herbivores. The diatom flora was not affected by the cellulase, a result in keeping with the siliceous nature of their cell walls. Apparently undamaged and viable diatoms are found frequently in snail fæces. This contrasts strongly with the fact that these plants form a very important part of the food of other herbivores[4].

A short length of gut, including the crystalline style, was taken from several specimens of *Melanoides*, macerated in a drop of distilled water and centrifuged. The supernatant solution was then analysed in order to determine the nature of the acid secreted. The chloride content did not prove high enough for estimation, but sulphate was present in a concentration of approximately 3·0 gm. per litre. This is of particular interest as sulphates in the waters and soils around Lake Victoria are present only in very small amounts and are frequently undetectable by normal chemical methods. Similar results were obtained using material from *Caelatura*.

A direct estimation was made of the inorganic solutes liberated into a small volume of water by various species of snails. In one experiment with *Melanoides*, for example, 0·05 mgm. sulphate was produced per snail in 12 hr.

It has been suggested that the fertility of many lakes in East Africa is controlled by the availability of dissolved sulphate[5], and by the activity of herbivores[6]. The observations indicate that both gastropods and bivalves have a favourable effect on fertility from both these points of view. Further work on these and other molluscs may show that their metabolism, in those waters in which they are abundant, has a significant effect on fertility.

I am grateful to Mr. C. C. Cridland of this Organization for identifying the Mollusca named above.

G. R. FISH

East African Fisheries Research Organization,
Jinja, Uganda.
Dec. 13.

[1] Yonge, C. M., *Nature*, **142**, 464 (1938). Morton, J. E., *Proc. Linn. Soc. Lond.*, **164**, 240 (1953).
[2] Scales (1915), quoted by Stephenson, M., "Bacterial Metabolism", 313 (Longmans, Green and Co., 1949).
[3] Newell, B. S., *J. Mar. Biol. Assoc., U.K.*, **32**, 491 (1953).
[4] Fish, G. R., *Nature*, **167**, 900 (1951). East African Fisheries Research Organization, Annual Report (1950).
[5] Beauchamp, R. S. A., *Nature*, **171**, 769 (1953).
[6] East African Fisheries Research Organization, Annual Report (1952).

Reappearance of *Ocenebra erinacea* (L.) off the East Coast of England

ON the east coast of Britain three genera of Muricid drills, *Nucella*, *Urosalpinx* and *Ocenebra*, attack lamellibranchs. Of these, *Nucella* appears to have maintained its population status; but the abundance of the other two has undergone considerable changes. *Urosalpinx*, the American whelk tingle, has gradually increased during this century[1], whereas *Ocenebra* has twice suffered virtual extinction on the east coast by cold winters: 1928–29[2] and 1939–40 followed by 1940–41[3]. So far as is known, *Ocenebra* on the south coast of England was not affected.

There are now signs of reappearance of *Ocenebra* on the east coast. Newell[4] has found living specimens at Whitstable. Although none was found in recent surveys of the Rivers Roach, Crouch, Blackwater, Colne and Orwell, nor in Hamford Water, viable spawn has been found in Orford River. A substantial area has been trawled and dredged regularly since 1950 off Clacton-on-Sea and the approaches to the River Colne, but only dead shells of *Ocenebra* were recorded. In August 1954, however, in three separate hauls, five live *Ocenebra* were taken from the trawl near the Priory Spit buoy, two miles south-east of the mouth of the River Colne. In September 1954 two further live *Ocenebra* were taken from near the Outer Ridge buoy, about one mile south-east of the mouth of the Rivers Stour and Orwell. The specimens were all small, mostly of no more than about one to two years old.

The appearance of young individuals, in an area previously free from adult *Ocenebra*, indicates the beginning of recolonization. It may be significant that the competitor *Urosalpinx* has not so far been recorded in Suffolk.

It will be interesting to observe whether *Ocenebra* can re-establish itself in the rivers of Essex, in view of the large numbers of *Urosalpinx* there.

M. N. MISTAKIDIS
D. A. HANCOCK

Fisheries Laboratory,
Burnham-on-Crouch,
Essex.
Dec. 17.

[1] Hancock, D. A., *J. Cons. Int. Explor. Mer*, **20**, 186 (1954).
[2] Orton, J. H., and Lewis, H. M., *J. Mar. Biol. Assoc. U.K.*, **17**, 301 (1931).
[3] Cole, H. A., *J. Mar. Biol. Assoc. U.K.*, **25**, 477 (1942).
[4] Newell, G. E., *Ann. Mag. Nat. Hist.*, **7**, 321 (1954).

Control of Crabs with Crude BHC

CRABS, of which the commonest is *Sesarma africanum*, H. M. Edw., are numerous on the tidal rice lands of Sierra Leone and destroy large numbers of newly planted rice seedlings. In normal farming practice, this has little appreciable effect on yields as sufficient seedlings are planted in each stand to allow for losses. In the past three years, however, there has been a considerable increase in the crab population on the farm of the West African Rice Research Station, and serious damage has been caused to experimental material.

Control of these crabs is complicated by the fact that river water is used for drinking purposes by the local population and that fishing is widespread. Generally toxic substances cannot, therefore, be used.

Preliminary experiments have now shown that crude BHC is effective against the crabs as a contact poison. The results of prolonged contact with aqueous suspensions of varying concentrations were as follows:

65 p.p.m. crude BHC caused death within 4 hr.
6·5 p.p.m. crude BHC caused death within 24 hr.
0·65 p.p.m. crude BHC caused complete lack of co-ordination within 24 hr. but no death within 72 hr.
0·065 p.p.m. crude BHC, no effect observed.

After momentary contact with a concentration of 650 p.p.m. crude BHC followed by thorough washing, death was caused within 24 hr., and under field conditions spraying with concentrations as low as 325 p.p.m. gave adequate protection to young rice seedlings.

These trials were carried out in a season of high tides and heavy rain, and it is probable that during the dry season even greater economy of spray could be obtained.