excellent information about the relief as well as the outline of the coccoliths. The accompanying illustrations compare a shadowed replica (Fig. 1) with a similar coccolith photographed in the transmitted beam (Fig. 2).

The method used in preparation is similar to the silica transfer technique applied by Hall[3] to the study of protein crystals. The replicas of coccoliths were made by dispersing coccoliths, obtained by scraping the rock, in distilled water and supporting this dispersion on a 'Formvar' film. The whole was then coated with a thin evaporated carbon film and the 'Formvar' dissolved in acetone. Finally, the coccoliths were removed with dilute hydrochloric acid and the remaining replica shadowed with gold–palladium.

The method has been applied to coccoliths from the White Band of the Kimmeridge Clay of Kimmeridge, Figs. 1 and 2 being of the dominant coccolith type present. The structure of spirally arranged calcite crystals and central perforation is clearly seen in Fig. 1. It is felt that adequate descriptions of coccoliths should require similar illustration, and that re-examination of existing types by this technique is imperative to establish a satisfactory classification.

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[1] *C.R. Acad. Sci., Paris*, **234**, 2100 (1953).
[2] *Micropalæontology*, (1), **2**, 157 (1955).
[3] *J. Biol. Chem.*, **185**, 45 (1950).

Modification of the Bulk Mechanical Properties of Water by Complex Formation in Dilute Solution

A solution of 75 per cent aqueous glycerol shows considerable viscosity (six times that of water) but no structure, so that small bubbles rise to the surface slowly but at a rate predictable from Stokes's law. A 0·07 per cent solution of agar, on the other hand, is only about 4 per cent more viscous than water; but eddies in it are destroyed as rapidly as in the glycerol. Air bubbles rise to the surface in characteristic jerks, and if small enough become trapped. Clearly a certain critical stress has to be exceeded in order to break the molecular framework.

It has now been found that a solution of 0·01 per cent cetyl trimethyl ammonium bromide and 0·005 per cent β-naphthol, added in that order to tap water, resembles the above-mentioned agar solution in its mechanical properties. Its viscosity is only about 2 per cent greater than that of water, eddies are rapidly destroyed and bubbles become trapped. A new feature, however, is the considerable elasticity shown, so that an eddy is not simply damped out but is reversed. Most of the life of a swirl set up in volumes of 500 ml. or less is, in fact, spent in motion in the reverse sense to the initial. With c as the concentration of cetyl trimethyl ammonium bromide in p.p.m., the β-naphthol being at $c/2$ throughout, and t the time in seconds before motion first stops, it was found that the relation $\log t = 0{\cdot}42 + 28/c$ was obeyed between $c = 50$ and 500. The size of the eddy was defined by using 50 ml. of solution in a bottle of 4·3 cm. internal diameter, a rapid swirl being timed with a stop-clock.

When distilled water is used, more material is required, the efficiency of tap water (London) being part of a general salt effect, probably due to anion adsorption by the complex. Details of the chemistry of this and similar systems are being submitted elsewhere, but the easily controlled 'thickening' of large volumes of water in this manner should be of interest in hydrodynamic and sedimentation studies.

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"Zoonoses in East Africa"

In the report of the recent conference in Kampala, Uganda, "Zoonoses in East Africa"[1], I was quoted as suggesting that *Trypanosoma rhodesiense* had developed from *Tr. brucei* by repeated passages through *Glossina pallidipes*. My thesis was, in fact, almost the exact opposite of this. I emphasized that all the evidence so far shows that the property of infectivity to man which alone distinguishes *Tr. rhodesiense* from *Tr. brucei* is an extremely stable one and that there has never been a known case of interconversion of these two. On the other hand, I pointed out, in any area where *Tr. rhodesiense* had appeared, either it could be traced to direct introduction by infected human beings from a known source, or the other human infective 'species', *Tr. gambiense*, had been known to be present in the area for some time.

I stressed the association of *Tr. gambiense* with the *palpalis* group of *Glossina* and of *Tr. rhodesiense* with the *morsitans* group and indicated that *G. pallidipes* was consistently present in areas where *Tr. rhodesiense* had appeared some time after *Tr. gambiense*. There are several areas in which, though the appearance of *Tr. rhodesiense* might conceivably have been due to direct transport, it also might have been due to the conversion of *Tr. gambiense* into the more virulent form, *Tr. rhodesiense*. Such areas are Busoga in Uganda, Buvuma Island in Lake Victoria, Uganda, Central Nyanza in Kenya and North Mara in Kenya. *G. pallidipes* occurs in all these areas. Further, *Tr. rhodesiense* is believed to have originated from the Luangwa Valley in Northern Rhodesia at the end of the first decade of this century, where *Tr. gambiense* was known to have been introduced in the previous two or three years. This area is one of the largest in eastern Africa of a mixed population of *G. pallidipes* and *G. morsitans*.

At the Kampala conference I put forward the hypothesis that *Tr. rhodesiense* has always originated from *Tr. gambiense* and made the tentative suggestion, which is supported by small pieces of other evidence, that the conversion to the more virulent human infective form may have been due to repeated transmission by *G. pallidipes*.

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[1] Daves, J. N. P., *Nature*, **177**, 406 (1956).