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PTEROPODA THECOSOMATA in the North Atlantic.<sup>1)</sup>

- |  |  |
|--|--|
| 1. Shell calcareous; coiled, straight or slightly curved dorsally .....  | 2  |
| Shell cartilaginous, transparent, boat-shaped  | <i>Cymbulia peroni</i> de Blainville, Fig. 13                          |
| 2. Shell coiled, left-handed .....   | 3  |
| Shell straight or slightly curved dorsally .....   | 4  |
| 3. Columella of shell prolonged into a kind of twisted rostrum, along which a "columellar membrane" stretches.<br>Animal with a short proboscis, consisting of lateral lips of the mouth and the posterior foot lobe |  |
|  | <i>Peraclis</i> (Forbes) <sup>2)</sup>                                 |
| No distinct rostrum, umbilicus generally distinct. Animal without proboscis; mouth situated flush with the plane of the fins   | <i>Limacina</i> Lamarck  |
| 4. Shell widest at aperture, which is more or less triangular  | <i>Euclio</i> Bonnevie   |
| Shell widest behind aperture, which is a transverse slit .....   | 5  |
| 5. Shell ending in a straight hind stalk, dorsal and ventral edges of aperture thickened; often of a brown colour in adult individuals   | <i>Diacria</i> ( <i>trispinosa</i> ) (Lesueur) <sup>3)</sup> , Fig. 11 |
| Shell ending in a curved and short hind stalk, edges of aperture not thickened   | <i>Cavolinia</i> ( <i>inflexa</i> ) (Lesueur) <sup>4)</sup> , Fig. 12  |

<sup>1)</sup> Comprises the region N. of 40°N. Lat.

<sup>2)</sup> Despite the possession of a calcareous shell the genus *Peraclis* is more closely related to *Cymbulia* than to *Limacina*.

<sup>3)</sup> Two subspecies, *major* and *minor*, created by Boas. *major* (Fig. 11A) is generally larger (ca. 13 mm. long); spines at lateral edges of aperture slanting backwards (= *Hyalaea mucronata* Quoy et Gaimard, non d'Orbigny et auct.), *minor* is smaller (Fig. 11B); spines at lateral edges of aperture directed nearly straight outwards.

<sup>4)</sup> Two subspecies, *longa* and *lata*, created by Boas. *longa* (Fig. 12A and B) is typical for the North Atlantic, but generally not farther northwards than the coast of Portugal and the Bay of Biscay; a large posterior part lies behind the line uniting the tips of the lateral spines at the aperture. *lata* (Fig. 12C) inhabits more southern regions; the line uniting the tips of the (more pronounced) lateral spines at the aperture divides the shell into more unequal parts, the posterior one being much the smaller.

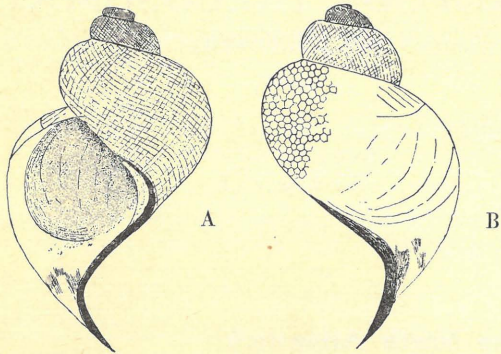


Figure 1.  
*Peracelis reticulata*  
(d'Orbigny).  $\times 10$ .  
A, from aperture; B, from behind.

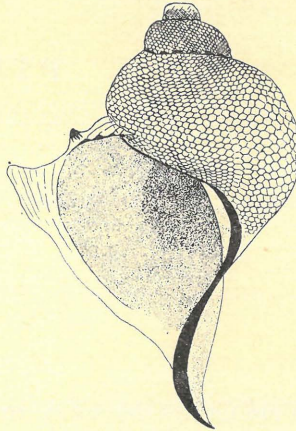


Figure 2.  
*Peracelis bispinosa*  
Pelseneer, from aperture.  
 $\times 10$ .

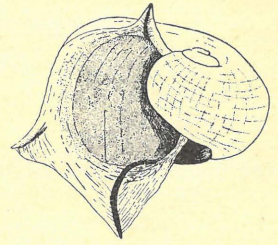


Figure 3.  
*Peracelis triacantha*  
(Fischer), from aperture.  
 $\times 7$ .

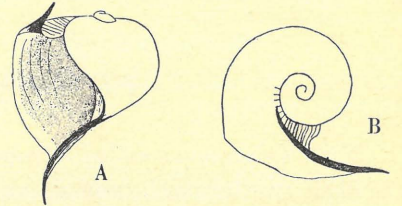
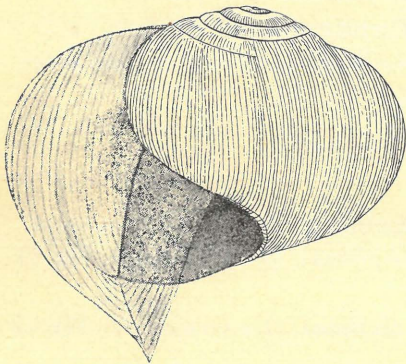
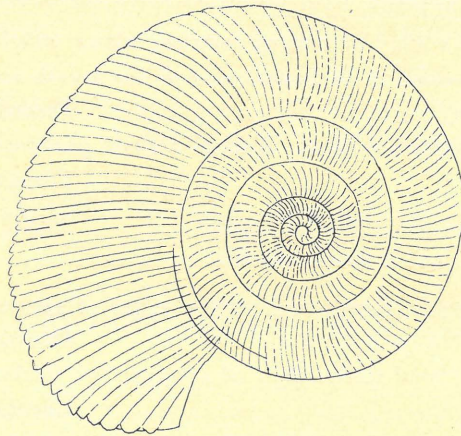


Figure 4.  
*Peracelis moluccensis* Tesch,  
 $\times 7$ .  
A, from aperture;  
B, upper view.

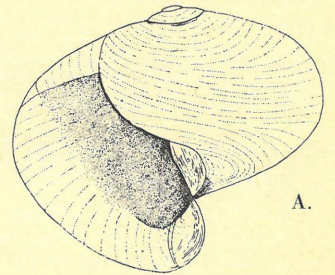


A, from aperture;



B, upper view.

Figure 5.  
*Limacina helicina*  
(Phipps).  $\times 10$ .



A, from aperture;

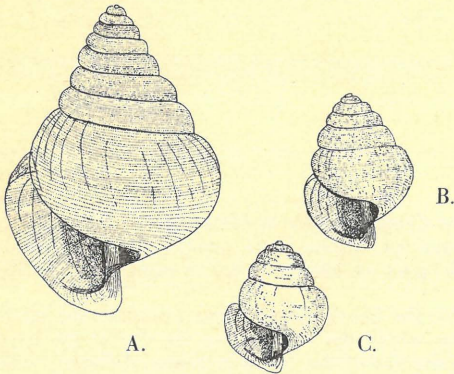
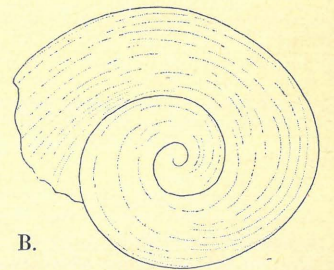


Figure 6.  
*Limacina retroversa*  
(Fleming), from aperture.  
 $\times 10$ .  
A, forma *balea* Möller  
B, transitional form:  
C, forma *retroversa*.



B, upper view.

Figure 7.  
*Limacina helicoides*  
Jeffreys.  $\times 10$ .

J. J. Tesch del.

Genus PERACLIS Forbes.

Species	Shell						Animal	Remarks
	Shape	Sculpture	Rostrum	Aperture	Colour	Max. Size		
1. <i>reticulata</i> (d'Orbigny) Fig. 1	turreted, longer than broad	hexagonal reticulation disappearing on body whorl	long, columellar membrane not developed on free part	rounded, no processes	light- yellow	ca. 6 mm. long	fins fleshy, pro- boscis short, spiral operculum firmly adhering on un- derside of fins	not near surface, but generally at a depth of 100 m. and more; cosmo- politan
2. <i>bispinosa</i> Pelseneer Fig. 2	turreted, longer than broad	hexagonal reticulation disappearing on body whorl	long, columellar membrane developed on free part	rounded, two processes at upper part of aperture <sup>1)</sup>	gray, mud- coloured	ca. 11 mm. long	fins fleshy, pro- boscis short, spiral operculum firmly adhering on un- derside of fins	strictly bathypela- gic, cosmopolitan
3. <i>triacantha</i> (Fischer) Fig. 3	depressed, broader than long	only, fine lines of punctae, especially longitudi- nally	short, with very broad columellar membrane on free part	large, with two proces- ses (excl. rostrum) strengthened by short ribs	trans- parent	ca. 5 mm. broad	fins fleshy, pro- boscis short, spiral operculum firmly adhering on un- derside of fins	not near surface, but generally at a depth of 100 m. and more; cosmo- politan
4. <i>moluccensis</i> Tesch Fig. 4	depressed, length little more than breadth	none, only growth lines	long, with narrow columellar membrane	one very large spine sticking out near suture	trans- parent	ca. 3 mm. long	fins fleshy, pro- boscis short, spiral operculum firmly adhering on un- derside of fins	decidedly bathy- pelagic, cosmo- politan

<sup>1)</sup> These processes are absent in young specimens ("*Spirialis diversa*" Monterosato).

Genus LIMACINA Lamarck.

Species	Shell					Animal	Remarks
	Shape	Sculpture	Umbilicus	Colour	Max. Size		
5. <i>helicina</i> (Phipps) Fig. 5	depressed, broader than high	distinct vertical lines on all whorls	very wide accentuated by raised ridge around umbilicus	transparent	ca. 7 mm. broad, generally much smaller	fins with tentacular lobe on anterior mar- gin; operculum near- ly always lacking	typically arctic (in Labrador Current and off Spitsbergen)
6. <i>retroversa</i> (Fleming) <sup>1)</sup> Fig. 6	turreted, higher than broad	very fine longitudinal and vertical striation	small, but distinct	transparent	ca. 5 mm. high, in typi- cal <i>retroversa</i> ca. 1.5	fins as in 5; opercu- lum always present, with eccentric spiral	typically boreal
7. <i>helicoides</i> Jeffreys Fig. 7	<i>helix</i> -like, nearly as broad as high; 3 whorls	fine longitu- dinal lines of punctae, often interrupted	nearly none	chestnut coloured	ca. 15 mm. broad	fins fleshy, thick, deeply pigmented, without tentacular lobe; operculum nearly always lacking	typically bathypela- gic, cosmopolitan

<sup>1)</sup> Two subspecies; the larger one (*balea* Möller) possesses up to 10 whorls, all finely sculptured, and normally lives in more northern latitudes (e. g. N. of Iceland); the typical *retroversa* Fleming has only 5—6 whorls and the sculpture is much reduced; it lives in more strictly boreal waters and appears in winter in the Skagerak and the northern North Sea; typical habitat is in Faroe-Shetland waters and in the Norwegian Sea. There are transitional forms (Fig. 6 B), often found together with either typical *balea* or *retroversa*.

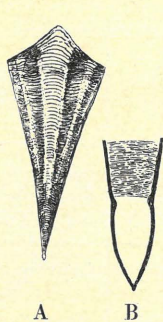


Figure 8.  
*Euclio pyramidata*  
(Linné).  
A, upper view,  $\times 3$ ;  
B, embryonic shell,  $\times 10$ .

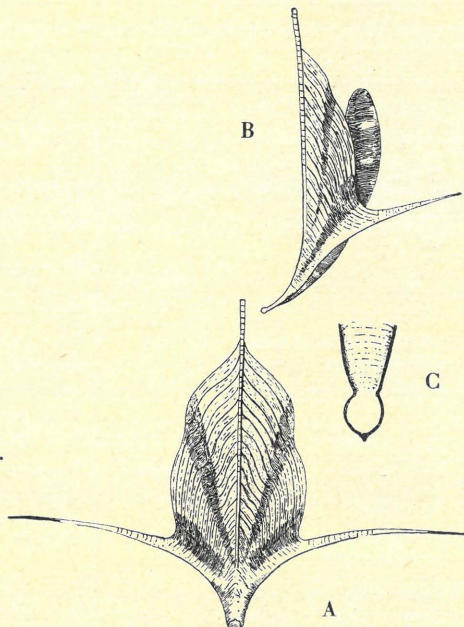


Figure 9.  
*Euclio cuspidata*  
(Bosc)  
A, upper view,  $\times 3$ ;  
B, from right side,  $\times 3$ ;  
C, embryonic shell,  $\times 10$ .

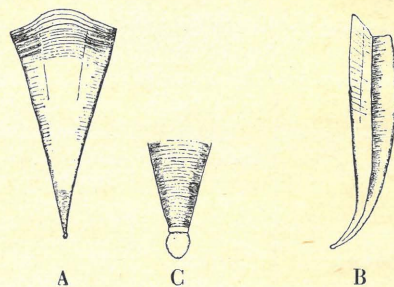


Figure 10.  
*Euclio polita*  
(Pfeffer).  
A, upper view,  $\times 2$ ;  
B, from right side,  $\times 2$ ;  
C, embryonic shell,  $\times 10$ .

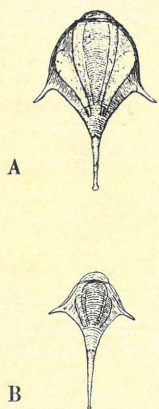


Figure 11.  
*Diacria trispinosa*  
(Lesueur).  $\times 2$ .  
A, forma *major* Boas;  
B, forma *minor* Boas.  
Both upper view.

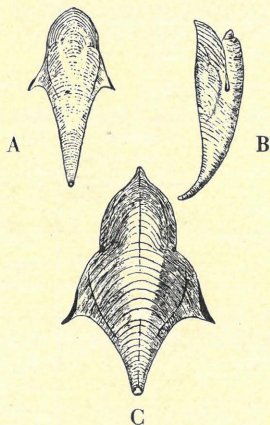


Figure 12.  
*Cavolinia inflexa*  
(Lesueur).  $\times 4$ .  
A, forma *longa* Boas, upper view;  
B, forma *longa* from right side;  
C, forma *lata* Boas, upper view.

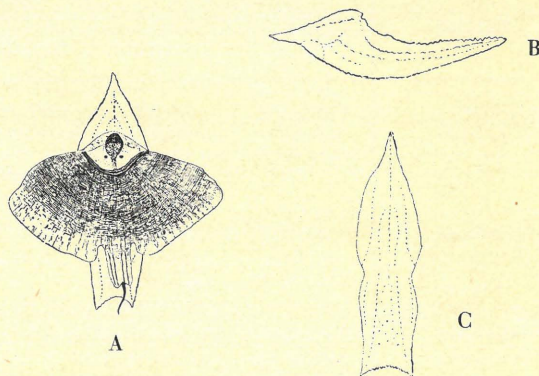


Figure 13.  
*Cymbulia peroni*  
de Blainville. Nat. size.  
A, oral view of animal + pseudoconcha;  
B, pseudoconcha from left side;  
C, pseudoconcha from under side.

Genus EUCLIO Bonnevie.

Species	Shell					Animal	Remarks
	Shape	Sculpture	Aperture	Colour	Max. Size		
8. <i>pyramidata</i> (Linné) Fig. 8	quite straight, not curved dorsally; forming a high triangle when viewed from above or below; ending in conical embryonic shell	three dorsal ribs, the middle one very strong, projecting beyond aperture	widely gaping, in transverse section forming a low triangle	none, transparent	ca. 18 mm. length	posterior foot lobe narrow; lips at mouth-opening generally pigmented	very common in surface layers, carried along by Atlantic Current into North-Atlantic
9. <i>cuspidata</i> (Bosc) Fig. 9	posterior part gradually curved dorsally, ending in cusped, globular embryonic shell	median dorsal rib narrow, strongly projecting beyond aperture	extremely wide, lateral edges drawn out into long spines, sticking out sideways	none, transparent	ca. 18 mm. length, breadth (incl. spines) about equal	posterior foot lobe large, semi-circular; lateral edges of mantle have long prolongation at either side	somewhat less common, but otherwise entirely as 8
10. <i>polita</i> (Pfeffer) Fig. 10	posterior part evenly curved dorsally, ending in globular embryonic shell	nearly none; only faint growth lines	not very widely gaping, lateral edges of shell sharp, continuous to embryonic shell	grayish	ca. 14 mm. length, 7 mm breadth at aperture	posterior foot lobe semi-circular, generally with black or violet hue	strictly bathypelagic, cosmopolitan

Further Information on Distribution.

Distribution	Species (Species in brackets occur only occasionally)	Distribution	Species (Species in brackets occur only occasionally)
Gulf of Bothnia	—	Davis Strait	5, 6 A
Gulf of Finland	—	Bay of Biscay	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13
Baltic proper	—	Coast of Portugal	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13
Belt Sea	—	Open Atlantic	1, 2, 3, 4, (6 C), 8, 9, 10, 11, 12, 13
Kattegat	—	(S. of Wyville-Thomson Ridge)	12, 13
Skagerak	6 C		
Northern North Sea	6 C		
Southern North Sea	—		
English Channel (eastern)	—		
English Channel (western)	6 C		
West coast of Ireland	1, 2, 7, 8, 9, (10), 11, 13,		
Faroe Shetland Area	6 C, 8, 9		
Faroe Iceland Area	6 C, 8		
Norwegian Sea	(6 B), 6 C, 7, 8, 10		
Spitsbergen	5, 6 A, B, C		
N. of Iceland	5, 6 A, B, C		
Denmark Strait	5, 6 A, B, C		

It is hoped that the figures here given (all original) may suffice to identify species at first glance. Not all species occurring in the North Atlantic north of 40°N. Lat. are given here; those not listed are mere stragglers being carried only occasionally to the SW. coast of Ireland by currents.

Nos. 1—4, 7 and 10 are bathypelagic and are distributed all over the Atlantic proper. Only Nos. 5 and 6 are endemic to the area concerned.

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(mostly faunistic notes).

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