

“Gill Disease” of Portuguese Oysters

DURING April and May of this year, there has been a heavy mortality of Portuguese oysters, *Crassostrea angulata* Lmk., which were imported into Britain from the River Tagus (Portugal) in March. Losses in some cases exceeded 90 per cent.

The symptoms shown by the dying oysters are the same as those seen in Britain¹ and France in *C. angulata* in 1967 and 1968, when losses were severe in France, but less so in Britain. Farley² described the general symptoms in oysters (*C. virginica* Gmelin) dying of prolonged functional or infectious disease. These gross symptoms appear to be similar in the case of several different diseases including the present European mortality.

On arrival in Britain, the Portuguese oysters were thin, rather dry and had a noticeable yellow tint to the meats. There were 2 per cent with “active syndrome” consisting of damage to the gills, adductor muscle and mantle. On the gills, the first symptom is the appearance of one or more yellow spots. These increase in size and the tissues at the centre die, become brown and disintegrate (Fig. 1) resulting in perforation of the gill (or if at the edge, a deepening indentation). On the adductor muscle (Fig. 2) and on the mantle, yellow or green pustules develop and mantle perforations may occur as on the gills. In extreme conditions all the gills may be almost entirely eroded away. In 3 weeks, the percentage of “active” disease in one group of freshly imported oysters had risen from 2 per cent to 60 per cent, and all were in extremely poor condition. These “active” states have been found to occur chiefly in spring and early summer. Apparently some oysters are resistant to the disease or there may be remission, because throughout the year animals can be found which have typical gill damage, but lack the yellow staining and dead brown tissues which indicate that the disease is active.

Oysters in all conditions have been examined for the presence of parasites or pathogens which could be responsible for the mortality. Cells bearing a resemblance to those seen by Mackin *et al.* in oysters infected by *Labyrinthomyxa marina* (Mackin, Owen and Collier) Mackin and Ray (= *Dermocystidium marinum* Mackin, Owen and Collier)^{3,4} have been observed in many of the diseased oysters examined so far. Experiments are in progress with cultures of these cells (Fig. 3) to determine whether they are a *Labyrinthomyxa* and are pathogenic to oysters.

Although the present mortality concerns only recently imported Portuguese oysters, specimens of *Ostrea edulis*

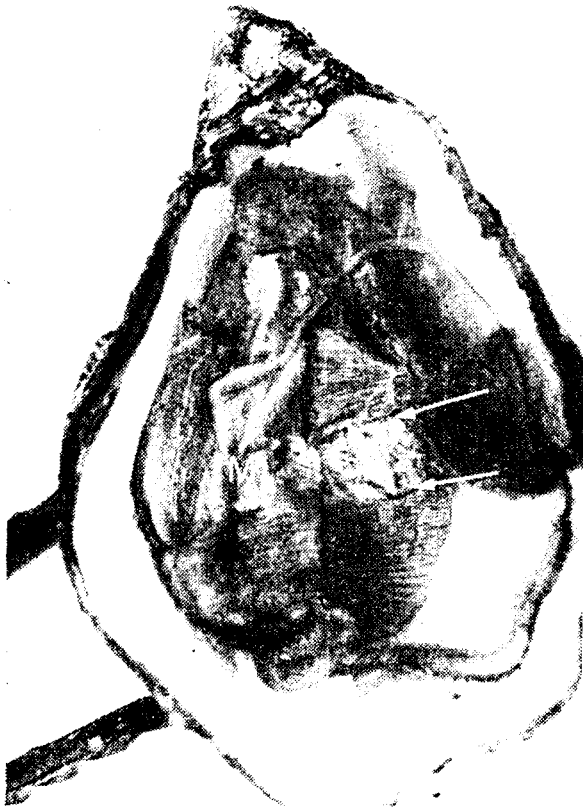


Fig. 1. Oyster with severe infection of the gills, the central parts of which are brown and dead (arrows indicate edges of damage). The mantle (M) is also covered with pustules opposite the infected gill.



Fig. 2. Oyster with infected adductor muscle which is patched with yellow-green pustules.

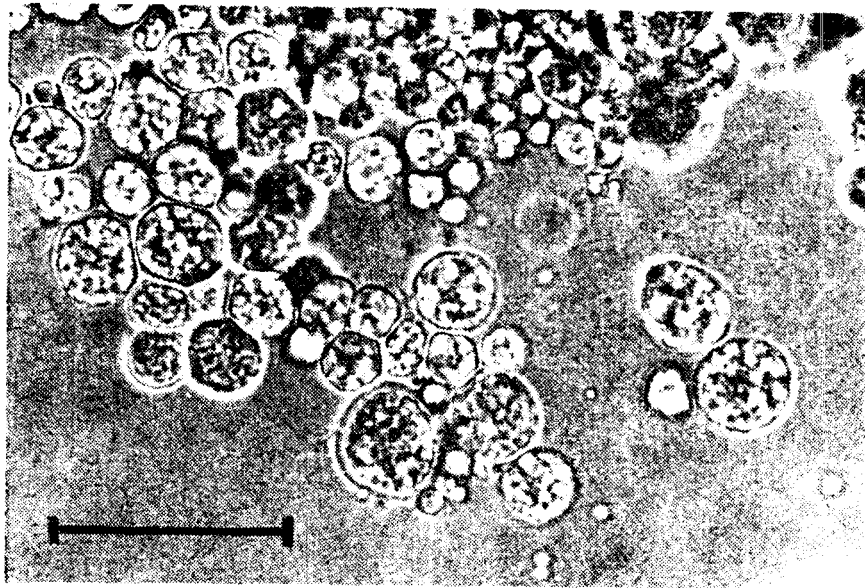


Fig. 3. Liquid culture (yeast peptone) of organism isolated from diseased oysters. (Scale = 50 microns.)

L. have been found in France and Holland apparently with symptoms of remission stages of disease on the gills, and in one case (Cancalle, France) a *Labyrinthomyxa*-like organism has been cultured.

In 1920 there was a severe and so far unexplained mortality of *O. edulis* through Europe, which Orton⁵ investigated. Several of his drawings of diseased oysters show cells very similar both to those seen in dying Portuguese oysters this year and to *Labyrinthomyxa marina*. A similar mortality in France⁶ in 1930 may also have been caused by the same organism.

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¹ Howell, B., Key, D., and Shotton, R., *Intern. Comp. for Exploration of the Sea, Shellfish Communications*, Document No. K12 (Copenhagen, 1968).

² Farley, C. A., *J. Protozool.*, **15** (3), 585 (1968).

³ Mackin, J. G., *Bull. Mar. Sci. Gulf and Caribbean*, **1**, 72 (1951).

⁴ Mackin, J. G., and Ray, S. M., *J. Invert. Pathol.*, **8** (4), 544 (1966).

⁵ Orton, J. H., *Fishery Invest.*, London, Ser. II, IV, 3 (1924).

⁶ Voisin, P., *Rev. Trav. Office des Pêches Maritimes*, IV (2), No. 14, 221 (1931).