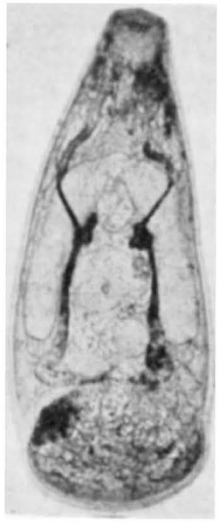

Fig. 1. Measurements given in text

frog or another mollusc) has given the opportunity for full development within a molluscan host, in place of one of the expected vertebrate host (that is, one of the Amphibia).

On the other hand, the presence of amphistome rediæ raises the possibility that the whole of the life-cycle may occur, by means of a type of 'short-circuiting', within the (former) intermediate host, which would account for the lack of free-swimming cercariæ. The cercaria of *Diplodiscus subclavatus*, in contrast, is well known under the name *Cercaria diplocotylea* Fil. Although this has a period of development external to the redia (that is, in the tissues of the snail *Planorbis umbilicatus* L.), it later leaves the intermediate host, and encysts externally.

It is of interest to speculate on the definitive host for this species of *Diplodiscus*, and whether it is a parasite of molluscs, in contrast to all other members of the group, or a parasite of vertebrates that, in exceptional circumstances, has adapted itself to a molluscan host. Whatever the answer to this problem may prove to be, it is the first known case of an amphistome parasitizing an invertebrate.

For the opportunity and facilities to carry out further work on the life-cycle and identification of this trematode, the results of which it is hoped to publish at a later date, I am indebted to the Institute mentioned below and in particular to its director, Prof. D. Swierstra.

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Effect of Pyruvate upon Nucleated and Enucleated Fragments of *Amoeba proteus*

The detection of metabolic differences between nucleated and enucleated fragments of *Amoeba proteus* suffers from the fact that the amounts involved are often minute[1]. In a search for the effect of enucleation upon cellular metabolism, the sensitivity of nucleated and enucleated fragments, respectively, towards selected metabolites may serve as a guide.

The effect of pyruvate on nucleated and enucleated fragments of *Amoeba proteus* was tested as one example. Since enucleated cells are unable to take up food particles, both the controls and the fragments were kept in non-nutrient salt solution without the addition of food particles throughout the experiment. The *Amoebae* were cut into nucleated and enucleated halves with a glass needle. Nucleated fragments as well as whole cells tolerated concentrations of sodium pyruvate up to $2{\cdot}5 \times 10^{-3}$ mM/ml. for 24 hr. without appreciable changes either in their mode of movement, or in the morphology of the pseudopodia. However, about 90 per cent of the enucleated fragments were cytolysed within the first 10 hr. of exposure to the same concentration. This difference is the more remarkable since both nucleated and enucleated fragments survive starvation for more than a week.

Since synthesis of protein and ribonucleic acid is dependent on the nucleus, the higher toxicity of the pyruvate for the enucleated fragments might reflect an intracellular increase in lactic acid, caused by a change in the reduced diphosphopyridine nucleotide/diphosphopyridine nucleotide ratio as a result of an insufficient consumption of chemically bound energy[2,3]. It is interesting that a similarly increased sensitivity of enucleated fragments towards 'natural' precursors of proteins and nucleic acids has been found in *Acetabularia*[4].

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BACTERIOLOGY

Egg-Yolk Reactions of *Pseudomonas* Species

Various bacteria are known to produce opalescence in egg-yolk emulsions due to lecithinase or lipase activity. Among these are the lecithinase-producing clostridia and aerobic spore-forming bacilli, and the lipolytic clostridia and staphylococci. Little attention seems to have been paid to the effects produced by Gram-negative organisms growing on egg-yolk media. Felsenfeld[1] showed that the opalescence produced by four strains of *Vibrio comma* and one strain of *Vibrio el tor* was due to lecithinase activity, and Crook[2] made a passing reference to one strain of *Pseudomonas pyocyanea* (*Ps. aeruginosa*) which produced an opalescence on egg-yolk agar. Willis[3] noted the opalescence changes produced by four strains of *Ps. pyocyanea*.

This communication presents briefly the results obtained in a study of the cultural reactions of *Pseudomonas* species on egg-yolk agar and other lecithin and fat-containing media. Thirty strains were examined, of which 15 were strains of *Ps. pyocyanea* isolated from human infections; the remainder consisted of a number of species other than *Ps. pyocyanea*.

All organisms were examined for lipolytic activity by growing them on fat-containing media (tributyrin agar ('Oxoid'), cream agar, monostearate agar and