Letter to the Editor

A PROPOS OF THE 'PRESENCE OF VIRUS-LIKE BODIES IN LIVER CELLS OF PATIENTS WITH INFECTIOUS HEPATITIS'

In a recent study of liver biopsies of patients with hepatitis, Babudieri *et al.* (*J. clin. Path.*, 1966, 19, 577) have described 'virus-like' particles, 200 Å in diameter, in cytoplasmic 'sacculi' of hepatocytes and endothelial cells. The authors distinguish these particles from ribosomes, polysomes, and glycogen on the basis of their morphology and of their resistance to enzymatic extraction by diastase. However, the last paragraph casts a doubt on the validity of these criteria since it says that these virus-like particles could be 'the endothelial type of particulate glycogen . . . not yet observed in the human liver'.

It would have been interesting to see this assumption supported by some morphological evidence and by the effects of enzymatic extraction upon these particles using the same technique as for hepatitis biopsies, in normal liver or another tissue. Before submitting their paper, Babudieri *et al.* received a communication of our comments about their findings, and of the pictures published with this letter. We have had the opportunity to examine several biopsies of normal human liver and we found that glycogen is frequently present in endothelial cells and almost constantly in subendothelial cells (Fig. 1). In both these types of cells, the glycogen is in monoparticulate form and the particles are about 200 Å in diameter. Some fragments of endothelial cells are occasionally seen, apparently free in the sinusoidal lumen in the plane of section, and are similar to the 'sacculi' described by Babudieri *et al.* (Fig. 2). In hepatocytes, the glycogen has the 'rosette-like' appearance in the cytoplasm and the monoparticulate form occurs in the nucleus (intranuclear aggregates of glycogen are not unusual in livers of healthy individuals).

These findings should be taken into consideration when examining human livers in pathological conditions. They strongly support our belief that the particles described by Babudieri *et al.* are actually glycogen particles.

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Book reviews

INTERNATIONAL REVIEW OF EXPERIMENTAL PATHOLOGY
VOL. 5. Edited by G. W. Richter and M. A. Epstein.
(Pp. x + 374; illustrated. 132s.) New York: Academic
Press. 1967.

This, the fifth volume of the series, maintains the high standard set by previous volumes. Each of the seven chapters is a comprehensive review of some topic of current interest and importance. All are first rate and they cover a wide range.

Gowans deals concisely with the lymphocyte. Mellors describes the autoimmune and immunoproliferative diseases that afflict NZB/BC mice and hybrids and shows how this spontaneous 'experiment of nature' is shedding light on many important human diseases. The chapter by Moor on freeze-etching contains a host of valuable technical hints and a series of beautiful illustrations which reveal the potential, and the limitations, of this method for investigating biological ultrastructure. Technique is also an important part of Rose's chapter on culturing tissues under cellophane membranes but the author also provides ample evidence of how the method, by maintaining cell differentiation and restraining mitosis and cell migration, has a great deal to offer the biologist and pathologist.

Svoboda writes with clarity on the difficult topic of the interaction of oncogenic viruses with heterologous cells. Less readable but equally interesting is Godman's review of the cytopathology of the human enteroviruses (polio, ECHO, and Coxsackie viruses). The longest chapter, however, and perhaps the best, is French's review of the structural changes, as visualized by electron microscopy, that comprise the atherosclerotic lesion. Anyone studying arterial disease cannot fail to benefit from reading it.

The volume will probably be of interest primarily to those working in one or other of the fields reviewed but pathologists too will read it with pleasure and benefit, though they may find the going rather heavy in places.

R. C. CURRAN

BIOCHEMICAL VALUES IN CLINICAL MEDICINE, 3RD ED.
By R. D. Eastham. (Pp. iv + 162. 15s.) Bristol:
John Wright and Sons. 1967.

Three editions of this book have appeared since 1960 and it has been translated into Italian, Spanish, and Greek. This testifies to the demand for it and to the author's energy in revising it. Nevertheless, it is difficult to know the purpose of this type of book unless it is the answering of multichoice examination questions.

Factual errors mentioned in a review of the first edition in this Journal remain unaltered and there are additional defects. The paragraph on lactic acid dehydrogenase, for instance, contains contradictory statements listing pulmonary infarction amongst the causes of raised values, and of unaltered values without any qualification. The normal range of activity given for this enzyme is much wider than that reported by most laboratories.