Correspondence

Reply

Intestinal permeability

SIR,—I am writing in reply to the letter from D I Cobden (*Gut* 1988; 29: 693). Many papers have been written describing changes in intestinal permeability during various inflammatory conditions in man and experimental animal models using different probes. Obviously, we could not acknowledge all of these. It was an oversight on our part, however, not to have discussed the papers by Cobden *et al.*

In the first study, the authors described changes in urinary recovery of two sugars, mannitol and lactulose, two hours after injection into ligated loops of jejunum in rats with acute inflammation after infection with *Nippostrongylus*. At day 10, recovery of mannitol was significantly decreased while recovery of lactulose was increased and, therefore, the lactulose/mannitol ratio was significantly increased. The intestinal lesion in their experiments was more severe than in ours, most likely because twice as many larvae were injected. They suggested that the reduced recovery of mannitol was due to reduced surface area and, therefore, reduced numbers of effective 'pores' in the intestinal mucosa, while the increased recovery of lactulose, which is too large to pass through the pores, must have penetrated via the extrusion zones at the tips of the villi or through tight junctions which were functionally altered during the infection. Our studies confirm and enlarge their results. They also described studies in which probes were administered by gavage. Conclusions from those experiments were less clear, however, and data from infected animals were not compared with uninfected controls. Such studies are complicated by possible changes in gastric emptying and intestinal transit.

In the second series of experiments, changes in permeability in rats were described after methotrexate treatment or disruption of the villous epithelium with the detergent, centrimide. Again, the probe sugars were administered into ligated loops and urinary recovery was determined. After methotrexate, at day 3, recoveries of both mannitol and lactulose were reduced. A lesion was present which consisted of villous atrophy and hypoplastic crypts. Detergent, which resulted in sloughing of villous tip enterocytes, caused no change in recovery of mannitol but increased recovery of lactulose. In the methotrexate animals, as in the first study, mannitol

recovery related to reduced surface area. In both studies changes in uptake of lactulose could be related to changes in the crypt, with hyperplasticity causing increased uptake and hypoplasticity decreasing it. These studies provide more evidence for our hypothesis that permeability is related to the state of differentiation of the epithelium, with lactulose and ^{51}Cr -EDTA following a similar pattern. It is obvious that direct damage to the villous tips with detergent, which causes sloughing of enterocytes leaving gaps in the epithelium, also results in a more permeable intestine.

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News

Lilly Gastroenterology Award

Dr P J Ciclitira, from the Rayne Institute, St Thomas' Hospital, London, has been awarded £10 000 in the first stage of a European award sponsored by Eli Lilly and Company. Dr Ciclitira has won the UK award, and his work will be entered into a European scheme, along with other national winners. The European award will attract a prize of £50 000 and will be presented in September in Rome at the World Congress of Gastroenterology.

Gastrointestinal Endoscopy: New Horizons in Diagnosis and Therapy

Lake Buena Vista Palace, Walt Disney World, Lake Buena Vista, Florida, USA, from 7–10 December 1988. Information: H Worth Boyce Jr, MD, USF Medical Center, Box 19, 12901 Bruce B Downs Blvd, Tampa, Florida 33612; (813) 974-2034.

Workshop: Gastroduodenal pathology and Campylobacter pylori

To be held on 7 and 8 October 1988 in Bordeaux, France. For further information: CPS, 22 Rue Michelet, 92100 Boulogne, France.