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SIR,—Professor Dudley attributes to “the weight and tradition behind examining” the persistence of examiners in setting essay questions despite Bull’s finding that he and his colleagues often gave different marks for the same questions. In my experience this is not the right reason. Many schools have been experimenting continually with different forms of examination and find that the essay paper, with or without an oral examination, is the best if not the only acceptable one for making the pass/fail decisions required of them. An experienced examiner has little difficulty in classifying an essay answer into one of three categories, very good (honours), adequate (pass), or inadequate (fail). Converting this into an actual mark is merely adding plus or minus signs to the prime judgment. Differences between actual marks given by different examiners for the same answer are to be expected, especially if a close marking system is not used. But there should be little discrepancy between prime judgments on any essay if the examiners are reasonably competent and conscientious and are briefed in the form of the examination.

Multiple-choice questions have many merits and uses but they are singularly ill-adapted for making pass/fail decisions; all they can do is put the candidates in a ranking order. Unlike essay-type examinations, scores vary with the difficulty of the questions, being high for easy papers and low for difficult ones. Deciding on a “pass” mark in a multiple-choice-question score is an arbitrary exercise. If such a mark is needed, it is usually worked out by calibration against the results of the essay section of the examination. It would be illogical to say that a person reaches pass standard by being correct 50% or 75% of the time; it all depends on the questions.

Multiple-choice papers are useful as screening procedures to weed out the abysmal and also as class tests to provide feedback to the teachers and students about their performance relative to their peers. They permit the testing of a wider spread of topics than do essay questions and can be designed to test reasoning as well as memory functions. However, they are no substitute for essays and orals in professional examinations, as the persistence of the latter forms of examination clearly indicate.

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PREVIOUSLY UNDESCRIBED PARTICLES IN Au-ASSOCIATED HEPATITIS

SIR,—The demonstration of the Australia antigen¹⁻³ and the Dane particle⁴ have been followed by reports⁵⁻¹⁶ of so-called “virus-like particles” in ultra-thin liver sections. These reports have in common the belief that the viral agent of Australia-antigen (Au) hepatitis has been revealed in the liver cells.

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Particles at margin of liver-cell nucleus.
Uranyl-acetate and lead-citrate stain.

In the acute stage of a case of Au-associated hepatitis, we found previously undescribed “virus-like particles” in liver-cell nuclei by means of electron microscopy. They were seen in or at the margins of pyknotic liver-cell nuclei (see figure). They had an inner electron-dense core of 25 nm., a shell of 100 nm., and an outer coat giving them a total diameter of 100 nm. (arrows). Some particles gave the impression of “budding” towards the centre of the nucleus (labelled arrow), probably an effect of shrinkage during processing. The particles stained with uranyl acetate. Despite some virus-like properties, we do not interpret them as virus particles, but as aggregations of chromatin altered by the viral infection. We believe they represent a non-specific result of liver-cell damage.

We are not convinced that the particles described by others in ultra-thin sections represent specific virus particles of hepatitis.⁵⁻¹⁶

Similar particles to those usually referred to as Au particles have been described in tissues other than liver and in diseases other than viral hepatitis. They have, for instance, been described as “ring-shaped structures” occurring with herpes-like viruses in nuclei of cultured lung cells from sheep pulmonary adenomatosis.¹⁷ Similar particles have also been reported as adenovirus-associated viruses in herpes infection in cultured human embryonic lung cells.¹⁸

In human hepatitis the particles of about 20 nm. might also represent co-viruses, and they have in fact been found with coronavirus-like particles in ultra-thin sections¹¹ and in serum.¹⁹ They might also represent a non-specific response to viral infection.

It is not possible at present to decide whether the particles described by Stein et al.¹³⁻¹⁵ are of viral origin or merely a non-viral synthetic product.

The reports on ultrastructure in Au-associated hepatitis have not presented unequivocal evidence of the aetiological agent. One reason might be that there is an immunological basis for the liver damage, unassociated with viral replication in the liver itself.

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