(5) The demonstration of the indicator phase in heat-sensitive *NWS* will be described elsewhere. This character of *NWS* has only been assumed to exist until now⁷.

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⁶ Cairns, H. J. F., *Brit. J. Exp. Path.*, **32**, 110 (1951).

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A New Species of Sporozoan ?

In the course of research on digestion in *Cardium edule*, Mr. G. Owen, of this Department, noticed structures, which he termed 'spicules', occurring in the epithelia of the ducts of the digestive diverticula, stomach and midgut. I believe these 'spicules' to be a stage in the life-cycle of a coccidiomorph sporozoan, but can find no account of them in the literature. The following description of them is offered in the hope that if they have already been described I will receive notice of it.

The 'spicules' are slender cylindrical structures about 1.5 μ in diameter, tapering quite sharply at one end (the proximal end) and more slowly at the other. They range in length from 10 μ to 50 μ and are found intracellularly, with the long axis perpendicular to the plane of the epithelium (Fig. 1).

The nuclear region (so designated on the strength of Feulgen-positive staining) is situated about one-fifth of the overall length from the proximal end, that is, the end in the basal region of the epithelium. The apparent structure of this region varies somewhat, depending on both the state of development of the 'spicule' and the staining method used. In any event it seems to consist of a capsule 2-7 μ in length containing a Feulgen-positive particle or particles 1-4 μ

Fig. 1. A 'spicule' and two schizogonic masses in epithelial cells of a duct of *Cardium*. $\times 2,500$

Fig. 2. Appearance of nuclear region produced by (a) iron haematoxylin; (b) Feulgen; (c) crystal violet

in length. The 'spicule' is a little swollen in this region.

Epithelia in the ducts of the digestive diverticula contain many schizogonic masses, in highly hypertrophied cells, besides the 'spicule' stage. These schizogonies make the interpretation of feeding experiments very difficult unless the material fed is quite characteristically distinct from them in staining properties. Still other stages can be seen in the connective tissues and amoebocytes between the ducts.

Practically 100 per cent incidence of infection has been recorded in specimens of *C. edule* from Plymouth, Bangor and Millport. The infection is frequently so heavy that it obliterates much of the epithelium.

A full and complete description of the organism will be published later.

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Glacial Shore-lines

THE transition of the shore-line in the neighbourhood of a large ice sheet has been calculated on the assumption that the Earth behaved under the load as an elastic spherical shell enclosing incompressible fluid. The analysis is an extension of that of Niskanen¹, who considered uniformly thick and terraced ice caps, but who calculated the shore-line movement only at the centre, at the edge, and 90° from the centre of these caps.

In the present calculations, the ice load was taken to be that of two polar caps the thickness of which is given by

$$h = h_0 \left(\frac{P_2(\cos \theta) - P_2(\cos \theta_0)}{1 - P_2(\cos \theta_0)} \right)$$

where h_0 is maximum thickness of either cap; θ_0 is angular radius of either cap; θ is latitude of any point on the sphere measured from the North Pole; P_2 is a Legendre polynomial of order two.