of the swimming movements of the organism. On the other hand, it may lend further significance to the widespread occurrence among aquatic organisms of continuous upward swimming. Since swimming not only maintains organisms in the euphotic zone but may also cause them to accumulate in compact groups in the plane of the surface, it may play a valuable part in bringing the sexes together and in reducing the dispersal of sex products. In *Enteromorpha intestinalis* the gametes, though not the zoospores, show this behaviour and swarm at the surface, while the surface swarming of the sexual segments of Heteronereids and of other annelids may be brought about in this way.

A further consequence of the inward flow of water towards each organism is an increase in the catchment of food particles, although as larger swarms develop and the surface in the vicinity of the swarms becomes denuded, any such advantage may be lost. Redistribution would then be necessary by such means as diurnal migration as suggested by Bainbridge[2].

I wish to thank Dr. R. Bainbridge for useful discussion on this subject.

D. J. Crisp

Marine Biology Station,
Menai Bridge,
Anglesey.

[1] Colebrook, J. M., *J. Anim. Ecol.*, **29**, 241 (1960).
[2] Bainbridge, R., *J. Mar. Biol. Assoc., U.K.*, **32**, 385 (1953).
[3] Steven, D. M., *Nature*, **192**, 280 (1961).
[4] Bary, B. M., *N.Z. J. Sci. Tech. Bull.*, **34**, 393 (1953).
[5] Stommel, H., *J. Mar. Res.*, **12**, 148 (1949).
[6] Bainbridge, R., *Biol. Rev.*, **32**, 91 (1957).
[7] Crisp, D. J., and Southward, A. J., *Nature*, **178**, 1076 (1956).

A Coral-eating Polychæte

A variety of polychætous annelids are known to be associated with coral reefs. Most of them dwell in interstices of the rock beneath the living surface of the reef and undoubtedly contribute, in some degree, to the eventual destruction of the reef. Other invertebrates, polychætes, crustaceans and others live at the surface, in close association with the live coral[1]. With the exception of some reef-dwelling fish, however, predators of the living coral have generally been considered non-existent[2].

Hermodice carunculata (Pallas) has long been known to be associated, at least in part of its geographical range, with coral reefs. This amphinomid is also the one polychæte commonly found roaming freely over the surface of the reef. At the Bellairs Research Institute, Barbardos, with the aid of the simplest skin-diving equipment, *H. carunculata* has been watched carefully and repeatedly. These observations show that this animal is never encountered on the reef in the middle of the day but can be counted on to appear after 4 p.m. and has occasionally been seen before 9 a.m. *H. carunculata* may, therefore, be presumed to remain in the crevices of the reef during most of the day and to emerge to move over the surface of the reef during the late afternoon, night and early morning. This pattern of activity is also shown by animals kept in the laboratory.

H. carunculata, while moving slowly over the surface of the reef, has been seen, on more than ten occasions, to evert the buccal region of the digestive tract and fold it over the projecting tip of one of the finger-like growths of the madreporian coral, *Porites porites* Pallas. The buccal region is short but elastic and stretches over the blunt coral projection, giving the anterior end of the worm a broad, flat appearance as seen from above. Such feeding *Hermodice* are fairly securely attached in position and can be dislodged only by gently pulling the animal away from the coral. After removal of the feeding *Hermodice* the *Porites* tip appears white and bereft of living tissue. In the particular area of shallow reef where these observations were made there was a considerable amount of *Porites porites*, and damaged tips of this sort were not uncommon.

The contents of the digestive tract of *Hermodice* taken from the reef have been studied by the examination of the gut taken from preserved individuals and also by the study of fæcal deposits left by animals isolated in finger bowls. In both cases the material studied was rich in nematocysts, all the same holotrichous type, some intact and some discharged. Common also were masses of small, spherical, greenish-brown cells resembling zooxanthellæ from coral tissue.

It seems probable, therefore, that *Hermodice carunculata* is a habitual predator of living coral. A study of feeding and digestion in this animal is now under way and will be published in the near future.

Joan R. Marsden

Department of Zoology,
McGill University,
Montreal.

[1] Hyman, L. H., *The Invertebrates*, **1**, 615 (McGraw-Hill, New York, 1940).
[2] Wells, J. W., *Geol. Soc. Amer. Mem.*, **67**, 612 (1957).

Production of Hybrids between Physiological Races of the True Slime Mould *Didymium iridis*

For many years it was believed that plasmodia of the same species of Myxomycetes merge on contact, whereas those of different species do not. This test was proposed as a criterion of specificity by Torrend[1] in 1909. In 1934 Skupienski[2] announced the discovery of physiological races in *Didymium iridis* (*D. xanthopus*) and stated that the plasmodia of the two races he had in culture would not merge. Later he found[3] physiological races in *Didymium squamulosum*, and Gray found them in *Physarum polycephalum*[4].

For some years we have been experimenting at Iowa with some races of *Didymium iridis* collected in Honduras. Collins[5], working in our laboratory, showed that race *H* of this species is heterothallic, consisting of two mating types he designated (+) and (−). Later, working with another race (*B*), we found that this, too, consists of self-sterile strains which yield plasmodia readily when mated in certain combinations. Plasmodia of the same race *HH* or *BB* merge one with another on coming in contact, but *HH* plasmodia will not merge with *BB* plasmodia.

After a number of self-sterile clones of each race were isolated, *H* clones were mated with *B* clones in various combinations and hybrids were produced which formed *HB* plasmodia within two or three days after the swarm cells from the two parents were mixed. The hybrid plasmodia grow well and sporulate, producing typical sporangia of *Didymium iridis*. Hybrid *HB* plasmodia resulting from the same cross fuse readily one with another, but do not fuse with *HH* plasmodia or *BB* plasmodia.

Because it is difficult sometimes to determine whether plasmodia in intimate contact are actually merging, visual observations were confirmed by