

## NOTES AND MEMORANDA.

**On the Occurrence of the Nudibranch *Hancockia* at Plymouth.**—I am glad to be able to record a second English specimen of this interesting form. It was dredged, apparently on *Delesseria*, in Plymouth Sound, about halfway between Drake's Island and the west end of the Breakwater, on August 20th, 1891.

Mr. A. R. Hunt, the original discoverer of *Hancockia*, dredged a single example in Tor Bay in August, 1877. This was described by Mr. Gosse under the name *Hancockia eudactylota* (Annals and Mag. of Nat. Hist., Ser. 4, vol. xx, 1877).

In January, 1885, four specimens, representing two closely allied forms, were taken near Naples, and described by Prof. Trinchese (Ricerche Anatomiche sul Genere *Goria*, 1886). He defined the genus *Goria*, apparently in ignorance of Gosse's paper, including his forms under two species, *G. rubra* and *G. viridis*.

The Plymouth specimen is about a quarter of an inch in length when extended. This is only half the length of Mr. Hunt's specimen and of Prof. Trinchese's *Goria rubra*.

It is of a dark claret colour, very similar to that of the *Delesseria* on which it lived.

The epidermis of the upper surface, seen by reflected light, is of a delicate bluish-green hue, as in *Hancockia eudactylota* (Gosse, loc. cit., p. 317).

There are four pairs of pleuropodial processes, with a rudiment of a fifth on the left side.

In its other characters, this specimen is apparently intermediate between *H. eudactylota* and *Goria rubra*.

In the number of processes of the oral veil (four on each side), in the form of the rhinophoral sheaths, and in the absence of the white spots which Trinchese has described, it agrees with *Hancockia* and differs from *Goria rubra*.

In the absence of rudimentary oral processes described by Gosse between the well-developed ones, in the presence of a more or less circular pigment patch at the base of the pleuropodial expansions, and especially in the form of the latter, it agrees with *Goria rubra* and differs from *Hancockia*.

More specimens, however, are required to settle the relations of these interesting forms.—F. W. GAMBLE.

**Saphenia mirabilis, Haeckel.**—In the same haul of the large tow-net in which the *Phyllosoma* elsewhere described were taken on the night of July 16th I captured a large number, some hundreds, of small Medusæ of a single species. These proved on examination to be the *Goodsiria mirabilis* of Strethill Wright, described and figured by him in a paper in the Edinburgh Philosophical Journal, vol. lxxvii, 1859. The species has been placed by Haeckel (System der Medusen, Jena, 1879) in Eschscholtz's genus *Saphenia*, of which two other species only have been described. No other observer than Strethill Wright has recorded or described *Saphenia mirabilis*, and he took only three specimens near Queensferry in the Firth of Forth. Strethill Wright's specimens were about an inch in diameter; those taken near the Eddystone were not so large, the largest being only about 12 mm. The species, however, is certainly the same; it is distinguished by the depressed form of the umbrella, the presence of only two extensile tentacles, and a very long and very extensile peduncle several times as long as the breadth of the umbrella. The genus *Saphenia* is placed by Haeckel in the family *Eucopidæ* of the order *Leptomedusæ*. All the *Leptomedusæ* whose development is known are developed asexually from a fixed hydriform stock. The development of *Saphenia* is at present entirely unknown, but it seems probable that the numerous specimens taken near the Eddystone were derived from some fixed hydroid which flourishes at the bottom of the sea in that neighbourhood.—J. T. CUNNINGHAM.

**Pleurophyllidia Lovéni, Bergh.**—Another interesting capture made last summer was that of the rare Opisthobranch *Pleurophyllidia Lovéni*, Bergh. A single specimen was taken in the shrimp trawl, about two miles to the north of the Eddystone on the night of July 9th. It was accompanied by many Nudibranchs and a Pleurobranchus; these Molluscs, as well as the *Pleurophyllidia*, were identified by Mr. W. Garstang, and the list of them is as follows:

*Pleurobranchus membranaceus*, 1 specimen; *Acanthodoris pilosa*, 10 specimens, all white; *Philine aperta*, 3; *Scaphander lignarius*, 1; *Eolis* sp., several.

The other contents of the trawl were a few small flat-fishes, a number of *Pecten opercularis*, and a large quantity of *Cellaria*. Only two specimens of *Pl. Lovéni* are recorded as taken in the British area by Forbes and Hanley, and by Gwyn Jeffreys. But Mr. Holt has recently recorded the capture of two specimens in St.

Andrew's Bay ; he obtained them from fishermen's haddock-lines (Ann. and Mag. Nat. Hist., August, 1891).—J. T. C.

**Breeding of Fish in the Aquarium.**—At the end of March the plaice in the large flat-fish tank were spawning, and the eggs floated at the surface of the water. But when examined, none of the eggs were found to be fertilized. A hatching box of Captain Dannevig's pattern had recently been fitted up in the aquarium for hatching floating eggs. I took out some of the ripe plaice and fertilized a number of eggs from them artificially. Some of the females yielded healthy eggs, and large numbers of these were successfully hatched in the hatching box. But some of the females yielded only ripe eggs which were already dead ; the difference between these and unripe eggs being perfectly obvious. These same plaice spawned in the tank in 1890, and the eggs were naturally fertilized and found in a developing condition at the surface in the tank. It seems as though a prolonged residence in the water of the aquarium produced some abnormal disturbance of the reproductive functions in these plaice. In the same tank were two ripe female flounders, but no males of the same species. I squeezed a large number of eggs from these, and made the experiment of mixing them with milt from a male plaice. Fertilization occurred in a certain number of the ova, about half, and a few of these lived till they were hatched, and the larvæ lived several days. They died, however, like all my larvæ, soon after the absorption of the yolk-sac. In April and May many of the soles in the flat-fish tank were much swollen in the abdominal region, and it seemed as if the ovaries were enlarged and the eggs on the point of being shed. But no soles' eggs ever appeared in the tank, although arrangements were made that no floating eggs shed in the tank could escape. After a time many of the soles gradually lost the swollen appearance. I took out a specimen 25 cm. long on June 10th, and found it was a male, and on teasing up a portion of the testis saw a considerable number of ripe active spermatozoa mixed with unripe spermatid cells. Afterwards I squeezed a swollen female, but no ripe eggs were expelled, but, instead, some curious translucent masses whose nature I did not understand. On June 27th I took out a large female sole which was still swollen, and on squeezing obtained some more of these masses of soft substance. When teased up under the microscope the substance proved to consist of degenerate ripe ova, looking as though they had been half digested. The vitelline membranes were present, but shrivelled and containing only granules of dead matter. I then opened the ovary, and found more of these masses in its cavity ; the ovary itself was

crowded with eggs not quite ripe. It appears, therefore, that in these soles the eggs, when nearly ripe, escaped in successive lots into the cavity of the ovary, and there died and degenerated. It is evident that soles will not spawn in our tanks. These specimens had been living in the same tank since the summer of 1889, and they showed no signs of spawning in 1890. Whether the cause of this inability to breed is merely the confinement, or the shallowness of the water in a tank compared to the depth of the sea, or the quality of the water, there is at present no evidence to show.—J. T. C.

**The Amount of Fat in Different Fishes.**—An inquiry has recently been made concerning the above, and in consequence of this I have made a number of determinations of the amount of fat in the flesh or muscle of various species. The fat was extracted with ether in a fat extraction apparatus; the ethereal solution thus obtained was separated from any water which happened to be present, and dried over calcium chloride. The ether was then distilled off, and after being heated to 100° C. the residue was weighed. The following table gives the results obtained:

Common name of fish.	Scientific name.	Weight of fish taken.	Weight of extract.	Percentage of fat.
		Grms.	Grms.	
Piper . . .	<i>Trigla lyra</i> . . .	150	0.250	0.166
Red gurnard . . .	<i>Trigla cuculus</i> . . .	135	0.192	0.142
Mackerel . . .	<i>Scomber scombrus</i> . . .	200	3.05	1.52
" . . .	" . . .	200	2.52	1.26
Thickback . . .	<i>Solea variegata</i> . . .	78	0.014	0.018
Turbot . . .	<i>Rhombus maximus</i> . . .	166	0.028	0.017
John Dory . . .	<i>Zeus faber</i> . . .	166	0.144	0.086
Hake . . .	<i>Merluccius vulgaris</i> . . .	190	0.057	0.030
Haddock . . .	<i>Gadus aeglefinus</i> . . .	190	0.009	0.005
Pollack . . .	<i>Gadus pollachius</i> . . .	190	0.011	0.006
Cod . . .	<i>Gadus morrhua</i> . . .	190	0.009	0.005
Ling . . .	<i>Molva vulgaris</i> . . .	150	0.032	0.022

F. HUGHES.

### ERRATUM.

In Mr. Cunningham's paper in the previous number of the Journal, p. 17, line 25, for 6 lbs. read 2 lbs.