

**Zooplankton**

Sheet 122

**ORDER: TINTINNIDA**

**Family: Petalotrichidae**

Genera: Ascampbelliella,  
Acanthostomella, Petalotricha

**Family: Rhabdonellidae**

Genera: Protorhabdonella,  
Rhabdonella, Rhabdonellopsis

**Family: Epiplocylididae**

Genera: Epiplocylis,  
Epiplocyloides, Epicancella

(By S. M. MARSHALL)

**1969**



Plate VII.

	Fig.	Length in $\mu$	Oral diam. in $\mu$ (Max. width in brackets)	Approx. ratio L/oral diam.	Distribution	Notes on lorica
Family PETALOTRICHIDAE KOFOID & CAMPBELL, 1929						Short, tubular or cup-shaped bowl with rounded or pointed end or, rarely, pedicel. Mouth region differentiated with collars, circumoral lip and, in <i>Petalotricha</i> , suboral cone. Aboral end closed. Wall trilaminate with intermediate layer hyaline or weakly alveolar.
Sub-family Ascampbelliellinae CORLISS, 1964						Very small forms, cup or tube shaped with rounded or pointed aboral end. Circumoral region differentiated into inner collar and outer collar or flaring lip with gutter or slope between. No spiral or annular structure except in <i>A. armilla</i> .
Genus <i>Ascampbelliella</i> CORLISS, 1964	Plate VII					Very small tubular or cup-shaped bowls. Circumoral region always with two rims an inner collar and flaring lip. Outer rim sometimes repeated. No teeth.
<i>A. acuta</i> (KOFOID & CAMPBELL, 1929)	1	39-43	30-33 (40)	1.3	11, 13	Small, cup-shaped, with pointed aboral end. Inner collar erect, lip slopes downwards to scarcely projecting outer rim.
<i>A. armilla</i> (KOFOID & CAMPBELL, 1929)	2	27-35	19-20	1.1-1.8	13	Small, tubular, with rounded aboral end, inner collar low, erect separated by gutter from slightly flaring outer collar. Collar and trough sometimes repeated below. Alveolar structure visible in wall. Surface rugose.
<i>A. obscura</i> (BRANDT, 1906)	3	70	42	1.6-1.7	12, 14	Cone-shaped, narrowing more abruptly in aboral $\frac{1}{4}$ to a sharp point. Inner collar erect, outer slightly flaring with gutter between. Well marked alveolar structure in wall.
<i>A. urceolata</i> (OSTENFELD, 1899)	4	45-56	40-42	1.1-1.3	2, 11, 12, 13	Small, wide, conical or sack-shaped bowl with aboral point. Inner collar contracts to mouth, outer flaring, gutter between shallow or absent. Wall almost hyaline.
Genus <i>Acanthostomella</i> JÖRGENSEN, 1927						Small, cup-shaped or tubular, usually with pointed aboral end. Inner and outer collars separated by a trough, outer denticulate. Well defined alveolar structure between inner and outer laminae of wall.
<i>A. elongata</i> KOFOID & CAMPBELL, 1929	5	70	23	3.0	1	Long, tube shaped, aboral end hemispherical with small point. Inner collar erect, outer with about 25 low teeth.
<i>A. gracilis</i> (BRANDT, 1896)	6	45-60	30 (34-35)	1.6-1.7	2, 14	Small, cylindrical, with bluntly pointed aboral end. Inner collar erect, separated by deep groove from flaring denticulate outer collar.

	Fig.	Length in $\mu$	Oral diam. in $\mu$ (Max. width in brackets)	Approx. ratio L/oral diam.	Distribution	Notes on lorica
<i>A. lata</i> KOFOID & CAMPBELL, 1929	7	37-46	30-33	1.3-1.6	11	Cup-shaped, bowl about as wide as long, aboral end a thin pedicel. Collars separated by deep narrow gutter, outer with 20-25 teeth.
<i>A. minutissima</i> KOFOID & CAMPBELL, 1929	9	29-36	22-25	1.3-1.7	11	Cup-shaped with hemispherical or bluntly pointed aboral end. Low inner, slightly flaring outer, collar, outer with 16-30 teeth. Wall with coarse mesh and sometimes with coccoliths.
<i>A. norvegica</i> (DADAY, 1887)	8	36-50	23-25	1.1-2.0	1, 2, 3, 4, 6, 7, 8, 12, 13, 14	Form variable, cup-shaped to rounded. Aboral end rounded or with short solid point. Inner collar low, erect, outer flaring with 20-36 incurved teeth. Wall thin.
<i>A. obtusa</i> KOFOID & CAMPBELL, 1929		26-36	16-24	1.6-1.7	11	Short, cylindrical-conical, narrowing to a short blunt point. Inner collar relatively high, outer with 10-20 stout teeth.
Sub-family Petalotrichinae KOFOID & CAMPBELL, 1929						Bowl shaped lorica with round or pointed aboral end and collar in two parts, suboral cone and flaring lip. Nuchal constriction usually present. Suboral and subnuchal fenestrae.
Genus <i>Petalotricha</i> KENT, 1882						Sack-shaped, conical or globose bowl with nuchal constriction. At junction of two parts of collar often a row of oval fenestrae set horizontally; on bowl long axes of fenestrae vertical. Internal nuchal ridge, and sometimes ridge where cone meets lip. Outer rim of lip sometimes denticulate.
<i>P. ampulla</i> (FOL, 1881)	10	116-165	135	1.1-1.6	8, 11, 12, 13, 14	Globose or ovoid bowl with rounded or pointed aboral end. Suboral cone nearly cylindrical, lip flaring. Edge of lip often irregularly denticulate. Ring of small oval fenestrae at top of cone and a double row on shoulder of bowl.
<i>P. major</i> JÖRGENSEN, 1924	11	84-134	76-137	0.8-1.1	8, 11, 13	Globose with rounded aboral end and marked nuchal constriction. Outer margin minutely serrate. Suboral cone slightly flaring, oral ridge with a row of small fenestrae, outer lip separated by slight gutter, horizontal or nearly so. Fenestrae on upper half of bowl.
<i>P. serrata</i> KOFOID & CAMPBELL, 1929	12	105-120	95-122	1.1	15	Ovoid with slightly pointed aboral end, sometimes with nipple. Suboral cone slightly flaring and lip more so, a row of small fenestrae at the junction and larger ones scattered on top half of bowl. Margin of lip with 48 teeth.
Family RHABDONELLIDAE KOFOID & CAMPBELL, 1929						Long, usually conical or vase shaped, usually with a pedicel, or pedicel knob and lance. Mouth simple or often with gutter between laminae of wall, never denticulate. Aboral end usually closed, sometimes with minute aperture. Ribs simple, branched or anastomosed, vertical

	Fig.	Length in $\mu$	Oral diam. in $\mu$ (Max. width in brackets)	Approx. ratio L/oral diam.	Distribution	Notes on lorica
Genus <i>Protorhabdonella</i> * JÖRGENSEN, 1924						or spiral, reaching from lip to tip of pedicel, often with fenestrae between them. Wall trilaminate with intermediate secondary structure visible.
<i>P. curta</i> (CLEVE, 1901)	13	39–52	22–29	1.4–1.8	11	Short relatively wide and pointed, or slender with pedicel. Mouth always thin, simple. Wall usually hyaline. 8–28 vertical or spiral ribs or fins.
<i>P. simplex</i> (CLEVE, 1900)	14	47–98	26–39	1.5–2.2	13	More or less conical bowl slightly dilated above middle, aboral end pointed, closed. Oral rim simple with only slight thickening of wall below. Ribs 18–24, vertical or slightly spiral; no branching. No fenestrae. Wall thin hyaline.
Genus <i>Rhabdonella</i> * BRANDT, 1906						Short, convex-conical with low collar and pointed aboral end. 6–10 vertical ribs. Wall thick just below collar.
<i>R. amor</i> (CLEVE, 1900)	15	58–107	35–60	1.9–2.9	2, 10, 11, 12, 13	Long, conical or vase shaped gradually contracting to pedicel. Oral margin entire with gutter between laminae, inner usually a little higher than outer lip. Ribs numerous (20–64) simple, branched or anastomosed. Fenestrae none to many, especially suborally.
<i>R. brandti</i> KOFOID & CAMPBELL, 1929	16	95–134	43–53	2.7–3.5	2, 13	Wide cone narrowing gradually to pointed aboral end or short pedicel. Oral rim hardly emergent, gutter shallow. Wall thickest suborally. 24–36 ribs well defined, slight spiral from under lip right-handed to aboral end, bifurcating and anastomosing especially in middle. Fenestrae numerous and inconspicuous.
<i>R. chavesi</i> BRANDT, 1906	17	190–255	51–58	3.7–4.4	11, 12, 13	Convex-conical bowl, narrowing to pedicel about $\frac{1}{3}$ total length. Oral rim higher than in <i>R. amor</i> , gutter shallow. 36–48 almost vertical ribs. Little flare at lip. Fenestrae numerous.
<i>R. conica</i> KOFOID & CAMPBELL, 1929	18	290–470	37–102	4.8–7.9	11, 12, 13, 15	Medium tall, vase-shaped, slender pedicel nearly half total length with knob or swelling near aboral end. Inner collar stands above flaring lip, gutter between shallow. Ribs 36–48 in right-handed spiral from lip. No fenestrae.
						Tall, slender cone-shaped bowl merging gradually into pedicel $\frac{1}{2}$ total length, open at tip. Oral rim no higher than lip. 32–48 ribs almost vertical on top half, curving slightly right to near aboral end. Fenestrae numerous. Jelly like curtain sometimes on upper part.

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<i>R. elegans</i> JÖRGENSEN, 1924	19	110-124	39-54	2.8-4.1	13	Vase-shaped with slender pedicel, closed at tip. Low oral rim and deep gutter. Lip not thickened but flaring slightly. Nuchal constriction above slight expansion in bowl. Ribs almost vertical turning left abruptly on underside of lip. Fenestrae small.
<i>R. hebe</i> (CLEVE, 1900)	20	200-330	47-56	4.1-5.1	11, 12, 13, 14	Medium tall, conical, narrowing gradually to pedicel, about $\frac{1}{3}$ total length, which has fusiform swelling (or at least some differentiation in wall thickness) above minutely open tip. Oral rim low, thickened lip. Ribs 30-42, nearly vertical or with slight twist to R. from lip. Fenestrae present. Jelly-like curtain in oral region.
<i>R. henseni</i> BRANDT, 1906	21	153-354	62-86	2.5-5.8	11, 13, 15	Medium, cylindrical-conical, narrowing to thickish pedicel, $\frac{1}{3}$ - $\frac{1}{2}$ total length, with sometimes a fusiform swelling near tip. Oral rim higher than lip which flares little. 18-48 vertical ribs, numerous fenestrae. Jellylike film envelops upper part.
<i>R. hydria</i> JÖRGENSEN, 1924	22	104-143	54-63	1.7-2.5	11	This squat, flat bottomed form may be an abnormality, possibly of <i>R. spiralis</i> , yet occurs frequently. Low oral rim and deep gutter, flaring oral lip. Ribs run obliquely to R. from oral end, but may or may not reach aboral end.
<i>R. spiralis</i> (FOL, 1881)	24	252-337	47-67	4.7-6.1	11, 13	Tall, cylindrical in upper part narrowing to thick pedicel which contracts to fine, open (sometimes closed) tip. Oral rim barely higher than lip, lip flaring. Ribs 36-60, vertical throughout, or in upper half, but turning right on lower bowl. Fenestrae numerous, small, circular.
<i>R. striata</i> (BIEDERMANN, 1893)	23	200-410	40-57	3.3-4.6	15	Cylindrical-conical with slender pedicel more than $\frac{1}{3}$ total length. Oral rim hardly emergent, lip flaring. Wall with very distinct laminae, thick in pedicel. Ribs 24-54, vertical or slightly spiral. Fenestrae small, numerous. Shorter and stouter than <i>R. spiralis</i> , longer than <i>R. brandti</i> .
Genus <i>Rhabdonellopsis</i> * KOFOID & CAMPBELL, 1929						Long, more or less conical with long pedicel ending in knob and lance. Mouth as in <i>Rhabdonella</i> with inner and outer lamellae separated by gutter. Ribs 10-32 vertical or slightly spiral sometimes extending to knob. Fenestrae usually present. Wall with well marked lamellae, primary and coarse secondary structure.
<i>R. apophysata</i> (CLEVE, 1900)	25	284-350	51-62	5.5-8.0	12, 13	Long, vase-shaped with pedicel nearly $\frac{1}{2}$ total length bearing stout ribbed knob. Oral rim higher than flaring lip. 20-28 vertical or slightly spiral ribs. No fenestrae.

	Fig.	Length in $\mu$	Oral diam. in $\mu$ (Max. width in brackets)	Approx. ratio L/oral diam.	Distribution	Notes on lorica
<i>R. composita</i> (BRANDT, 1906)	26	279-353	46-58	4.7-6.6	13	Tall, cone or vase-shaped, pedicel nearly $\frac{1}{2}$ total length with wide knob and thick lance. Oral rim higher than flaring lip. 12 vertical unbranched ribs not extending to pedicel. A few or no fenestrae.
<i>R. longicaulis</i> KOFOID & CAMPBELL, 1929	27	350-468	50-54	7.0-8.7	11, 13	Long, almost conical, slender bowl, stout tapering pedicel about $\frac{1}{2}$ total length with stout knob and thin lance. Oral rim above flaring lip. 16-32 ribs, nearly vertical, running to pedicel and knob. Fenestrae few and very small.
Family EPIPLOCYLIDIDAE KOFOID & CAMPBELL, 1939						Short, wide, cylindrical or cup-shaped ending aborally in point or short pedicel. Oral rim simple or with inner collar and suboral shelf. Wall with deep polygonal surface reticulations, bounded by raised ridges. Sometimes free lines extending towards mouth.
Genus <i>Epiplocylis</i> , JÖRGENSEN, 1924						Cylindrical or cup-shaped with well-marked pedicel; simple oral rim sometimes thickened suborally. Reticulated zone and free lines never reach mouth. Fenestrae sometimes present in reticulations. Warm or temperate water genus.
<i>E. acuminata</i> (DADAY, 1887)	28	63-97	40-63 (52-79)	1.6-2.1	7, 8, 11, 12, 13, 14, 15	Most of bowl cylindrical or convex-conical, suboral region narrower and free from reticulations. Greatest width about $\frac{1}{3}$ length from mouth. Aboral end with short point or pedicel often more marked than shown. Reticulation over most of bowl. Wall thick in widest part of bowl.
<i>E. blanda</i> JÖRGENSEN, 1924	29	102-158	55-71 (52-65)	1.8-2.2	11, 12, 13	Cylindrical upper part, convex-conical below with short pedicel. Reticulations over lower $\frac{1}{3}$ - $\frac{1}{2}$ length with short, almost vertical, free lines. Wall slightly thicker suborally.
<i>E. carnegiei</i> CAMPBELL, 1942	30	113	56 (81)	2.5	13	Squat, squarish, with suboral bulge, decreasing abruptly aborally to short solid pedicel. Coarse reticulations cover bowl to top of bulge. Wall thickest suborally and in bulge.
<i>E. constricta</i> KOFOID & CAMPBELL, 1929	31	95-120	55-66 (53-59)	1.2-1.9	13	Short, rounded, contracting orally, narrowing below to pedicel. Reticulation covers lower $\frac{1}{3}$ with free lines usually running to left. Wall thickened suborally.
<i>E. undella</i> (OSTENFELD & SCHMIDT, 1901)	32	103-180	50-79	1.7-2.4	13	Large, almost cylindrical in upper part (sometimes angular), conical aboral end and stout tapering pedicel. Reticulations with short free lines on lower $\frac{1}{3}$ . Wall only slightly thickened aborally. HADA (1938) includes in this species <i>E. blanda</i> and <i>E. constricta</i> .



	Fig.	Length in $\mu$	Oral diam. in $\mu$ (Max. width in brackets)	Approx. ratio L/oral diam.	Distribution	Notes on lorica
Genus <i>Epiplocyloides</i> HADA, 1938						Cylindrical or cup shaped, aboral end baggy or conical with point or short pedicel. Oral end differentiated into upright hyaline collar and projecting suboral lip, with gutter between. Coarse reticulations over lower part, or most, of bowl, free lines reaching to, or almost to, lip. Differs from <i>Epiplocylis</i> in oral differentiation, smaller size, shorter pedicel, and greater area of surface covered with reticulation and ribs.
<i>E. acuta</i> (KOFOID & CAMPBELL, 1929)	34	66-70	41-50	1.2-2.1	13	Almost cylindrical in upper half, conical in lower, narrowing to a sharp point. Collar erect, separated from flaring lip by a deep cleft. Strong reticulations on lower half, free lines running vertically on to lip.
<i>E. brandti</i> (KOFOID & CAMPBELL, 1929)	35	59-87	45-67	1.3	13	Short, wide, coming more abruptly than last sp. to a sharp point. Collar separated from flaring lip by a shallow gutter. Reticulations cover $\frac{2}{3}$ bowl and free lines run to just below lip.
<i>E. duplicata</i> BUSCH, 1948					14	Much flattened with mouth in shape of figure of eight. No measurements given. Possibly a deformed specimen.
<i>E. reticulata</i> (OSTENFELD & SCHMIDT, 1901)	33	58-65	47-50	1.2-1.3	8	Short and wide. Bowl almost cylindrical with slightly flaring lip and erect collar. Aboral end baggy with very short pedicel. Reticulations over more than half bowl and free lines almost to lip. HADA unites this sp. with <i>E. brandti</i> .
Genus <i>Epicanella</i> KOFOID & CAMPBELL, 1929						Convex-conical, aboral end bluntly or acutely pointed. Oral end differentiated as in <i>Epiplocyloides</i> but suboral lip is rounded and scarcely projects. Whole surface below lip raised into lattice work made of vertical ribs running all the way and lighter crossribs joining them. Ribs end on lip in fine network. Wall has very thin inner and outer lamellae with primary alveoli between. One species only.
<i>E. nervosa</i> (CLEVE, 1900)	36	79-84	49-59	1.3-1.9	13	As above. Slight constriction below lip and widest just below this. Aboral end acutely or bluntly pointed or truncated. Lorica very transparent.

(For introduction to Plankton Sheets 117-127, Key to numbers used in the tables for distribution, and Sources of illustrations, please refer to Sheet No. 117, pp. 2 and 11-12).