B. glaciale*, but has three narrower primary spiral cords at the periphery, above and below, on the body whorl. And also it resembles *B. opisthoplectum* which might be regarded as a variant form of this species by the existence of the various kinds of transitional forms. A quite dwarf specimen from Hanazaki measures 27.5 mm. in height and 15.5 mm. in breadth.

48. *Buccinum ochotense* (Middendorff)

(Pl. 4, fig. 3; pl. 5, fig. 10)

Tritonium (*Buccinum*) *ochotense* Middendorff 1851, p. 235, pl. 9, fig. 5; pl. 10, figs. 1, 2.
Buccinum ochotense Kobelt 1883, p. 59, pl. 85, fig. 5; p. 89, pl. 92, figs. 1-3; Dall 1925, p. 100; Oldroyd 1927, p. 251; Iw. Taki 1933, p. 514; Kinoshita 1934, pl. 7, fig. 53; Kuroda 1935, p. 155; Kuroda et Kinoshita 1951, p. 19.

Material: Only one specimen from Hanazaki.

Distribution: Japan Sea; Okhotsk Sea and Bering Sea.

This is a slender shell with the obliquely placed ribs on the whorls, vanishing to the aperture. *B. simulatum* Dall may be a form of this species. The radular formula as in the preceding species. The figured specimen measures 42.8 mm. in height and 22.6 mm. in breadth.

49. *Buccinum polare mirandum* Smith

(Pl. 5, fig. 9)

Buccinum mirandum Smith 1875, p. 107; Kobelt 1883, p. 92, pl. 92, fig. 4; Pilsbry 1907, p. 245, pl. 19, fig. 5; pl. 20, fig. 5; Y. Hirase 1908, pl. 27, fig. 46; S. Hirase 1934, pl. 104, fig. 4.

Buccinum polare mirandum Kuroda 1935, p. 156.

Buccinum schrenckii Verkrüzen 1882, p. 212; Kobelt 1883, p. 81, pl. 90, fig. 3.

Material: Many specimens from Akkeshi.

Distribution: Hokkaido to Kuriles and Saghalien.

This is commonly collected with the fishing net of herring in summer. The specimens from Akkeshi are very variable in shape and in size as in many other northern whelks. Some of them agree quite well with Smith's *mirandum* and some with the typical *polare*, most of them being transitional forms among three named forms. *B. ochotense* is somewhat similar to the extremely varied form of this species. The figured specimen of *mirandum*-form measures 62.7 mm. in height and 41.1 mm. in breadth.

50. *Buccinum undatum middendorffi* Verkrüzen

(Pl. 4, figs. 1, 2; pl. 5, figs. 14, 15)

Tritonium (Buccinum) undatum schantaricum Middendorff 1851, p. 233, pl. 10, figs. 4-6 (non Middendorff 1851, p. 230).

Buccinum middendorffi Verkrüzen 1882, p. 213; Kobelt 1883, p. 76, pl. 89, fig. 2; Pilsbry 1907, p. 245, pl. 19, fig. 4; pl. 20, fig. 4; Y. Hirase 1908, p. 74, pl. 27, fig. 45; Kuroda 1935, p. 154; Kinoshita 1937, p. 14, pl. 4, fig. 23.

Buccinum schantaricum Iw. Taki 1933, p. 513; Kuroda 1935, p. 153; Kuroda et Kinoshita 1951, p. 19; Kira 1954, pl. 27, fig. 8.

Material: Many specimens from Akkeshi obtained with the fishing net of herring.

Distribution: Hokkaido; Saghalien and Kuriles.

This species shows distinctly sexual dimorphism. The female specimen bears a deep sinus at the upper part of the outer margin of the aperture, while in male it is shallow. The cusp on the hind margin of central tooth varies three to five in number. The figured specimen measures 63.8 mm. in height and 43.5 mm. in breadth (female) and 66.7 mm. by 46.0 mm (male).

Family Pyrenidae

51. *Mitrella bella* (Reeve)

(Pl. 2, fig. 17; pl. 4, fig. 14)

Columbella bella Reeve 1859, sp. 172.

Columbella martensi Lischke 1871, p. 40; Lischke 1871, p. 47, pl. 5, figs. 1-9.

Pyrene martensi Yen 1936, p. 216, pl. 18, fig. 36.

Pyrene bella Yen 1942, p. 227, pl. 22, fig. 144.

Pyrene (Mitrella) bella Kuroda et Kinoshita 1951, p. 16; Kira 1954, pl. 28, fig. 4.

Material: Many specimens collected from Lake Akkeshi together with *Batillaria cumingii* and two nassarids species.

Distribution: China; Formosa; Korea; Japan and Maritime Prov. of Siberia.

This is an elongate flat-sided form which dwells on the eel-grass meadow of the inshore waters. The figured specimen measures 19.6 mm. in height and 7.6 mm. in breadth. The central tooth of radula is very broad transversely but narrow vertically and the marginal is of two cusps;

52. *Mitrella burchardi* (Dunker)

(Pl. 1, fig. 17)

Amycla burchardi Dunker 1877, p. 67; Dunker 1882, p. 55, pl. 4, figs. 3, 4.

Mitrella burchardi Iw. Taki 1933, p. 511; Kinoshita et Isahaya 1934, p. 9, pl. 5, fig. 41.

Pyrene varians Yen 1936, p. 217, pl. 18, fig. 37 (non Dunker).

Pyrens (Mitrella) tenuis Kuroda et Kinoshita 1951, p. 16.

Pyrene (Mitrella) burchardi Kira 1954, pl. 28, fig. 9.

Material: Many specimens from Lake Akkeshi.

Distribution: China; Japan; Korea; Maritime Prov. of Siberia and Kamchatka.

This species differs from the above species and *M. bicincta* (Gould) which was well known as *M. varians* (Dunker), in having the inflated large body whorl. The figured specimen measures 15.7 mm. in height and 7.8 mm. in breadth.

Family Nassariidae

53. *Reticunassa acutidentatus* (Smith)

(Pl. 3, fig. 4)

Nassa acutidentata Smith 1879, p. 212, pl. 20, fig. 46; Y. Hirase 1908, p. 178, pl. 30, figs. 95, 96.

Nassarius dominatus S. Hirase 1934, pl. 106, fig. 11.

Nassarius (Tritonella) semiplicatus Kinoshita et Isahaya 1934, p. 10, pl. 8, fig. 56.

Nassarius acutidentatus Is. Taki 1951, pl. 106, fig. 11.

Nassarius (Reticunassa) acutidentatus Kuroda et Kinoshita 1951, p. 20.

Tritia (Reticunassa) acutidentata Kira 1954, pl. 28, fig. 12.

Material: Many specimens from Lake Akkeshi.

Distribution: Kyushu to Hokkaido.

The sculpture of this species consists of numerous small beads which are formed by the crossing of axial ribs and spiral cords. Colouration is yellowish grey with the blackish zones. The figured specimen measures 1.11 mm. in height and 6.0 mm. in breadth.

54. *Reticunassa fraterculus* (Dunker)

(Pl. 2, fig. 15)

Nassa fraterculus Dunker 1865, p. 230; Dunker 1860, pl. 1, fig. 15.

Nassa plebecula Gould 1859, p. 332.

Hima fratercula A. Adams 1870, p. 426.

Nassa fuscolineatus Smith 1875, p. 423.

Nassa hypolius Pilsbry 1895, p. 37, pl. 2, figs. 13, 14; Y. Hirase 1908, p. 178, pl. 30, figs. 98, 99.

Nassarius (Tritonella) hypolius Kinoshita et Isahaya 1934, p. 10, pl. 8, fig. 55.

Nassarius (Reticunassa) fraterculus hypolius Kuroda et Kinoshita 1951, p. 20.

Material: Many specimens from Lake Akkeshi.

Distribution: Kyushu to Hokkaido.

This blackish blue shell which is a form named *hypolius*, chiefly ranging in the northern region of Japan, has the strong axial ribs on the surface as the distinguishing character from the preceding species. The figured specimen measures 15.6 mm. in height and 8.3 mm. in breadth.

Superfamily Volutacea
Family Cancellariidae

55. *Admete couthouyi* (Jay)

(Pl. 1, fig. 14)

Cancellaria couthouyi Jay 1838, Boston Jour. Nat. Hist., 2, pl. 3, fig. 3; Jay 1839, p. 157.
Admete couthouyi Dall 1921, p. 84, pl. 16, fig. 7; Kuroda et Kinoshita 1951, p. 20; Abbott 1954, p. 252, fig. 55a.
Cancellaria (Tritonium) viridula Middendorff 1849, p. 439, pl. 9, figs. 13, 14, pl. 10, figs. 1-4.

Material: One specimen from Akkeshi Bay and one specimen from Volcano bay.

Distribution: Northern Honshu; Hokkaido to Bering Sea.

Whilst two specimens obtained are immature they are quite identical with the typical *Admete couthouyi* in having the distinct 15 axial ribs on the body whorl above the periphery and many spiral cords all over the surface. *A. middendorffi* Dall from Bering Sea is a more globose shell. *Cancellaria japonica* Smith is related to this form in shape, but that species has a more solid shell with less numerous ribs which are vanishing to the base of body whorl and with the distinctly folded columellar margin. The figured specimen from Akkeshi measures 11.9 mm. in height and 6.5 mm. in breadth.

Superfamily Conacea (Toxoglossa)
Family Turridae

56. *Aforia circinata* (Dall)

Pleurotoma circinata Dall 1873, p. 62, pl. 2, fig. 5.
Pleurotoma insignis Jeffreys 1883, p. 120.
Aforia circinata Dall 1921, p. 68, pl. 11, fig. 6; Kuroda et Kinoshita 1951, p. 21.
Turricula (Sulcula) hondoana Dall 1925, p. 25, pl. 31, fig. 6.
Leucosyrinx circinata Oshima 1838, p. 102, pl. 2.
Aforia diomedea Bartsch 1945, p. 389, figs. 11, 12; Kuroda et Kinoshita 1951, p. 21; Kira 1954, pl. 35, pl. fig. 14.
Aforia hondoana Bartsch 1945, p. 389, figs. 7, 8.
Aforia insignis Bartsch 1945, p. 391, figs. 13, 14.
Aforia olhotskensis Bartsch 1945, p. 391, figs. 1, 2.
Aforia sakhalensis Bartsch 1945, p. 392, figs. 3, 4.
Leucosyrinx (Aforia) circinata minatoensis Otuka 1949, p. 305, pl. 13, fig. 11.
Leucosyrinx diomedea Is. Taki 1951, pl. 115, fig. 8.

Material: Two specimens from off Kushiro.

Distribution: Japan Sea; Honshu (south to Sagami Bay); Okhotsk Sea and Bering Sea.

The shell is turreted and covered by the thin periostracum when perfect. The surface is marked by the spiral grooves below a strong median keel on the periphery. By Dr. Bartsch many species have been described from the Japanese seas, but they may be only local forms of *Aforia circinata* with a complete intergradation among them. Therefore, they certainly have no specific value. The examined specimen measures 86 mm. in length and 39.5 mm. in breadth.

57. *Antiplanes (Rectiplanis) sanctaioannis* (Smith)

Pleurotoma sanctaioannis Smith 1875, p. 416.

Antiplanes yessoensis Dall 1925, p. 4, pl. 21, fig. 3.

Pleurotoma sadoensis Yokoyama 1926, p. 259, pl. 32, fig. 3.

Antiplanes sadoensis Otuka 1949, p. 306, pl. 13, fig. 16.

Antiplanes (Rectiplanis) sanctaioannis Kuroda et Kinoshita 1951, p. 21.

Material: Many specimens from off Kushiro.

Distribution: Northern Honshu and Hokkaido.

This is an elongate-conic, dextral turrid species with the rather smooth greenish brown periostracum on the shell, the aperture of which has a deep but broad sinus on the outer lip. The examined specimen measures 39.4 mm. in height and 16.7 mm. in breadth. *Antiplanes perversa* Gabb is similar to this species in shape, but the shell is sinistral.

58. *Suavodrillia declivis* (v. Martens)

(Pl. 2, fig. 14; pl. 4, fig. 21)

Pleurotoma declivis v. Martens 1880, p. 39, pl. 9, figs. 2a, b.

Pleurotoma vertebrata Yokoyama (non Smith) 1922, pl. 1, fig. 26.

Suavodrillia declivis Kuroda et Kinoshita 1951, p. 21; Is. Taki et Oyama 1954, p. 25, pl. 21, fig. 26.

Material: Three specimens from Hanazaki.

Distribution: Shikoku; Honshu and Hokkaido.

This white species is quite characteristic in the highly elevated shell spire which bears a sharp peripheral angle on each whorl, forming the

pogoda appearance. The figured specimen measures 22.6 mm. in height and 8.8 mm. in breadth.

59. *Ophiidermella miyatensis* (Yokoyama)

(Pl. 2, fig. 13)

Pleurotoma (Mangelia) miyatensis Yokoyama 1920, p. 42, pl. 6, figs. 2a, b.

Lora miyatensis Onoyama 1938, p. 76, figs. 7-12.

Pseudomelatoma miyatensis Nomura et Zinbo 1940, p. 24, pl. 2, figs. 10a, b.

Ophiidermella miyatensis Is. Taki et Oyama 1954, p. 26, pl. 6, fig. 2.

Material: Only one specimen collected from Hanazaki.

Distribution: Northern Honshu and Hokkaido.

This dull brown species has an elongate shell, the surface of which is sculptured with the spiral cords in the varietal form *sematensis*. The axial ribs are vanishing away to the lower whorls. The specimen figured measures 22.8 mm. in height and 8.6 mm. in breadth.

60. *Oenopota okudai* n. sp.

(Pl. 3, fig. 7)

Material: Two specimens from Akkeshi Bay collected by the late Dr. S. Okuda.

This new species closely resembles *Oenopota pleurotomaria* (Couthouy) which is the type species of this genus, in shell appearance, but the former has a decidedly shorter spire by a half of the body whorl's length.

The shell is elongate ovate in shape with about seven whorls. The nuclear whorl is smooth and the succeeding whorls have a peripheral cord and distantly placed upper and lower cords which become weakened and the intercalated cords appear. Axial ribs are distinctly placed. The body whorl are provided with many spiral cords and oblique axial ribs along the sigmoid growth lines with regular intervals, vanishing towards the base. Aperture is rather narrow with the somewhat wide siphonal canal.

Height 17.4 mm. and breadth 12.2 mm. in the type specimen figured.

Height 12.3 mm. and breadth 5.6 mm. in the paratype specimen.

61. *Rhodopetoma erosa* (Schrenck)

(Pl. 3, fig. 3; pl. 4, fig. 20)

Pleurotoma (Clavatula) erosa Schrenck 1867, p. 17, figs. 5-7.

Lora erosa Kinoshita 1937, p. 11, pl. 5, fig. 38.

Rhodopetoma erosa Kuroda et Kinoshita 1951, p. 21.

Material: Four specimens from Akkeshi and two specimens from Hanazaki and one specimen from Nemuro.

Distribution: Hokkaido and Okhotsk Sea.

This is a rather small turrid species, the shell of which is light brown with the pale yellowish zone on the periphery and the white base. On the last whorl there are 10 to 15 strong oblique axial ribs with wider interspaces, ending half way to the base with rather widely spaced spiral grooves. The subsutural constriction is conspicuously impressed. The figured specimen from Hanazaki measures 17.6 mm. in height and 6.6 mm. in breadth.

62. *Rhodopetoma akkeshiensis* n. sp.

(Pl. 3, fig. 5)

Material: Two specimens obtained with the dredging in Akkeshi Bay by the late Dr. S. Okuda.

This new species is closely related to the preceding species in shape but is easily separable by the smaller size of the shell, having more numerous axial ribs on the body whorl, viz. 18 ribs in this species instead of 13 in that species. The shell is light rose in colour with the pale yellowish periostracum.

Height 10.4 mm. and breadth 4.7 mm. (type specimen here figured).

Height 10.8 mm. and breadth 4.9 mm. (paratype specimen).

63. *Obestoma schantarica* (Middendorff)

(Pl. 3, fig. 1)

Pleurotoma schantaricum Middendorff 1849, p. 118; Middendorff 1851, p. 223, pl. 12, figs. 17-19.

Bela schantaricum Tryon 1884, p. 214, pl. 34, fig. 76.

Lora schantarica Grant et Gale 1931, p. 1, 533.

Obestoma schantarica Kuroda et Kinoshita 1951, p. 21.

Material: Only one specimen collected from Nemuro.

Distribution: Hokkaido and Okhotsk Sea.

This globose shell is characterized by the weak but closely set spiral threads all over the surface, and axial ribs which are scarcely oblique and gradually reduced in size and fade away towards the body whorl from the earlier whorls. The specimen figured measures 24.4 mm. in height and 10.7 mm. in breadth.

64. *Obestoma hanazakiensis* n. sp.

(Pl. 3, fig. 2)

Material: Only one specimen from Hanazaki.

A closely allied species to the preceding one; the surface of the shell consists of about 18 distantly placed axial ribs on the body whorl which become weakened to the base, forming a shoulder angle on the upper end of ribs; the spiral ribs are more widely placed than that species. *Obestoma tenuilirata* and its variety *cymata* are another allied species, but their axial ribs debilitate towards the base of body whorl.

Height 17.8 mm. and breadth 8.1 mm. (type specimen figured).

65. *Obestoma uchidai* n. sp.

(Pl. 2, fig. 23)

Material: Eight specimens collected with the dredging in Akkeshi Bay by the late Dr. S. Okuda.

This small rose turrid species may belong to the genus *Obestoma*, slightly disagreeing by the possession of the distinct axial ribs on whorls. The shell is elongate ovate, the spire elevated and with six whorls. The body whorl occupies two-thirds of the shell length, on which there are 14 axial ribs with the interspaces between ribs as wide as a rib and densely-set weak spiral grooves from the suture to the obtuse shoulder. Nuclear whorls are smooth, and succeeded by the post-embryonic whorls with distantly-placed axial ribs and two spiral cords dividing the whorl

into three equal parts. On the lower whorls suture is deep, but without the subsutural constriction and two spiral cords gradually becomes weaker and weaker. Aperture is pyriform and elongate towards the rather wide siphonal canal anteriorly. The callus covers the parietal wall of the penultimate whorl.

Height 13.2 mm. and breadth 7.2 mm. (type specimen figured).

Height 12.9 mm. and breadth 6.2 mm. (paratype specimen).

Subclass Opisthobranchia
Order Pleurocoela (Tectibranchia)
Family Pyramidellidae

66. *Menestho akkeshiensis* n. sp.

(Pl. 3, fig. 6)

Material: Four specimens collected with the dredging in Akkeshi Bay.

Shell small, thin, white, polished, elongate ovate, imperforated; protoconch consists of at least two smooth whorls, the succeeding five whorls rounded; suture distinct; each whorl marked with three well incised spiral grooves; body whorl longer than a half of the shell length, with a rounded periphery and smooth base, sculptured with four spiral grooves between the periphery and suture; aperture oval, rounded anteriorly and acute posteriorly, outer margin thin and arched, columella somewhat thickened and reflexed, without a visible fold; umbilicus closed.

Height 3.4 mm. and breadth 1.7 mm. (figured type specimen).

This species differs from *M. exarata* A. Adams (which was renamed *M. exaratissima* by Dall and Bartsch by reason of the preoccupation), from Hakodate in having four spiral grooves on the body whorl above the periphery instead of seven ones in that species. *M. sexsulcata* Nomura is distinguished from this new species in having the more slender shell with six spiral grooves instead of four on the body whorl, and a slightly perforated umbilicus.

67. *Derjuginella* (n. gen.) *rufofasciata* (Smith)

(Pl. 1, fig. 19)

Stylopsis rufofasciata Smith 1875, p. 103.

Turbonilla (Pyrgolampros) vladivostokensis Bartsch 1929, p. 135, pl. 4, fig. 2.

Turbonilla (Pyrgolampros) petri Bartsch 1929, p. 135, pl. 4, fig. 3.

Turbonilla (Pyrgolampros) acosta Bartsch 1929, p. 136, pl. 4, fig. 5.

Syrnola (Stylopsis) rufofasciata Kuroda et Kinoshita 1951, p. 22.

Material: Two specimens from Akkeshi Bay with the dredging and also two specimens from Volcano Bay.

Distribution: Maritime Prov. of Siberia and Hokkaido.

The shell of this species is elongate conical covered, with the pale yellowish periostracum ornamented with golden brownish bands above and below the periphery, sometimes adding a third narrow band between the suture and upper band on the whorls, axial ribs run vertically on the surface, the number of which is 22 to 34, but they become evanescent on the lower whorls in the adult specimens and in some specimens they are missing altogether. The spiral striation is hardly observed to the naked eye. The whorl is slightly overhanging on the succeeding whorl. Aperture is ovate in shape, the outer margin of which is thin and gently arcuate, but the columellar margin is thickened and reflexed on the umbilicus which is perfectly closed.

This is separable from the genus *Pyrgolampros* Sacco, *Pyrgolampros mioperplicatulus* Sacco being the type species, in having the elongate conical shell of the eulimid appearance, with the flated sides and somewhat overhanging whorls. It seems that this new genus perhaps may be apart far from that genus systematically despite of the resemblance of shell characters, when the animal observed. The figured specimen measures 9.6 mm. in height and 4.0 mm. in breadth and the another specimen is 11.8 mm. by 4.2 mm.

This new genus is named in honour of Dr. K. Derjugin who was Professor of the University of Leningrad.

Subclass Pulmonata
Order Basommatophora
Family Siphonariidae

68. *Siphonacmea* (n. gen.) *oblongata* (Yokoyama)

(Pl. 2, figs. 3, 4)

Acmaea oblongata Yokoyama 1926, p. 288, pl. 34, fig. 14.

Acmaea angustitesta Yokoyama 1926, p. 288, pl. 34, fig. 10.

Lepeta (Cryptobranchia) angustitesta Hatai et Nishiyama 1925, p. 165.

Lepeta (Cryptobranchia) oblongata Hatai et Nishiyama 1925, p. 166.

Material: Several small specimens from Lake Akkeshi.

Distribution: Hokkaido; also Sado Island in Japan Sea as a Pliocene fossil.

Shell thin, conically elevated, ellipsoidal in shape, with almost parallel lateral sides. Apex obtuse, a little anterior to the centre. Surface with the weak growth lines only. On the interior of the shell is impressed the mantle scar which opens on the right side.

Length 13.1 mm., breadth 8.1 mm. and height 4.1 mm. (the specimen from Usu, Volcano Bay).

Length 10.5 mm., breadth 6.7 mm. and height 2.7 mm. (the specimen from the same locality).

The living specimen of this species collected on the leaves of eel-grass at the entrance of Lake Akkeshi are all immature, measuring 2.7 mm. in length and 2.1 mm. in breadth and 0.8 mm. in height in the figured largest specimen. This is a member of the marine pulmonate limpet in having the mantle scar opened side-wards. But, curious to say, this is alike the group of the American *Acmaea instabilis* in the shell characters superficially, except the manner of mantle line, owing to the same habitat of living on the eel-grass. This new genus differs from all known genera of the family Siphonariidae in having the quite smooth surface which covered with the distinct periostracum.

Besides the above the terrestrial molluscs, *Fruticicola (Ezohelia) flexibilis* (Fulton), *Succinea lauta* Gould, *Discus pauper* (Gould) and *Valonia costata tenera* Reinhardt were obtained at Akkeshi by the writer.

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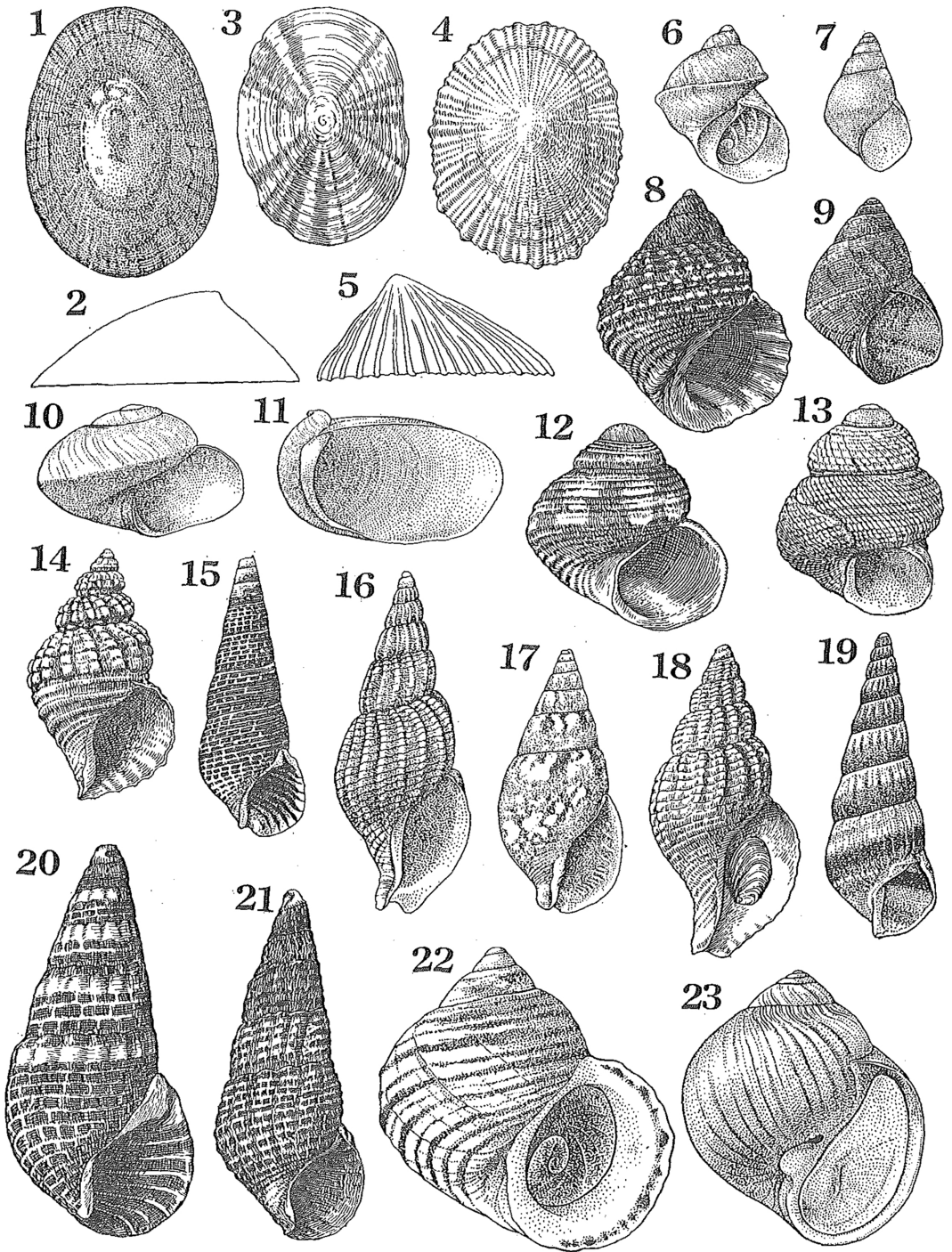
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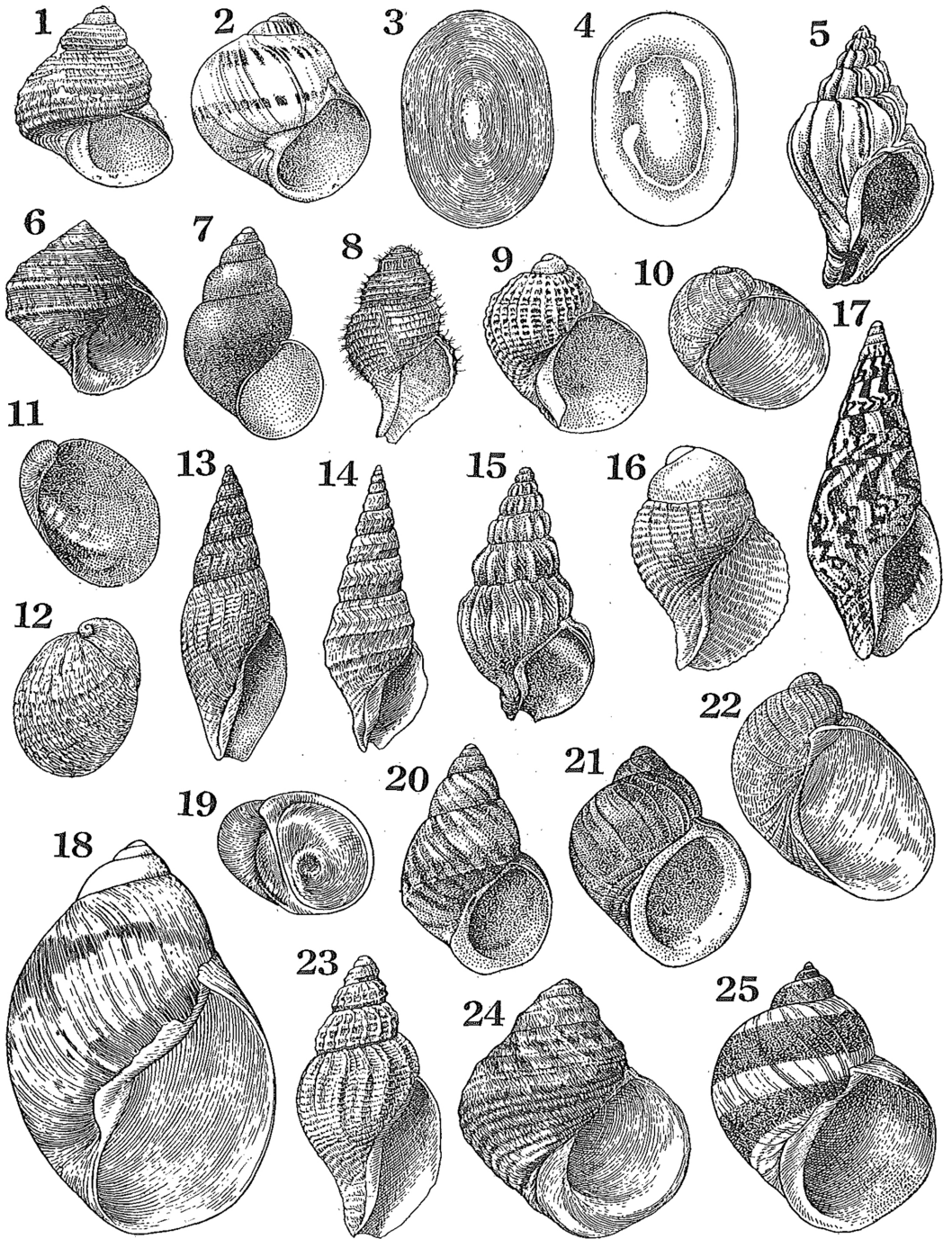
EXPLANATION OF PLATE I (Shells)

- Figs. 1, 2. *Collisella pelta* (Eschscholtz) from Akkeshi Bay.
Fig. 3. *Collisella? sybaritica* Dall from Akkeshi Bay.
Figs. 4, 5. *Aemaea (Niveopecten) pallida* (Gould) from Akkeshi Bay.
Fig. 6. *Stenotis carinifera* A. Adams from Iwate Pref., Honshu.
Fig. 7. *Falsicingula angustata* (Pilsbry) from Akkeshi Bay.
Fig. 8. *Nodilittorina granularis* (Gray) from Wakayama Pref., Honshu.
Fig. 9. *Temanelia turrita* A. Adams from Volcano Bay, Hokkaido.
Fig. 10. *Margarites pilsbryi* Kuroda et Habe from Akkeshi Bay.
Fig. 11. *Lamellaria uchidai* n. sp. from Akkeshi Bay.
Fig. 12. *Larularia iridescens* (Schrenck) from Yoichi, Hokkaido.
Fig. 13. *Homalopoma amussitata* (Schrenck) from Volcano Bay, Hokkaido.
Fig. 14. *Admete couthouyi* (Jay) from Akkeshi Bay.
Fig. 15. *Batillaria cumingii* (Crosse) from Lake Akkeshi, Hokkaido.
Fig. 16. *Plicifusus (Retifusus) plicatus* (A. Adams) from Akkeshi Bay.
Fig. 17. *Mitrella burchardi* (Dunker) from Lake Akkeshi, Hokkaido.
Fig. 18. *Plicifusus (Retifusus) brunneus* Dall from Akkeshi Bay.
Fig. 19. *Gerjuginella* (n. gen.) *rufofasciata* (Smith) from Akkeshi Bay.
Figs. 20, 21. *Batillaria multiformis* (Lischke) from Okayama Pref., Honshu.
Fig. 22. *Ezolittorina* (n. gen.) *squalida* (Broderip et Sowerby) from Akkeshi Bay.
Fig. 23. *Tectonatica janthostoma* (Deshayes) from Nemuro, Hokkaido.



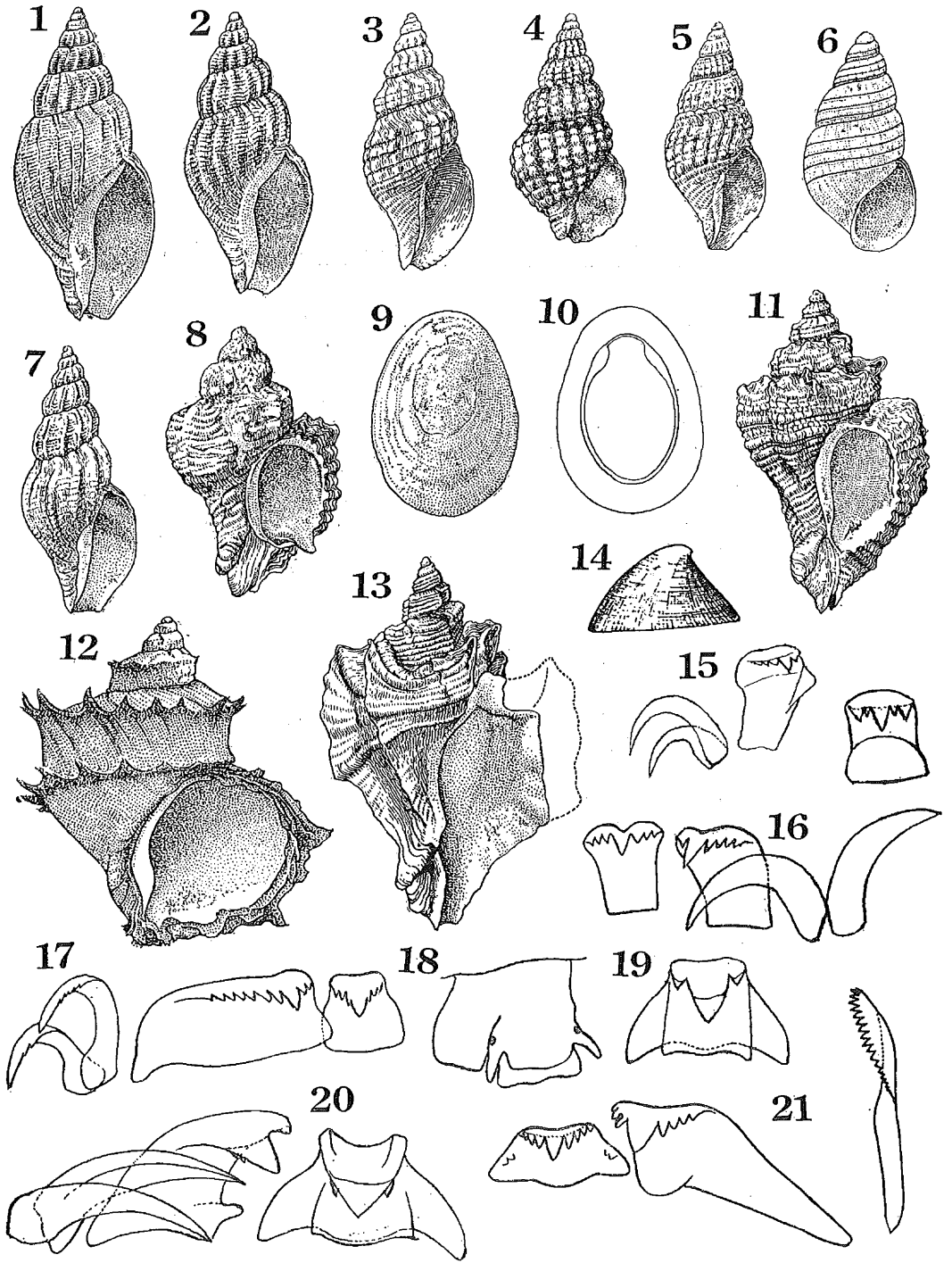
EXPLANATION OF PLATE II (Shells)

- Fig. 1. *Homalopoma sangarensis* (Schrenck) from Yoichi, Hokkaido.
Fig. 2. *Tectonatica hirasei* (Pilsbry) from Akkeshi Bay.
Figs. 3, 4. *Siphonacmea* (n. gen.) *oblongata* (Yokoyama) from Akkeshi.
Fig. 5. *Boreotrophon beringi* Dall from Akkeshi Bry.
Fig. 6. *Littorina mandschurica* (Schrenck) from Yoichi, Hokkaido.
Fig. 7. *Falsicingula kurilensis* Pilsbry from Akkeshi Bay.
Fig. 8. The young shell of *Fusitriton oregonensis* (Redfield) from Volcano Bay, Hokkaido.
Fig. 9. *Ariadna insignis* (Middendorff) from Hanazaki, Hokkaido.
Fig. 10. *Velutina (Limneria) bulla* n. sp. from Yoichi, Hokkaido.
Figs. 11, 12. *Velutina (Velutella) cryptospira* Middendorff from Akkeshi Bay.
Fig. 13. *Ophiodermella miyatensis* (Yokoyama) from Hanazaki, Hokkaido.
Fig. 14. *Suavodrillica declivis* (Martens) from Hanazaki, Hokkaido.
Fig. 15. *Reticunassa fraterculus* (Dunker) from Lake Akkeshi, Hokkaido.
Fig. 16. The young shell of *Neptunea (Barbitonia) arthritica* (Bernardi) in the egg capsule.
Fig. 17. *Mitrella bella* (Reeve) from Lake Akkeshi, Hokkaido.
Fig. 18. *Bulbus smithi* (Brown) from Nemuro, Hokkaido.
Fig. 19. *Stenotis uchidai* Habe from Akkeshi Bay.
Fig. 20. *Epheria decorata* (A. Adams) from Iwate Pref., Honshu.
Fig. 21. *Neritrema sitkana* (Philippi) from Akkeshi, Bay.
Fig. 22. *Velutina (Limneria) conica* Dall from Hanazaki, Hokkaido.
Fig. 23. *Obestoma uchidai* n. sp. from Akkeshi Bay.
Fig. 24. *Littorina brevicula* (Philippi) from Okayama Pref., Honshu.
Fig. 25. *Neritrema sitkana* (Philippi) (Paratype specimen of *Littorina atkana* Dall from Kyska Id, Alaska).



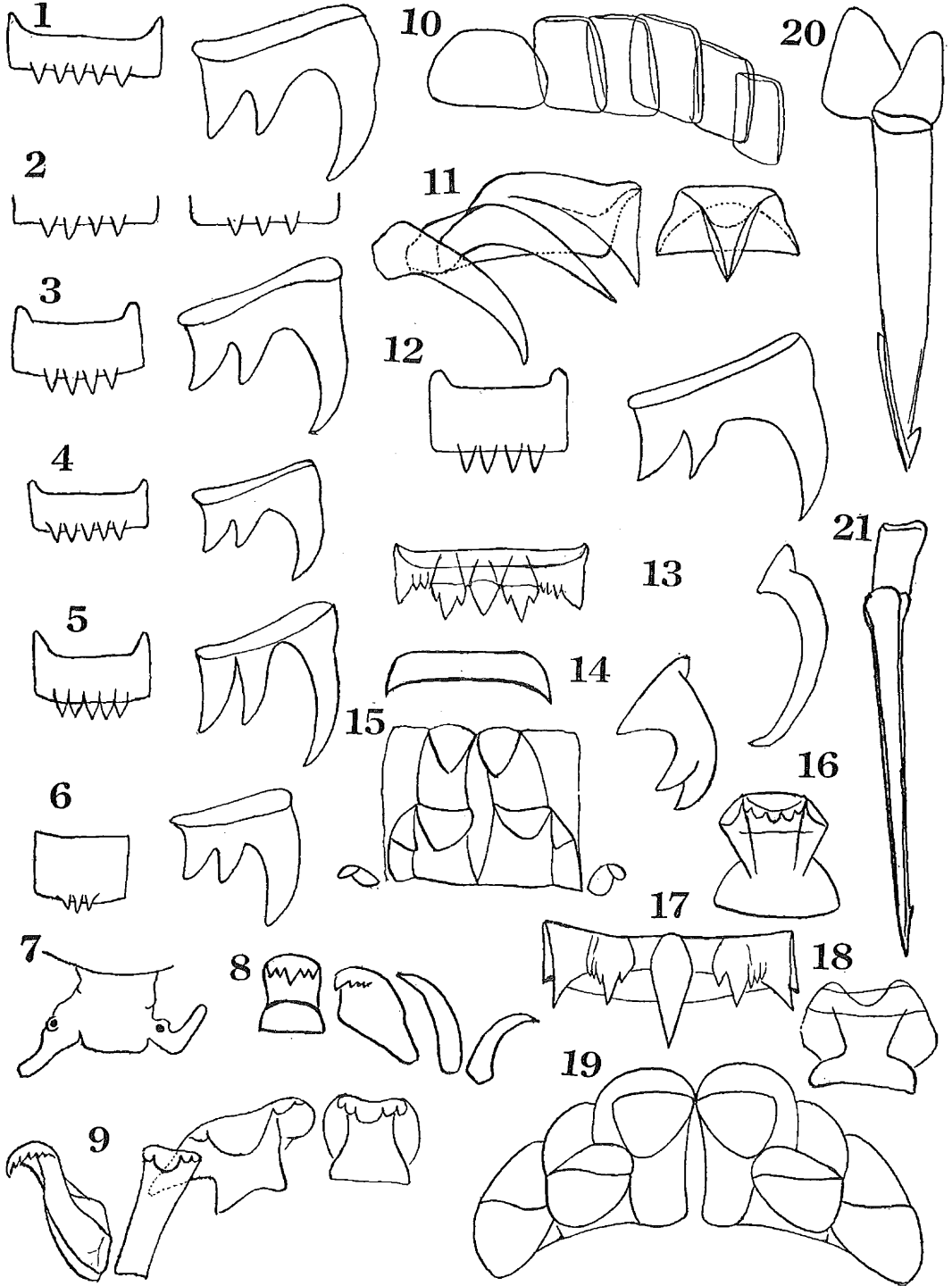
EXPLANATION OF PLATE III (Shells and radulae)

- Fig. 1. *Obestoma schantarica* (Middendorff) from Hanazaki, Hokkaido.
Fig. 2. *Obestoma hanazakiensis* n. sp. from Hanazaki, Hokkaido.
Fig. 3. *Rhodopetoma erosa* (Schrenck) from Hanazaki, Hokkaido.
Fig. 4. *Reticunassa acutidentatus* (Smith) from Lake Akkeshi, Hokkaido.
Fig. 5. *Rhodopetoma akkeshiensis* n. sp. from Akkeshi Bay.
Fig. 6. *Menestho akkeshiensis* n. sp. from Akkeshi Bay.
Fig. 7. *Oenopota okudai* n. sp. from Akkeshi Bay.
Fig. 8. *Ocenebra japonica* (Dunker) from Yoichi, Hokkaido.
Figs. 9, 10. Paratype specimen of *Cryptobranchia alba* Dall from off the eastern Siberia.
Fig. 11. *Ocenebra japonica* (Dunker) from Iwate Pref., Honshu.
Fig. 12. *Trichotropis bicarinatus* (Sowerby) from Nemuro, Hokkaido.
Fig. 13. *Ocenebra (Ocinebrellus) adunca* (Sowerby) from Nemuro, Hokkaido.
Fig. 14. *Cocculina japonica* Dall from off Cape Erimo, Hokkaido (after Dall).
Fig. 15. *Velutina (Limmeria) conica* Dall.
Fig. 16. *Velutina (Velutella) cryptospira* (Middendorff).
Fig. 17. *Crepidula grandis* Middendorff.
Fig. 18. Head of *Velutina (Velutella) cryptospira* Middendorff.
Fig. 19. Central tooth of *Tectonatica hirasei* (Pilsbry).
Fig. 20. *Tectonatica janthostoma* (Deshayes).
Fig. 21. Radula (omitted inner marginal tooth) of *Falsicungula kurilensis* (Pilsbry).



EXPLANATION OF PLATE IV (Radulae)

- Figs. 1, 2. *Buccinum undulatum middendorffi* Verkrüzen.
Fig. 3. *Buccinum ochotense* (Middendorff).
Fig. 4. *Buccinum chishimanum* Pilsbry.
Fig. 5. *Neptunea (Barbitonia) arthritica* (Bernardi).
Fig. 6. *Plicifusus (Retifusus) plicatus* (A. Adams).
Fig. 7. Head of *Velutina (Limmeria) bulla* n. sp.
Fig. 8. *Velutina (Limmeria) bulla* n. sp.
Fig. 9. *Ezolittorina* (n. gen.) *squalida* (Broderip et Sowerby).
Fig. 10. *Lirularia iridescens* (Schrenck).
Fig. 11. *Trichotropis bicarinatus* (Sowerby).
Fig. 12. *Volutharpa ampullacea* (Middendorff).
Fig. 13. *Ocenebra adunca* (Sowerby).
Fig. 14. *Mitrella bella* (Reeve).
Fig. 15. *Collisella pelta* (Eschscholtz).
Fig. 16. Central tooth of *Stenotis uchidai* Habe.
Fig. 17. Central tooth of *Polytropa lamellosa* (Gmelin).
Fig. 18. Central tooth of *Epheria decorata* (A. Adams).
Fig. 19. *Acmaea (Niveotectura) pallida* (Gould).
Fig. 20. *Rhodopetoma erosa* (Schrenck).
Fig. 21. *Suavodrillia declivis* (Martens).



EXPLANATION OF PLATE V (Shells and radulae)

- Figs. 1, 2. *Cryptobranchia lima* (Dall) from Volcano Bay, Hokkaido.
Fig. 3. *Tectonatica severa* (Gould).
Fig. 4. *Cryptobranchia lima* (Dall).
Figs. 5, 6. *Crepidula grandis* Middendorff from Nemuro, Hokkaido.
Fig. 7. *Tectonatica russa* (Gould) from Volcano Bay, Hokkaido.
Fig. 8. *Eupira pila* (Pilsbry) from Akkeshi Bay.
Fig. 9. *Buccinum polare mirandum* Smith from Akkeshi Bay.
Fig. 10. *Buccinum ochotense* (Middendorff) from Hanazaki, Hokkaido.
Fig. 11. *Polytropha freycinetii* (Deshayes) from Akkeshi Bay.
Fig. 12. *Polytropha lamellosa* (Gmelin) from Akkeshi Bay.
Fig. 13. *Neptunea (Barbitonia) arthritica* (Bernardi) from Akkeshi Bay.
Fig. 14. *Buccinum undulatum middendorffi* Verkrüzen (male) from Akkeshi Bay.
Fig. 15. The same (female) from Akkeshi Bay.
Fig. 16. *Haustator (Neohaustator) fortivata* (Sowerby) from Volcano Bay, Hokkaido.
Fig. 17. *Volutharpa ampullacea* (Middendorff) from Akkeshi Bay.
Fig. 18. *Buccinum chishimanum* Pilsbry from Hanazaki, Hokkaido.
Fig. 19. *Neptunea lyrata* (Gmelin) from Iwate Pref., Honshu.
Fig. 20. *Neptunea soluta* (Hermann) from Akkeshi Bay, Hokkaido.
Fig. 21. *Fusitriton oregonensis* (Redfield) from Northwest coast of America.

