

**Preliminary observations on laboratory-reared *Sepia orbignyana* (Mollusca, Cephalopoda)**

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*Sepia orbignyana*, a rather small species of cuttlefish, is found at depths ranging from 50 to 370 m in the area of Banyuls-sur-Mer (Mangold-Wirz, 1963). Over the past few years, the eggs of this species, which spawns all the year round, were collected regularly from various sponges sampled at a depth of about 100 m on the west side of the "rech Lacaze-Duthiers" (42° 30'-35' N, 3° 22'-23' E).

Rearing experiments made under natural daylight conditions, using standard techniques (Boletzky & Hanlon, 1983), were successful only up to 2 months after hatching. Why the animals ceased feeding and died after this time is not clear. From a series of experiments set up at constant artificial dim light, in an underground laboratory with running sea water, only two individuals kept in a 50 l tank from hatching (15 Oct. 1986) survived to reach the adult stage. In contrast to other experimental batches that were kept either on pure mud substrate, smooth hard substrate or on plastic netting, these two animals lived on a "mixed" substrate composed of clean, decaying crab exoskeletons, sand and mud.

The newly hatched animals, which measured about 6 mm in dorsal mantle length (ML), settled on the substrate and generally appeared only to move over short distances, either by active swimming or by slowly "walking" (using their ventral arms) along the bottom. They fed on small prawns and mysids of a size similar to their own. No direct observations on feeding were possible for the early months of rearing, but after about 5 months the animals were repeatedly seen to ingest palaemonid shrimps.

Apparently *S. orbignyana* does not bury itself in soft substrate. The covering behaviour, which is so characteristic of *S. officinalis* and other species (cf. Boletzky, 1983), was never observed at any growth stage, either under strong or under feeble light. On the other hand, colour patterns, skin papillation and arm displays were very similar to what is known of *S. officinalis*. In very young *S. orbignyana*, the lateral waving of raised dorsal arms is much quicker and more pronounced than in *S. officinalis*. The attachment to a hard substrate by means of ventral skin ("sucker") adhesion is also very pronounced in young *S. orbignyana*.

A very slight difference became apparent after a few weeks in the growth of these two individuals (Fig. 1), but it remained rather insignificant up to an age of about 4 months. Over the following two months it became very distinct, after which similar growth rates resulted in virtually parallel growth trajectories. After 9 months the smaller individual had some skin damage on the fins and was found swimming at the water surface. After a few days it was found dead (16 July 1987). It should be noted that temperature of the circulating sea water was rising, finally to a level about 10°C above water temperatures in winter (in its natural environment *S. orbignyana* lives at 12-13°C all the year round). Dissection of the animal, which measured 36.5 mm ML, showed that it was an immature female with nidamental glands only 2 mm in length. The cuttlebone had 63 lamellae (last loculus 13.5 mm in length); the lamellar index was 0.52. The larger individual soon after this showed some tissue degeneration at the mantle tip (around the spine); it was sacrificed on 25 July and turned out to be a mature male with spermatophores (3 mm in length) stored in the Needham sac. The cuttlebone had 68 lamellae (last loculus 13.5 mm in length); the lamellar index was 0.54. This is low compared to the lamellar index of wild-caught *S. orbignyana* which generally ranges from about 0.65 to 0.75; it suggests a reduced growth rate under aquarium conditions (cf. Boletzky, 1983).

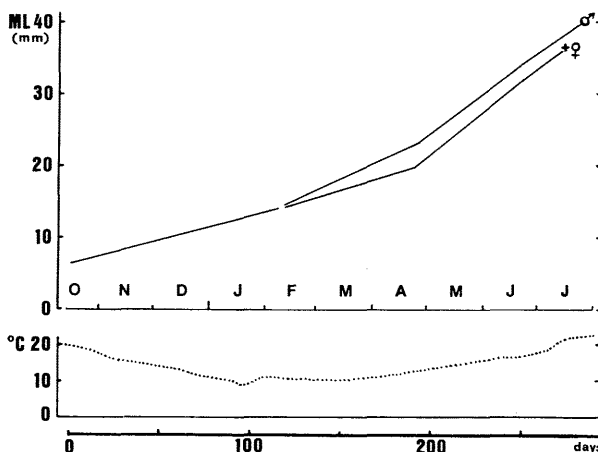


Fig. 1. - The growth of two individuals of *S. orbignyana* reared under artificial light conditions and at varying temperatures.

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**On an anomaly of the tentacular club in *Loligo vulgaris* Lamarck, 1798**

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The most reliable macroscopic character to distinguish *L. vulgaris* from *L. forbesi* is the relative size of the suckers on the tentacle club (for literature see MANGOLD & BOLETZKY, 1987). A peculiar specimen of *L. vulgaris* was trawled at about 15 miles SE of Marsala (Western Sicily), at a depth of about 214 m., in November 1986 (Fig. 1). The most noticeable feature of this specimen is the dimorphism in the two tentacular clubs (Fig. 2): the left tentacular club corresponded to *L. vulgaris* the right to *L. forbesi*, according to the average ratio between the relative suckers diameters (JEREB & RAGONESE, in press) and the dentition of the suckers rings. The specimen can nevertheless be identified as a female of *Loligo vulgaris* (\*), following other characters such as the chromatophoric pattern, the fins - mantle length ratio and the morphology of the beak. This female has a well developed ovary but no eggs in the oviducts. Biometric parameters, taken on the thawed specimen, are given in the TABLE. Both tentacles were intact and perfectly formed, with no sign of regeneration although such cases have been observed on *Loligo* specimens from the English Channel (FERAL, 1978). As far as the authors know, this is the first report of such an anomaly recorded in the Mediterranean Sea; an analogous case has been reported for *Allo-reuthis subulata* from the Belgian coast (ADAM, 1932). If the true specific identity can be ascertained in this and similar cases of unilateral "malformation" or "aberrancy", the question remains as to whether *bilateral/symmetrical* modification of the same (essentially functional) type would be recognized by a taxonomist. The ultimate question thus is whether a subspecies or even a species described on the basis of a *single specimen* differing from a known species by only one character can be considered valid.

TAB.- All the parameters following ROPER & VOSS, 1983	
T.W. (gr.)	187,8
T.L. (mm.)	446
M.L. "	189
M.W. "	49
F.L. "	126
F.W. "	114
H.W. "	33
H.L. "	37
E.D. "	22
Tentacles: Left Right	
Tt.L. (mm)	228 200
* Cl.L. "	67 62
* Dc.L. "	21 18
* Mn.L. "	46 44
* Cr.L. "	
* Cl.L. = Club length	
* Dc.L. = Dactylus length	
* Mn.L. = Manus length	
* Cr.L. = Carpus length	

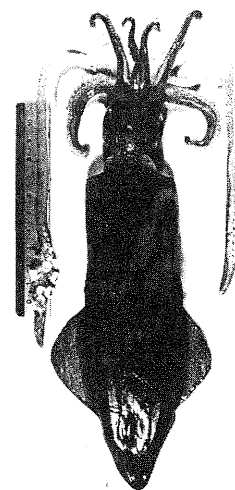
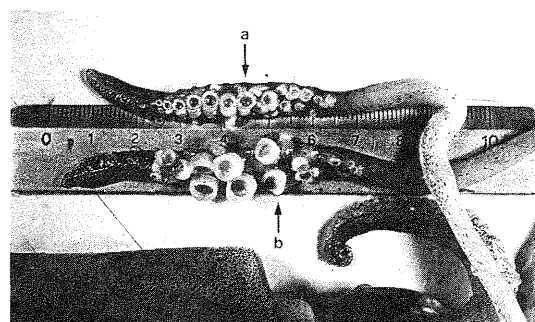


FIG. 2 - a) right tentacle  
b) left tentacle

FIG. 1 - Aspect of the whole animal, thawed



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(\*) Available in our collection, labelled I.T.P.P. - CS03

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