

ON SOME PLANKTON ANIMALS COLLECTED BY
THE SYUNKOTU-MARU IN MAY-JUNE 1954

IV. THECOSOMATOUS PTEROPODS¹⁾

TAKASI TOKIOKA

Seto Marine Biological Laboratory, Sirahama

With Plates VII-XIII and 1 Text-figure

The present material comprises the following 23 species and 3 forms:—

EUTHECOSOMATA

Fam. Limacinidae	Individual number	Frequency of occurrence
1. <i>Limacina trochiformis</i>	31	10/28
2. <i>Limacina inflata</i>	39	5/28
3. <i>Limacina lesueurii</i>	2	1/28
4. <i>Limacina bulimoides</i>	7	2/28
Fam. Cavoliniidae		
5. <i>Euclio pyramidata lanceolata</i>	11	4/28
6. <i>Creseis virgula virgula</i>	15	5/28
6a. <i>Creseis virgula conica</i>	21	6/28
7. <i>Creseis acicula acicula</i>	59	9/28
7a. <i>Creseis acicula clava</i>	11	3/28
8. <i>Styliola subula</i>	77	4/28
9. <i>Hyalocylix striata</i>	8	4/28
10. <i>Cuvierina columnella</i>	1	1/28
11. <i>Diacria trispinosa trispinosa</i>	9	5/28
12. <i>Diacria quadridentata quadridentata</i>	12	5/28
13. <i>Cavolinia tridentata tridentata</i>	22	9/28
14. <i>Cavolinia longirostris longirostris</i>	5	4/28
14a. <i>Cavolinia longirostris angulata</i>	5	3/28
15. <i>Cavolinia uncinata</i>	1	1/28
16. <i>Cavolinia globulosa</i>	2	2/28
17. <i>Cavolinia inflexa labiata</i>	10	6/28

1) Contributions from the Seto Marine Biological Laboratory, No. 269.

PSEUDOTHECOSOMATA

Fam. Peraclididae

18. <i>Peraclis reticulata</i>	1	1/28
19. <i>Peraclis apicifulva</i>	1	1/28

Fam. Cymbuliidae

20. <i>Cymbulia sibogae</i>	4	1/28
21. <i>Corolla ovata</i>	6	4/28
22. <i>Corolla intermedia</i>	1	1/28
23. <i>Desmopterus papilio</i>	7	6/28

Most grown shells of the above-listed species can be identified unmistakably, but shells of some small species, young shells of many species and pseudoconchae are liable to be confused. Here, to certificate my identification I wish to give some brief notes, figures and results of measurements in the following ways:

- (1) Horn shaped shells.—The ratio of the width to the length measured on the level 1 mm (or various distances) apart from the posterior end of the shell, represented by $\frac{\text{width}}{\text{length}}$ (1 mm) in tables. The angle between the tangents on the level, where the value $\frac{\text{width}}{\text{length}}$ is measured, is shown under the name of "Rear angle".
- (2) Spiral shells.—In order to show the size of the spire, body whorl and aperture numerically, area of the frontal projection of respective parts of the shell is represented as a percentage of the frontal projection of the whole shell. For instance, the value of the spire is shown in tables in the column indicated simply as "Frontal projection of spire".

1. *Limacina trochiformis* (D'ORBIGNY), 1836

(Pl. VII, Figs. 1-4)

Limacina trochiformis—PELSENEER 1888, TESCH 1904, 1913, 1946; MEISENHEIMER 1905.

Surface of shell is smooth and devoid of any sculptures. Spire is very small as compared with body whorl, SP (the frontal projection of the spire)/BW (the frontal projection of the body whorl, excluding that of the aperture) is 0.07-0.14 in 4 examined specimens, being 0.11 on an average. Aperture large, AP (the frontal projection of the aperture)/BW being 0.55-0.69, 0.61 on an average. Apical angle 75°-96°, 84° on an average. Colour of shell white to faint purplish, columella and the lower part of outer lip purplish, purplish brown or light brownish and sutures on the spire light brownish in some specimens. Umbilicus small, but distinct and deep.

Height	Long diameter	Apical angle	Number of whorls	Frontal projection of		
				spire	body whorl, excluding aperture	aperture
670 μ	570 μ	75°		7.7	54.6	37.7
680	650	96	4 $\frac{1}{2}$	4.2	61.0	34.8
810	750	88		5.0	61.3	33.7
840	730	77		7.9	56.5	35.6

Occurrence: St. 1 (1 shell), 2 (8), 3 (5), 12 (1), 19 (3), 20 (3), 21 (3), 27 (3), 28 (3), 29 (1).

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

(Pl. VII, Figs. 5-6)

Limacina inflata—PELSENEER 1888, TESCH 1904, 1913, 1946; MEISENHEIMER 1905, 1906; VAYSSIÈRE 1915.

Shell depressed, spire extremely low and invisible in the side view. In general, the concavity of the outer lip in the upper half is stretched with translucent lamella. Number of whorls usually 3 in fully grown state. Shell translucent and faintly purplish as a whole or tinted yellow-brownish on spire, or even chalky white in some specimens under a peculiar state of preservation. Umbilicus distinct and sometimes so large that an inner whorl may be observable within it.

Height	Long diameter	Whorl formula*	AP:BW	AP/BW
560 μ	1000 μ	1:0.27:0.09	37.9:62.1	0.61
	1070	1:0.28:0.1		

* See the measuring method for shells of Atlantidae, Publ. Seto Mar. Biol. Lab., Vol. IV, Nos. 2-3 (1955), p. 228.

Occurrence: St. 10 (5), 13 (8), 27 (5), 28 (18), 29 (3).

3. *Limacina lesueuri* (D'ORBIGNY), 1836

(Pl. VII, Figs. 7-8)

Limacina lesueuri—TESCH 1904, 1913.

Limacina lesueuri—PELSENEER 1888, MEISENHEIMER 1905, VAYSSIÈRE 1915, TESCH 1946.

Spire low and aperture rather large, SP/BW is 0.16 and AP/BW is 0.77. Shell whitish, slightly tinted yellowish on the spire. Umbilicus distinct, large and deep.

Height	Long diameter	Apical angle	Number of whorls	Frontal projection of		
				spire	body whorl, excluding aperture	aperture
840 μ	790 μ	133°	3½	8.3	51.8	39.9
	1070		4			

Occurrence: St. 28 (2).

4. *Limacina bulimoides* (D'ORBIGNY), 1836

(Pl. VIII, Figs. 9-10)

Limacina bulimoides—PELSENEER 1888, TESCH 1904, 1913, 1946; MEISENHEIMER 1905, VAYSSIÈRE 1915, MASSY 1932.

Spire is very large and tall, SP/BW being 0.39-0.46 in two measured specimens. Aperture rather small, AP/BW is 0.54-0.56. Shell translucent and nearly colourless, faintly purplish or whitish in some cases under a peculiar state of preservation. Columella brownish, lower part of outer lip is frequently coloured purplish or brownish. Sutures, most frequently the lowest one, may be also brownish. Umbilicus very small or closed entirely in some fully grown specimens.

Height	Long diameter	Apical angle	Number of whorls	Frontal projection of		
				spire	body whorl, excluding aperture	aperture
1030 μ	600 μ	55°	5	20.0	51.3	28.7
1140	660	65	5			
1410	740	56	6			

Occurrence: St. 2 (5), 29 (2).

5. *Euclio pyramidata lanceolata* (LESUEUR), 1813

(Pl. VIII, Figs. 11-13)

Clio pyramidata—PELSENEER 1888, TESCH 1904, MEISENHEIMER 1905.

Clio pyramidata lanceolata—TESCH 1913.

Cleodora pyramidata—VAYSSIÈRE 1915, MASSY 1932.

Euclio pyramidata—TESCH 1946, 1948.

Embryonal shell is elongate and slightly constricted at the base. Tip is pointed very sharply and the curvature of the shell surface is rather inconspicuous. Larval shell slender and shows a section roughly triangular in outline, each angle being rounded. On a 6.7 mm long shell, there are 17 distinct growth lines and a median crest is discriminated in the distal half of the dorsal shell.

Length	$\frac{\text{Width}}{\text{Length}}$ (1 mm)	Rear angle
1.1 mm	0.53	31°
1.6	0.39	21
6.7	0.39	19

Occurrence: St. 2 (4), 13 (1), 28 (2), 29 (4).

6. *Creseis virgula virgula* RANG, 1828

(Pl. IX, Fig. 14)

Clio (Creseis) virgula—PELSENEER 1888, TESCH 1904.

Creseis virgula—MEISENHEIMER 1905, TESCH 1946, 1948.

Creseis virgula virgula—TESCH 1913.

Cleodora (Creseis) virgula—VAYSSIÈRE 1915.

Embryonal shell is elongate and scarcely swollen. The tip is rounded. The constriction at the base is so faint that practically the embryonal shell is hardly discriminated.

Length	$\frac{\text{Width}}{\text{Length}}$ (1 mm)	Rear angle
1.5 mm	0.5	40°

Occurrence: St. 1 (1), 12 (1), 14 (3), 28 (6), 29 (4).

6a. *Creseis virgula conica* (ESCHSCHOLTZ), 1829

(Pl. IX, Figs. 15-17)

Clio (Creseis) conica—PELSENEER 1888.

Creseis conica—MEISENHEIMER 1905.

Creseis virgula conica—TESCH 1913.

Creseis virgula f. conica—TESCH 1948.

Length	$\frac{\text{Width}}{\text{Length}}$ (1 mm)	Rear angle
1.1 mm	0.37	30°
1.4	0.28	14
1.5	0.31	16

Occurrence: St. 1 (1), 2 (13), 10 (1), 16 (1), 28 (1), 29 (4).

7. *Creseis acicula acicula* RANG, 1828

Clio (Creseis) acicula—PELSENEER 1888, TESCH 1904.

Creseis acicula—MEISENHEIMER 1905, TESCH 1946, 1948.

Creseis acicula acicula—TESCH 1913.

Cleodora (Creseis) acicula—VAYSSIÈRE 1915.

Embryonal shell is elongate, with rounded tip and shows a slight swelling. The constriction at the base is very slight, but distinct; the shell is slightly thickened at this constricted part.

Occurrence: St. 1 (3), 2 (25), 3 (1), 6 (1), 19 (8), 20 (8), 27 (8), 28 (4), 29 (1).

7a. *Creseis acicula clava* RANG, 1828

(Pl. IX, Figs. 18-19)

Creseis acicula clava—TESCH 1913.

Creseis virgula var. or f. *clava*—TESCH 1946, 1948.

The specimens treated here resemble superficially *Cr. virgula conica*, especially closely in younger shells, although they have embryonal shells of the "acicula-type" differing distinctly from those of *Cr. virgula* and its varieties or forms.

Length	$\frac{\text{Width}}{\text{Length}}$ (1 mm)	Rear angle
1.5 mm	0.3	13.5°
1.9	0.3	14

Occurrence: St. 27 (2), 28 (7), 29 (2).

8. *Styliola subula* (QUOY et GAIMARD), 1827

(Pl. IX, Fig. 20)

Clio (Styliola) subula—PELSENEER 1888, TESCH 1904.

Styliola subula—MEISENHEIMER 1905, 1906; TESCH 1913, 1946, 1948.

Cleodora (Styliola) subula—VAYSSIÈRE 1915, MASSY 1932.

The embryonal shell is elongate and hardly swollen. The tip is pointed acutely and the base is constricted very slightly. As a whole it resembles very closely the embryonal shell of *Euclio pyramidata*, although the former is much less distinguishable than the latter. The characteristic longitudinal crest is observable already on a 1.9 mm long shell near the distal end. Such young shells resemble superficially young *Creseis* spp., but the appearance of the embryonal shell differs distinctly between these forms.

Length	$\frac{\text{Width}}{\text{Length}}$ (1 mm)	Rear angle
1.9 mm	0.26	11°

Occurrence: St. 2 (42), 3 (4), 28 (16), 29 (15).

9. *Hyalocylix striata* (RANG), 1828

(Pl. IX, Fig. 21)

Clio (Hyalocylix) striata—PELSENEER 1888, TESCH 1904.

Hyalocylix striata—MEISENHEIMER 1905, TESCH 1946, 1948.

Hyalocylis striata—TESCH 1913.

Cleodora (Hyalocylix) striata—VAYSSIÈRE 1915, MASSY 1932.

A 1 mm long young shell is already devoid of the embryonal shell.

Length	$\frac{\text{Width}}{\text{Length}}$ (1 mm)	Rear angle
1 mm	0.54	24°

Occurrence: St. 2 (1), 12 (3), 14 (1), 28 (3).

10. *Cuvierina columnella* (RANG), 1827

Cuvierina columnella—PELSENEER 1888, TESCH 1904, 1913, 1946, 1948; MEISENHEIMER 1905, MASSY 1932.

Cuvieria columnella—VAYSSIÈRE 1915.

Occurrence: St. 28 (1).

11. *Diacria trispinosa trispinosa* (LESUEUR), 1821

(Pl. X, Figs. 23-25)

Cavolinia trispinosa—PELSENEER 1888.

Cavolinia (Diacria) trispinosa—TESCH 1904.

Diacria trispinosa—MEISENHEIMER 1905, VAYSSIÈRE 1915, MASSY 1932, TESCH 1946, 1948.

Diacris trispinosa trispinosa—TESCH 1913.

Cleodora compressa—PELSENEER 1888, TESCH 1904, VAYSSIÈRE 1915.

I refer here only to young shells known to us under the name of "*Cleodora compressa* SOULEYET." Shell is compressed very much; the lateral edges are thickened to ribs excepting in the distal portion rapidly growing. In general, many fine growth lines are observable on the surface excepting in the posterior part. Embryonal shell nearly spherical, frequently coloured brownish as well as in the adjacent portion.

Length	Width Length	Rear angle
1.5 mm	0.24 (8/7 mm)	8°
1.7	0.21 (8/7 mm)	8
2.4	0.21 (8/7 mm)	7
3.4	0.24 (10/7 mm)	9
3.5	0.21 (2 mm)	9
4.2	0.29 (1 mm)	

Occurrence: Grown shells St. 11 (2); Young shells St. 12 (3), 14 (1), 28 (1), 29 (2).

12. *Diacria quadridentata quadridentata* (LESUEUR), 1821

(Pl. X, Figs. 27-28; Pl. XI, Fig. 26)

Cavolinia quadridentata—PELSENER 1888, VAYSSIÈRE 1915.

Cavolinia (Diacria) quadridentata—TESCH 1904.

Diacria quadridentata—MEISENHEIMER 1905, TESCH 1946, 1948.

Diacria quadridentata quadridentata—TESCH 1913.

Cleodora pygmaea—PELSENER 1888, TESCH 1904.

Young shells, "*Cleodora pygmaea* BOAS", are usually coloured yellowish brown. They may be whitish sometimes, even in such cases the lateral ribs are coloured yellowish brown. The growing distal margins, especially of the dorsal shell are generally fringed with transparent lamella. A median and two lateral longitudinal depressions, and many fine growth lines are observable on the dorsal shell. The distal margin of the ventral shell is nearly always broken off, this part is considered to be extremely fragile. The embryonal shell nearly spherical.

Length	Width Length	Rear angle
1.2 mm	0.39 (8/7 mm)	25°
1.3	0.43 (8/7 mm)	25
1.8	0.29 (1 mm)	14
2.7	0.32 (2 mm)	17
2.9		27

Occurrence: Grown shells St. 17 (1), 20 (2), 28 (4); young shells St. 12 (3), 19 (1), 28 (1).

13. *Cavolinia tridentata tridentata* (FORSKÅL), 1775

(Pl. XII)

Cavolinia tridentata—PELSENEER 1888, TESCH 1904, 1946, 1948; MEISENHEIMER 1905, VAYSSIÈRE 1915, MASSY 1932.

Cavolinia tridentata tridentata—TESCH 1913.

Pleuropus longifilis—PELSENEER 1888, TESCH 1904.

A considerable number of young shells referable to "*Pleuropus longifilis* TROSCHEL" or "*Hyalaea complanata* GEGENBAUR" were found in the material. These shells are evidently not belonging to *Cav. inflexa*, because distinct lateral longitudinal depressions are clearly shown on the dorsal shell of a large one of the specimens of this series. However, it can not be warranted that all the specimens of this series belong to the single species "*Cavolinia tridentata*"; contrarily it is very possible that they comprise some young shells of one or two other cavolinians, namely *Cav. gibbosa* and *Cav. uncinata*, which I could not distinguish from those of *Cav. tridentata*. In future, statistical analyses on a large data obtained by measuring abundant specimens in various ways will probably be able to separate young shells of these species from one another.

Length	$\frac{\text{Width}}{\text{Length}}$ (1 mm)	Rear angle
1.2 mm	0.69	40°
1.3	0.74	46
1.3	0.63	41
1.3		35
1.4	0.59	31
1.4	0.56	39
1.7	0.8	49
1.7	0.54	30
1.8	0.59	29
2.2	0.83	36
2.4		42
2.6	0.57	32

Occurrence: Grown shells St. 12 (1); young shells St. 1 (1), 2 (2), 3 (1), 10 (1), 12 (9), 13 (4), 19 (1), 27 (1), 29 (1).

14. *Cavolinia longirostris longirostris* (LESUEUR), 1821

(Pl. IX, Figs. 22-22')

Cavolinia longirostris—PELSENEER 1888, TESCH 1904, 1946, 1948; MEISENHEIMER 1905, VAYSSIÈRE 1915, MASSY 1932.

Cavolinia longirostris longirostris—TESCH 1913.

Hyalaea laevigata—PELSENEER 1888, TESCH 1904.

Cavolinia laevigata—VAYSSIÈRE 1915.

Two young shells referable to "*Hyalaea laevigata* D'ORBIGNY" were found in the

material. As they are rather in a poor state of preservation, I can only give here a result of the measurement on the single specimen.

Length	$\frac{\text{Width}}{\text{Length}}$ (1 mm)	Rear angle
1.2 mm	0.91	54°
1.7		

Progenitors are most frequently coloured faint purplish.

Occurrence: St. 9 (1), 11 (2 young shells), 19 (1), 21 (1).

14a. *Cavolinia longirostris angulata* (SOULEYET), 1852

Hyalaea angulata—TESCH 1904.

Cavolinia longirostris angulata—TESCH 1913, 1948.

Shells are most frequently coloured brownish.

Occurrence: St. 1 (1), 28 (2), 29 (2).

15. *Cavolinia uncinata* (RANG), 1836

Cavolinia uncinata—PELSENEER 1888, TESCH 1904, 1913, 1946, 1948; MEISENHEIMER 1905, MASSY 1932.

Occurrence: St. 13 (1).

16. *Cavolinia globulosa* (RANG), 1850

Cavolinia globulosa—PELSENEER 1888, TESCH 1904, 1913, 1946, 1948; MEISENHEIMER 1905.

Occurrence: St. 12 (1), 28 (1).

17. *Cavolinia inflexa labiata* (D'ORBIGNY), 1836

(Pl. XI, Figs. 29-33)

Cavolinia inflexa—PELSENEER 1888, TESCH 1904, MEISENHEIMER 1905, VAYSSIÈRE 1915, MASSY 1932.

Cavolinia inflexa labiata—TESCH 1913.

Cavolinia inflexa lata—TESCH 1946, 1948.

Hyalaea depressa—PELSENEER 1888, TESCH 1904.

Young shells, "*Hyalaea depressa*", are markedly compressed dorso-ventrally. Narrow posterior part is clearly discriminated, curved dorsads and ending in a rounded tip. Growth lines may be read on the dorsal shell.

Length	Width Length	Rear angle
0.71 mm	1.0 (5/7 mm)	65°
0.76	1.0 (5/7 mm)	58
0.76	1.08 (5/8 mm)	87
0.96	1.0 (5/7 mm)	72
1.0	1.0 (5/7 mm)	73
1.2	1.0 (0.7 mm)	
	1.14 (1 mm)	68
1.2	1.2 (5/7 mm)	73
1.8	1.0 (0.65 mm)	
	1.14 (1 mm)	73
2.3	0.9 (1 mm)	65

Occurrence: Grown shells St. 2 (1); young shells St. 2 (3), 12 (1), 13 (1), 14 (1), 27 (1), 28 (2).

18. *Peraclis reticulata* (D'ORBIGNY), 1836

(Pl. XIII, Figs. 6-6')

Peraclis reticulata—PELSENER 1888, MEISENHEIMER 1905, 1906; VAYSSIÈRE 1915, TESCH 1946, 1948.

Peraclis reticulata var. *minor*—TESCH 1904.

Peraclis reticulata—TESCH 1913.

A single specimen from St. 29. Surface of the shell reticulated and yellowish brown in colour. Umbilicus closed.

Height	Long diameter	Apical angle	Number of whorls	Frontal projection of		
				spire	body whorl, excluding aperture	aperture
1.09 mm	0.93 mm	102°	3	2.5	46.2	51.3

19. *Peraclis apicifulva* MEISENHEIMER, 1906

(Pl. XIII, Figs. 7-7')

Peraclis apicifulva—MEISENHEIMER 1906, VAYSSIÈRE 1915, TESCH 1946, 1948.

Peraclis apicifulva+*P. brevispira*—TESCH 1913.

A single shell from St. 20. It is rather in a poor state of preservation, being softened considerably in the preservative. Shell is very thin, its surface is quite devoid of any sculptures and light yellowish brown in colour. Umbilicus closed. The lower protuberance of the outer lip is very delicate.

Height	Long diameter	Apical angle	Number of whorls	Frontal projection of		
				spire	body whorl, excluding aperture	aperture
1.19 mm	0.9 mm	115°	3	2.2	42.9	54.9

20. *Cymbulia sibogae* TESCH, 1904

(Fig. 1, A)

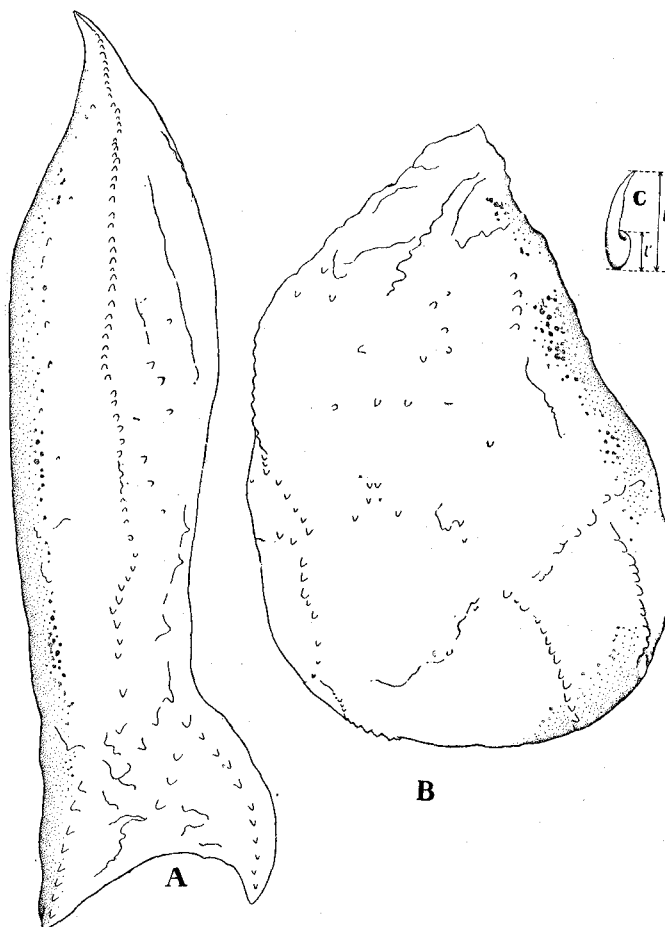


Fig. 1, A—*Cymbulia sibogae* TESCH, 22 mm long pseudoconcha, posterior side. $\times 7$
 B—*Corolla ovata* (QUOY et GAIMARD), posterior side of the pseudoconcha. $\times 7$
 C—The same pseudoconcha, profile. $1' < \frac{1}{21}$

Cymbulia Sibogae—TESCH 1904, MEISENHEIMER 1905.

Cymbulia sibogae—TESCH 1913.

Four pseudoconchae from St. 28, ranging from 8 mm to 22 mm in length. Pseudoconchae very slender, the dorsal part is tapering for a considerable length and ends acutely. A long median spiniferous ridge and two short ventro-lateral ones are observable clearly, although they are all rather low; besides a considerable number of spinules scattered irregularly.

21. *Corolla ovata* (QUOY et GAIMARD), 1832

(Fig. 1, B)

Cymbuliopsis ovata—PELSENEER 1888, TESCH 1904.

Corolla ovata—TESCH 1913.

Aperture of pseudoconcha is much longer than a half of the length of the pseudoconcha. The distribution of spinules irregular, although some ones may be arranged in short rows.

Occurrence: St. 3 (1), 16 (1), 20 (1), 28 (3).

22. *Corolla intermedia* (TESCH), 1903

(Pl. XIII, Figs. 8-8')

Cymbuliopsis intermedia—TESCH 1904.

Corolla intermedia—TESCH 1913.

A single young pseudoconcha referable to this species from St. 19. Pseudoconcha narrower than in the preceding species, 14.5 mm long \times 4.5 mm wide; the aperture slightly longer than a half of the length of the pseudoconcha. The distribution of spinules quite irregular.

23. *Desmopterus papilio* CHUN, 1889

Desmopterus papilio—MEISENHEIMER 1905, TESCH 1913.

Desmopterus—TESCH 1946.

Occurrence: St. 1 (1), 11 (1), 17 (1), 20 (1), 28 (2), 29 (1).

LITERATURE

- MASSY, A. L. (1932): Mollusca: Gastropoda. Thecosomata and Gymnosomata. Discovery Reports, Vol. III.
- MEISENHEIMER, J. (1905): Pteropoda. Wiss. Ergebn. Deutsch. Tiefsee-Exped., Bd. 9, Lief. 1.
- MEISENHEIMER, J. (1906): Die Pteropoden der Deutschen Südpolar-Expedition 1901-1903. Ergebn. Deutsch. Südpolar-Exped., Bd. IX, Zool. 1.

- PELSENER, P. (1888): Report on the Pteropoda collected by H. M. S. Challenger during the years 1873-76. Part II. The Thecosomata. Challenger Report, Vol. XXIII.
- TESCH, J. J. (1904): The Thecosomata and Gymnosomata of the Siboga-Expedition. Siboga-Exped., Monogr. LII.
- TESCH, J. J. (1913): Pteropoda. Schulze's "Das Tierreich", Lief. 36.
- TESCH, J. J. (1946): The thecosomatous pteropods. I The Atlantic. Dana Report, No. 28.
- TESCH, J. J. (1948): The thecosomatous pteropods. II The Indo-Pacific. Dana Report, No. 30.
- VAYSSIÈRE, A. (1915): Mollusques Euptéropodes (Ptéropodes Thécosomes) provenant des campagnes des yachts Hirondelle et Princesse-Alice. Res. Camp. Sci. Prince de Monaco, Fasc. XLVII.

EXPLANATION OF PLATES VII-XIII

PLATE VII

- Figs. 1-4. *Limacina trochiformis* (D'ORBIGNY)
 1 ...680 μ high shell. $\times 73$
 1'...The same, apical view. $\times 73$
 2 ...670 μ high shell. $\times 47$
 3 ...840 μ high shell. $\times 47$
 4 ...810 μ high shell. $\times 47$
- Figs. 5-6. *Limacina inflata* (D'ORBIGNY) $\times 47$
 5 ...Shell with 1 mm long diameter, apical view.
 5'...The same, front view.
 6 ...Shell with 1.07 mm long diameter, apical view.
 6'...The same, under side.
- Figs. 7-8. *Limacina lesueuri* (D'ORBIGNY) $\times 47$
 7 ...840 μ high shell.
 7'...The same, apical view.
 8 ...Shell with 790 μ long diameter, apical view.

PLATE VIII

- Figs. 9-10. *Limacina bulimoides* (D'ORBIGNY) $\times 47$
 9 ...1.14 mm high shell.
 9'...The same, right side.
 10 ...1.41 mm high shell.
 10'...The same, right side.
- Figs. 11-13. *Euclio pyramidata lanceolata* (LESUEUR)
 11 ...6.7 mm long shell, dorsal. $\times 15$
 11'...Posterior part of the same shell. $\times 47$
 12 ...1.6 mm long shell, ventral. $\times 47$
 12'...Section of the same shell. $\times 47$
 13 ...1.1 mm long shell. $\times 47$

PLATE IX

- Fig. 14. *Creseis virgula virgula* RANG, 1.5 mm long shell. $\times 47$
- Figs. 15-17. *Creseis virgula conica* ESCHSCHOLTZ
 15 ...1.4 mm long shell. $\times 73$
 16 ...1.1 mm long shell. $\times 47$
 17 ...1.5 mm long shell. $\times 23$
- Figs. 18-19. *Creseis acicula clava* RANG $\times 47$
 18 ...1.9 mm long shell.
 19 ...1.5 mm long shell.
- Fig. 20. *Styliola subula* (QUOY et GAIMARD), 1.9 mm long shell. $\times 47$
- Fig. 21. *Hyalocylix striata* (RANG), 1 mm long shell. $\times 47$
- Figs. 22-22' *Cavolinia longirostris longirostris* (LESUEUR), young shell
 "*Hyalaea laevigata* D'ORBIGNY". $\times 23$

- 22 ...1.2 mm long shell, ventral.
22' ...1.7 mm long shell, left side.

PLATE X

- Figs. 23-25. *Diacria trispinosa trispinosa* (LESUEUR), young shell "*Cleodora compressa* SOULEYET". ×47
23 ...4.2 mm long shell.
24 ...3.4 mm long shell.
25 ...1.5 mm long shell.
Figs. 27-28. *Diacria quadridentata quadridentata* (LESUEUR), young shell "*Cleodora pygmaea* BOAS".
27 ...2.7 mm long shell. ×33
28 ...1.3 mm long shell. ×47

PLATE XI

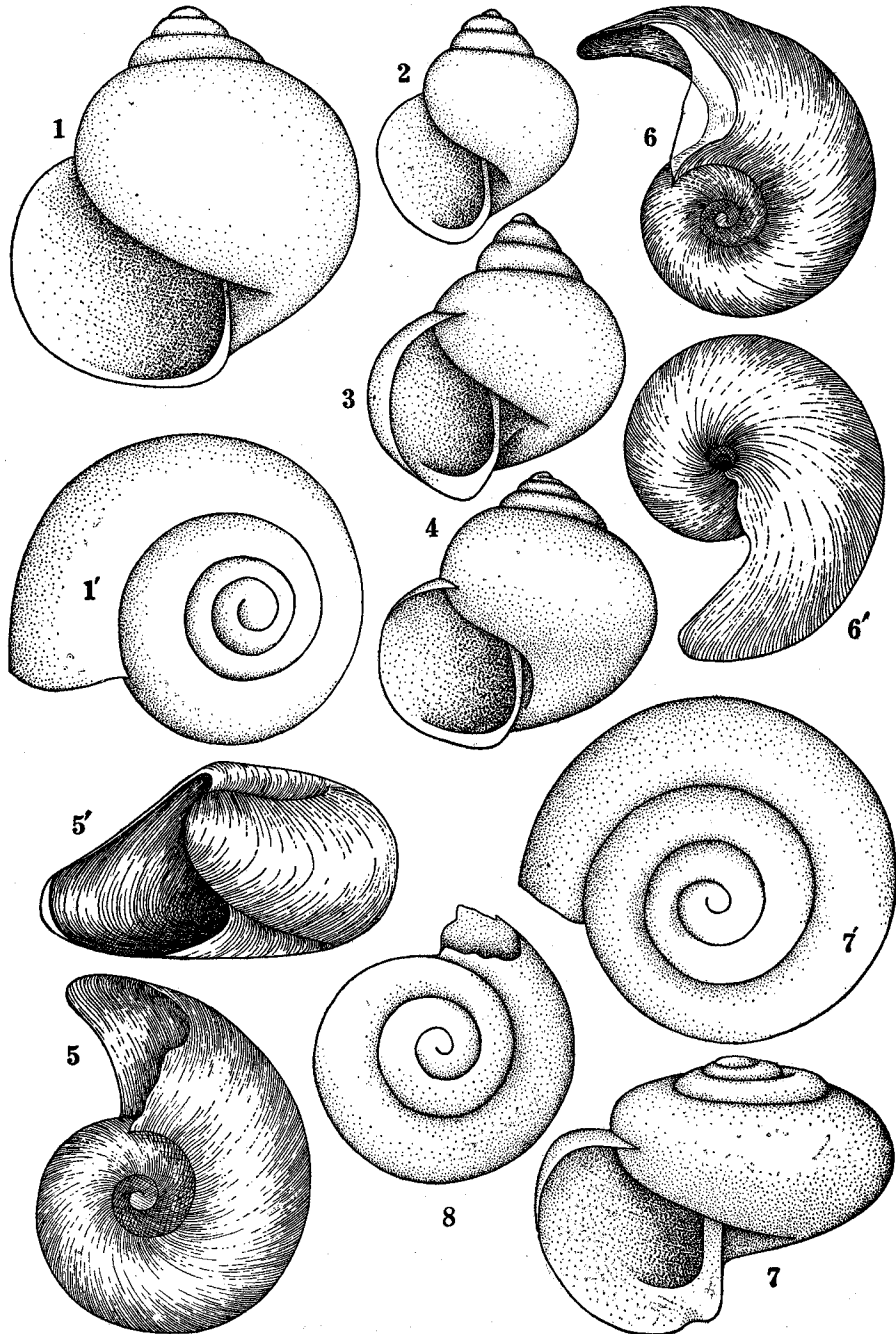
- Fig. 26. *Diacria quadridentata quadridentata* (LESUEUR), 2.9 mm long young shell "*Cleodora pygmaea* BOAS". ×47
Figs. 29-33. *Cavolinia inflexa labiata* (D'ORBIGNY), young shell "*Hyalaea depressa* TESCH".
29 ...1.8 mm long shell, dorsal side. ×33
29' ...The same shell, left side. ×33
30 ...1.2 mm long shell, dorsal side. ×33
31 ...960 μ long shell. ×47
32 ...760 μ long shell. ×47
33 ...710 μ long shell. ×47

PLATE XII

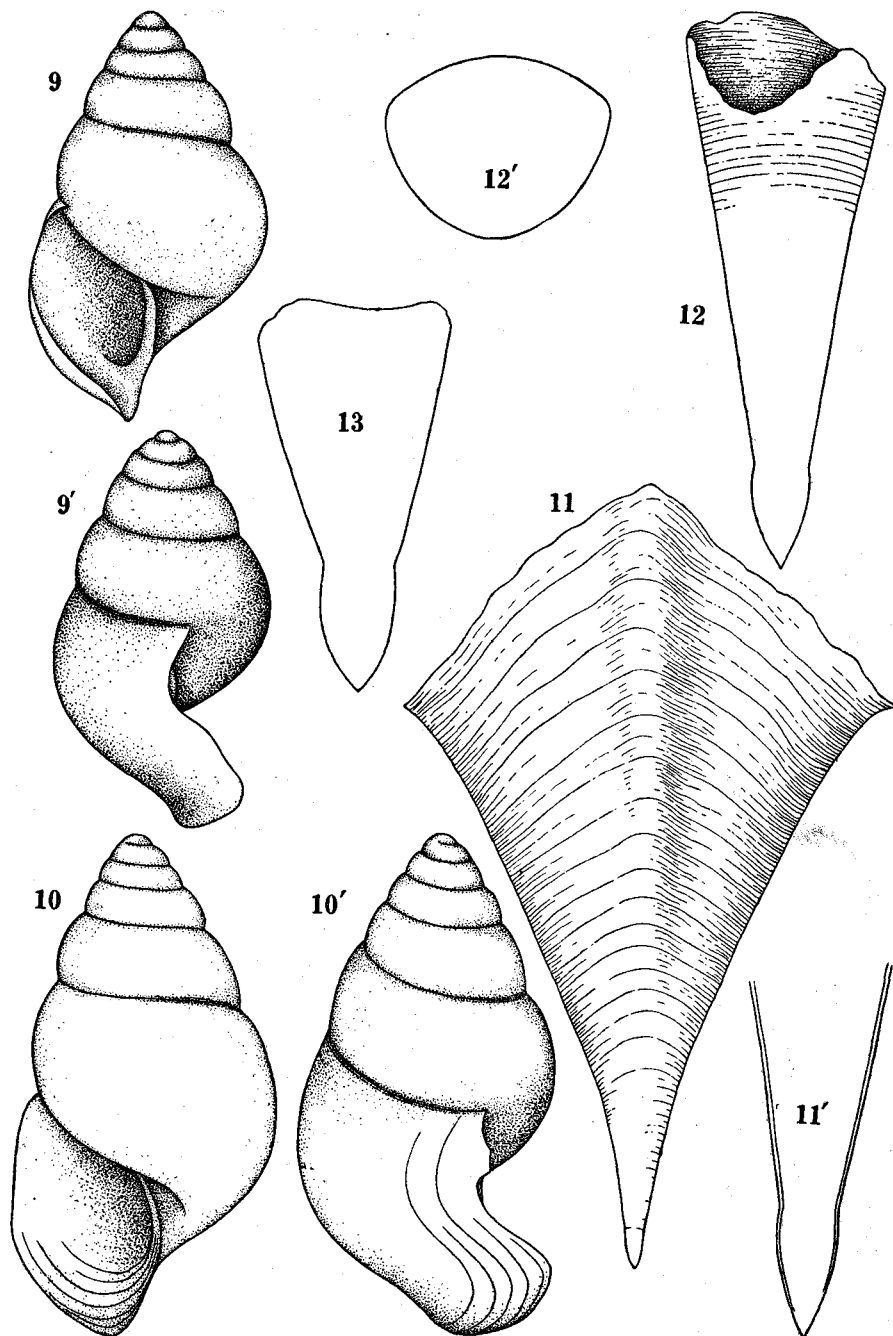
- Figs. 1-5. *Cavolinia tridentata tridentata* (FORSKÅL), young shell "*Pleuropus longifilis* TROSCHER or *Hyalaea complanata* GEGENBAUR".
1 ...2.6 mm long shell, dorsal side. ×47
2 ...1.8 mm long shell, dorsal side. ×47
3 ...1.3 mm long shell, dorsal side. ×47
4 ...1.4 mm long shell, dorsal side. ×47
5 ...1.7 mm long shell. ×23

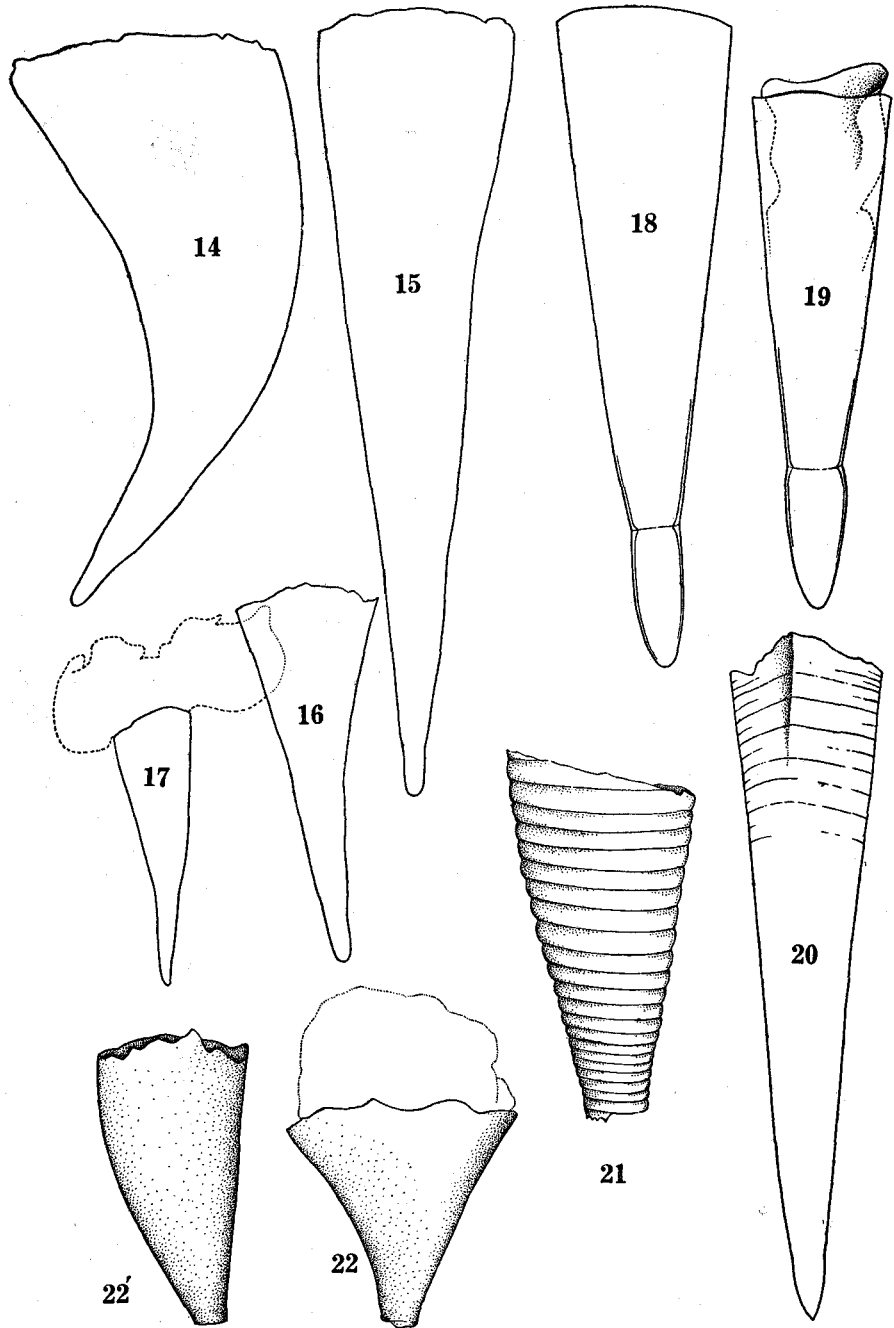
PLATE XIII

- Figs. 6-6'. *Peraclis reticulata* (D'ORBIGNY) ×47
6 ...1.09 mm high shell.
6' ...The same, apical view.
Figs. 7-7'. *Peraclis apicifulva* MEISENHEIMER ×47
7 ...1.19 mm high shell.
7' ...The same shell, apical view.
Figs. 8-8'. *Corolla intermedia* (TESCH) ×7
8 ...14.5 mm long pseudoconcha, posterior side.
8' ...The same pseudoconcha, front view.

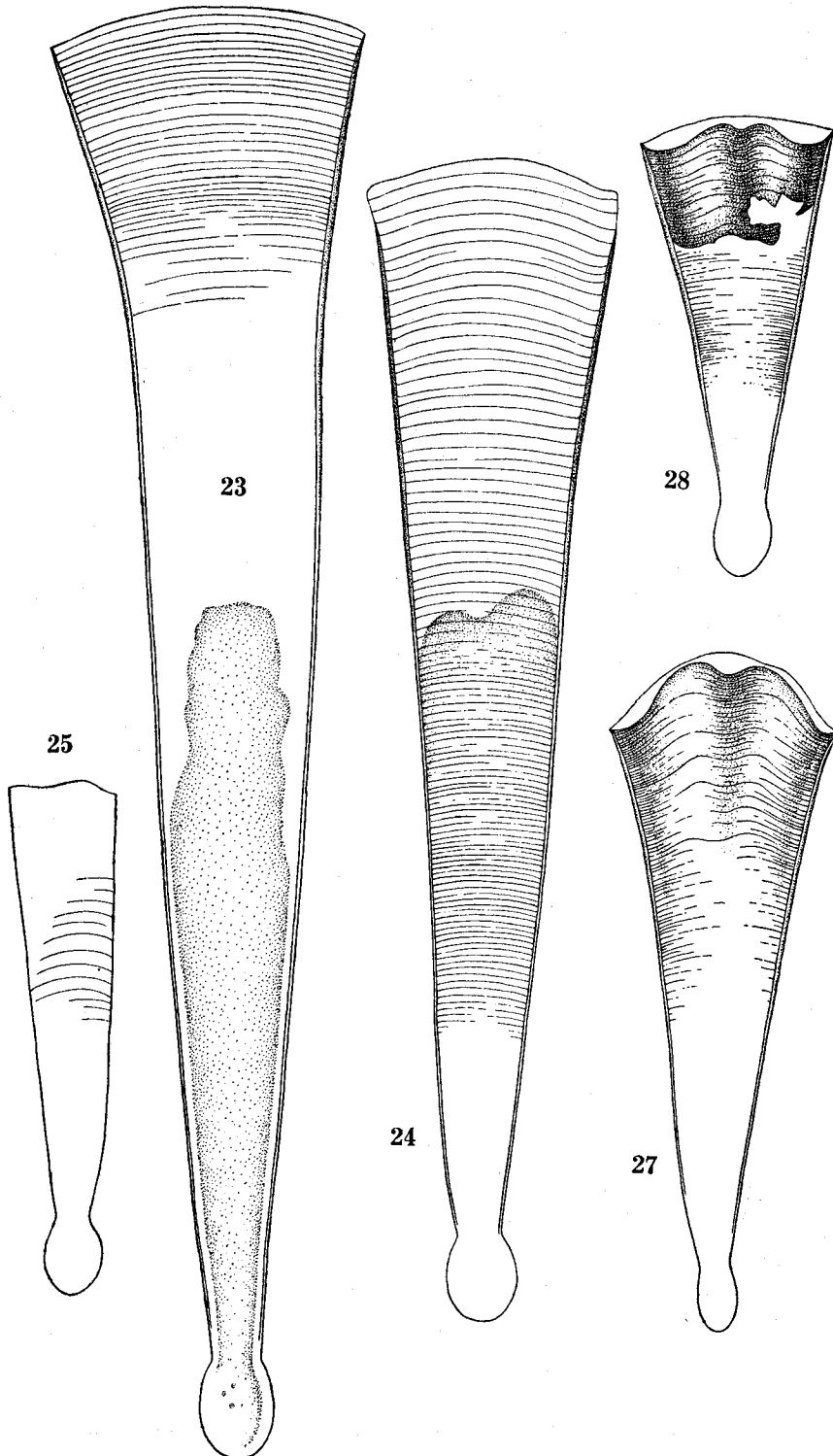


T. TOKIOKA: PLANKTON ANIMALS COLLECTED BY THE SYUNKOTU-MARU, IV.

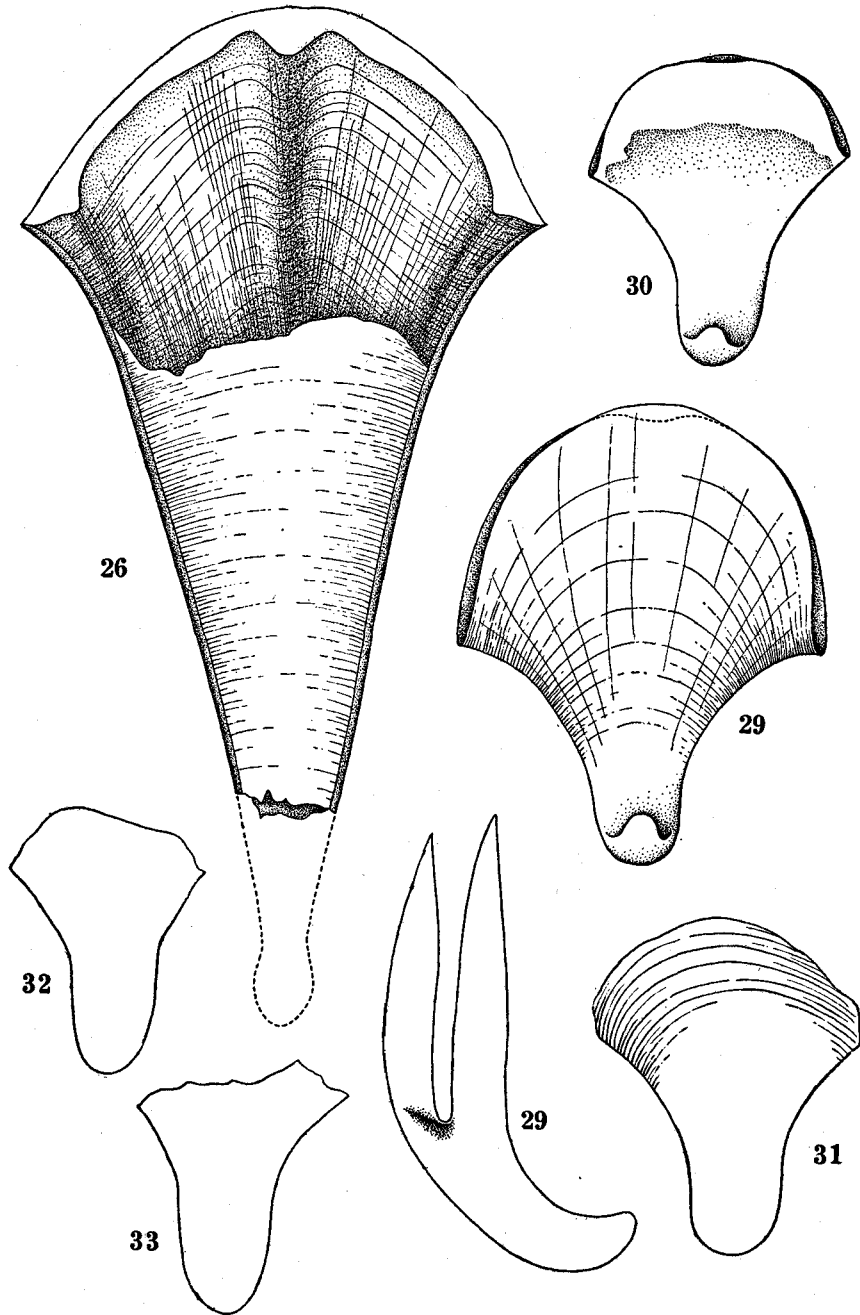




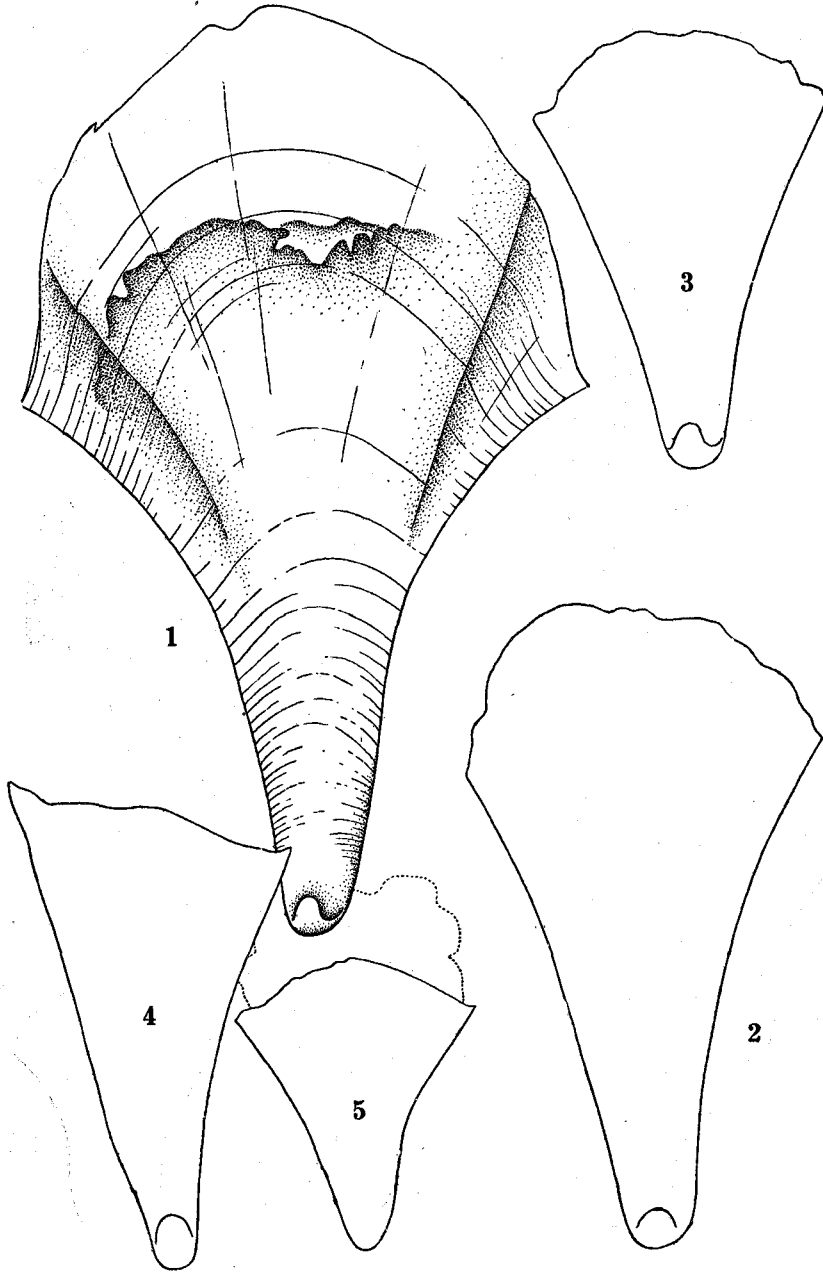
T. TOKIOKA: PLANKTON ANIMALS COLLECTED BY THE SYUNKOTU-MARU, IV.



T. TOKIOKA : PLANKTON ANIMALS COLLECTED BY THE SYUNKOTU-MARU, IV.



T. TOKIOKA: PLANKTON ANIMALS COLLECTED BY THE SYUNKOTU-MARU, IV.



T. TOKIOKA: PLANKTON ANIMALS COLLECTED BY THE SYUNKOTU-MARU, IV.

