

Note on a Large Squid (*Ommastrephes pteropus*, Stp.).

By

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ON the 6th of January, 1892, Dr. Elliot of Kingsbridge most generously presented to the Marine Biological Association a large and interesting Cephalopod which was captured off Salcombe.

Dr. Elliot brought the squid to the Plymouth Laboratory, and it was subsequently purchased for the Oxford Museum by Prof. Ray Lankester, who requested me to identify it, giving me much kind help, for which I wish to express my sincere thanks.

The specimen in question, which I find to be a female *Ommastrephes pteropus*, Stp. (*Sthenoteuthis pteropus*, Verr.), is in very fair condition, having been preserved in chromic acid and in alcohol. The left eye is unfortunately missing, and the lateral membranes of the arms and lining of the siphon pit are somewhat torn. The principal measurements, which can only be approximate owing to the shrinking during preservation, are as follows:—Length from the extremity of the body to the edge of the mantle, dorsally, 51 cm.; length from the extremity of the body to the edge of the mantle, along the postero-ventral surface, 50 cm.; length from the extremity of the body to the level of the mouth, 66 cm. The edge of the mantle is nearly straight along its postero-ventral border, and is produced to a slight point dorsally at the end of the nuchal cartilage, as figured by Steenstrup (3, p. 146, fig. 3). The large "caudal fins" are transversely rhomboidal, as described and figured by Verrill (5, p. 229, and Pl. LIV, fig. 2 a). The breadth across the two is 40 cm.; they each measure 27 cm. along the posterior free edge, and 23 cm. along the dorsal line of attachment. The dorsal or first pair of sessile arms is 23 cm. long, and trapezoidal in section. The second pair is 28 cm. long, with a keel and a small lateral membrane, whose maximum width is about 1.5 cm., on the ventral border. The third or lateral pair of arms (Fig. 1) is 28.5 cm. in length; on the outer surface is a large keel, broadest

FIG. 1.

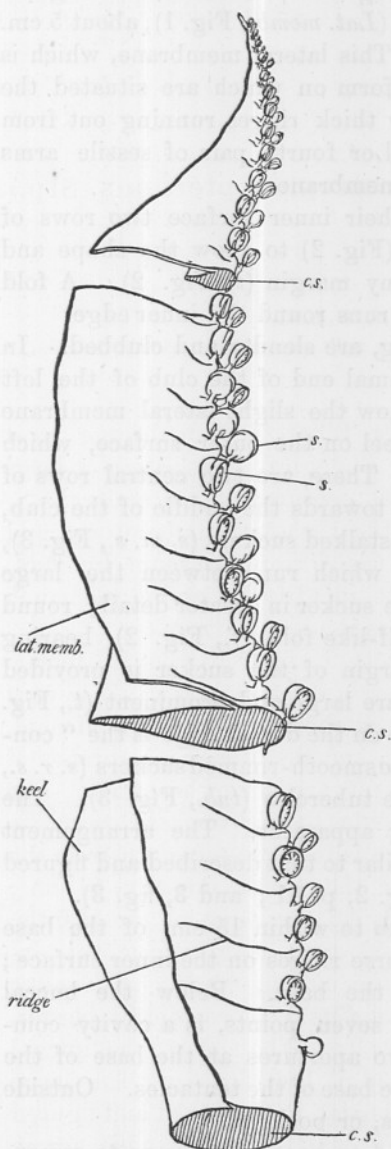


FIG. 2.

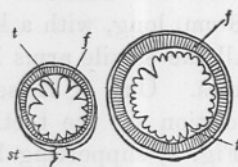


FIG. 3.

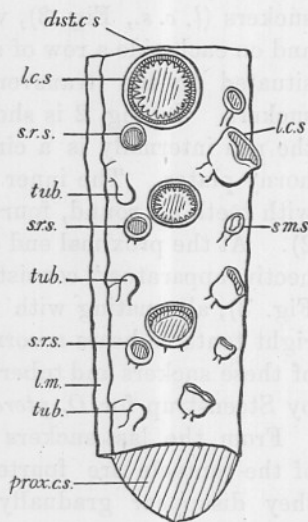


FIG. 1.—Posterior view of the third (left) arm. *Lat. memb.*, lateral membrane; *s.*, sucker; *c. s.*, cut surface. The arm is drawn diagrammatically, as if cut into three pieces.

FIG. 2.—On the left, figure of one of the suckers of the sessile arms. On the right, figure of one of the large suckers of the club of the left tentacle. *st.*, stalk or peduncle; *f.*, circular fold bearing horny plates; *t.*, teeth of horny margin.

FIG. 3.—View of the proximal part of the left tentacular club, diagrammatically drawn as if cut off. *Dist.c.s.*, distal cut surface; *prox.c.s.*, proximal cut surface; *l.c.s.*, large central sucker; *sm.s.*, small sucker; *s.r.s.*, smooth-rimmed sucker; *tub.*, tubercle; *l.m.*, lateral membrane.

below the middle of the arm. Along the postero-ventral edge of this arm extends a broad membrane (*Lat. memb.*, Fig. 1), about 5 cm. wide near the middle of the arm. This lateral membrane, which is formed by the extension of the platform on which are situated the suckers of the arm, is supported by thick ridges running out from between the suckers. The ventral or fourth pair of sessile arms is 28 cm. long, with a keel but no membrane.

All the sessile arms have along their inner surface two rows of suckers. One of these is figured (Fig. 2) to show the shape and disposition of the teeth of the horny margin (*t.*, Fig. 2). A fold (*f.*, Fig. 2) supporting horny plates runs round the inner edge.

The tentacular arms, 64 cm. long, are slender and clubbed. In Fig. 3 I have represented the proximal end of the club of the left tentacle as if cut off, in order to show the slight lateral membrane on the dorsal edge, and the small keel on the outer surface, which is more prominent towards the tip. There are two central rows of suckers (*l. c. s.*, Fig. 3), very large towards the middle of the club, and on each side a row of small long-stalked suckers (*s. m. s.*, Fig. 3), situated on the transverse ridges which run between the large suckers. In Fig. 2 is shown a large sucker in greater detail; round the rim internally is a circular shelf-like fold (*f.*, Fig. 2), bearing horny plates. The inner horny margin of the sucker is provided with teeth all round, four of which are large and prominent (*t.*, Fig. 2). At the proximal end of the club on the dorsal edge is the "connective apparatus," consisting of three smooth-rimmed suckers (*s. r. s.*, Fig. 3), alternating with three large tubercles (*tub.*, Fig. 3). The right tentacle bears a corresponding apparatus. The arrangement of these suckers and tubercles is similar to that described and figured by Steenstrup for *O. pteropus* (2, fig. 2, p. 81; and 3, fig. 3).

From the last suckers on the club to within 15 cm. of the base of the tentacle are fourteen transverse ridges on the inner surface; they disappear gradually towards the base. Below the buccal membrane, which is provided with seven points, is a cavity communicating with the exterior by two apertures at the base of the dorsal arms, and two apertures at the base of the tentacles. Outside the base of the tentacles are two pits, or pockets.

The funnel is represented in Fig. 4 as bent back, so as to expose the pit in which it lies. It is retained by four bridles, two towards the middle line (*in. br.*, Fig. 4), and a thicker bridle on each side (*out. br.*, Fig. 4). Within the bases of attachment of the inner bridles are seen two apertures (*d. ap.*, Fig. 4), communicating with the cavity of the siphon above the valve.* Inside the external bridle is an aperture, perhaps artificial, communicating from the siphon pit

* I have observed these apertures in *Thysanoteuthis rhombus*.

to the cavity outside the bridle, which opens by the "ouverture anale" of D'Orbigny (1, p. 342). At the top of the siphon pit are seen folds which correspond pretty closely, but not exactly, to those figured for this species by Steenstrup (2, p. 79, fig. 1). There are

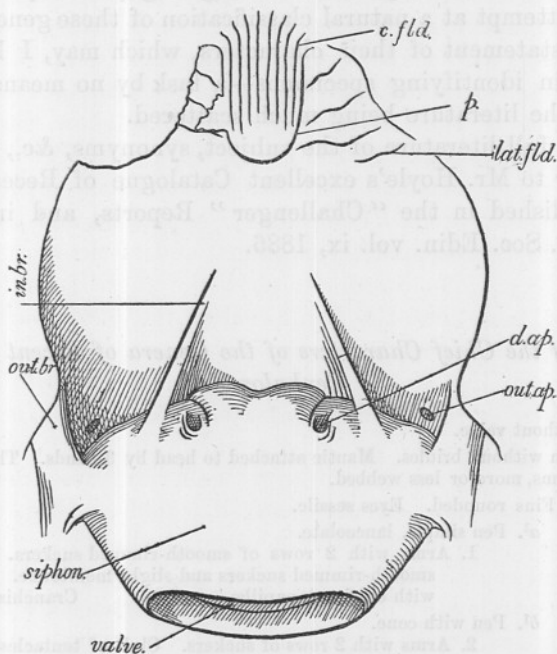


FIG. 4.—View of siphon pit, the siphon being bent down so as to expose it. *out. br.*, outer bridle; *in. br.*, inner bridle; *out. ap.*, outer aperture; *d. ap.*, aperture in dorsal or inner wall of siphon; *c. fld.*, central fold; *lat. fld.*, lateral fold; *p.*, shallow pocket or velum.

eight grooves within the central space, bounded by a U-shaped fold or velum, and four folds on either side outside it. Steenstrup figures only twelve folds in all.

The specimen before us, then, agrees with Prof. Steenstrup's species, *O. pteropus*, in size, in having very well-developed lateral membranes to the arms, a nearly straight mantle edge, numerous folds in the siphon pit, and in possessing a particular arrangement of the connective apparatus. This species, which inhabits the Atlantic, has rarely been recorded from our shores. Mr. E. A. Smith, of the British Museum, has kindly given me the following information concerning two specimens now in the Natural History Museum. One is an incomplete specimen obtained on November 19th, 1883, at Scarborough: it was 52 inches long (arms included), 25 inches in girth, and 22 inches across the fins. The second specimen is a perfect one, captured in the North Sea, February 27th,

1884. It measures from the mouth to the end of the body 39 inches ; in girth 22 inches ; across the fins 23 inches. The tentacles are 36 inches in length.

I have added to this note a table of the chief diagnostic characters of the well-established genera of living Oigopsid Cephalopods. It is not an attempt at a natural classification of these genera, but only a tabular statement of their characters, which may, I hope, be of some use in identifying specimens—a task by no means easy now, owing to the literature being much scattered.

For the full literature of the subject, synonyms, &c., I must refer the reader to Mr. Hoyle's excellent Catalogue of Recent Cephalopoda, published in the "Challenger" Reports, and in the Proc. Roy. Phys. Soc. Edin. vol. ix, 1886.

Table of the Chief Characters of the Genera of Recent Oigopsid Cephalopods.

A. Siphon without valve.

A. Siphon without bridles. Mantle attached to head by 3 bands. Three dorsal pairs of arms, more or less webbed.

a. Fins rounded. Eyes sessile.

a¹. Pen simple, lanceolate.

1. Arms with 2 rows of smooth-rimmed suckers. Tentacles with smooth-rimmed suckers and slight membrane. Mantle covered with chitinous papillæ. Cranchia (Leach, 1817).

b¹. Pen with cone.

2. Arms with 2 rows of suckers. Club of tentacles with 4 rows of blunt-toothed suckers, and group of suckers and tubercles forming connective apparatus. Prominent eyes. Seven lobes to buccal membrane. Taonius (Stp., 1861).

3. Arms short, with 2 rows of suckers. Tentacles absent in adult. Eyes prominent. Two rows of cartilaginous papillæ on mantle. Leachia (Les., 1821).

b. Pen lanceolate. Fins more or less angular. Eyes pedunculate.

4. Arms with 2 rows of stalked suckers. Tentacles with 2 rows of suckers along the stem and 4 on the club. Suckers all smooth. Eyes pedunculate (sessile in type species?). Fins terminal.

Loligopsis (Lam., 1812). [Zygæonopsis, de Roche, 1884.]

5. Arms with 2 rows of sessile suckers. Tentacles long, with tubercles along stem. Fins triangular and subterminal.

Pyrgopsis (de Roche, 1884).

B. Siphon with 2 bridles.

6. Arms with 2 rows of toothed suckers. Club of tentacle with 4 rows of toothed suckers. Siphon pit with velum. Pen with cone. Seven lobes to buccal membrane. Eye with sinus. Fins rounded. Steenstrupiola (Pfeffer, 1884).

B. Siphon with a valve.

A. Siphon without bridles.

7. Arms with 4 rows of smooth suckers. Club of tentacle with many rows of minute suckers. Small sinus. Pen feather-shaped. Suckers on the 7 lobes of buccal membrane. Fins subterminal, rounded. Bathyteuthis (Hoyle, 1885).

B. Siphon with 1 bridle (probably 2 fused).

8. Three dorsal pairs of arms, webbed. Socket I-shaped. Pen feather-shaped. Fins rounded. Histiopsis (Hoyle, 1885).

C. Siphon with 2 bridles.

a. Ear-shaped socket of mantle.

a¹. No sinus. Fins subterminal and rounded. Ventral arms large and with lateral membrane.

9. Arms very unequal, 2 rows of toothed suckers to first 3, and 1 row to ventral arms (?). Club of tentacle with sessile suckers and membrane, 4 rows down the stem. Spoon-shaped olfactory organ. Pen with hollow cone. Doratopsis (de Roche., 1884).

10. Arms with 2 rows of toothed suckers. Tentacles extremely long, suckers along stem, large club with long curved toothed suckers and spoon-shaped extremity. Buccal membrane with 7 lobes. Six buccal aquiferous openings. Spoon-shaped olfactory organ. Pen lanceolate. Cheiroteuthis (d'Orb., 1839).

b¹. Small sinus. Lateral membrane of arms very small.

11. Arms with 2 rows of nearly smooth suckers. Tentacles long and lash-like, numerous minute toothed suckers at end. Six lobes to buccal membrane. Pen narrow, with cone. Fins rhomboidal. Socket without pronounced tooth.

Mastigoteuthis (Verrill, 1881).

b. I-shaped socket (except Ancistrocheirus?)

a¹. Without sinus.

a². Fins of separate filaments.

12. First 3 pairs of arms with 4 rows of smooth suckers. Ventral arms with 2 rows, and lateral membrane. Club of tentacles with many rows of smooth suckers. Fins of muscular filaments joined only at base. (Small sinus?).

Chtenopteryx (Appelöf, 1888).

b². Fins rhomboidal. Pen lanceolate.

13. Arms with 2 rows of toothed suckers. Tentacles long and slender, with suckers along whole length; club with lateral membrane and numerous small suckers. Lobes of buccal membrane indistinct.

Brachioteuthis (Verrill, 1881).

c². Fins rounded.

a³. Pen with cone.

14. Arms with 2 rows of suckers, smooth proximally and toothed distally. Club of tentacle with 4 rows of smooth suckers and group with tubercles (conn. app.). Buccal membrane with 7 lobes. Pen broad, hollow, bent at tip, and with small cone. Calliteuthis (Verrill, 1880).

b³. Pen lanceolate.

15. Arms with 2 rows of suckers, the 3 dorsal pairs of arms joined by a web, and the ventral joined by a web. Tentacle with 6 rows of toothed suckers on club, and conn. app. extending down the stem, cluster of smooth suckers at tip. Four buccal and 2 brachial aquiferous openings. Buccal membrane with 6 lobes.

Histioteuthis (d'Orb., 1839).

b¹. With sinus.

a². Without hooks.

a³. Pen with cone. Nuchal crests small or absent.

16. Arms with 2 rows of toothed suckers and slight web. Club of tentacle with 4 rows of toothed suckers distally and 10 rows of smooth suckers proximally. Buccal membrane with 7 lobes. Fins rounded.

Tracheloteuthis (Stp., 1881).

17. Arms with 2 rows of toothed suckers. Club of tentacles with 4 rows of toothed suckers and lateral membrane. Conn. app. extending along the stem, cluster of smooth suckers at tip. Fins forming an arrow-head.

Architeuthis (Stp., 1856).

b³. Pen lanceolate. Nuchal crests.

18. Arms with 2 rows of smooth suckers. Tentacles mere stumps.

Chaunoteuthis (Appelöf, 1890).

b². With hooks. Fins rhomboidal. Conn. app. at base of club, and generally group of suckers at tip.

a³. Pen lanceolate.

a⁴. Fins terminal. Suckers to tentacles.

19. Arms with 2 rows of hooks. Tentacles short, suckers few. Pen slender, cartilaginous. Fins somewhat rounded, terminal. Verania (Krohn, 1847).

b⁴. Fins subterminal generally. Hooks to tentacles.

a⁵. Hooks to arms and tentacles. Very large fins.

20. Arms with 2 rows of hooks. Tentacles with hooks on club. Fins large, along nearly whole length of mantle, subterminal. Socket ear-shaped (?).

Ancistrocheirus (Gray, 1849).

b⁵. Hooks and suckers to arms and tentacles.

21. Arms with 2 rows of hooks and a few suckers. Club of tentacles with hooks. Buccal membrane with 8 lobes. Fins slightly rounded. Enoplateuthis (d'Orb., 1839).

22. Arms with 1 row of hooks near base and 2 rows of suckers near tip. Club of tentacles with alternate hooks and suckers. Abralia (Gray, 1849).

b³. Pen with cone.

a⁴. Only suckers on arms in 2 rows. Hooks and suckers on tentacles. Buccal membrane with 7 lobes.

23. Arms with two rows of smooth suckers, and lateral membrane. Club of tentacle with 2 rows of hooks. Two brachial and 6 buccal aquiferous sacs. Solid cone to pen. Onychoteuthis (Licht., 1818).

24. Arms with two rows of suckers. Club of tentacles with 2 inner rows of hooks, and 2 outer of toothed suckers. Cone of pen solid at apex.

Teleoteuthis (Verrill, 1882).

25. Arms with 2 rows of smooth suckers. Club of tentacles with 2 rows of hooks. Cone of pen hollow.

Ancistroteuthis (Gray, 1849).

b⁴. Hooks and suckers on arms in 4 rows.

26. Ventral arms with 4 rows of suckers, the other arms with 2 rows of hooks within and 2 rows of suckers without. Hooks on tentacles. Buccal membrane rounded. Pen with hollow cone. Fins reach beyond tip of body.

Gonatus (Gray, 1849).

c. Socket with large tooth or process.

27. Arms with 2 rows of toothed suckers and lateral membrane. Club with 4 rows of toothed suckers and conn. app. extending along the stem. Sinus. Two apertures at back of siphon. Pen lanceolate. Long fins along whole length of the mantle.

Thysanoteuthis* (Troschel, 1857).

D. Siphon with 4 bridles, and 2 apertures at back. \perp -shaped socket. 2 brachial, 2 anal, and 4 buccal aquiferous openings. Buccal membrane with 7 lobes. Three longitudinal nuchal crests. Eye with sinus. Pen with hollow cone. Arms with 2 rows of toothed suckers.

a. Folds in siphon pit absent, or only within the velum.

28. Smooth siphon pit. Little or no lateral membrane to arms. Teeth absent or blunt on large suckers of club.

Ilex (Stp., 1880).

29. Folds in siphon pit within the velum. Lateral membrane of arms small. Alternate sharp and blunt teeth on one half the circumference of large suckers of club. Todarodes (Stp., 1880).

* A small specimen of *Thysanoteuthis rhombus*, Trosch., presented to the Oxford Museum by Prof. Ray Lankester, appears to possess 4 bridles; this may perhaps be due to the artificial splitting of a single pair.

b. Folds in siphon pit within and without the velum. Lateral membrane of arms large. Large suckers of club with 4 large teeth, and small teeth all round.

30. Suckers of arms moderate in size and number.

Ommastrephes (d'Orb., 1835).

31. Suckers of arms long-stalked and crowded.

Dosidicus (Stp., 1857).

List of Works referred to.

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