alternate light and dark 'Hunter-Schreger' bands. It is probable that the appearance described is associated with the development of this pattern of weaving of the enamel prisms.

The developing surface of the enamel was also observed to vary in height over larger intervals corresponding to several prism (depression) widths.

The appearances seen in the scanning electron micrographs independently confirmed the interpretation of the nature of the surface which had been made by one of us (A. B.) from an examination study of wax reconstructions. Serial 0·5μ sections of methacrylate embedded tooth germs were cut using a Porter-Blum ultra-microtome, stained with crystal violet and basic fuchsin and mounted in D.P.X. The outline of the developing surface of the enamel in each section was traced in projection using a light miscroscope at a magnification of some 1,500 diameters. Wax sheets were cut following the outline of these tracings. The surface of such a wax reconstruction (Fig. 3) shows a morphology similar to that seen in the scanning electron micrographs.

So far as we are aware, the foregoing features of the surface of developing enamel have not been described before, and would be difficult to study by other means, since newly secreted enamel is too soft to replicate in the fresh state and too absorbent to replicate in the dry state.

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A. Boyde

Anatomy Department,
The London Hospital Medical College,
London, E.1.

A. D. G. Stewart

The Cambridge Instrument Co., Ltd.,
Cambridge.

Effect of Tetracycline on Crystal Growth

In a previous investigation[1], it was shown that when the larvæ of the sand-dollar *E. parma* were reared in sea-water containing low concentrations of tetracycline, the fluorophore was incorporated into the growing skeleton. At higher concentrations, reduction or failure of the formation of skeletal elements resulted. Further, the addition of calcium to the sea-water–tetracycline mixtures in excess of the theoretical amount with which tetracycline could combine, failed to prevent inhibition of mineralization. Several additional investigations carried out by my colleagues and me have demonstrated that administration of tetracycline to organisms producing skeletal elements results in hypomineralization of bones[2] and teeth[3]. In an attempt to elucidate the mechanism of hypomineralization in greater detail, we selected as a test object the regenerating shell of the marine mollusc *Pinna*, in which the regenerating portion of the shell consists of large calcite crystals.

Specimens of *Pinna*, obtained in Bermuda waters, were prepared as previously described[4] in such a manner as to facilitate regeneration of the shell. The specimens were afterwards injected with 1 mg of tetracycline in the adductor muscle and maintained in aquaria with circulating sea-water for 1–5 days. The regenerate portions of the shell consisting of layers of calcite crystals were removed at various intervals and examined with visible, polarized, and ultra-violet light.

Control. Regeneration of the prismatic portion of the shell of *Pinna* occurs at a rapid rate resulting in the formation of approximately 0·5 cm shell in 24 h. In these specimens, the newly formed crystals are fairly uniform in size and shape and measure approximately 40μ along the greatest axis. Viewed with ultra-violet light the crystals exhibit a faint, bluish fluorescence and the membrane surrounding the crystal is non-fluorescent.

Experimental. Examination of the regenerate shell of the injected specimens show, with ultra-violet light, a fluorescent band in which the fluorophore was experimentally caused to be located. Examination of the crystals in this area of the shell reveals that they are much smaller (about 0·5) in size than those observed in control specimens. Viewed under ultra-violet light the characteristic golden-yellow fluorophore occurs in both the mineral portion of the crystal and also in the fibrous periostracum enclosing each crystal.

The use of the regenerate portion of the shell of *Pinna* consisting of large calcite crystals has afforded us the opportunity of exploring the behaviour of growing crystals subjected to a tetracycline environment under physiological conditions. Of particular interest in relation to hypomineralization, which this drug produces in growing skeletal elements, is how it produces the observed effect on the mineralizing structure. It was observed that the fluorophore combines with the protein membrane surrounding each crystal as well as the calcite crystal itself. In addition, the amount of shell regenerated is reduced, and there is also a corresponding decrease in size of the crystals. We have accordingly demonstrated a causal relationship between the administration of tetracycline and a decrease in the size of the crystals formed during the experimental period.

The assumption that this effect is a simple sequestering phenomenon, whereby the mineral available for crystal formation is withdrawn from the available pool, is open to question. It appears that before this explanation can be fully accepted it will be necessary to ascertain whether binding of tetracycline on the fibrous membrane surrounding the crystal may be responsible, in part, for the reduction in crystal growth under these circumstances.

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Gerrit Bevelander

Department of Histology,
University of Texas,
Houston 25.

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PATHOLOGY

Erythrocyte Osmotic Fragility in *AKR* Mice with Lymphoid Leukæmia

Investigations to characterize the anæmia occurring in mouse lymphoid leukæmia have recently involved a comparison of the erythrocyte osmotic fragility in mice of the low-leukæmia strain C_3H, and the high-leukæmia strain *AKR*, using the technique of Creed[1]. Mice were bled under ether anæsthesia by cutting the axillary blood vessels and gently aspirating the blood with a wide-bore Pasteur pipette. The blood was immediately transferred to a heparinized test-tube, and the osmotic fragility of the cells tested within 5 min of collection of the blood.

Fig. 1 shows the mean osmotic fragility curves for forty 2–3-months-old C_3H mice, and sixty 2–3-months-old non-leukæmic *AKR* mice. The mean saline concentration at which 50 per cent hæmolysis occurred with C_3H blood ($0{\cdot}40 \pm 0{\cdot}02$ (*S.D.*) g per cent) was significantly lower than the concentration for 50 per cent hæmolysis with *AKR* blood ($0{\cdot}45 \pm 0{\cdot}02$ g per cent). However, an initial survey of other low-leukæmia mouse strains suggests that erythrocyte fragility in non-leukæmic *AKR* mice falls within the upper limits of normal variation for mice.