

On the Occurrence and Habits of the Siphonophore, *Stephanomia bijuga* (Delle Chiaje).

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With One Figure in the Text.

ACCORDING to E. T. Browne, 1899, *Stephanomia bijuga* (Delle Chiaje) (syn. *Cupulita sarsii* Haeckel and *Agalmopsis elegans* Sars, partim) belongs to the surface Atlantic fauna. It has been recorded at Valencia from March to November, and while suffering badly from the destructive power of gales it must occur at times in enormous numbers, for in November, 1898, tow-nets were taken that were full of isolated pneumatophores. Into the more confined waters of the English Channel, however, it penetrates apparently very rarely, the only record being that of a single specimen taken a mile or two out from Plymouth Sound in March, 1902.

It is of some interest, therefore, to record its occurrence in great numbers in the main and secondary channels of the Salcombe Estuary, even to the heads of the tidal creeks, on May 17-19, 1929. This profusion coincided with a similar abundance of the three Ctenophores commonly occurring in these waters, namely, *Beroe cucumis* Fabricius, *Bolina infundibulum* Fabricius, and *Pleurobrachia pileus* Fabricius, and not only were these abundant, but they also had reached what is possibly their maximum size. Individuals of *Beroe* frequently were seen of at least six inches in length. Ten days later all trace of Siphonophores and Ctenophores had vanished, with the exception of some small individuals of *Beroe*, and these last were not seen to approach the large size already mentioned until after two months.

Stephanomia was noticed floating and swimming a few inches below the surface of very calm water, though all that was visible was the red pigment of the gastrozooids, but as several individuals were obtained in perfect condition and were kept alive in glass vessels for some days, a description of its form and behaviour may be of some interest. Unfortunately no microscope or lens was available, so that only the coarser details were observed.

The general form is seen in Figure 1 A, which is typical of the great

majority of the individuals encountered, i.e. two to three inches in length and with three or four sets of nectophores; but apart from the details shown in the figure, the observations more concerned the habits than the anatomy.

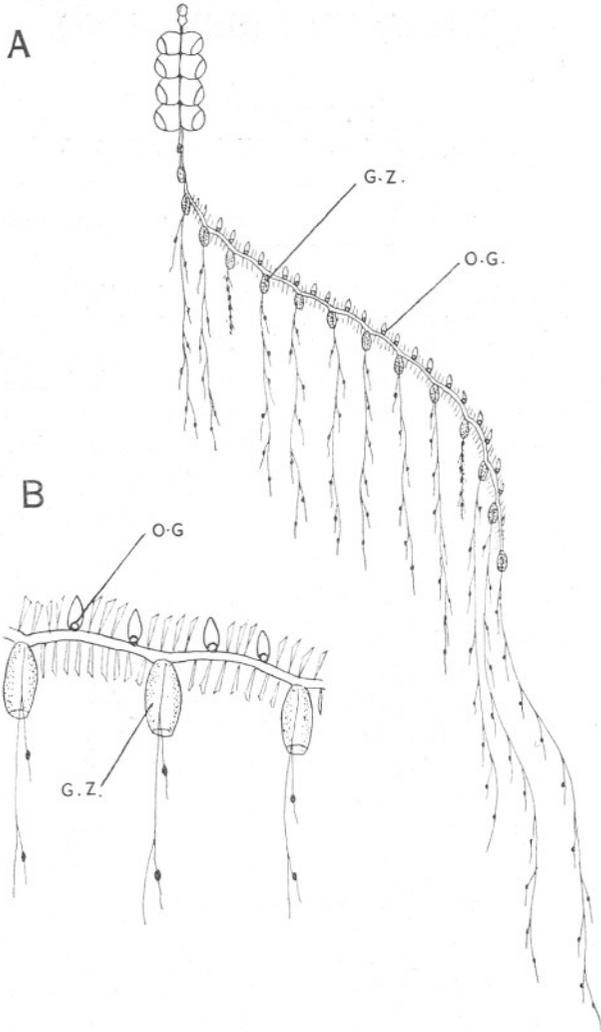


FIG. 1.

Unless disturbed, *Stephanomia* apparently remains perfectly quiescent, and in an inclined position. The pneumatophore causes the whole organism to float to the top of still water, and that part of the stem bearing the nectophores hangs vertically below it, but the rest of the

stem falls away from the basal nectophores at an angle of about forty-five degrees. The reason for this seems obvious, for in this position the long contractile filaments hang separately, vertically, and evenly spaced, whereas if the whole organism assumed a vertical position in the quiescent state the filaments would hang down together as one cluster, with a relatively small volume of water with its contained organisms exposed to their influence.

The result, therefore, of the inclined position is to form, in effect, a very efficient trap for small actively moving organisms such as copepods. Undisturbed, the *Stephanomia* drifts placidly with the current and consequently small active forms are in constant danger of swimming into the grating of filaments as herring are into a drift-net. Contact of any small particle with a single filament or tentacle causes the instantaneous contraction of the latter towards its associated gastrozoid. Stronger stimulation of one or more filaments not only results in their contraction, but also that of the stem itself up to the base of the nectophores. Usually such stimulation also affects the nectophores so that the organism moves actively away. Sometimes, however, the swimming movements seem to start spontaneously, and an individual suddenly swims through the water at about 8 cm. per second, setting into motion also any with which it may collide. At 16° C., to produce the above movement, the nectophores contract simultaneously about four times per second.

The characteristic inclined position when quiescent is apparently due to the presence of an oil-globule in two persons, that may be modified bracts, occurring between every pair of gastrozoids, as is shown in Figure 1 B. Typical bracts are numerous on all sides of the stem between the gastrozoids, but the forms containing an oil-globule are to be found only on its upper side, opposite to that bearing the gastrozoids themselves.

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