or lesser extent, of the dark pectoral blotch covered with light spots:—one, $12\frac{1}{2}$ inches long, from the Propontis; another, $9\frac{1}{2}$ inches long, from Dalmatia; a third, of the same size, from Naples; and a fourth, $7\frac{1}{2}$ inches in length, from Sicily.

As no structural difference is observable between *T. pæcilopectera* and *T. hirundo*, except such as may be due to age, I think we are justified in considering the former the immature of the latter; while the immature colours may be continued (although less decidedly) to the adult age, this difference being restricted to the inner side of the pectoral fin.

Whether Thompson's specimen was *T. hirundo* or *T. lineata* is open to grave doubt. He says:—"10 dorsal spines . . . lateral lines spinous;" and as to colours, "I have little doubt that when recent it would in colour have corresponded. So I conclude it did not correspond when he received it from Mr. Ball, who obtained the single example, 2 inches in length, from among some sprats captured at Youghal, in Ireland. A *Trigla* possessing ten dorsal spines and a spinous lateral line is unlikely to be *T. pæcilopectera*, which has nine dorsal spines and a smooth lateral line.

EXPLANATION OF PLATE XVIII.

Trigla hirundo, from a specimen in the author's collection obtained near Southend: *a.* Stomach and cæcal appendages; *b.* Air-bladder; *c.* Pectoral fin (inner side).

11. On a Collection of Mollusca from Japan. By EDGAR A. SMITH, F.Z.S., Zoological Department, British Museum.

[Received January 28, 1879.]

(Plates XIX., XX.)

A large collection of Japanese Mollusca, containing very many new and most interesting forms, has been presented to the British Museum by Dr. J. Gwyn Jeffreys, F.R.S., with his wonted liberality. It is a most valuable addition to the series of species from the same region which was placed in the national collection a few years ago by the same gentleman. That series, of which a brief account of the Gastropoda only appeared in the 'Annals and Magazine of Natural History' for 1875, was dredged by Capt. H. C. St. John, of H.M.S. 'Sylvia.' The specimens now to be considered were derived from the same source; and the highest praise must be accorded to Capt. St. John for the excellent manner in which they have been collected and preserved. Most of them are from the region of the Goto islands; and to save the continual repetition of the longitude, latitude, and depths of the various stations, a list of them with consecutive numbers is appended below; so that for the locality of each species only the number of the station will be quoted.

List of the Stations.

Station 1. Goto Islands in the Korean Channel, $33^{\circ} 19'$ N. lat., $129^{\circ} 7'$ E. long.; 50 fathoms.

Station 2. East of Goto Islands, $32^{\circ} 43'$ N. lat., $129^{\circ} 28'$ E. long.; 58 fathoms.

Station 3. West of Goto Islands, $33^{\circ} 10'$ N. lat., $128^{\circ} 51'$ E. long.; 54 fathoms.

Station 4. Low-water mark, Goto Islands.

Station 5. Ojica Bay, Goto Islands, $33^{\circ} 12\frac{1}{2}'$ N. lat., $129^{\circ} 5'$ E. long.; 10 fathoms.

Station 6. Ibid. On rocks at low water.

Station 7. Goto Islands, $32^{\circ} 49'$ N. lat., $128^{\circ} 54'$ E. long.

Station 8. Ukushima, Goto Islands, $33^{\circ} 15\frac{1}{2}'$ N. lat., $129^{\circ} 5'$ E. long.; 11 fathoms.

Station 8*. Ibid. $33^{\circ} 16'$ N. lat., $129^{\circ} 4'$ E. long. Among rocks at low water.

Station 9. East of Goto Islands, $33^{\circ} 10'$ N. lat., $129^{\circ} 12'$ E. long.; 36 fathoms.

Station 10. East of Goto Islands, $33^{\circ} 4'$ N. lat., $129^{\circ} 18'$ E. long.; 23 fathoms.

Station 11. West of Goto Islands, $33^{\circ} 2\frac{1}{2}'$ N. lat., $128^{\circ} 48\frac{1}{2}'$ E. long.; 22 fathoms.

Station 12. North of Goto Islands, $33^{\circ} 19'$ N. lat., $129^{\circ} 7\frac{1}{2}'$ E. long.; 50 fathoms.

Station 13. East of Goto Islands, $32^{\circ} 47'$ N. lat., $129^{\circ} 5'$ E. long.; 46 fathoms.

Station 14. East of Goto Islands, $32^{\circ} 48\frac{1}{2}'$ N. lat., $129^{\circ} 6'$ E. long.; 47 fathoms.

Station 15. East of Goto Islands, $33^{\circ} 15'$ N. lat., $129^{\circ} 18'$ E. long.; 40 fathoms.

Station 16. West of Goto Islands, $33^{\circ} 8'$ N. lat., $128^{\circ} 46'$ E. long.; 60 fathoms.

Station 17. West of Goto Islands, $33^{\circ} 14'$ N. lat., $128^{\circ} 55'$ E. long.; 40 fathoms.

Station 18. East coast of Kii, south of Nippon.

Station 19. East of Kii, $34^{\circ} 13'$ N. lat., $136^{\circ} 13'$ E. long.; 48 fathoms.

Station 20. East of Kii, $34^{\circ} 11'$ N. lat., $136^{\circ} 25'$ E. long.; 56 fathoms.

Station 21. Between south-western extremity of Nippon and the island of Shikoku, $33^{\circ} 45\frac{1}{2}'$ N. lat., $132^{\circ} 30'$ E. long.; 30 fathoms.

Station 22. Inland sea between Shikoku and Nippon, $34^{\circ} 31'$ N. lat., $133^{\circ} 40'$ E. long.; 22 fathoms.

Station 23. Channel between the east end of Shikoku island and the Kii peninsula, $33^{\circ} 52'$ N. lat., $135^{\circ} 4'$ E. long.; 30 fathoms.

Station 24. Gulf of Yedo, $35^{\circ} 24'$ N. lat., $139^{\circ} 43'$ E. long.; $10\frac{1}{2}$ fathoms.

Station 25. South of Nippon, $34^{\circ} 12'$ N. lat., $136^{\circ} 28'$ E. long.; athoms.

Station 26. West of Nagasaki, $32^{\circ} 43'$ N. lat., $129^{\circ} 28'$ E. long.; 40–58 fathoms.

Station 27. North of Kiushiu, $33^{\circ} 56'$ N. lat., $130^{\circ} 27'$ E. long.; 30 fathoms.

Station 28. Satsuma Bay, south Kiushiu.

Station 29. South of Korea, $34^{\circ} 8'$ N. lat., $126^{\circ} 24'$ E. long.; 24 fathoms.

Station 30. South of Korea, $33^{\circ} 42'$ N. lat., $127^{\circ} 40'$ E. long.; 51 fathoms.

Station 31. South of Korea, $34^{\circ} 30'$ N. lat., $125^{\circ} 44'$ E. long.; 20 fathoms.

Station 32. South of Korea, $34^{\circ} 19'$ N. lat., $124^{\circ} 57'$ E. long.; 12 fathoms.

GASTROPODA.

1. *TEREBRA EVOLUTA*, Deshayes.

Terebra evoluta, Deshayes, P. Z. S. 1859, p. 292; Reeve, Conch. Icon. xii. f. 55.

Hab. Station 8.

Like the specimens which were mentioned by me in the 'Annals and Magazine of Natural History' 1875, these also from the Goto Islands are much smaller than the type, which seems to be of very unusual dimensions. The Goto specimens differ from the type and the others from Matoza Harbour in having a much narrower sulcus at the upper part of the whorls, from which circumstance the infrasutural band is broader. The colouring and sculpture are the same.

2. *TEREBRA GOTOENSIS*. (Plate XIX. figs. 1–1 a.)

Shell subulate, pale brown or fawn-colour, with a white band spotted with brown at the upper part of the whorls, and with a white narrow zone round the middle of the last whorl: volutions 16; the two apical ones white, smooth, subglobose, the rest almost flat, only very faintly constricted towards the upper part, where they are unequally divided by a transverse shallow groove, longitudinally ribbed and very finely striated, the striae being inconspicuous to the naked eye and scarcely developed at all on the ribs; the latter are but little raised, arcuate, and divided at the upper part by the spiral furrow, and number about 24 on the penultimate whorl; costae on the last volution obsolete at the periphery: columella white, oblique at the base, straightish at the upper part; canal short, recurved, oblique.

Length 25 millims., diameter 5.

Variety. Shell more slender, similarly sculptured; spots on infrasutural band dark brown; rest of surface purplish brown, variegated with white patches. Length 29 millims.; breadth $4\frac{2}{3}$. (Fig. 1 a.)

Hab. Station 1. Var., Japan.

The brown spots on the white zone at the top of the whorls are somewhat distant from one another, of a transversely oblong subquadrate form. Below these are other less conspicuous spots placed

under them, so that the upper series might be said to be subdivided by the spiral furrow which separates them. The general tone of the shell is light brown or fawn; but a few of the upper whorls are of a more or less lilac tint. The variety, from its slenderness and different coloration, appears at first sight almost specifically distinct; its sculpturing, however, is of precisely the same character as that of the typical form. The painting of *T. alveolata*, Hinds, resembles that of this species very much; but its sculpture is a great deal coarser.

3. *TEREBRA JEFFREYSII*. (Plate XIX. fig. 2.)

Shell subulate, dirty yellowish, dotted and streaked with light brown. Whorls 13 to 14; the two nuclear ones proportionally very large, globose, white, shining; the rest flat, bearing numerous oblique, but little raised fine costæ (about 20 on a whorl), and spirally striated, the striæ cutting through the riblets and giving them a nodulous appearance: the striæ number about five on a whorl; of these the two uppermost are twice as far apart as the three following, and consequently the spaces between them are wider and more conspicuous; the ends of the costæ cut off by the two uppermost striæ are prominently nodulous, and form two distinct series of granules, whereof the upper are more elongate than the lower. The body-whorl is but very faintly angled at the middle; the costæ upon it terminate abruptly at that part, and are only continued to the base in a very obsolete manner; thus the lower half of the whorl is comparatively smooth to the upper portion, and the spiral or concentric striæ are also less pronounced than those above. The aperture is small, light brown, and exhibits traces of one or two pale narrow zones. The canal is short, oblique, and slightly recurved: the columella is straight or nearly so in the middle and oblique at the base, and covered with a thin, shining, whitish callosity.

Length 25 millim., diam. 5.

Hab. Stations 20 and 21.

This species is remarkable on account of the unusually large size of the nuclear whorls. The colour is rather indistinct, as most of the specimens are more or less coated with a cretaceous deposit; however, it appears to be luteous or dirty yellow, dotted with light brown between the two series of nodules, and streaked with the same colour beneath, and the body-whorl has a pale zone at the middle.

4. *TEREBRA TORQUATA*, Adams & Reeve.

Terebra torquata, Adams & Reeves, Voy. Samarang, p. 30, pl. 10. fig. 13; Reeve, Conch. Icon. vol. xii. fig. 69.

Hab. Station 14. China Sea (*A. Adams*).

This species must not be confounded with *T. fenestrata*, Hinds. The latter is very similarly sculptured, but lacks the variegated painting of *T. torquata*.

5. *TEREBRA TEXTILIS*, Hinds.

Terebra textilis, Hinds, P. Z. S. 1843, p. 156; id. Voy. Sulphur,

p. 34 ; id. Sowerby's Thesaur. Con. vol. i. pl. 44. fig. 73 ; Reeve, Conch. Icon. vol. xii. fig. 130.

Hab. Station 18. Philippines (*Cuming*); Straits of Macassar (*Hinds*); Ovalau, Fiji Islands (*Macgillivray in Brit. Mus.*).

6. *TEREBRA SUBTEXTILIS*. (Plate XIX. fig. 3.)

Shell subulate, entirely white : whorls probably about 22, the few apical ones being broken off ; they are a little convex, finely ribbed, and spirally grooved ; costæ about 20 on a whorl, arcuate, constricted a little below their upper extremities by a spiral furrow, which in the interstices between the ribs is comparatively deeply pitted ; transverse striæ rather deep, more or less obsolete on the costæ, about ten in number on a whorl, whereof three are above the pitted sulcus, and the rest below it ; the ribs on the last whorl are arcuate above and flexuous at the base, to which they attain ; the lower part of the whorl is also transversely sulcated like the upper portion ; columella covered with a distinct callosity ; canal short, rather broad and recurved.

Length 37 millims., diam. 6.

Hab. Station 21.

This species to a certain extent has the characters of *T. textilis*, *Hinds*. From it, however, it may be known by its more convex and broader whorls, its greater size, and the more numerous spiral sulci or striæ, which in this species are present on the infrasutural band as well as below the pitted groove, whilst in *T. textilis* they only exist on the latter portion of the whorls, leaving the upper part plain, with the exception of the cut-off terminations of the costæ. These striæ are of different magnitudes, so that the interstices also vary in size and also in their degree of elevation. The sculpture of *T. polygyrata*, *Desh.*, is similar in character, but much finer. That, too, is a coloured species and smaller.

7. *TEREBRA TANTILLA*, Smith. (Plate XIX. fig. 4.)

Myurella tantilla, Smith, Ann. & Mag. Nat. Hist. 1873, vol. xi. p. 270.

Myurella pumilio, Smith, *l. c.* p. 269.

Hab. Station 21. Persian Gulf (*Col. Pelly in Brit. Mus.*).

The specimens described under the name of *T. tantilla* were in bad, faded condition ; and hence it was that the third band on the body-whorl escaped observation. I am now convinced of the identity of *P. tantilla* and *T. pumilio*.

8. *TEREBRA ALBOZONATA*, Smith. (Plate XIX. fig. 5.)

Terebra albozonata, Smith, Ann. & Mag. Nat. Hist. 1875, vol. xv. p. 415 ; *l. c.* 1877, vol. xix. p. 226.

Hab. Station 27. Matoza Harbour (*l. c.*).

It is satisfactory to have obtained a second, although young, example of this species agreeing perfectly with the type.

I take this opportunity of changing the name of a species of

Terebra described by me as *granulosa* in the Ann. & Mag. Nat. Hist. 1873, vol. xi. p. 268: I propose to call this interesting Japanese form *T. pustulosa*.

9. *PLEUROTOMA FUSCA*, var., Hombron & Jacquinot.

Pleurotoma fusca, var., Hombron & Jacquinot, Voyage au Pôle Sud, Zoologie, vol. v. p. 111, pl. 25. figs. 19, 20.

Shell fusiform, pale horn-colour, with a white band round the middle of the whorls, brownish at their upper part: whorls 10; first three convex, the rest strongly keeled above at the suture; beneath this keel they are concavely sloping, prominently carinated at the middle, the carina being white and bearing small close-set nodules; beneath and above this series of nodules the whorls are ornamented with three or four spiral thread-like liræ and oblique lines of growth; last whorl whitish at the lower extremity, with a brownish somewhat indistinctly defined band around the middle, and encircled with about 15 liræ below the white carina; mouth and canal occupying rather less than half the entire length of the shell; slit in the labrum small, situated at the termination of the prominent white keel; canal narrow, produced, and a little recurved.

Length 17 millims., diam. 5.

Hab. Stations 1 and 21. "Torres Straits" (*Hombron & Jacquinot*).

Although in some respects like the Californian *P. gemmata*, Hinds, nevertheless, on comparison with that species, the present one appears sufficiently distinct for specific rank. It has a less slender spire and is strongly carinated beneath the suture, whilst *P. gemmata* is described by Hinds as having two small keels parallel with the suture; and Reeve ('Conchologia Iconica,' i. sp. 83) refers to these keels as "two very distinct elevated lines." A second, rather deep sinus is situated in the outer lip, about halfway between the suture and the caudal extremity. This character is not referred to by Hombron & Jacquinot; but if the labrum of their single specimen were broken (and this is very possible, judging from the figure of it), of course the slit would not be present. The name *fusca* has been employed earlier for a species in this family by C. B. Adams; but as that belongs to a different section, I think it unadvisable to alter the name of the present.

10. *PLEUROTOMA MARMORATA*, Lamarck.

Pleurotoma marmorata, Kiener, Coq. Viv. pl. 6. fig. 11; Reeve, Conch. Icon. vol. i. fig. 21; jun. = *Pl. hastula*, Reeve, l. c. fig. 139.

Hab. Station 21.

Other localities are:—the Straits of Malacca; Shanghai; Ticao, Philippines; and Ovalau, Fiji Islands.

11. *PLEUROTOMA VERTEBRATA*, Smith. (Plate XIX. figs. 6–6 a.)

Hab. Stations 21 and 27.

The description of this species in the 'Annals and Magazine of Natural History,' 1875, vol. xv. p. 416, was based upon specimens

from the Persian Gulf (fig. 6). The Japanese examples (fig. 6'a) differ in a slight measure: they are a trifle narrower, have a very slightly more elongated canal; and the apex is brown instead of pale violet as in the typical form. In sculpture and colouring they are identical.

12. *PLEUROTOMA NIPONICA*. (Plate XIX. fig. 7.)

Shell shortly fusiform, light brown: whorls $6\frac{1}{2}$; nucleus consisting of $1\frac{1}{2}$, rather large, globose, glassy shining; the four whorls following strongly keeled around the middle, concave above, with two or three fine spiral liræ, and also concave below the carina, margined at the upper and lower boundaries by a fine thread-like lira, arcuately or flexuously elevatedly striated above the carina, and obliquely, but in an opposite direction, beneath it; the last whorl encircled beneath the principal keel by about ten liræ, whereof the uppermost is the stoutest, the rest gradually becoming finer towards the base; the interstices between them crossed by elevated striæ or lines of increment. Aperture small, brownish, occupying about three sevenths of the entire length of the shell; slit situated in the concavity above the principal carination; columella a little convex or prominent in the middle, and oblique below it; canal short, scarcely recurved.

Length 7 millims., width $2\frac{1}{2}$.

Hab. Station 21.

This pretty shell is recognizable by the strong central keel to the whorls, which are excavated above and below, and the raised striæ on the upper portion are obliquely flexuous towards the right, whilst those below the carina are obliquely straight and inclined to the left.

13. *PLEUROTOMA DIFFICILIS*. (Plate XIX. fig. 8.)

Shell shortly fusiform, brownish horn-colour. Whorls nearly flat, strongly keeled a little below the middle, and above at the suture, with one or two thread-like spiral liræ in the spaces between these two carinæ and between the subcentral one and the suture below it; lines of growth moderately distinct, raised, flexuous, and more or less oblique; nucleus (or the three apical whorls) smooth, glassy, shining, convex; the fourth also convex and coarsely obliquely costate; last whorl encircled by about ten coarsish liræ, whereof the three uppermost are equal in size to the submedian carina of the upper whorls, which falls just above them on this volution; the interstices between them coarsely striated by the lines of growth. Aperture small, occupying three sevenths of the entire length; columella brown, coated with a smooth enamel, oblique below the middle; slit above the submedian liration; canal short, very little recurved. Operculum ovate, pointed at the base; nucleus apical.

Length 7 millims., width $2\frac{1}{2}$.

Hab. Stations 21 and 27.

Of this species there are two specimens in the collection. In both there are two fine thread-like liræ in the interstice between the upper and submedian keels on the last two whorls; but the upper one gradually becomes obsolete on ascending the spire. The upper of the

two fine liræ in the inframedian space also gradually disappears or attenuates on the upper whorls.

14. *PLEUROTOMA TRIPORCATA*. (Plate XIX. fig. 9.)

Shell shortly fusiform, of a uniform pale brown or luteous tint. Whorls 9, the first globular, glassy, rather large, the rest encircled with three distinct keels: the uppermost is just beneath the suture; the median one (the most prominent of all) is situate in the middle of the whorls, and the lowermost a little above the lower suture: the interstices between the carinations are finely latticed with spiral thread-like liræ and raised incremental lines; the former are about three or four in number in each of the interstitial spaces, and the latter very arcuate between the central and uppermost keel, and very oblique beneath the former: the body-whorl has about twelve additional carinæ or liræ, whereof the four uppermost are stouter and further apart than those beneath. Columella a little oblique and arcuate above the middle, more sloping below; labrum thin, very much produced in the middle, widely and deeply notched between the terminations of the uppermost and principal keels; canal short, recurved.

Length 14 millims., diam. $4\frac{1}{2}$.

Hab. Station 1.

This is another species belonging to the same section of the genus *Pleurotoma* as the three preceding. They are all sculptured with the same character of ornamentation; yet in detail it is very distinct, and they also show good differences in the nuclear whorls.

15. *PLEUROTOMA PATRUELIS*, Smith. (Plate XIX. fig. 10.)

Pleurotoma (—?) *patruelis*, Smith, Ann. & Mag. Nat. Hist. 1875, vol. xv. p. 419.

Hab. Gulf of Yedo, $10\frac{1}{2}$ fathoms.

The specimen from the above locality agrees precisely with the type in colour and sculpture, but it is rather more robust. It is $25\frac{1}{2}$ millims. long, and 8 broad. When describing this species I was unable to give any account of the labrum, as, unfortunately, it was broken away in the only specimen at hand. In the perfect shell it is thin, prominent in the middle, and broadly sinuated at the upper part in the concavity of the whorl. Columella a little oblique, covered with a callosity, thickest towards the base. Operculum sub-ovate, concentric, nucleus subcentral, but rather towards the inner or columellar side (fig. 10 a).

16. *PLEUROTOMA CONSIMILIS*. (Plate XIX. fig. 11.)

Shell ovately fusiform, turreted, pale fleshy brown. Whorls 8; the first globular, glassy, smooth, the rest concave above, angled at the middle and a little concave below the angle, longitudinally flexuously obsoletely plicated; plicæ obsoletely nodulous above at the suture, bearing larger nodules at the angle and two smaller ones beneath it; nodules connected by spiral liræ between the plicæ, which are coarser than other intermediate fine spiral lirations; the last whorl encircled

by about fourteen of these transverse liræ, whereof nearly all, with the exception of a few at the base, are more or less granular on the plicæ. Aperture equalling about two fifths of the entire length of the shell, light brown; fissure in the lip, below the suture, and above the nodulous angle, broad and moderately deep; labrum thin, prominent in the middle, with a very shallow sinuation near the base, smooth and not lirated within; columella callous at the base; canal very short. Operculum elongate, rather acuminate at both ends; nucleus terminal.

Length $18\frac{1}{2}$ millims., diam. $6\frac{1}{2}$.

Hab. Station 29. Also China Seas (*Mus. Cuming*).

The style of sculpture of this species is considerably like that of *P. metcalfei*, Angas. However, the whorls are fewer, the nuclear one being larger, the last proportionally broader. The few lirations within the lip of that species are wanting in the present one; and the tubercles around the middle of the whorls are less oblong than in *P. metcalfei*.

17. DRILLIA PERADMIRABILIS. (Plate XIX. fig. 12.)

Shell robustly fusiform, whitish or yellowish white, stained with brown beneath the suture, and obscurely banded with the same colour about the middle of the last whorl, spotted and dotted with a lighter tint irregularly over the rest of the surface, but leaving a plain white zone at the angulation of the whorls and a second just above the median brown one on the last whorl; apex white. Volutions $8\frac{1}{2}$; one and a half nuclear smooth, globose; the rest concavely sloping above, then obtusely angled about the middle, rounded, and much contracted beneath, obliquely plicated and spirally lirated; plicæ rounded, oblique, but little elevated, more or less obsolete at the upper part. Transverse liræ most beautifully and finely granulated, separated by deep-cut striæ of different sizes, those in the concavity of the whorls subequal and finer than those beneath, which, again, are not all of uniform tenuity; on the penultimate whorl they number about 20, and on the last as many as 55; those around the lower part of the last whorl are pretty regularly alternately larger and small, the latter being the more granulous. The body-whorl is contracted at the lower part, and is destitute of the plicæ on about a third of its extent near the lip. Aperture together with the canal a little less than half the length of the shell, brownish within, with a single white central zone, and a white patch parallel with the margins of the lip, corresponding to a stout exterior submarginal varix, and stained with dark brown between this and the thin prettily crenulated edge of the labrum, which is curved and very shallowly sinuated towards the base, and finely sulcated within, but at the edges; sinus deep, at the suture; columella a little oblique and tortuous, whitish, without markings or callosity, only furnished with a small whitish tripartite tubercle at the upper part, just a little below the sinus, and connected with the suture by a thin callus.

Length 23 millims., diam. $7\frac{1}{2}$.

Hab. Stations 1 and 32.

The example of this most wonderfully sculptured species from the latter locality is a little darker in colour than the other. The marking on the upper part of the whorls and the bands on last volution are of a dull purplish brown.

18. *DRILLIA NAGASAKIENSIS*. (Plate XIX. fig. 13.)

Shell elongate, turreted, luteous. Whorls 9; two apical brown, smooth, convex; the rest keeled above at the suture, somewhat excavated beneath the carina, then convex at the sides, which contract inwards towards the base; they are closely ribbed and transversely grooved; the costæ are rounded, oblique, sixteen on the penultimate volution, and do not quite attain to the suture, but become obsolete in the sloping concavity above; the spiral ridges between the sulci number eight on the penultimate whorl; of these the three uppermost are very fine and situated in the concavity above, the rest are much coarser and subnodulous on the costæ; the latter are attenuated inferiorly on the last volution, and become obsolete a little below the middle; one of them near the tip is considerably enlarged in the form of a varix; the spiral sulcation also extends over the entire surface. Aperture rather small, occupying a third of the entire length, light brown within; labrum thin, much produced and arcuated at the middle, broadly and deeply notched a little below the suture, and with a second shallow sinuation near the base; columella suberect, smooth, coated with a thin callosity, terminating above at the sinus in the form of a tubercle; canal short, broad, but little recurved.

Length 17 millims., diam. 5.

Hab. Station 26.

This species has much the appearance of *P. pyramidula* of Reeve (Con. Icon. fig. 260). The whorls, however, are more convex at the sides and broader, and the lip is different. The costæ are less numerous on the upper whorls than on the lower one, and they gradually become finer as the shell increases, so that those on the last volution are more slender than those on the upper part of the spire.

19. *DRILLIA LONGISPIRA*. (Plate XIX. fig. 14.)

Shell slender, fusiform, whitish, banded with brown between the costæ; zones two in number on the upper whorl—one a little below the upper suture, and the other at the base. Whorls 10, the two first smooth, convex, the rest somewhat excavated above, obtusely angled at the middle, obliquely costate and spirally striated; ribs about six on a whorl, oblique, subnodose at the middle, attenuating at both extremities and not reaching to the upper suture; transverse striæ rather coarse, minutely decussated by the flexuous lines of growth; last whorl with a third brown zone below the middle. Aperture whitish within, ornamented with the three exterior bands, occupying about four elevenths of the entire length of the shell; sinus deep, situated in the upper part of the lip, which is thin, has a second shallow sinuation near the base, and is much produced and

arcuate in outline in the middle; columella straightish, but a trifle oblique, covered with a thin callosity terminating in a tubercle at its junction with the upper extremity of the labrum; canal short, re-curved.

Length $16\frac{1}{2}$ millims., diam. $4\frac{1}{2}$.

Hab. Station 13.

This slender species is well characterized by the brown bands, which are interrupted by the oblique ribs. The spiral striation is rather coarse.

20. *DRILLA JAPONICA*, Lischke. (Plate XIX. fig. 15.)

Drilla japonica, Lischke, Japanische Meeres-Conch. i. p. 32.

Hab. Station 27. Nagasaki (*Lischke*).

The number of whorls is rather underestimated by Lischke, whose two specimens were mutilated at the apex, and had but six remaining volutions. The two examples in the present collection have eleven each, whereof the two nuclear ones are brown, smooth, and shining; the rest are a little constricted at the upper part, and then rather convex. Both of these shells and also a third in the Cumingian Collection display two or three transverse series of more or less distinct whitish granules; a little below the middle of the last whorl they form an ill-defined band terminating in the white spot near the base of the labrum, which at this point has a second shallow sinus.

21. *DRILLIA OBLIQUATA*, Reeve, var.

Pleurotoma obliquata, Reeve, Conch. Icon. i. fig. 262.

Hab. Station 21. —? (*Reeve*); Ceylon and Singapore (*Mus. Cuming*); var. from Persian Gulf (*Colonel Pelly*).

The single shell of this species is not full-grown, and differs from the normal form in having a series of white dots on the ribs, in place of the band round the middle of the whorls. In describing this species, Reeve omitted to notice the presence of a transverse row of minute white dots situated on the costæ a little below the middle of the body-whorl, the end or cauda of which is encircled by about five oblique liræ; columella smooth, very slightly oblique, covered with a callosity terminating in a large tubercle at the upper end of the labrum, and aiding in forming the large rounded sinus; labrum thin at the edge, with a large swollen varix some distance behind, and with a second slight emargination near the base.

22. *DRILLIA SUBOBLIQUATA*. (Plate XIX. fig. 16.)

Shell acuminate ovate, light brown, with a narrow white zone a little below the middle of the whorls, and a second, less distinct and subinterrupted one a little below the middle of the body-whorl: whorls 9, two nuclear smooth, convex, white, the rest concave at top, thin, convex at the sides, obliquely costated and finely transversely lirated; costæ rather fine, 14 on the penultimate whorl, subnodose a little above the middle, where the concavity of the whorl commences, attenuated at the upper extremity, and becoming obsolete about the middle of the body-whorl; the spiral liræ are not conspicuous, rather

far apart, and are not found in the excavation at the upper part of the volutions: aperture small, occupying rather more than a third of the entire length; sinus deep, inferior sinuation very shallow; canal very wide, not recurved; columella covered with a pale brownish callosity, tuberculated at the upper extremity.

Length 18 millims., diam. 6.

Hab. Station 15.

This species is closely affined to *P. obliquata*, Reeve. It differs in being more slender, has a narrower concave portion at the top of the whorls, and consequently longer rounded sides; the costæ are more numerous and less produced inferiorly on the last volution; and the surface, with the exception of the upper or depressed part of the whorls, is ornamented with fine subdistant lirulæ, which in *obliquata* are altogether wanting; the basal canal, too, is broader, and the labrum has not the large swollen varix behind it which is characteristic of Reeve's species.

23. DRILLIA CANDENS. (Plate XIX. fig. 17.)

Shell shortly subfusiform, entirely white, shining, subpellucid: whorls 8, two nuclear ones large, globose, smooth, the rest rather bulging towards the lower part, and a little constricted above, obliquely ribbed and striated by the lines of growth; costæ stouter on the upper whorls than on the last, on which they are obsolete at the middle; they are very oblique and flexuous; the lower part of the body-whorl is sculptured with fine oblique grooves, which by degrees are less distinct on the upper portion; sinus very wide and deep, inferior sinus slight; columella but little oblique, sinuous, covered with a white shining enamel, with a small tubercle at the upper extremity; canal broad, very short, and not recurved.

Length 12 millims., diam. $4\frac{1}{2}$.

Hab. Stations 1 and 15.

This is a very pretty species, of a diaphanous white tint, a little more opaque just beneath the suture. Besides the fine lines of growth, other striæ in a transverse direction, and equally fine, can be discovered in parts under a powerful lens. For such a small shell the sinus is remarkably large and deep; the apical whorls, too, are proportionally large.

24. DRILLIA RARICOSTATA. (Plate XIX. fig. 18.)

Shell elongate, shining, horny brown: whorls 8, two apical transversely keeled and angled round the middle; the rest concavely excavated above, convex below, coarsely obliquely plicated, and somewhat margined beneath the suture; plicæ abruptly terminating at the concavity, eight on a whorl, very oblique, gradually shorter on ascending the spire, so that the upper rather acute ends fall about the middle of the whorls; costæ on last whorl obsolete at the base, which is obliquely grooved; aperture very small, about one third as long as the whole shell; sinus deep, inferior sinuation shallow; labrum thin, curved and prominent, with a swollen varix some distance behind the margin; columella scarcely oblique, but slightly sinuous,

covered with a callosity, tuberculated above at the suture; canal very short and a little recurved.

Length 10 millims., diam. $3\frac{1}{3}$.

Hab. Station 26.

This species is remarkable for the abrupt and acute termination of costæ above.

25. *DRILLIA INTERMACULATA*. (Plate XIX. fig. 19.)

Shell shortly fusiform, shining, subpellucid, white, with two transverse series of brownish-yellow dots between the ribs on the upper whorls and four on the last. Whorls 7, two nuclear ones simple, smooth, convex, the others concave at the upper part and convexish beneath, ornamented with oblique rounded costæ, which become obsolete above, not attaining to the suture, twelve in number on a whorl; those on the body-whorl less strongly developed, especially near the labrum, and not extending downwards below the middle. Aperture occupying about two fifths of the entire length; sinus deep, lower sinuation slight; columella arcuate, with a tubercle at the suture; canal very short, wide, and not recurved.

Length $10\frac{1}{3}$ millims., diam. $3\frac{1}{2}$.

Hab. Station 31.

The painting of this pretty shell is very characteristic; the uppermost series of dots is situated between the ribs just about where they become obsolete, the second row at the middle of the body-whorl, and the two following at equal distances below.

26. *DRILLIA HUMILIS*. (Plate XIX. fig. 20.)

Shell fusiformly ovate, chocolate-brown at the base of the whorls and lighter above, indistinctly banded with white round their middle, the band being most conspicuous on the ribs, which are also white at their upper extremities. Whorls 8; two apical smooth, convex, rather large, the rest considerably excavated above and rather bulgingly convex inferiorly and obliquely ribbed; costæ nine in number on the penultimate whorl, subobsolete in the concavity at the upper part of the whorl, and again nodulous at the suture; last whorl with a transverse series of white dots on the costæ a little below the middle; ribs gradually attenuating downwards, not extending quite to the extreme base; the latter, or cauda, is sculptured with about six oblique fine grooves. Aperture small, brown, white at the sinus and at the termination of the series of dots a little below the middle; sinus large, deep, rounded, in the concavity, lower sinuation slight; lip thin, arcuate, produced, with a large tumid varix at a little distance from the margin; columella a trifle oblique, coated with a smooth brown callus, adjoining the suture in the form of a tubercle; canal very short, broad, and not recurved.

Length 9 millims., diam. $3\frac{1}{4}$.

Hab. Station 5.

This species at a first glance has the appearance of a dwarfed *D. obliquata* (Reeve), but when closely examined proves specifically distinct. It has fewer volutions, whereof the apical ones are propor-

tionally much larger; the form is less robust, and the colouring is different in detail.

27. *DRILLIA FLAVONODULOSA*. (Plate XIX. fig. 21.)

Shell solid, ovately fusiform, pale fleshy white, banded with yellow on a series of nodules around the lower half of the whorls, stained with reddish brown between the nodules, with a second series of yellow gemmules, with a reddish-brown lira beneath it, situated a little below the middle of the body-whorl. Whorls $7\frac{1}{2}$, apical ones large, the rest undulately carinated above at the suture, then concave, coarsely ribbed and spirally liræ; two of the liræ (in all six in number) are vastly stouter than the rest, and on crossing the ribs form two distinct series of nodules around the lower part of the whorls; the other liræ above and below these are fine and thread-like; beneath the sutural wavy keel on the last whorl are three fine liræ; then follow nine of the coarse nodulous ones; and around the basal extremity or cauda, which is brownish, are about six finer ones. Aperture small, a little more than one third the entire length of the specimen; labrum not thickened, rather deeply sinuated in the concavity at the upper part of the whorl; columella smooth, a trifle oblique, very slightly tortuous, covered with a moderately thick livid enamel; canal very short.

Length $9\frac{1}{2}$ millims., width 3.

Hab. Station 22.

This is a solid species, peculiarly coloured, and readily known by the coarse granules. It belongs to the same group as *P. inconstans*, another Japanese form described by me in the Ann. & Mag. Nat. Hist. in 1875.

28. *DRILLIA FORTILIRATA*. (Plate XIX. fig. 22.)

Shell elongated, horny or dirty white, stained with brown or purplish brown at the extremity of the last whorl. Whorls 12, a little convex, rather coarsely clathrated by longitudinal costæ and transverse ridges; costæ a little oblique, rounded, ten or eleven on a whorl; spiral liræ very prominent, compressedly subnodulous on crossing the ribs, undulating or festooned, five or six in number, whereof the uppermost (which borders the suture) is especially developed; last whorl concave below the middle, at which point the ribs terminate, and encircled by about nine fine thread-like liræ. Aperture small, brownish within, equalling about two sevenths of the entire length of the shell; labrum thickened by the last costa, liræ internally, with a small sinus a little below the suture; columella coated with a thin brown callosity, obliquely sinuous, smooth, without liræ or granules; canal short, oblique, faintly recurved, broadish.

Length 14 millims., width $3\frac{1}{2}$.

Hab. Stations 21 and 14.

The liræ within the lip may not be a character of much specific value, as they are only observable in one of the four specimens before me.

29. DRILLIA SUBAURIFORMIS. (Plate XIX. fig. 23.)

Shell elongate, narrow, yellowish white, banded at the suture with purplish brown, and the lower half of the body-whorl of the same colour. Whorls 10; the two or three apical ones smooth, convex; the rest convex, sometimes exhibiting a slight angulation at a little distance from the top, obliquely costate and spirally lirate; costæ about fourteen on a whorl, rounded, varying somewhat in thickness in different specimens; liræ also subject to variation in number and stoutness, usually five or six in number, but sometimes as many as eight; on crossing the costæ they are a little thickened, producing a somewhat granulous effect; on the last whorl there are from eighteen to twenty liræ, whereof those around the base are smooth and simple, as they do not cross the riblets, which terminate a little below the middle of the whorl. Aperture varying in length in proportion to that of the entire shell, sometimes occupying a little more and in other specimens a trifle less than one third of it; labrum stained with brown, thickened exteriorly, denticulated or lirate within, and widely sinuated just below the suture; columella transversely lirate (this character is only apparent in quite adult shells, and then not obviously); canal short, narrow.

Length $9\frac{1}{2}$ millims., diam. $2\frac{2}{3}$. Larger specimens are $12\frac{1}{2}$ long and $3\frac{1}{2}$ broad.

Hab. Station 21.

This species has for its nearest ally *Defrancia tecta*, Dunker. It is, however, more elongate, and apparently, judging from Dunker's description and figure, differently coloured. The small and larger forms of this species agree in all respects with the exception of size.

30. DRILLIA TEXTA, Dunker.

Defrancia texta, Dunker, Malakozool. Blät. 1859, vol. vi. p. 225; Moll. Japonica, p. 2, pl. i. fig. 19.

Hab. Station 22.

Little can be added to the excellent diagnosis of this species given by Dunker. The number of whorls in the specimen which I consider belongs to this species, from the above locality, is eight. The two nuclear are glassy, smooth, and convex; the rest are convex, with a slight tendency to angulation or shouldering at the upper part. Besides the colouring noticed by Dunker, the whorls are stained beneath the suture with light brown, in which respect it agrees with the preceding species (*subauriformis*), and in fact might almost be considered an extreme variety of it.

31. DRILLIA GRACILENTA, var., Reeve. (Plate XIX. fig. 24.)

Pleurotoma gracilentata, Reeve, Conch. Icon. sp. 114.

Var. = *P. contracta*, Reeve, l. c. sp. 116.

Var. = *P. fusoides*, Reeve, l. c. fig. 349.

Shell narrow, subfusiform, elongate, whitish, banded at the suture and around the middle and base of the last whorl with orange-red. Whorls 7, the first two smooth, very convex, shining; the rest

longitudinally and a trifle obliquely costate and transversely lirate, sloping at the upper part and a little convex below; the costæ on the upper whorls are coarser and fewer than on the body-whorl, which has about twenty, attenuated below, and not quite attaining to the base: the spiral liræ are four in number on the upper whorl, two principal ones with a smaller one between them around the middle, and the fourth below at the suture; on the body-whorl they number about sixteen. The entire surface under the microscope is seen to be minutely cancellated by the lines of growth and excessively slender spiral striæ. Aperture narrow, almost half the length of the shell, white within; lip thin at the edge, thickened both interiorly and without, and blotched with orange-red on both sides, the spots being the terminations of the transverse bands, without teeth or liræ; columella smooth, almost rectilinear, but inclining a little obliquely; sinus well defined, semicircular, situated in the labrum close to the suture.

Length 8 millims., width $2\frac{1}{3}$.

Hab. Station 18. Philippine Islands (*Cuming*).

The specimen above described resembles almost exactly the variety *contracta*, the figure of which in the 'Conchologia Iconica' is not at all good, the whorls being much too angular and the spiral line scarcely traceable.

32. *DEFRANCIA GRACILISPIRA*. (Plate XIX. fig. 25.).

Shell slender, fusiform, dirty yellowish, faintly banded with livid brown between the costæ near the top of the whorls, and stained with the same colour from the middle of the last whorl downwards. Whorls 12; three nuclear convex, minutely reticulated with raised obliquely crossing lines; the rest very convex, with a slight concavity, sculptured with distinct arcuate short raised lines beneath the suture, also bearing slender oblique costellæ (13 on the penultimate whorl), which are crossed by transverse liræ; these are four to six on the upper whorl, nodulous on the riblets; nodules compressed, subacute; last whorl convex above, slender below the middle; at this point the costellæ are becoming obsolete; and thence downwards the whorl is transversely obliquely lirate; the liræ are simple, subequal, and rather close together. Aperture narrow, occupying about four elevenths of the entire length; labrum imperfect, probably incrassated as in the European *D. gracilis* of Montagu; sinus at the suture; columella obliquely tortuous; canal rather long, narrow, somewhat recurved.

Hab. Station 27.

The slender form, the delicate riblets, the shallow excavation at the upper part of the volutions, and their convexity are the principal distinctive characters of this interesting shell. It belongs to the genus *Defrancia* as restricted by Jeffreys for species with the sinus in the suture and with the apical whorls minutely reticulated.

33. *DAPHNELLA?* *FUSCOBALTEATA*. (Plate XIX. fig. 26.)

Shell ovately fusiform, yellowish, pale violet or lilac towards the

apex, banded with light brown, one band at the top of the whorls darker than the rest. Whorls 9? (apex broken), obliquely sloping at the upper part, and slightly convex at the sides, strengthened with longitudinal suberect rounded costæ, whereof there are 12 on the penultimate whorl and about 16 on the last (those towards the labrum being finer), gradually vanishing a little below the middle; between the more slender ribs there are a few fine intermediate ones, but this may only be an individual peculiarity; the whorls are also transversely lirate; liræ of different thicknesses, numerous, raised equally between and upon the costæ, fewer and coarser upon the upper whorls, and about 30 on the body-whorl. Aperture rather narrow, less than half the length of the shell, exhibiting the same banded colours as the exterior; labrum thickened within and exteriorly, thin at the extreme edge, smooth interiorly; sinus small at the suture; columella simple, obliquely flexuous; canal a trifle oblique and slightly recurved.

Length 12 millims., width $3\frac{1}{2}$.

Hab. Station 21.

This species belongs to a section of *Pleurotoma* which includes *saturata*, Reeve, *subula*, Reeve, *albibalteata*, Reeve, and a few others.

34. *DAPHNELLA?* SUBZONATA. (Plate XIX. fig. 27.)

Shell elongate, dull lightish brown, more or less distinctly banded at the middle of the whorls, with opaque white lines interrupted by dark brown dots or short lines; sometimes marked with opaque white streaks just beneath the suture, and with a second less apparent transverse band around the lower part of the last volution. Whorls 11; apical ones minutely reticulated; the rest convex, divided by an oblique suture, longitudinally costate, and transversely closely lirate; costæ rounded, a little oblique, 16 on the penultimate, and fewer on the preceding whorls; spiral liræ equally elevated on and between the ribs, about 12 on the penultimate, and, like the costæ, gradually fewer on the upper whorls; the entire surface microscopically reticulated. Aperture rather broad, somewhat of the same colour as the exterior, but a little clouded; lip arcuate, moderately thickened, with a small sinus at the suture, smooth within; columella suberect, a little oblique at the lower end, smooth; canal rather wide, short, but very little recurved.

Length 17 millims., width 5.

Hab. Station 27.

Allied to *Pleurotoma albibalteata*, Reeve, but narrower, with less-swollen whorls, of a different colour, and with the characters of the aperture and lip not agreeing.

35. *DAPHNELLA?* SATURATA, Reeve.

Pleurotoma saturata, Rve. Con. Icon. vol. i. sp. 213.

Hab. Station 27. Corrigidor, Philippines (*Cuming*).

This specimen is a little lighter in colour than the type. The whorls in all examples are somewhat convex and have a narrow furrow just beneath the raised margin at the top; they are 9 in

number, the three apical ones being very much rounded and minutely reticulated by raised lines, oblique in opposite directions. This oblique reticulation is found in *Defrancia* as limited by Jeffreys (Brit. Conch. iv. p. 361), and also in *Daphnella* of Hinds.

36. *DAPHNELLA FRAGILIS*, Reeve, var.

Pleurotoma fragilis, Reeve, Con. Icon. sp. 179.

Var. = *P. lymnææformis*, Rve. Con. Icon. sp. 325.

Non *P. lymnæiformis*, Kiener, Coq. Viv. p. 62, pl. 22. fig. 3.

Hab. Philippine Is. (Reeve).

The Japanese specimen is much smaller than the type of this species, having a length of only 10 millims. However, in form and sculpture the differences are but very trifling. Its spire is certainly less acutely conical, and the reticulation of the surface proportionally coarser, in these respects approaching *Daphnella interrupta* of Pease (Proc. Zool. Soc. 1860, p. 147), a Sandwich-Island form. In truth the gradation from one species to the other is so subtle, that I fail at present to perceive any other differences except of size, stoutness of the spire, and the solidity of the labrum in *interrupta*.

37. *MANGILIA ROBUSTICOSTATA*. (Plate XIX. fig. 28.)

Shell ovately fusiform, light brown, whitish at the base of the body-whorl and labrum. Whorls 6; the apical one and half the succeeding forming the nucleus, globose, large, smooth; the rest turreted, angulated at the upper part at a short distance from the suture, beneath the angulation, which is rounded, sloping inward, so that they are much narrower at the lower part than at the angle, obliquely costate, and striated by the incremental lines; costæ very thick (12 on the penultimate whorl), subacute at their edge, and almost adjacent to one another at their bases, thinner and at times sublamellar at the upper extremities, and very obliquely flexuous from the angle downwards; on the last volution they gradually become obsolete below the middle. Aperture small, livid brown within, except near the lip, where it is whitish; labrum thin at the extreme edge, strengthened exteriorly by the last well-developed costa, which is white with a single livid-brown spot a little below the middle; sinus scarcely discernible; columella smooth, slightly oblique, subrectilinear, covered with a thin callosity which unites at the upper extremity with the termination of the labrum; canal very short.

Length $6\frac{1}{3}$ millims., width $2\frac{1}{2}$.

Hab. Japan.

This species, like the British *M. septangularis*, exhibits but a very small sinuation in the labrum.

38. *LACHESIS JAPONICA*, A. Adams. (Plate XX. fig. 29.)

Lachesis japonica, A. Ad. Ann. & Mag. Nat. Hist. 1860, vol. v. p. 411.

Hab. Station 2. "Off Mino-Sima, 63 fms." (A. Ad.).

The largest specimen of this species in the Museum is 12 millims.

long and 4 broad. Adams describes the colour as fuscous. The only fresh specimen that I have seen is of a dirty transparent white tint, blotched with light brown at intervals beneath the suture, and indistinctly banded with the same colour a little below the middle of the last whorl, leaving a light zone above it which is visible within the aperture. The cancellation of the surface is composed of about 20 longitudinal arcuate costæ on the penultimate, crossed by six transverse liræ, rather finer than the costæ, on crossing which they are very prettily nodulous; this cancellation extends over the greater portion of the body-whorl; and the ribs not being produced quite to the extremity, the cauda is only transversely grooved or lirate. The lip is somewhat thickened exteriorly, thin and crenulate at the margin, arcuate and very faintly sinuated near the suture, and furnished within with about 10 short fine liræ at a little distance from the extreme edge. Columella whitish, only slightly flexuous, and a trifle oblique, covered with a thin smooth callosity which abruptly limits the clathrated surface of the whorl. Adams remarks that "the spire is as long again as the aperture." This is apparently a slight exaggeration, since in the most elongated specimen in the collection it only occupies $\frac{7}{12}$ of the entire length.

39. MUREX SOBRINUS, A. Adams. (Plate XX. fig. 30.

Murex sobrinus, P. Z. S. 1862, p. 370.

Shell subclavately fusiform, whitish, with two reddish-brown bands interrupted by whitish costæ; one, the broader of them, rather below the middle of the upper whorls, and the other beneath the convexity of the last. Whorls 7; the two apical smooth, rounded; the rest convex, subangled above, trivaricose, tricostate between the varices and spirally lirated; liræ about eight on a whorl, those on the upper part finer than the inferior ones, which are compressedly nodulous on crossing the costæ and varices; the latter bear a single, shortish, upward-directed spine at the subangulation of the volutions; the upper whorls seem to be pretty constantly destitute of spines; the last whorl has a second shorter spine on the varices a little below the middle of the convex part, and two still smaller ones somewhat lower down, those on the antepenultimate varix falling opposite the lower end of the oval aperture, and those on the last a short distance below it on the right; lower part of the last whorl, with the exception of the end of the cauda, obliquely, finely, and rather rugosely lirate. Aperture roundly ovate, bluish white, two-banded; peritreme thin, produced; canal stained with brown behind, long, slender, a little oblique, very much closed, rather more than half as long as the entire shell. Operculum (fig. 3a) reddish brown, composed of coarse concentric layers; nucleus nearly terminal.

Length 36 millims., diam. 11; aperture 7 long, and $4\frac{1}{2}$ broad.

Hab. Stations 3 and 30. "Satanomosaki, 55 fathoms; Goto, 48 fathoms; Kuro-Sima, 29 fathoms" (A. Adams).

This appears to be a species which does not attain to a large size, and is remarkable for the fewness and smallness of the spines. Of the spiral liræ three are generally more prominent than the rest.

40. MUREX (PHYLLONOTUS) FALCATUS, Sowerby.

Hab. Stations 9 and 17.

For synonymy and distribution of this species consult Lischke's 'Japonische Meeres-Conchylien,' ii. p. 30.

41. MUREX (CERASTOMA) EMARGINATUS, Sowerby.

Murex emarginatus, Conch. Illust. figs. 98-100; Reeve, Conch. Icon. iii. f. i.

Hab. Stations 4 and 11. Kiusiu (*Lischke*).

The operculum is subpyriform, having the nucleus at the outer side at a short distance from the lower or smaller extremity. On the lower surface it has a smooth thickening along the outer edge, and the marks of muscular attachment consist of a few narrow concentric layers placed obliquely crossways. It is of a reddish-brown colour, paler at the outer margin.

42. MUREX (CERASTOMA) RORIFLUUS, Adams & Reeve.

Murex rorifluus, Ad. & Reeve, Voy. Samarang, p. 38, pl. viii. f. 2 a, 2 b.

Murex monachus, Crosse, Journ. de Conch. 1862, vol. x. p. 55, pl. 1. fig. 8.

Hab. Station 4. Bay of Talienwhan, N. China (*Crosse*); Tsaulian (*A. Adams*, P. Z. S. 1862, p. 373); Nagasaki (*Lischke*). Korean archipelago (Samarang).

Crosse refers to the similarity of his species to *M. rorifluus*. The type of the latter is now in the Museum, and appears to me a very worn specimen of the same species described as *monachus*.

The specimen figured by Crosse is in bad condition and does not truly represent the usual character of the colour of Japanese specimens. In these the ground-colour is a dark chocolate-brown, which is interrupted by narrow transverse whitish lines, two in number on the upper whorls, and varying from four to eight on the last; they are a trifle elevated, especially upon the varices. The latter vary in number, sometimes being four on a whorl and sometimes five. All the eleven specimens from the Goto Islands are smaller than those from Talienwhan, and rather narrower. Owing to the bad state of the shells, Crosse was not enabled to notify the presence of a very short tooth-like projection near the base of the labrum. It is very small, but still is constant in all perfect shells. The operculum is almost precisely the same as that of the preceding species.

43. MUREX (MURICIDEA) CIRROSUS, var., Hinds.

Murex cirrosus, Hinds, P. Z. S. 1843, p. 128; Voy. Sulphur, 3. p. 9, pl. 3. f. 17, 18; Reeve, Conch. Icon. i. fig. 138.

Hab. Station 2. Straits of Macassar (*Hinds*); Andaman Islands (*Capt. Wilmer*).

The single specimen obtained by Capt. St. John off the coast of the Goto Islands is remarkable for the manner in which the transverse liræ at the upper part of the whorl are produced at the varices

into an upturned and curved hollow hook. Its canal too, like some examples from the Andaman Islands described by me (P. Z. S. 1878), is rather elongate, and directed to the left, or in an opposite direction to that of the type. Notwithstanding these differences, and a few other slight ones, I feel convinced that they all belong to one and the same species.

44. MUREX (OCINEBRA) FIMBRIATULUS, A. Adams. (Plate XX. fig. 31.)

Trophon fimbriatulum, A. Adams, P. Z. S. 1862, p. 375.

Shell turgidly subfusiform, turreted, fawn or light reddish, with a narrow interrupted brown band a little above the middle of the last whorl and almost obsolete above, and dark brown at the apex. Whorls 7, the two apical smooth, the rest sloping at the upper part and rather convex beneath, longitudinally nodosely plicated and spirally ridged; costæ or plicæ attenuated at the top of the whorls, rounded, about eleven on a whorl; on the last subnodose at the upper part or shoulder, attenuated and becoming obsolete inferiorly; spiral liræ about nine in number on the upper volutions, whereof the upper three or four on the slope are finer than those beneath, which appear at intervals to be somewhat imbricately scaled; last whorl rather suddenly contracted below the middle, with about twenty-eight transverse liræ, the interstices being moderately deep. Aperture ovate, pale pinkish or flesh-colour within; labrum thin and crenulated at the margin, strengthened with a strong imbricated exterior varix, extending downwards almost to the extremity of the cauda; columella arcuate, pale rose; canal closed, as long as the aperture, curved to the right, slightly retroverted and brown at the tip.

Length 19 millims., diam. $7\frac{1}{2}$.

Hab. Station 15.

Like *Murex japonicus* of Dunker, this species is remarkable for the absence of varices, with the exception of the postlabral one, in which respect it calls to mind certain species of *Tritonium*—for example, *T. strangei*, A. Adams and Angas; but in that and other allied species the canal is not closed.

45. TROPHON, sp.

Hab. Station 21.

This shell, I believe, is the young state of an undescribed species. It is subpyriform, white, purple at the apex, longitudinally plicate, and very beautifully spirally liræ, the liræ being most prettily imbricately scaled. The aperture, together with the canal, occupies two thirds of the entire length (10 millims.).

46. UROSALPINX INNOTABILIS. (Plate XX. fig. 32.)

Shell ovately or shortly fusiform, whitish, with two transverse somewhat interrupted brown lines on the last whorl, the upper one of which is visible on the upper volutions. Whorls 9; two apical smooth, convex; the rest turreted, concave at the upper part, then

rather strongly angulated at the middle; beneath with convex outlines, but sloping or contracted inwards, thus being narrower at the base than at the angle, stoutly plicate and coarsely spirally ridged; plicæ or costæ about nine on a whorl, equal in width to the interstices between them, becoming thinner or more or less obsolete in the concavity, on the last whorl attenuated below and produced to the extremity; transverse liræ stout, four or five beneath the angulation, prominent on the ribs, and the same number above the carination, rather finer than the preceding, about twenty in number on the body-whorl; the interstices between are deep, about as broad as the ridges, all of which are finely and somewhat closely imbricately scaled. Aperture half the length of the shell, white within, exhibiting about six tubercles near the labrum; columella smooth, covered with a thin white callosity, only a trifle oblique, tortuous below the middle; canal short, reflexed.

Length 20 millims., diam. 10.

Operculum with a lateral subterminal nucleus exteriorly.

Hab. Station 27.

This species is a close relation of *Trophon paivæ*, Crosse, and *Trophon hanleyi*, Angas, which two species, judging from the shells alone, might conveniently be placed in Stimpson's genus *Urosalpinx*; but the operculum of both is fusoid, although not quite typical, and the odontophores have not been examined; therefore I prefer locating them provisionally in the genus *Fusus*. *Murex calcareus*, Dunker (Moll. Jap. p. 5, pl. 1. f. 2), also approaches this species very closely.

47. *FUSUS NODOSO-PLICATUS*, Dunker.

Fusus nodosoplicatus, Dunker, Novitates Conchologicæ, Abtheil. ii. p. 99, pl. 33. f. 3, 4; Lischke, Japan. Meer.-Conch. ii. pl. 3. f. 6, variety.

Hab. Station 8*. Nagasaki (*Lischke*).

48. *FUSUS PERPLEXUS*, A. Adams.

Fusus perplexus, A. Adams, Journ. Linn. Soc. 1864, vol. vii. p. 106.

F. inconstans, Lischke, Japan. Meeres-Conch. i. pl. 2. f. 1-6, part ii. pl. 3. f. 1-5; Schacko, Jahrbücher der deutsch. malak. Gesellschaft, 1874, p. 115, pl. 6. f. 1-1 d (radula).

Hab. Stations 9 and 10.

I have no doubt of the identity of Lischke's shell with this species, for specimens of it in the Cumingian collection, probably received by Cuming from A. Adams, answer exactly the description in the 'Japan. Meeres-Conchylien.'

49. *FUSUS NIGRIROSTRATUS*. (Plate XX. fig. 33.)

Shell fusiform, brownish, much streaked with very dark brown or black, especially between the plications, with white transverse liræ upon them; rostrum of the last whorl purplish black. Whorls 9, obliquely tabulated and a little concave above, then acutely angu-

lated, contracted to the base, longitudinally plicate, and prominently spirally ridged; plicæ suberect, becoming obsolete above the angulation, ten on the penultimate whorl; transverse liræ of different thicknesses, two around the middle and one at the lower suture of the whorls specially prominent, forming acute compressed transverse nodules upon the costæ; about fourteen on the upper whorls, all subgranose through being crossed by deep striæ of growth; on the body-whorl there is a fourth especially prominent lira falling within the aperture, just beneath the upper extremity of the labrum. Aperture bluish or purplish within, with the dark streaks of the exterior showing through, together with the canal equal to half the length of the shell; columella arcuate and whitish or livid above, oblique and purplish black below the middle; canal oblique, of moderate length, only a trifle reflexed.

Length 50 millims., diam. 17

Hab. Station 29.

The epidermis of this interesting form is of a brown colour, longitudinally, finely, and exceedingly closely lamellated, bearing upon the transverse liræ minute acute productions somewhat resembling short hairs.

50. *FUSUS NIPONICUS*. (Plate XX. fig. 34.)

Shell fusiform, brownish white or sordid yellowish, stained at the upper part of the whorls with brown, and ornamented with a narrow zone of the same colour around the middle of the last whorl. Whorls 7, apical one smooth, mamillar, the rest longitudinally plicated and transversely ridged, sloping above, and then very convex; plicæ or ribs oblique, not much elevated, attenuated and faint at the upper ends, eleven in number on the last whorl, attenuating and vanishing just below the middle or convex portion. Transverse liræ numerous; most of them (about eleven on the penultimate whorl) are very fine, thread-like, and simple; but two or three stouter than the preceding, and situated at some distance apart at the middle portion of the whorls, on crossing the plicæ are elevated into compressed and transversely elongated tubercles; suture prettily wavy, margined with the thickened upper edge of the volutions; last contracted below the middle, and produced into an elongated cauda, which is obliquely and rather closely and finely lirate; the transverse ridges, which become tubercular, number about six or seven on this volution, three of them being more conspicuous than the others. Aperture with the canal equal to about four sevenths of the whole length, whitish within; columella smooth, thinly enamelled, tortuous; canal elongate, narrow, oblique.

Length 22 millims., width 7.

Hab. Station 25.

The two specimens of this delicately sculptured species do not, I imagine, represent the ultimate size to which in all probability it attains. The coloured bands are not very conspicuous; and the entire surface is sculptured by the lines of growth, those immediately beneath the suture being arcuate and especially observable.

51. *FUSUS SIMPLEX*. (Plate XX. fig. 35.)

Shell fusiform, white, clothed with a smooth greyish-olive epidermis. Whorls sloping and slightly concave at the upper part, bulging beneath and contracted at the base, carinately margined above at the suture, obliquely nodosely plicate and spirally lirate; plicæ or costæ eight or nine on the upper whorls, rounded, large, almost obsolete at the upper part; spiral liræ about six in number on a whorl, whereof three around the lower portion are the stoutest; besides these liræ, at times a few fine thread-like lirulæ are present in the interstices. Last whorl with the costæ not extending below the middle, lirate throughout, the liræ on the rostrum being very fine and close together. Aperture suboval, together with the canal equal in length to the spire above it; columella arcuate above, tortuous beneath; canal shorter than the aperture and a little recurved.

Length 18 millims., diam. $5\frac{1}{2}$.

Hab. Station 29.

The shell above described may possibly not be of adult growth. It consists of but seven whorls, which is a small number for a species of true *Fusus*. However, I cannot identify it as the young state of any described species. It is remarkable for the absence of colouring of any kind and the shortness of the canal. The thickened margin of the whorls is rather oblique and scarcely undulating, as the longitudinal plicæ are somewhat obsolete at the lower part as well as above.

52. *FUSUS COREANICUS*. (Plate XX. fig. 36.)

Shell fusiform, dirty diluted flesh-colour, streaked with dark brown upon the costæ. Whorls $7\frac{1}{2}$ –8; nucleus consisting of one and a half to two whorls, smooth, globose; remaining volutions sloping and a trifle excavated above, margined at the suture, somewhat angular at the middle, a little convex beneath and much contracted at the base, longitudinally costate and transversely ridged; costæ or plicæ only slightly prominent, but little oblique, twelve in number on the penultimate whorl; spiral liræ close-set, pretty regularly alternately fine and coarser, about twelve on a whorl, whereof three or four around the lower half are larger than the rest and subnodulous on the ribs; the latter become obsolete about the middle of the body-whorl, which is rather suddenly contracted just below that point, and produced into a short oblique rostrum. Aperture ovate, fuscous within, with the canal occupying only five elevenths of the entire length; columella smooth, arcuate above, very oblique inferiorly; canal short, slightly retroverted.

Length 22 millims., diam. 8.

Hab. Station 29.

This species is remarkable for the brevity of the canal and the style of colouring. The dark stripes always appear to fall upon the ribs, and they are somewhat interrupted by the stoutest of the transverse liræ, which are rather nodulous and dirty whitish. The thickened margin at the top of the whorls is also pale.

53. *FUSUS PACHYRHAPHE*. (Plate XX. figs. 37, 37a.)

Shell shortly fusiform, biconical, dull light brown, pale at the angulation of the whorls. Whorls 8, of which the two apical are smooth and convex; the rest slopingly excavated above, rather sharply angled at the middle, and flattish beneath, longitudinally plicate and spirally grooved and ridged; plicæ eight or nine on a whorl, attenuating in the concavity, and again becoming more developed upon a thickening at the upper margin of the whorls consisting of two prominent liræ; the transverse ridges are all beautifully imbricately squamous through the elevated undulating lines of growth; two or three beneath the angle stouter than the rest and subnodulous upon the plicæ; on the penultimate whorl there are about from eight to nine, and on the last about twenty-two, generally alternately fine and coarser; the costæ attenuate inferiorly and extend almost to the extremity. Aperture elongate, more or less tinged within with fleshy brown, with the canal being rather longer than the spire, armed with about six short liræ, which do not attain to the crenulated margin of the lip; columella livid pinkish, straightish above, and oblique below the middle; canal short and recurved.

Length 21 millims., diam 9. Length of aperture and canal 12. A smaller specimen is 16 long, 6 broad, and the aperture has a length of 8 millims. (Fig. 37a.)

Hab. Stations 8 and 27.

The largest specimen from the latter locality differs from the rest in having one plication less on a whorl, and the aperture proportionally longer. In all other respects it agrees; and I feel convinced that they all belong to one and the same species. It belongs to the same section of *Fusus* as *F. imbricatus*, Smith, from New Caledonia.

54. *SIPHONALIA CASSIDARIIFORMIS*, Reeve.

Buccinum cassidariæformis, Reeve, Conch. Icon. iii. fig. 11; Lischke, Jap. Meer.-Conch. i. p. 38, pl. 4. f. 1-10 (as *Siphonalia*).

Hab. Stations 5 and 17.

The operculum of *Siphonalia* is described by A. Adams as fusoid. In this species it is not of the typical form, as the nucleus, instead of being terminal, is situated within the outer margin at the distance of three millimetres from the lower or narrowed extremity.

55. *SIPHONALIA SPADICEA*, Reeve. (Plate XX. fig. 38.)

Buccinum fusoides, Reeve, Conch. Icon. iii. pl. 9. f. 64.

Buccinum spadiceum, Reeve, l. c. (Errata).

Siphonalia spadicea, A. Ad. Ann. & Mag. Nat. Hist. 1863, vol. xi. p. 203.

Hab. Stations 25 and 32, and Port Hamilton, 10 fathoms, 34° 32' N. lat., 127° 15' E. long. "Mino-Sima 63 fathoms" (A. Ad.).

The specimen described by Reeve is somewhat worn and the colouring faded. In fresh examples, besides the brownish irregular blotching, chiefly between the plications, there are certain of the

spiral ridges, subequidistantly placed, of a rich reddish-brown colour. The operculum is typically fusoid, having a terminal nucleus, and differing in this respect from that of *S. cassidariæformis*, thus showing how variable and unreliable the operculum is as a divisional character.

56. *EUTHRIA FERREA*, Reeve. (Plate XX. figs. 39, 39a.)

Buccinum ferreum, Reeve, Conch. Icon. iii. 1847, p. 102.

Fusus viridulus, Dunker, Moll. Japon. 1861, p. 3, pl. 1. f. 16 ; Lischke, Jap. Meer.-Conch. i. pl. 5. f. 5, 6 ; Smith, Ann. & Mag. Nat. Hist. 1875.

Hab. Stations 8* and 28. "Tsu-Sima, O-Sima, and Nagasaki (*A. Ad.*) ; Decima and Nagasaki (*Lischke*).

The type of this species is in a worn condition, and entirely destitute of the olivaceous epidermis exhibited by fresh specimens. However, there is not a shadow of doubt that it is identical with the shell described by Dunker as *Fusus viridulus*. It is a species subject to considerable variation in form, some examples being considerably more robust than others. Its operculum is typically fusoid, with an apical nucleus.

57. *TRITONIDEA SUBRUBIGINOSA*. (Plate XX. fig. 40.)

Shell ovate, dark brown, with a luteous band around the middle of the last whorl, which is also partly seen upon the upper whorls just above the suture ; tip of the body-whorl luteous. Volutions $6\frac{1}{2}$, the one and a half at the apex smooth ; the rest very convex, obliquely plicated and spirally ridged ; plicæ or costæ large, swollen, broader than the interstices, ten in number on the penultimate whorl ; transverse liræ four or five on a whorl, with finer intermediate ones, a trifle thickened upon the plicæ ; the latter become obsolete upon the last whorl about the periphery. It is encircled throughout by spiral ridges, some of which at the basal extremity and between the strong ones above are very fine. Aperture occupying rather less than half the entire length, livid blue within ; labrum thickened exteriorly with a large tumid varix, thin and crenulated at the margin, armed within with about eight liræ, which are thickest at the end towards the lip ; columella covered with a thin callus, arcuate above, with a somewhat dentiform prominence at the middle, and one or two tubercles close to it, and another small elongate one above close to the termination of the outer lip ; canal oblique.

Length 17 millims., diam. 7.

Hab. Station 8*.

This interesting little shell might, at first glance, be mistaken for a diminutive form of *Buccinum rubiginosum*, Reeve. It is, however, distinguished by fewer whorls, whereof the nuclear ones are actually larger than those of *T. rubiginosa*, and also by difference of coloration and the shorter aperture. The operculum is fusoid, with the nucleus terminal.

58. *COLUMBELLA SCRIPTA*, Lamarck.

Columbella scripta, Kiener, Coq. Viv. p. 50, pl. 6. f. 3, 3a.

Columbella versicolor, Sowerby, Thesaurus, f. 41-46; Reeve; Conch. Icon. f. 51a, b.

Columbella variegata, Menke, Synops. p. 65.

Columbella bidentata, Menke, Moll. Novæ Hollandiæ, p. 23; Sowb. Thes. f. 53, 54; Reeve, f. 205.

Hab. Station 8*.

This species has a wide geographical range, having been recorded from the Philippine Islands, North and South Australia, Annaa Island, and New Caledonia.

59. *COLUMBELLA SAGENA*, Reeve.

Columbella sagena, Reeve, Conch. Icon. fig. 162; Lischke, Jap. Meeres-Conch. i. p. 58, iii. p. 34, pl. 2. f. 5-7.

Hab. Stations 8* and 18.

The variation of this species has been already remarked upon by Lischke. The epidermis, which is generally for the most part worn off when the shell arrives at maturity, is of a dull olivaceous colour and finely lamellated, the lamellæ being perpendicular and close together.

60. *COLUMBELLA UNDATA*, Duclos.

Columbella undata, Duclos, Monograph, pl. 4. f. 4; Kiener, pl. 9. f. 1, pl. 12. f. 3; Lischke, iii. pl. 2. f. 1-4.

Hab. Stations 8* and 29.

61. *COLUMBELLA MISERA*, Sowerby.

Columbella misera, Sowerby, Thesaurus, fig. 111; Reeve, Conch. Icon. fig. 68; Lischke, i. p. 59, ii. p. 48, iii. p. 35, pl. 2. f. 10, 11.

Hab. Station 8*. Nagasaki (*Lischke*); Sandwich Islands (*Pease* and *Martens*).

The number of costæ in this species is considerably variable, there being in some specimens fifteen on the last whorl, whilst in others there are but ten. A pretty constant character of the painting consists of the upper half of the whorls being unspotted, and the costæ on that portion opaque snow-white.

62. *COLUMBELLA (ATILIA) LISCHKEI*. (Plate XX. fig. 41.)

Shell fusiform, narrow, dirty white, blotched at intervals with olive-brown. Whorls 8; two apical smooth, globose, rather large, the one or two following longitudinally strongly costate; ribs thick, with a thin vitreous upper margin; the remaining volutions a trifle convex, smooth, with minute striations or lines of growth; the last suddenly contracted below the middle, where it is obtusely angulated, sculptured at the caudal extremity with about eight narrow oblique sulci or striæ. Aperture small, indistinctly quadrangular, occupying rather more than one third of the entire length; outer lip with a

broad swollen varix externally, thin at the margin, armed within with about six subtubercular lirations; columella very little oblique above, slightly convex, more inclined below the middle, invested with a very thin callous deposit, united above to the outer lip and not obscuring the oblique sulci around the caudal end of the whorl; canal distinct, faintly reflexed.

Length 11 millims., diam. $3\frac{1}{2}$.

Hab. Station 27.

Compared with *C. alabastrum*, Reeve, its nearest ally, this species is more elongated, has more numerous and shorter whorls, and is differently coloured. The brown maculations extend from suture to suture, and gradually increase in size as the whorls enlarge. On the base of the last whorl there are a few longitudinal streaks of the same colour.

63. COLUMBELLA (ATILIA) NIVEOMARGINATA. (Plate XX. fig. 42.)

Shell elongate, greyish white, with an opaque white band spotted with brown at the top of the whorls, and a narrower one around the middle of the last whorl, the rest of the surface being marked with opaque white in an irregularly closely reticulating manner. Volutions 8-9; the apical ones smooth, the one or two succeeding longitudinally costate, the rest almost flat, separated by a deep suture, so that the spire appears somewhat turreted; body-whorl transversely sulcate below the middle. Aperture small, occupying rather more than two fifths of the whole length of the shell, whitish within; labrum with an exterior varicose thickening and five or six small tubercles within, of which the uppermost is the largest; the margin near the upper extremity is faintly sinuated; columella suberect above, oblique below the middle, where there is a small notch or oblique groove, coated with a callosity with a thickened margin; canal short, recurved.

Length 11 millims., diam. $3\frac{1}{2}$.

Hab. Station 8.

The brown markings upon the opaque white zone at the upper margin of the whorls are small and in the form of somewhat irregular oblique short lines or stripes, some of them here and there being more like a blotch or irregular spot. The band at the middle of the last whorl is only half as broad as that above; and the spotting upon it is also paler and closer. Only a single specimen was obtained.

64. COLUMBELLA (ATILIA), sp.

Hab. Stations 1 and 30.

The two specimens of this species, which, I believe, is undescribed, are both of immature growth. They consist of eight whorls, whereof the three uppermost are glassy and faintly tinged with violet. The rest are flattish, smooth, of a transparent white colour, painted with close longitudinal olive-brown lines, interrupted by two broad trans-

verse bands of the same colour spotted with white, one above and the other below the suture. The body-whorl has a third similar band near the middle, and is obliquely finely grooved at the base. The banding upon the specimen from station 30 is less definite, and the form of the shell, too, is rather more slender.

Length 12 millims., diam. 5.

65. COLUMBELLA (ZAFRA) SUBVITREA. (Plate XX. fig. 43.)

Shell fusiformly ovate, subpellucid, white, with a thin indistinct brown line interrupted by the costæ around the lower part of the whorls, and a transparent pellucid zone at the top, with a second band or series of short flames just below the middle of the last whorl, which is stained with brown at the extremity. Whorls 7, the first two convex, smooth, the following two or two and a half almost flat and likewise smooth, the rest strongly costate; costæ about eleven on a whorl, rounded, a little oblique, and more or less arcuate, narrowed and subobsolete at the upper extremity, disappearing a little below the middle of the body-whorl, the lower extremity or cauda of which is transversely and a little obliquely sculptured with five or six striæ, whereof the two or three uppermost are wider apart than the rest. Aperture narrow, occupying rather less than half the shell's entire length; labrum thin, faintly and broadly emarginate, or sinuated just beneath the suture, smooth within; columella a trifle oblique, tinged with brown, a little convex or swollen at the middle, covered with a thin callosity with a defined margin, which unites at the upper extremity with the termination of the outer lip; basal canal short, rather deep, and in a slight measure recurving.

Length 4 millims., width $1\frac{1}{2}$.

Hab. Station 25.

The genus *Zafra* is described by A. Adams in the 'Annals and Magazine of Natural History,' 1860, vol. vi. p. 331. He considers that it belongs to the Turridæ or Pleurotomidæ. In his description he does not state whether the labrum bears internal liræ or denticles. I have examined a specimen of the typical species, and I do not discover their presence. The absence of these denticles appears to be the only character which distinguishes this group from the genus *Seminella* of Pease ('American Journal of Conchology,' 1867, vol. iii. pp. 233 & 234). In size and style of sculpture the species of the latter genus answers to the description of *Zafra*; and I am inclined notwithstanding that their lips are toothed within, to include them in that genus. It is possible that *Z. mitriformis* and *Z. subvitrea* in the very adult state at times may exhibit denticles.

The latter species differs from the former in being narrow, differently coloured, and having the costæ obsolete on all except the last two and a half whorls. *Anachis zonata*, Gould (?=*Zafra mitriformis*), and *Anachis virginea* of the same author, also should be classed with *Zafra*.

66. COLUMBELLA (AMYCLA) VARIANS, Dunker. (Plate XX. figs. 44-44b.)

Amycla varians, Dkr. Mal. Blät. 1860, vi. p. 231; Moll. Jap. pl. 1. f. 17; Lischke, J. M.-Conch. ii. p. 49.

Hab. Stations 5, 7, 8*, 10, 11, and 28.

This remarkably variable species is but poorly figured in Dunker's work. The illustration above cited represents the spire much more obtuse at the apex than is usual. The operculum is purpuroid. The following measurements will show how variable is the size of different specimens:—

Length	13 millims.,	diam.	$5\frac{1}{3}$
„	11	„	5
„	10	„	4
„	$11\frac{1}{2}$	„	4

67. NASSA (ALECTRION) GLANS, Linn.

Nassa glans, Kiener, Coq. Viv. pl. 15. f. 52; Reeve, Con. Icon. fig. 5.

Hab. Station 7. Philippine Islands and Australia are other localities.

The operculum of the single specimen of this species is of a bright vinous red colour, of an elongate subtrigonal form, the angles being rounded and the margins simple. The shell itself differs from the ordinary form of the species in having a less elongated spire, and the body-whorl less inflated and encircled with only eight red lines instead of nine.

68. NASSA (ZEUXIS) SIQUIJORENSIS, A. Adams. (Plate XX. figs. 45, 45 a.)

Nassa siquijorensis, A. Adams, P. Z. S. 1851, p. 97; Reeve, Con. Icon. figs. 53 a, b; A. Ad. Ann. & Mag. Nat. Hist. 1870, vol. v. p. 425 (*Zeuxis*).

Hab. Station 19. Tsaulian, Tomo, Seto-Uchi (*Adams*), Philippine Islands (*Cuming*).

The costæ in the Japanese specimen are fewer than in the originally described examples. In the latter the penultimate whorl has about 32 upon it, whilst the same volution in the former has but 22 to 24; in one specimen, however, there is the normal number. The largest example is 28 millims. long and 12 wide. The operculum (fig. 45a) is rather elongate, brown, serrated along the outer margin and also on the inner edge for a short distance from the nucleus.

69. NASSA (ZEUXIS) VARICIFERA, A. Adams, var.

Nassa varicifera, A. Adams, P. Z. S. 1851, p. 108; Reeve, Con. Icon. viii. figs. 118 a, b; A. Ad. Ann. & Mag. Nat. Hist. 1870, vol. v. p. 425; Gen. Rec. Moll. i. pp. 119 & 121 (as *Zeuxis* & *Hima*).

Hab. Station 31. Tsaulian (*Ad.*).

Only a single non-adult specimen was dredged at the above spot. It is most beautifully sculptured with very fine costæ, which

are coarsest on the upper whorls, gradually becoming finer on the penultimate, and then nearly obsolete on the last. Notwithstanding this difference from the types, in which the ribs become thicker from the upper part downwards, its more slender form, more convex whorls, and more turreted spire, I believe this shell to be a delicately sculptured form of this species; for the colouring and the peculiar varices are of precisely the same character. The operculum is coarsely serrated along the outer margin.

70. *NASSA* (*NIOTHA*) *STIGMARIA*, A. Adams.

Natha stigmaria, A. Adams, P. Z. S. 1851, p. 96; Reeve, Conch. Icon. fig. 42.

N. densigranata, A. Ad., Reeve, fig. 181.

Hab. Station 10. Philippine Islands (*Cuming*), Ooshima (*Capt. St. John*), Andaman Islands (*Capt. Wilmer*).

This species is subject to considerable variation in size. The type figured by Reeve is the largest specimen I have seen, being 20 millims. long and $10\frac{1}{3}$ broad. Another, the type of *densigranata*, has a length of 12 millims. and a breadth of $6\frac{1}{2}$.

71. *NASSA* (*HIMA*) *FESTIVA*, Powis.

Nassa festiva, Powis, Reeve, Conch. Icon. fig. 117.

N. lirata, Dkr. Moll. Jap. pl. 1. f. 22.

Hab. Station 8*. Other localities recorded are Decima, Nagasaki, and Hakodadi.

The home first assigned to this species, namely Panama and St. Helena, is only one of the numerous errors occurring in the Cumingian Collection. If this had not occurred, Dunker would never have redescribed the species.

72. *NASSA* (*HIMA*) *FRATERCULUS*, Dunker.

Nassa fraterculus, Dkr. Moll. Jap. pl. 1. f. 15; Lischke, J. M.-Conch. ii. pl. 4. f. 7-8; Schrenck, Reise Amurland, p. 435.

? *N. plebecula*, Gould, Proc. Bost. Soc. Nat. Hist. 1860, p. 332; Otia Conch. p. 128.

Hab. Stations 5 and 8*. Other localities are Decima, Ousima, Hakodadi, Tatiyama, Simoda, Nagasaki, and O-Sima.

One specimen differs from the rest in having fine transverse brown lines on the raised ridges between the grooves, and not in the latter as is usual. Another one is black with a single median narrow yellow zone.

73. *NASSA* (*HIMA*) *TENUIS*, Smith.

Nassa tenuis, Smith, Ann. & Mag. Nat. Hist. 1875, xv. p. 423.

N. japonica, Lischke, Jap. M.-Conch. iii. p. 37, pl. 2. f. 20-23.

?? *N. japonica*, A. Ad. P. Z. S. 1851, p. 110.

Hab. Station 21.

The type of Adams's species described from the Cumingian Collection is not to be found. On this account, and considering that

Adams's description is far too brief and vague for identification of the species, I am induced to retain the name *tenuis* imposed upon it by myself in the Annals of 1875.

74. *NASSA* (HIMA) *ACUTIDENDATA*. (Plate XX. fig. 46.)

Shell ovate, acuminate above, thick, reddish brown with a white zone round the middle of the upper whorls and two on the last, and again pale at the extremity. Volutions 7; two embryonal smooth, mamillar, convex; the rest a little convex, divided by a deep and almost channelled suture, ornamented with longitudinal ribs (18 on the penultimate whorl) and transverse liræ, which are granuliferous upon the costæ; they are usually four in number upon the upper whorls; but in some instances a fifth finer one is observed just beneath the suture; on the last whorl there are nine or ten granulous ones, then about five simple oblique ridges on the extremity or short cauda, whereof the uppermost is the stoutest and carinæform. Aperture small, ovate, whitish, with three dark brown bands within, one central, one superior, and the other at the basal extremity corresponding to the exterior banding of the whorl; labrum with an exterior varix, and armed within at a little distance from the extreme edge with 5-6 denticles, whereof one, the fourth from the base, is conspicuously larger than the rest and rather acute, and the one or two above that are more or less obsolete; columella much arcuated, coated with a small thin callus, thickened at its edge, bearing at the upper part a liræform tubercle and four or five smaller ones beneath it.

Length 10 millims., diam. $4\frac{1}{2}$.

Hab. Stations 5 and 8*.

This species is painted very much in the same manner as *N. tenuis*. It differs, however, from that species in the smaller number of the whorls, in form, and the character of the aperture and its armature. Twelve specimens were examined.

75. *NASSA* (HIMA) *LUTEOLA*. (Plate XX. fig. 47.)

Shell small, elongate, yellow: whorls 6; the two nuclear globose, the rest convex, costate, and transversely lirate; costæ twenty in number on the penultimate volution, a little oblique; liræ nodulous on the ribs, four to five on the upper whorls, six on the penultimate, and about eleven on the last, the cauda of which is grooved. Aperture small, ovate, yellow; lip exteriorly variced, thin at the margin, and lirate within; columella considerably arched, covered with a callosity, bearing a tubercle above and exhibiting traces of another below.

Length 7 millims., diam. $3\frac{1}{4}$.

Hab. Station 7.

This little shell, of which there is but one in the collection, is chiefly characterized by its diminutive proportions and the uniformity of coloration. The tuberculation upon the columella is hardly definable, and probably has been absorbed by the little *Pagurus* inhabiting the shell.

76. *CORALLIOPHILA JEFFREYSII*. (Plate XX. fig. 48.)

Shell shortly fusiform, reddish brown, transverse ridges, especially at the middle of the whorls, white: whorls probably 8; the six that are left acutely angular at the middle, spirally deeply sulcated, leaving very prominent ridges between the sulci, longitudinally obsoletely plicate; the liræ are six in number on the penultimate whorl, the third from the base being the most prominent, forming the angles, acutely produced on crossing the plicæ, and closely, rather coarsely imbricately scaled; last whorl encircled with sixteen liræ, with the scales on some of the lower ones remarkably thickened and prominent, terminated with a large prominent scaled ridge. Aperture bluish within, with the canal equal to the spire, internally finely lirate; canal short, very oblique and recurved; columella straightish at the upper part.

Length 20 millims., diam. 10.

Hab. Station 22.

This species is much of the same type as *Murex lamellosus* of Philippi. It differs from it, however, in colour, the deeper sulci, and the greater angulation of the whorls.

The location of it in the genus *Coralliophila* is only provisional. The sculpture is just of the character which frequently obtains in many species of that genus; but the brownish red colour is unusual.

77. *PURPURA BRONNI*, Dunker.

Purpura bronni, Dunker, Moll. Jap. pl. 1. f. 23; Lischke, Jap. M.-Conch. i. p. 53, pl. 5. f. 17.

Hab. Station 4. Nagasaki and Decima (*Lischke* and *Dkr.*); Tatiyama (*A. Adams*).

78. *PURPURA ALVEOLATA*, Reeve.

Purpura alveolata, Con. Icon. iii. fig. 60; Smith, Ann. & Mag. Nat. Hist. 1875, vol. xv.

P. clavigera, Küster, Con. Cab. pl. 31a. f. 1; Lischke, Jap. Meer.-Conch. i. p. 54, pl. 5. f. 12-14, part ii. p. 39.

Hab. Station 4. Nagasaki (*Lischke*).

The habitat "Panama," originally assigned to this species, is evidently incorrect.

79. *SISTRUM UNDATUM*, Chemnitz.

Murex undatus, Chem. Con. Cab. xi. p. 124, f. 1851-2.

Murex margariticola, Broderip, P.Z.S. 1832, p. 177; Reeve, Con. Icon. iii. f. 178.

Var. = *Ricinula fiscellum*, Reeve (not *Murex fiscellum*, Chemnitz), Con. Icon. iii. f. 28.

Hab. Station 4.

This species is very widely distributed. It has been recorded from Lord Hood's island and New Caledonia, besides Japan; and in the British Museum there are specimens from Swan River, Port Essington (*Jukes*), Andaman Islands (*Captain Wilmer*), Singapore

(*Dr. Livesay*), and Louisiade archipelago (*Macgillivray*, Voyage of 'Rattlesnake').

80. MITRA (COSTELLARIA) SUBTRUNCATA, Sowerby.

Mitra subtruncata, Sowerby, Thesaurus Con. iv. pl. 360. f. 405, sp. 468.

Hab. Ooshima harbour, 8 fathoms, on a bottom of sandy mud and broken shells.

Mr. Sowerby remarks that in sculpture this species resembles *M. obeliscus*. Judging from his figure and the specimens which I believe to belong to this form, this statement requires some qualification. To a certain extent there is some similarity; but the costellæ in *M. obeliscus* are finer and more numerous, and the spiral sulci between them much deeper than in *M. subtruncata*. The ribs, too, in the former are subgranulous at the points where the spiral liræ between the sulci come into contact with them, whilst in the latter they are smooth and regular. The columella has five plaits, *M. obeliscus* only four.

81. MITRA (COSTELLARIA) FUSCO-APICATA. (Plate XX. fig. 49.)

Mitra (Costellaria) suluensis, Smith (non Ad. and Rve.), Annals and Mag. Nat. Hist. 1875, xv. p. 425.

Shell fusiform, whitish, stained with brown at the apex, obscurely banded with bluish ash a little below the top of the whorls, and spotted irregularly with brown in the same part, generally between the costæ; lower half of the last whorl cinereous brown. Whorls 10, one to two apical ones smooth, globose, the rest almost flat at the sides, scarcely turreted, longitudinally ribbed and spirally sulcated between the costæ; the latter are about 17 in number on the penultimate whorl, a little arcuate and oblique, about half as broad as the interspaces between them; spiral sulci interrupted by the costæ, five on the upper whorls, moderately deep, subequidistant: the ribs on the body-whorl alternate at the base, and at this part are cut across by the oblique transverse grooves, producing nodules upon them; one of the ridges between the sulci, which is in a line or continuous with the uppermost fold on the columella, is conspicuous, being a little thicker than the rest. Aperture generally internally lirate, small, narrow, with a white band within a little above the middle, and two interrupted brown zones, one above and the other below the white one; columella with a callus near the extremity of the labrum, with four folds, the two uppermost grooved so as to appear duplex; canal recurved.

Length 24 millims., diam. 7; aperture 9 long, 2 wide.

Hab. Station 19. Ooshima harbour (Annals 1875).

This species is closely allied to *M. suluensis*, Ad. and Rve., with which I formerly confounded it; it differs in having a non-turreted spire, finer spiral sculpture, a shorter aperture, and the colour, too, a little different. The bluish-ash zone at the upper part of the whorls in some specimens is almost entirely wanting, so that the

shell is divided into two parts, the upper, with the exception of the brown apex, being white or bluish white, and the lower ashy brown.

82. MITRA (COSTELLARIA) COLLINSONI, A. Adams. (Plate XX. fig. 50.)

Mitra (Costellaria) collinsoni, A. Adams, Journal Linn. Soc. 1864, vol. vii. p. 200; Sowerby, Thes. Conch. figs. 621, 622 (merely caricatures); Smith, Annals and Mag. Nat. Hist. 1875, vol. xv. p. 425.

Hab. Station 9. Also Kino-o-Sima (*A. Ad.*), Ooshima and Matoza (*Capt. St. John*).

This species has four plicæ on the columella, and not three as stated by Adams. In the white zone which occupies the lower half of the whorls there is a brown line interrupted by the costellæ, in this respect agreeing with *M. bronni*, Dunker, which is known to me only by the description, from which it appears to be a stouter shell.

83. MITRA (COSTELLARIA) GOTOENSIS. (Plate XX. fig. 51.)

Shell like the preceding species (*M. collinsoni*); but with thicker costæ and consequently narrower interstices, white, stained with light purplish brown at the inferior margin of the upper whorls, and with the lower half of the last of the same colour; apex also stained with brown: whorls 9, a trifle convex; costæ 18 on a whorl, slightly arcuate; interstices transversely sulcated; sulci six to seven on the penultimate whorl, and about sixteen on the last; columella quadruplicate; aperture small, internally lirate, white at the margin of the lip.

Length $13\frac{1}{3}$ millims., diam. 4; length of aperture 5.

Hab. Station 7.

84. MITRA (PUSIA) ÆMULA. (Plate XX. fig. 52.)

Shell fusiformly ovate, blackish brown, with a narrow yellow line round the middle of the whorls, and yellow at the upper margin, and a second line on the last whorl rather below the middle; clothed with an olive epidermis obscuring the colouring: whorls 8, slightly convex, with stoutish longitudinal costæ, about fourteen in number on the penultimate volution, attenuated and obsolete just before the five oblique stoutish liræ encircling the cauda; interstices smooth, about as broad as the ribs. Aperture small, dark brown, with two yellow transverse lines, lirate far within; columella armed with four plicæ and a slight callus at the upper extremity.

Length 12 millims., diam $4\frac{1}{2}$; length of aperture $5\frac{1}{2}$.

Hab. Station 7.

This species is allied to *M. analogica*, Reeve, but differs in the length of the spire and aperture, width and position of the yellow zones, and the continuation of the ribs upon the body-whorl.

85. MITRA (PUSIA) INERMIS, Reeve. (Plate XX. figs. 53, 53a.)

Mitra (Pusia) inermis, Reeve, Con. Icon. ii. sp. 279; Sowerby's Thes. Conch. fig. 600 (vile!).

Hab. Station 5. Island of Luzon (*Cuming*).

A single specimen (fig. 53a), which I consider a variety of this species, differs from the type (fig. 53) in being nearly black, with the white zone less well defined, but marked in the same manner with short black and brown lines upon the ribs. Reeve does not mention the sculpture between the costæ: it consists of well impressed lines or sulci, six in number on the upper whorls and eleven or twelve on the last, besides some strong oblique grooves at the extreme base; the liræ between the latter, of which one is especially prominent, are spotted with white. The figure in the Con. Icon. represents the spire much too turreted and the whorls too flat. The copy of Reeve's figure in Sowerby's Thesaurus is simply as bad as possible.

86. CANCELLARIA JAPONICA. (Plate XX. fig. 54.)

Shell ovate, pyramidal, white, thickish: whorls 7, convex, divided by a deep suture, longitudinally ribbed and spirally liræte; costæ rounded, oblique, about 13 on a whorl, rather broader than the interstices; transverse liræ prominent, six or seven on the penultimate whorl and twelve on the last: aperture small, occupying about three eighths of the entire length; columella with two small central oblique plaits.

Length 12 millims., diam. 5.

Hab. Station 1.

This species is remarkable on account of its elongated form and the absence of colour. The only specimen is not in very good condition, and the liræ, which are usually met with in the aperture of species of *Cancellaria*, are not present, and possibly have been broken away with the front part of the labrum, which is incomplete.

87. OLIVA (OLIVELLA) CONSOBRINA, Lischke.

Oliva (Olivella) consobrina, Lischke, Japon. Meer.-Conch. ii. p. 62, pl. 5. f. 10, 11.

? *O. fortunei*, A. Adams, MS.; Marratt in Sowerb. Thesaurus, f. 422, 423.

? *O. fulgurata*, Ad. and Rve. Voy. Samarang, p. 31, pl. 10. f. 12.

Hab. Stations 7 and 22. Nagasaki (*Lischke*).

These three species are very closely related; and it is somewhat doubtful if they are really distinct. If they prove to be so, the name *fulgurata* will take precedence of the other two by many years. This species was quoted by me in the 'Annals and Magazine of Natural History' under the name of *O. fulgurata*.

88. OLIVA (OLIVELLA) SPRETA, Gould. (Plate XX. fig. 55.)

Olivella spreta, Gould, Otia, p. 127.

Shell small, elongate-ovate, pale livid luteous, with light brown indistinct zigzag undulating longitudinal lines: whorls $4\frac{1}{2}$ –5, the

upper ones with straight or even faintly concave outlines, pale at the upper margin, and of a uniform yellowish brown on the rest of the surface; suture deeply channelled; last whorl large, longitudinally streaked with very fine and close white lines (only visible under a lens); columella covered with a thin pellucid callus, with three or four oblique plicæ at the base; basal callous band pale luteous, white at the upper edge, with a brown line just beneath, and bordered inferiorly by the uppermost of the basal oblique plicæ, which is also brown; edge of the canal brown.

Length $6\frac{1}{2}$ millims., diam. 3; aperture 4 long.

Hab. Station 14.

The markings of these little shells, of which there are five, are rather indistinct to the naked eye. The longitudinal pale-brown lines are undulating, or partake of a zigzag disposition. They agree very well with Gould's brief description, and most likely are rightly assigned to his species, of which the Museum already possessed a single colourless example determined by Dr. P. P. Carpenter.

89. ANCILLARIA INORNATA. (Plate XX. fig. 56.)

Shell elongate, acuminate ovate, white, faintly tinged with yellow above the sutural line: whorls 4, coated with a thin enamel; spire moderately acute at the apex, with slightly convex outlines; last whorl indistinctly transversely striated with two narrow oblique sulci on the lower part, whereof the upper is the deeper and borders the basal balteus; the extremity of the whorl deeply sulcated, with three or four oblique plicæ between the sulcations. Aperture occupying rather more than half the whole length; basal notch broad, shallow.

Length 8 millims, diam. 3.

Hab. Japan.

EXPLANATION OF PLATES XIX. & XX.

Fig. 1, 1a. *Terebra gotoensis*, p. 183.

2. *Terebra jeffreysii*, p. 184.

3. — *subtextilis*, p. 185.

4. — *tantilla*, p. 185.

5. — *albozonata*, p. 185.

6, 6a. *Pleurotoma vertebrata*, p. 186.

7. — *niponica*, p. 187.

8. — *difficilis*, p. 187.

9. — *triporcata*, p. 188.

10. — *patruelis*, p. 188.

11. — *consimilis*, p. 188.

12. *Drillia peradmirabilis*, p. 189.

13. — *nagasakiensis*, p. 190.

14. — *longispira*, p. 190.

15. — *japonica*, p. 191.

16. — *subobliquata*, p. 191.

17. — *candens*, p. 192.

18. — *raricostata*, p. 192.

19. — *intermaculata*, p. 193.

20. — *humilis*, p. 193.

21. — *flavonodulosa*, p. 194.

22. — *fortilirata*, p. 194.

23. — *subauriformis*, p. 195.

Fig. 24. *Drillia gracilentia*, p. 195.

25. *Defrancia gracilispira*, p. 196.

26. *Daphnella?* *fuscobalteata*, p. 196.

27. — ? *subzonata*, p. 197.

28. *Mangilia robusticostata*, p. 198.

29. *Lachesis japonica*, p. 198.

30. *Murex sobrinus*, p. 199.

31. *Murex* (*Ocenebra*) *finbriatus*, p. 201.

32. *Urosalpinx innotabilis*, p. 201.

33. *Fusus nigrirostratus*, p. 202.

34. — *niponicus*, p. 203.

35. — *simplex*, p. 204.

36. — *coreanicus*, p. 204.

37, 37a. — *pachyrhaphie*, p. 205.

38. *Siphonalia spadicea*, p. 205.

39, 39a. *Euthria ferrea*, p. 206.

40. *Tritonidea subrubiginosa*, p. 206.

41. *Columbella* (*Atilia*) *lischkei*, p. 207.

1879. "On a collection of Mollusca from Japan." *Proceedings of the Zoological Society of London* 1879, 181-217.

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