

**1.4 Key to Orders and Families**

1a. More than 8 circumoral appendages

2a. More than 10 (63 to 94) circumoral appendages; suckers absent; chambered, coiled external shell (Fig. 33) ..... **Order Nautiloidea**  
(monotypic order)  
**Family Nautilidae**

2b. Ten circumoral appendages (8 arms, 2 tentacles; tentacles may be ontogenetically lost); suckers (or hooks) mounted on stalks, with chitinous supporting rings; no external shell

3a. Internal shell either straight and laminate, coiled and chambered, or rudimentary and straight; tentacles contractile and retractile into pockets between arms III & IV ..... **Order Sepioidea**

4a. Internal shell calcified

5a. Internal shell coiled, chambered (Fig.34) ..... **Family Spirulidae**

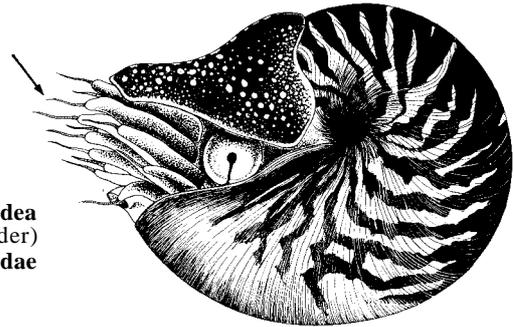
5b. Internal shell straight, laminate, chalky (Fig. 35) ..... **Family Sepiidae**

4b. Internal shell chitinous or lacking

6a. Shell (gladius) present (except *Euprymna*), chitinous; one only or both dorsal arms or one dorsolateral arm hectocotylized (Fig. 36) . . . . . **Family Sepiolidae**

6b. Shell (gladius) absent; left only or both ventral arms hectocotylized

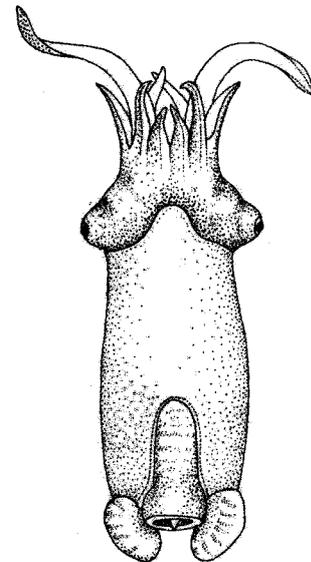
7a. Left ventral arm hectocotylized; dorsal border of mantle fused with head (Fig. 37) . . . **Family Sepiariidae**



lateral view

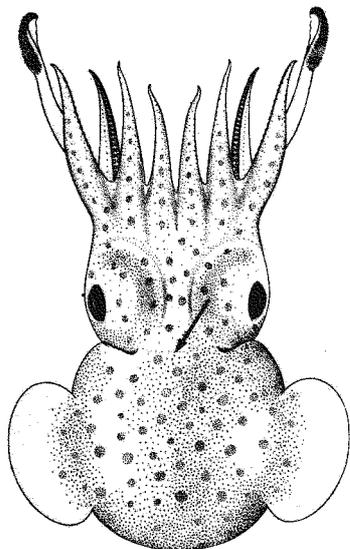
Nautilidae (*Nautilus*)

Fig. 33

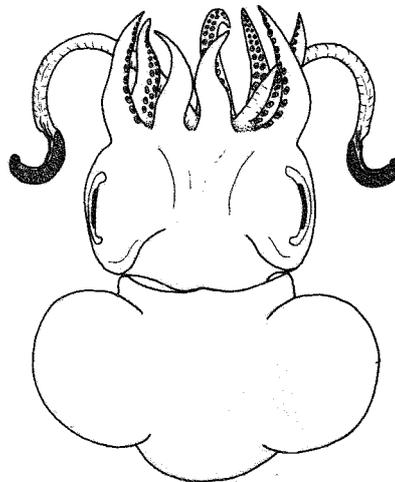


dorsal view  
Spirulidae  
(*Spirula*)

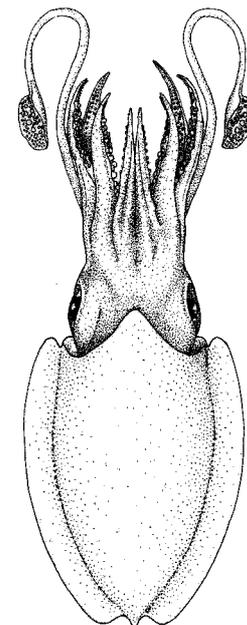
Fig. 34



dorsal view  
Sepiariidae (*Sepiadarium*) Fig. 37

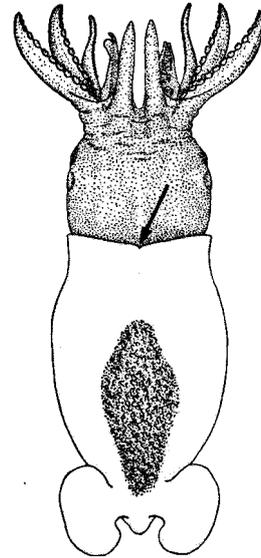


dorsal view  
Sepiolidae (*Rossia*) Fig. 36



dorsal view  
Sepiidae  
(*Sepia*) Fig. 35

7b. Both ventral arms hectocotylized; dorsal border of mantle free (unfused) from head (Fig. 38) ..... **Family Idiosepiidae**



dorsal view  
Idiosepiidae (*Idiosepius*) Fig. 38

3b. Internal shell straight, feather- or rod-shaped; tentacles contractile, not retractile, no pockets.. **Order Teuthoidea**

8a. Eye covered by transparent membrane (cornea) (Fig. 39a) ..... **Suborder Myopsida**

9a. Four rows of suckers on manus of tentacular clubs; medial posterior border of fins concave (Fig. 40) ..... **Family Loliginidae**

9b. Two rows of suckers on manus of tentacular clubs; medial posterior borders of fins convex (Fig. 41) .. **Family Pickfordiateuthidae**

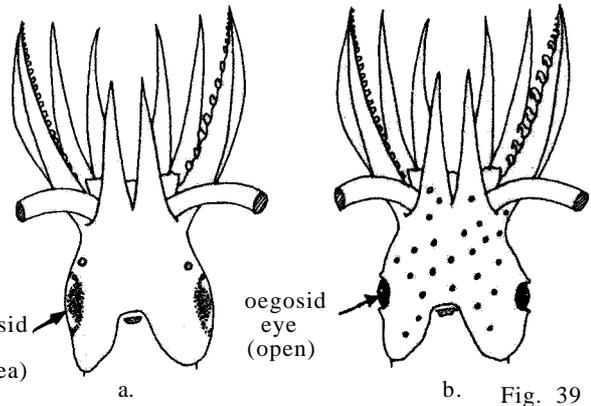
8b. Eyewithout cornea and in open contact with seawater (Fig. 39b) ..... **Suborder Oegopsida**

10a. Funnel free from mantle; funnel-mantle locking apparatus present

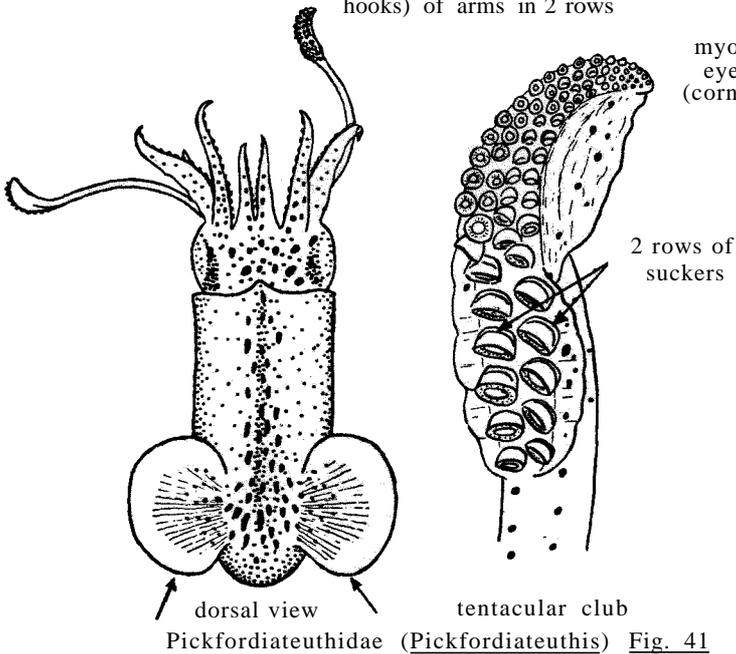
11a. Funnel-locking apparatus asimple, straight groove and ridge (Fig. 42a)

12a. Arms with hooks or with suckers in 4 rows on proximal half of ventral arms

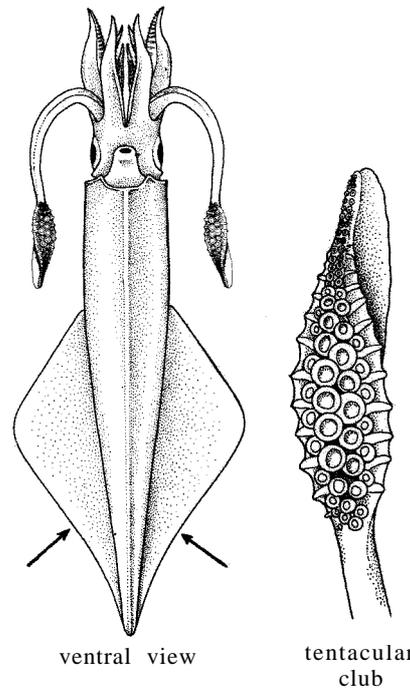
13a. Armature (suckers, hooks) of arms in 2 rows



b. Fig. 39



dorsal view  
Pickfordiateuthidae (*Pickfordiateuthis*) Fig. 41



ventral view  
tentacular club  
Loliginidae (*Loligo*) Fig. 40

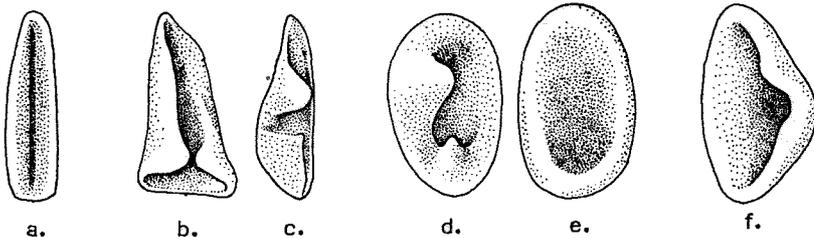


Fig. 42

14a. Tentacles present; fully developed clubs present (Fig. 43) ..... **Family Enoploteuthidae**

14b. Tentacles and clubs absent in adults although present in larvae or occasionally in juveniles (*Taningia*) but always with rudimentary clubs (Fig. 44) ..... **Family Octopoteuthidae**

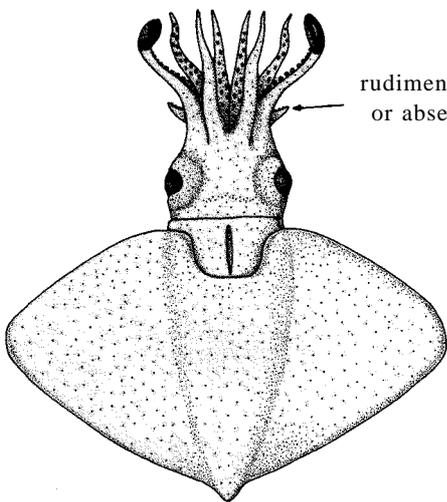
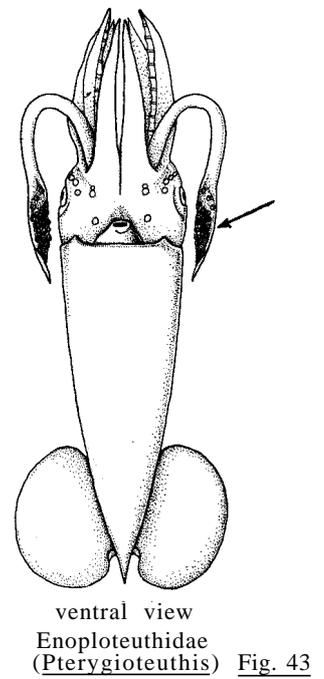
13b. Armature of arms in 4 rows (Fig. 45) ..... **Family Gonatidae**

12b. Arms without hooks and with suckers in 2 rows on proximal half of ventral arms

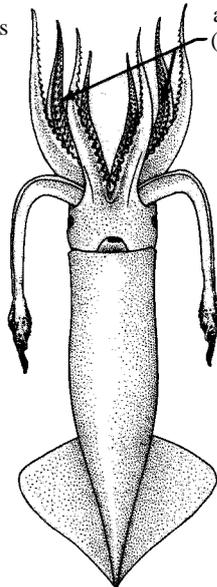
15a. Buccal membrane connectives attach to ventral sides of arms IV (Fig. 46a)

16a. Hooks present on tentacular clubs (Fig. 47a) (tentacles and clubs unknown in *Chaunoteuthis*) (Fig. 47b) ..... **Family Onychoteuthidae**

16b. Hooks lacking on tentacular clubs



dorsal view  
Octopoteuthidae  
(*Taningia*)  
Fig. 44



ventral view  
Gonatidae (*Gonatus*)  
Fig. 45

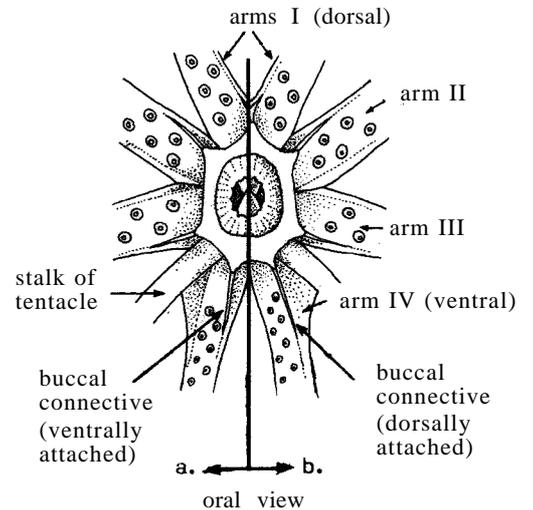
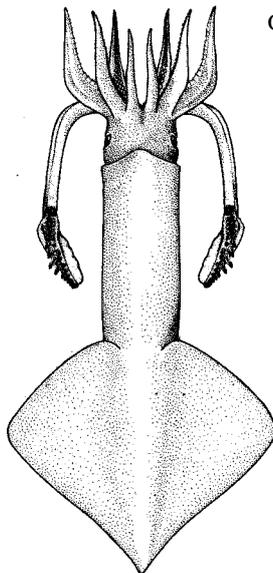


Fig. 46

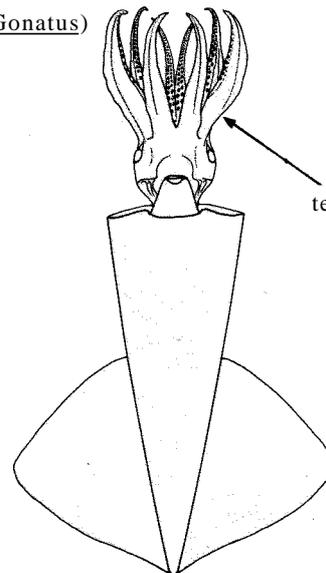


a. *Onychoteuthis*



dorsal view

Onychoteuthidae  
Fig. 47



ventral view

b. *Chaunoteuthis*

17a. Cartilaginous scales present on mantle (may be minute); tentacular clubs with 4 longitudinal rows of suckers (Fig. 48) ..... **Family Lepidoteuthidae**

17b. Cartilaginous scales lacking; tentacular clubs with more than 4 longitudinal rows of suckers on some areas

18a. Fin nearly as long as mantle, supported by strong, transverse, muscular ribs; minute suckers present on oral surface of buccal lappets (Fig. 49) ..... **Family Ctenopterygidae**

18b. Fins less than half the body length and without supporting ribs; no suckers on buccal lappets

19a. Tentacular clubs with 6 uniform rows of suckers; a long, spike-like tail present (greater than fin length) (Fig. 50) ..... **Family Batoteuthidae**

19b. Tentacular clubs with 4 rows of suckers on distal portion, numerous rows on proximal portion; no long, spike-like tail (Fig. 51) ..... **Family Brachioteuthidae**

15b. Buccal membrane connectives attach to dorsal sides of arms IV (Fig. 46b)

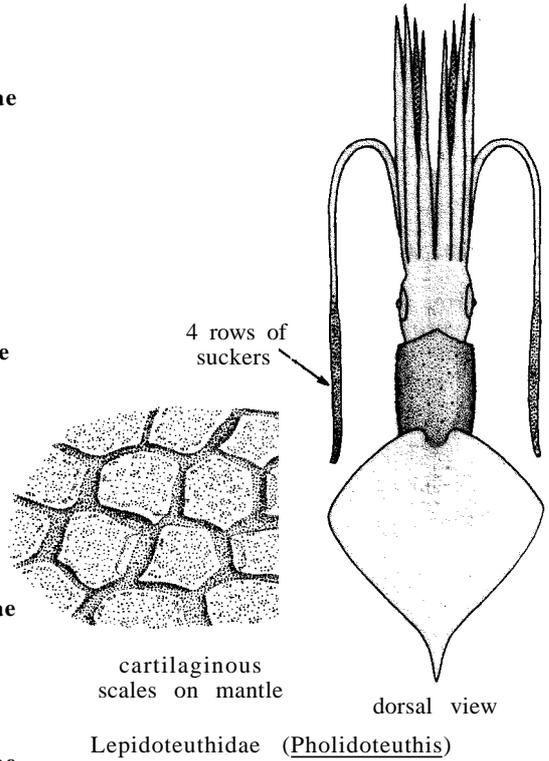
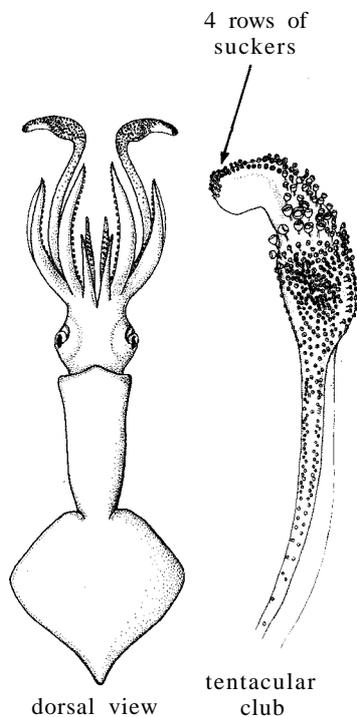
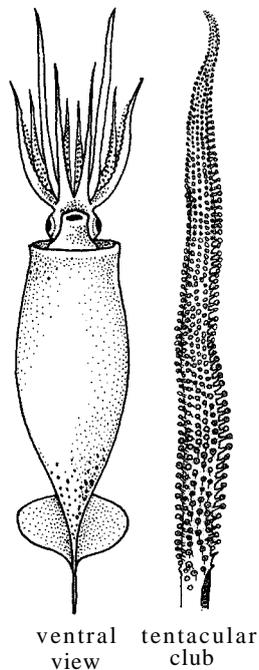


Fig. 48



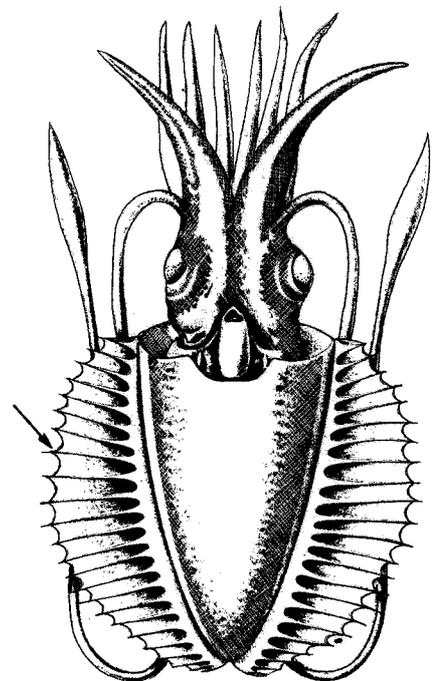
Brachioteuthidae (Brachioteuthis)

Fig. 51



Batoteuthidae (Batoteuthis)

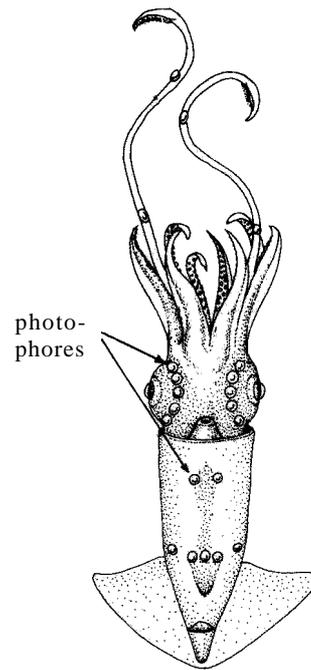
Fig. 50



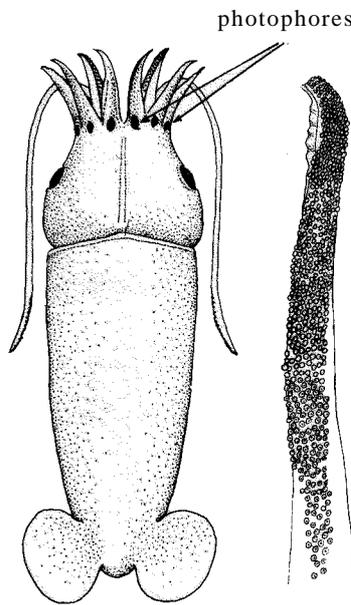
Ctenopterygidae (Ctenopteryx)

Fig. 49

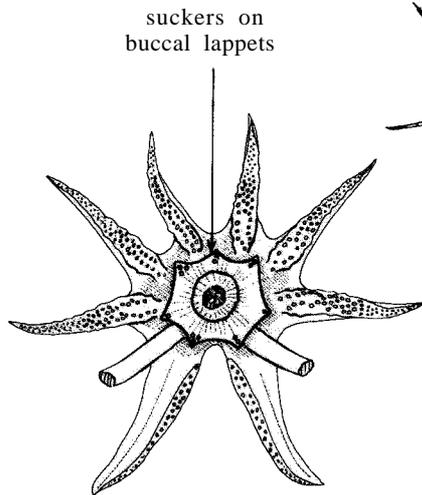
- 20a. Ventral surface of eye with a row of photophores; buccal membrane with 8 separate lappets (Fig. 52) ..... **Family Lycoteuthidae**
- 20b. No photophores on eyes; buccal membrane with 7 lappets or less
- 21a. Surface of mantle, head and arms covered with numerous photophores (usually large and distinct) (Fig. 53) ..... **Family Histioteuthidae**
- 21b. Surface of mantle and head without photophores (arms may have a few photophores)
- 22a. Minute suckers present on oral surface of buccal lappets (Fig. 54) ..... **Family Bathyteuthidae**
- 22b. No suckers on oral surface of buccal lappets
- 23a. Many small to minute suckers (or suckers and knobs) at proximal end of manus (Figs 55, 56)



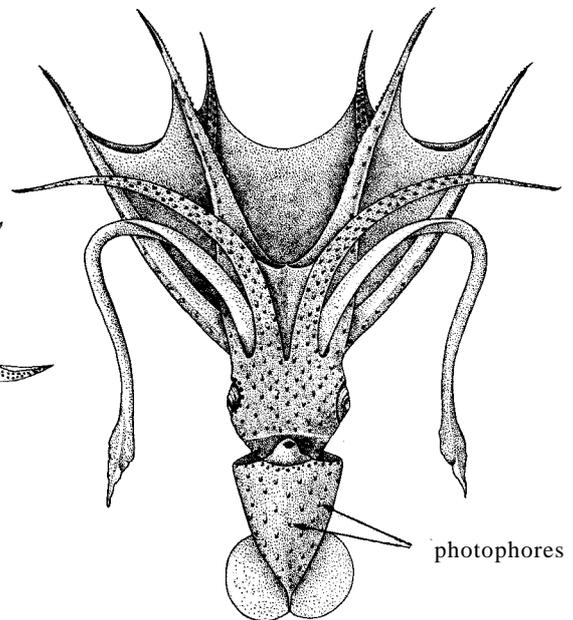
ventral view  
Lycoteuthidae (Lycoteuthis) Fig. 52



dorsal view      tentacular club



suckers on  
buccal lappets  
oral view of arms and  
buccal membrane



ventral view  
Histioteuthidae (Histioteuthis) Fig. 53

Bathyteuthidae (Bathyteuthis) Fig. 54

24a. Medial posterior borders of fins slightly convex; carpal knobs in a single dorsal row or absent; small size (Fig. 55) ..... **Family Neoteuthidae**

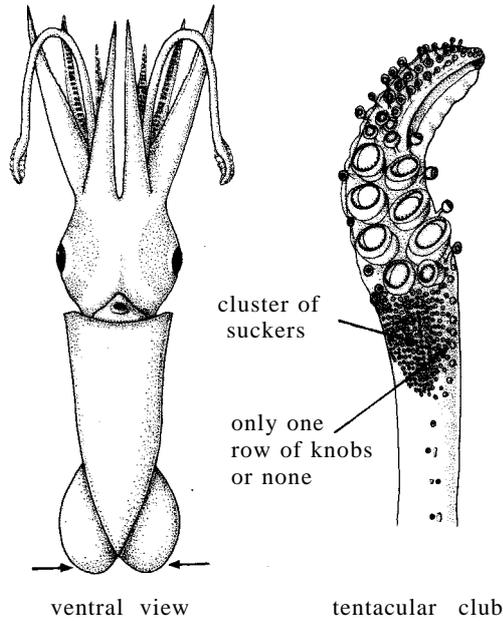
24b. Medial posterior borders of fins concave; carpal knobs in a cluster alternating with carpal suckers; attains very large size (Fig. 56) ..... **Family Architeuthidae**

23b. No cluster of small suckers at proximal end of manus (Fig. 57) ..... **Family Psychroteuthidae**

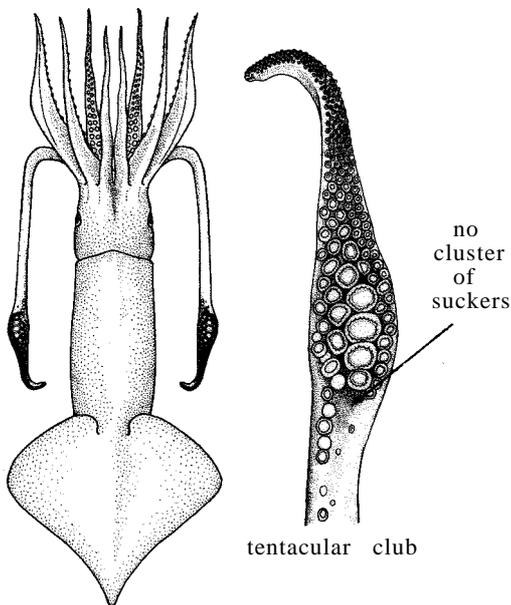
11b. Funnel-locking apparatus not a simple, straight groove and ridge

25a. Funnel locking-cartilage with a longitudinal and a transverse groove  $\perp$ -shaped or  $-|$ -shaped (Fig. 42b,c)

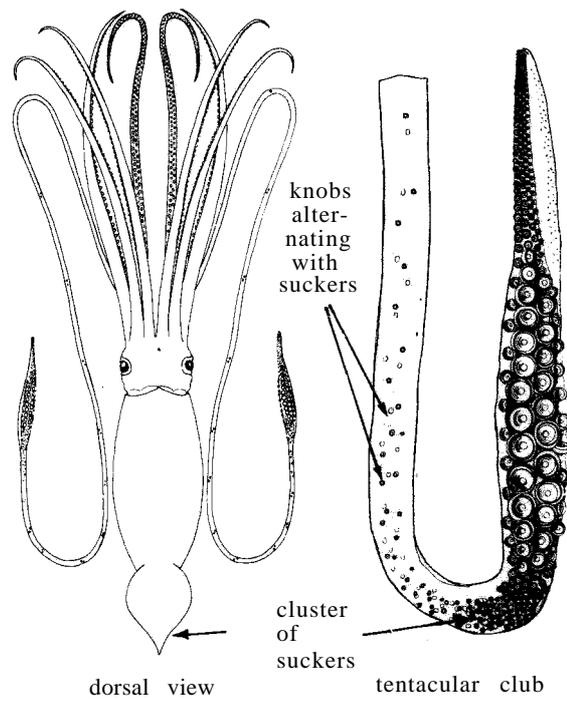
26a. Funnel locking-cartilage with a longitudinal groove crossed by a transverse groove at its posterior end,  $\perp$ -shaped; fins less than 60% of mantle length (Fig. 58)..... **Family Ommastrephidae**



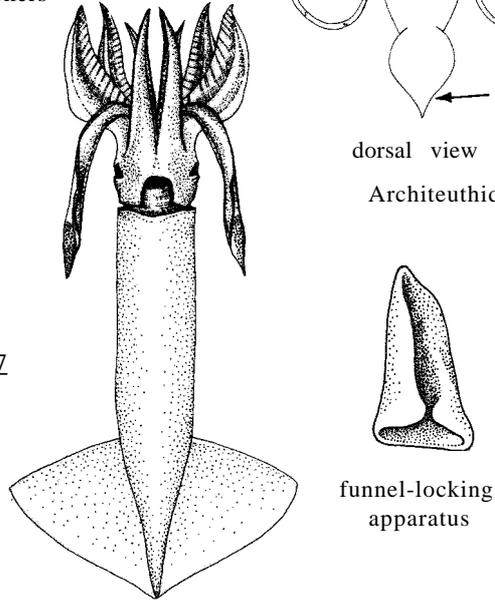
ventral view                      tentacular club  
Neoteuthidae (Alloteuthis) Fig. 55



dorsal view  
Psychroteuthidae (Psychroteuthis) Fig. 57

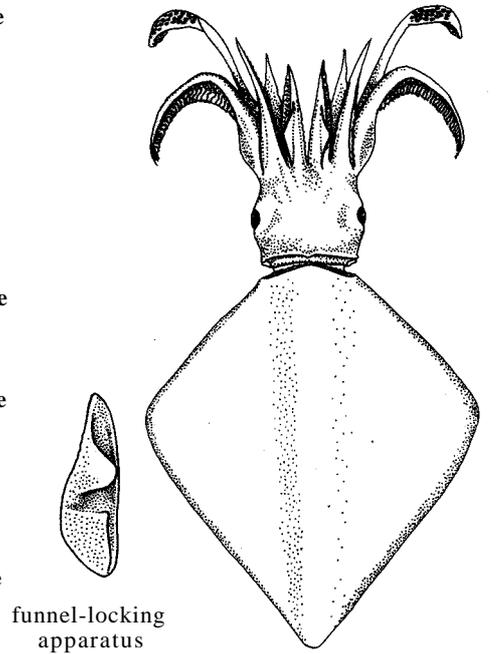


dorsal view                      tentacular club  
Architeuthidae (Architeuthis) Fig. 56



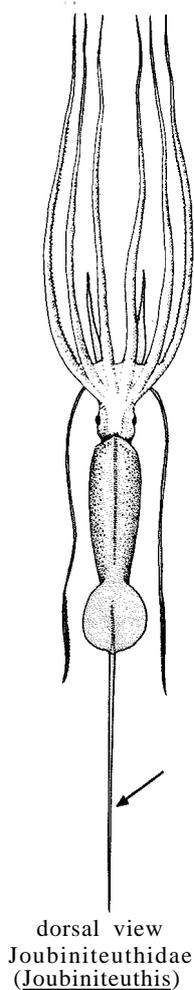
ventral view  
Ommastrephidae (Ommastrephes) Fig. 58

- 26b. Funnel locking-cartilage with a longitudinal groove from which a shorter groove branches medially, -| -shaped; fins more than 80% of mantle length (Fig. 59) ..... **Family Thysanoteuthidae**
- 25b. Funnel locking-cartilage oval, triangular or oval with inward projecting knobs (Figs 42d, e,f)
- 27a. Funnel locking-cartilage oval with 1 or 2 knobs directed toward the centre of the concavity (Fig. 42d)
- 28a. Club with only 4 rows of suckers (Fig. 60) ..... **Family Chiroteuthidae**
- 28b. Club with many (more than 15) rows of minute suckers (Fig. 61) ..... **Family Mastigoteuthidae**
- 27b. Funnel locking-cartilage oval or sub-triangular, without knobs (Fig. 42e,f)
- 29a. Suckers on arms in 4 to 6 rows; tail extremely long (greater than mantle length) (Fig. 62) . . . . **Family Joubiniteuthidae**
- 29b. Suckers on arms in 2 rows; tail short (less than half of mantle length) or absent



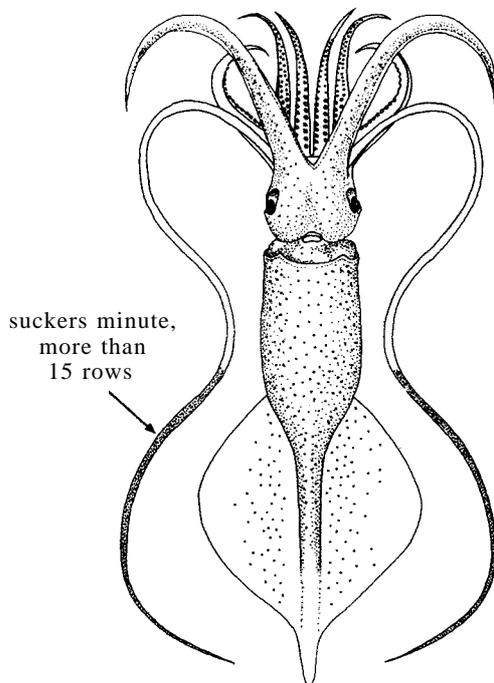
dorsal view  
Thysanoteuthidae (Thysanoteuthis)

Fig. 59



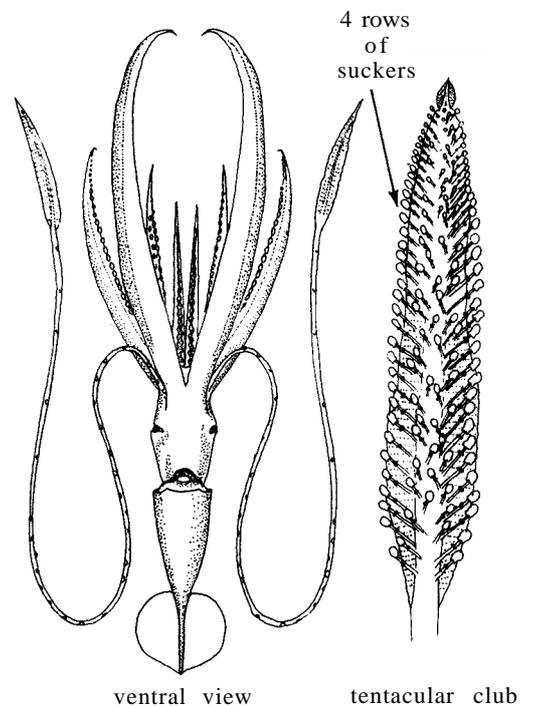
dorsal view  
Joubiniteuthidae (Joubiniteuthis)

Fig. 62



ventral view  
Mastigoteuthidae (Mastigoteuthis)

Fig. 61



ventral view  
Chiroteuthidae (Chiroteuthis)

Fig. 60