

Letters to the Editor.

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Some New Commensals in the Plymouth District.

WHILE collecting by digging on the shore at Millbay, Salcombe, in April this year, I found three consecutive pairs of Synapta and a polynoid worm living together, and at the same time three distinct associations of the brittle star, *Ophiocnida brachiata*, and a small mollusc. These finds led to five later

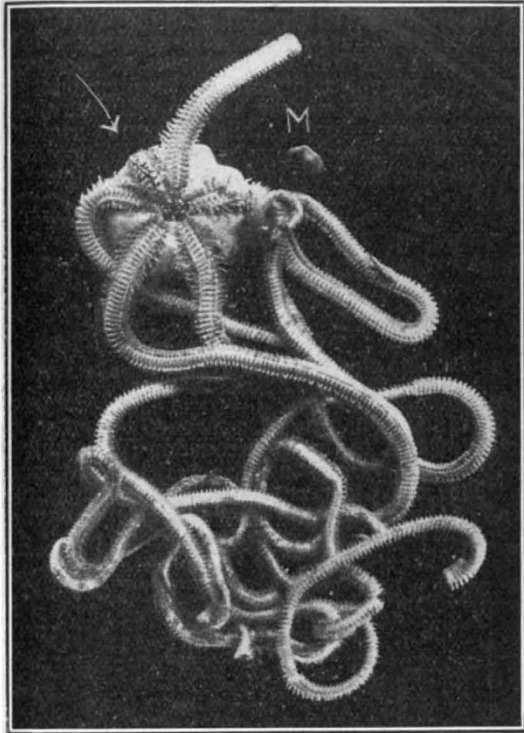


FIG. 1.—The brittle star, *Ophiocnida brachiata*, with the polynoid, *Harmothoe lunulata*, clamping and curving over the disc, opposite the arrow head and alongside the projecting arm which is broken off short; and the mollusc (M), *Montacuta bidentata*: three animals living associated together buried in muddy sand at Salcombe. \times ca. $\frac{3}{2}$. (From a photograph by Mr. R. S. Clark.)

monthly visits during the best spring tides, and resulted in the observations given below.

The polynoid, *Harmothoe lunulata*, was found in muddy sand at Salcombe on adjacent beds with six different animals belonging to two different phyla and four different classes, but the more interesting point is that the size of the polynoids forms on the whole an increasing series approximately as follows: *Harmothoe lunulata*, a few to 10 mm., with *Ophiocnida brachiata*, and curved round the disc or over the mouth (Fig. 1); *H. lunulata* (var. *synapta* St. Joseph), 15 to 20 mm., with *Synapta inhærens* and *S. digitata*, and also occasionally with *Phascolosoma pellucidum*. On the same beds occur larger specimens of a polynoid somewhat different in general appearance from the small *Harmothoe lunulata* just mentioned, but they appear to be merely later-growth stages of the same species, and agree generally with the var. *nigra*, Alajôs. Specimens of this form about 20 to 30 mm.

were taken with *Phascolosoma vulgare*, and of 35 to 50 mm. with *Amphitrite Edwardsi*. Further work will be required to put this last observation on a secure basis, but the animals can only be obtained by special search in small numbers at considerable intervals of time. There is little doubt, however, that this species of *Harmothoe* at Salcombe starts life commensally with *Ophiocnida*, and changes its mate as it grows bigger and requires more accommodation in the burrow provided by the messmate, until it finally consorts with polychætes up to 30 cm. long, such as *Amphitrite Edwardsi*.

Harmothoe lunulata was also taken at the mouth of the River Yealm with *Synapta inhærens*, and will no doubt later be found in the same association in Plymouth Sound.

During the same expeditions the almost constant association of the mollusc *Montacuta bidentata*¹ with *Ophiocnida brachiata* was confirmed. The mollusc in this case is frequently found in numbers just below or above the disc, and occasionally under an arm in company with *Harmothoe lunulata* young. The same mollusc was taken also but less frequently with the Gephyrean, *Phascolosoma pellucidum*, and occasionally with *Nereis*. With this Gephyrean, however, was found fairly constantly the messmate *Lepton Clarkia*,¹ which was fairly frequently present in groups of 4 to 7, and sometimes attached to the skin of the blood-worm.

On both shores at Salcombe another *Harmothoe* sp. B, not yet identified, was taken in tubes with one, and not in tubes with other species of *Nereis*. The same species was taken by careful work also in Rum Bay, Plymouth Sound, alongside or under the tentacles of *Amphitrite gracilis*, *Polycirrus aurantiacus*, and another species of *Polycirrus*, and at the same time *Harmothoe marphysa* was rediscovered with *Marphysa sanguinea* in Plymouth Sound after a long lapse of years. The same *Harmothoe* sp. B was also taken with *Nereis* in beds at the River Yealm. It is an interesting fact that Sir Ray Lankester took a similar polynoid under the tentacles and in the tubes of *Terebella (Polymnia) nebulosa* at Herne so long ago as 1865.

The frequency with which the associates mentioned above occurred apart from each other was noted during the collecting work, and found to be low except in the case of *Phascolosoma pellucidum*, which occurs in thousands in a few square yards of ground.

In none of these cases of association or commensalism can a reason for it be asserted with any certainty. The frequent occurrence of polynoids, however, at the bases of the tentacles of polychæte commensals, as *Polycirrus*, or in or near the grooves of other polychætes, as *Amphitrite*, *Nereis*, *Chaetopterus*, or the grooves of *Ophiocnida*, suggests the pilfering or scavenging of food-material. In the cases of *Montacuta* and *Lepton* it is clear that food-material is abundant in the burrows they inhabit, as their shells are often covered with Polyzoan polyps, and in addition various Foraminifera are not uncommon in the mouths or in the region of the burrows.

Indeed, the variety of associates of some commensals suggests, on the other hand, that an inhabited burrow may be simply and mainly a harbour of refuge, which is used so frequently that the inhabitants learn to know and tolerate each other, while at the same time not necessarily depending directly in any particular way on each other for food.

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¹ I am much indebted to Mr. R. Winckworth for the determination of these species.