

be an indication of the main spawning area of the species or another example of incidental spawning. It has shown without doubt, however, that there is a very extended area in which the pilchard may spawn.

The main planktonic organisms found in association with pilchard eggs and larvæ have been found to vary considerably. At times *Sagitta* has been the dominant organism; but eggs and larvæ have also been found in association with *Ctenophores* (*Pleurobrachia*), *Doliolum* and Copepoda. *Cladocera* have been present but only on a few occasions.

It may be mentioned that large numbers of ova, larvæ and juvenile stages of the Cape anchovy *Engraulis japonicus* (Houttyn) have been found in the St. Helena Bay area 1-100 nautical miles offshore. This may prove to be the main spawning ground of this species.

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### Antennæ and Mating Behaviour in *Drosophila melanogaster*

THE gene 'antennaless' of *Drosophila melanogaster* does not necessarily express itself fully in individuals homozygous for it<sup>1</sup>. In the course of a programme of work designed to isolate, by means of inbreeding and/or selection, a series of families all homozygous for this gene, but differing in degree of exhibition by reason of the various gene milieux present in the various families, it was noticed that high exhibition lines were conspicuously difficult to maintain. In view of the known chemoreceptive function of the antennæ in insects in general<sup>2</sup> and in *Drosophila* in particular<sup>3</sup>, and the importance of the antennæ in the mating behaviour patterns of various species, experiments were started to see whether the poor results obtained with high exhibition lines could be ascribed to failure of adequate mating responses consequent upon absence of stimuli normally reaching the animal via these organs. Evidence that males were attracted to females by olfactory stimuli had not been obtained in previous experiments<sup>3</sup>.

Three main types of individuals occur in cultures of antennaless stock: those with two antennæ ( $A_2$ ), one antenna ( $A_1$ ) and no antennæ ( $A_0$ ). It is thus possible to set up nine different sorts of mating with respect to two parents. One hundred such 1 x 1 matings were tried for each mating type, and the percentage of successful (that is, fertile) matings was recorded. Results are shown in Table 1.

Table 1

Mating	Total crosses	Successful matings (per cent)
$A_0 \delta \times A_0 \textcircled{\circ}$	100	6
$A_1 \delta \times A_0 \textcircled{\circ}$	100	31
$A_1 \delta \times A_1 \textcircled{\circ}$	100	46
$A_2 \delta \times A_0 \textcircled{\circ}$	100	44
$A_2 \delta \times A_1 \textcircled{\circ}$	100	63
$A_2 \delta \times A_2 \textcircled{\circ}$	100	69
$A_0 \delta \times A_1 \textcircled{\circ}$	100	32
$A_1 \delta \times A_2 \textcircled{\circ}$	100	72
$A_2 \delta \times A_2 \textcircled{\circ}$	100	75

Statistical analysis indicates that it matters little whether an animal has one or two antennæ. What is important is that it should possess at least one antenna. This point is perhaps best made by arranging the crosses in terms of whether neither, one

or both parents are antennaless. Such an arrangement is shown in Table 2, where  $A^-$  represents a male or female without antennæ,  $A^+$  a male or female with one or two antennæ.

Table 2

Mating	Successful matings (per cent)
$A^- \times A^-$	6
$A^- \times A^+$	31-46
$A^+ \times A^+$	63-75

If we leave aside at present the rather unlikely possibility that the suppression of antennæ in an individual fly is always associated with a corresponding structural or physiological abnormality of the sexual apparatus, we must conclude that the antennæ in *Drosophila* play an important, but as yet undetermined, part in mating behaviour. Their precise function is being investigated at present, and results will be fully published elsewhere.

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<sup>1</sup> Gordon, C., and Sang, J. H., *Proc. Roy. Soc.*, B, 130, 151 (1941).

<sup>2</sup> Marshall, J., *Trans. Roy. Ent. Soc.*, 83, 49 (1935).

<sup>3</sup> Begg, M., and Hogben, L., *Proc. Roy. Soc.*, B, 133, 1 (1946).

### An *Odostomia* attacking Oysters

A DETAILED account has recently been given<sup>1</sup> of the structure and mode of life of several members of the Pyramidellidæ. It has been shown that they are parasitic and feed by sucking the juices of lamellibranchs and tube worms. The normal hosts are known for only a small number of species, principally of the genus *Odostomia*.

The first species recognized as a parasite was *Odostomia eulimoides*, stated by Jeffreys<sup>2</sup> to occur "chiefly (if not only) on the ears of *Pecten opercularis* and *P. maximus*, in the coralline zone; it is widely distributed and rather common". This description of its mode of life was repeated by Fretter and Graham in their review of the family. It was of interest, therefore, to find the same species attacking oysters in the River Roach, Essex. A sample of a hundred two-year-old native brood oysters dredged from near Paglesham in early June 1951 contained no less than 46 which showed evidence of attack, and many of them actually contained living *Odostomia* when opened at Conway.

The parasites were lodged in small pockets just inside the ventral margin of the shell (see photograph). These pockets result from the withdrawal of the mantle in response to the irritation caused by the proboscis of the parasite during feeding. Apparently the parasites are sedentary, and as a result of continual attack at one point both the right and left mantles are more or less permanently withdrawn for a short distance from the free edge of the shell. In consequence, new shell is laid down in an arc some distance inside the ventral margin and a permanent pocket develops. The parasites occurred mainly in pairs; but in one pocket three were found. Several pockets contained no parasites; but as the oysters had been dredged in Essex, washed, packed and dispatched by post to Conway, some loss during these processes must be expected.

Normally, only one pair of parasites occurred in a single oyster, but one was found with two pockets