other anaerobes. The presence of a multiplicity of anaerobes is indicated by the development of concentric zones of inhibition of growth around the metronidazole disc. Gram films of smears prepared from within these zones provide useful preliminary indications of the identity of these organisms, which can be obtained in pure culture from the Nal 50 plate spread for single colonies.

This technique has been in regular use in this laboratory for the last two years. It has allowed the demonstration of the presence of obligate anaerobes, often after overnight incubation, their preliminary identification, and sensitivity to antibiotics. A quantitative evaluation of the technique was not carried out but it was used in our recent investigations of the bacteriology of otogenic cerebral abscesses (Ingham *et al.*, 1977). In this study 37 obligate anaerobes were isolated from nine patients, a frequency of isolation which, to our knowledge, has not previously been achieved in such patients.

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Letters to the Editor

Cell counting in gut mucosa

Counts of cells in the lamina propria have almost all been reported with the area of the lamina propria as the reference unit. This seems illogical. To take an obvious example, the lamina propria in coeliac disease is both densely cellular and increased in area in proportion to the length of gut wall examined; there is no evidence that the surface area of the muscular wall of the gut is altered in coeliac disease, and the muscularis mucosae should therefore provide a constant reference unit whereas the volume of lamina propria is not constant. An incidental advantage of using the muscularis mucosae for reference is the relative toughness of the muscle, compared with the loose connective tissue of the lamina propria, which is much more readily disrupted and theoretically more liable to artefactual volume changes because of its high proportion of extracellular fluid.

In diagnostic histopathology, the usual abnormality is both a large increase in cellular density and a lesser increase in area of lamina propria (Meinhard *et al.*, 1975), and in this situation the choice of area of lamina propria as unit produces few anomalies. However, if the area of lamina propria is reduced then the same absolute number of cells will appear to be an increased number, and this effect was well shown by a recent biopsy which on subjective assessment was clearly normal by all criteria; the mean mucosal thickness ($\pm$ standard deviation) excluding villous height was $91 \pm 19 \mu$ (6 controls: $108 \pm 33 \mu$), area of lamina propria was 0.086 ± 0.014 sq mm per 1 mm length of muscularis mucosae (controls 0.126 ± 0.026), and total plasma cells (methyl green pyronin) were 260 ± 57 per 1 mm length of muscularis mucosae (controls 223 ± 89). Estimation of total plasma cells per sq mm lamina propria gives

3023 ± 663 (controls 1770 ± 706); it is difficult to accept this apparent statistical difference as a valid biological difference.

I suggest that the length of muscularis mucosae is a rational choice of reference unit for cell counts in gut mucosa, and that where possible the area of lamina propria per unit length of muscularis mucosae should also be given.

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