The assumption is his practise of denying citizens their prerogative, of which they are likely to be unaware during the stress of unexpected death, whereby *they* decide whether or not a relative's organs are used for transplantation, research, or teaching (Human Tissue Act, 1961).

Mr Andrew points out that a willing kidney donor should carry a donor card. We agree with this view. However, to our knowledge, only two United Kingdom donors suitable for kidney transplants have been recognised by this method. The value of the kidney donor card is clearly limited and may well be indirect; relatives carrying kidney donor cards are likely to give permission for kidneys to be used for transplantation if given the opportunity by consultants and junior colleagues.

Nowadays most transplant units use only kidneys from donors with brain death supported by ventilators. In this circumstance there is no significant difference between asking relatives to remove kidneys for transplantation and requesting a necropsy. Permission for tens of thousands of necropsies are granted by bereaved relatives each year in the belief that other citizens and doctors will benefit from this examination. It is our view that the majority of citizens would, for the same reason, allow kidneys to be used for transplantation.

D O OLIVER
PETER J MORRIS

Radcliffe Infirmary,
Oxford

Whooping-cough vaccination

SIR,—Dr A Mithal (8 November, p 347) resuscitates the concept of "viral whooping cough." Although the range of symptomatology of whooping cough overlaps that of respiratory illnesses caused by adenoviruses and other viruses affecting the respiratory tract, I see no evidence that the classical illness to which experienced senior clinicians would give the unequivocal accolade of "whooping cough" is ever due to viruses. No "bordetella-negative, virus-positive" group of cases was found in the Scottish survey.[1-3]

I regard whooping cough as a serious specific infectious disease against which our current "magic bullets" are woefully ineffective and for the specific prevention of which we depend on the vaccine.

N R GRIST

University Department of Infectious Diseases,
Ruchill Hospital,
Glasgow

1 Calder, M C, *et al*, *Lancet*, 1970, **2**, 1079.
2 Grist, N R, and Ross, C A C, *Lancet*, 1971, **2**, 1100.
3 Grist, N R, *Communicable Diseases, Scotland, Weekly Reports*, 1971, No 45, p 1.

Treatment of Wilson's disease

SIR,—Dr J M Walshe (20 September, p 701) advocates the continued use of triethylenetetramine dihydrochloride (trien 2HCl), a compound that has not been subjected to any formal toxicity tests, as a treatment for Wilson's disease in patients who suffer adverse toxicity with penicillamine. Clearly a consideration in granting either a production or a clinical trials licence for trien 2HCl would be an assurance that no other therapeutic substance could be substituted for penicillamine. We would like to draw attention to the copper chelation properties of methisazone,[1] aspirin via its major metabolite salicylic acid,[2] isoniazid,[3] and metronidazole.[4]

The indications for the potential use of metronidazole in the treatment of Wilson's disease are: (1) Copper chelation occurs without chelation of tin, nickel, cobalt, iron, zinc, and magnesium. Since it does not chelate magnesium and zinc, metronidazole is highly unlikely to chelate ionic calcium, which has a lower electrochemical potential. (2) It is readily absorbed when given orally. (3) High oral doses (2·4 g) are well tolerated and it is widely used as a trichomonacide. (4) The incidence of toxicity is low when given in therapeutic doses.[5] (5) It is excreted unchanged in the urine. (6) From structural considerations the metabolites of metronidazole could also chelate copper. Similar considerations (2-5) also apply to aspirin.

In view of the above we suggest that metronidazole should be evaluated as a therapeutic agent for the treatment of Wilson's disease.

D P VAUGHAN
R KADERBHAI

School of Pharmacy and Biology,
Sunderland Polytechnic,
Sunderland

1 O'Sullivan, D, and Sadler, P, *Nature*, 1961, **192**, 341.
2 Perrin, D, *Nature*, 1958, **182**, 741.
3 Albert, A, *Nature*, 1956, **177**, 525.
4 Chien, Y W, Lambert, H J, and Sanvordeker, J, *Journal of Pharmaceutical Sciences*, 1975, **64**, 957.
5 Jennison, R F, Stenton, P, and Watt, L, *Journal of Clinical Pathology*, 1961, **14**, 431.

Student views on continuous assessment

SIR,—As a recent graduate of Birmingham University, at present employed as a short-term lecturer in the anatomy department of the same medical school, I read the students' views on continuous assessment at Birmingham (Dr K Cruickshank and others, 1 November, p 265) with great interest. It requires just a little perspective on the course from a teacher's point of view to realise the immense problems of passing on an increasing amount of essential knowledge. It is this volume of material that makes the concept of "core" knowledge, as expressed in the article, appear desirable. And yet this is merely compounding the problem of exam-oriented learning, which is already encouraged by 60 assessments in five years. If the student himself cannot discern the "core" of a subject, then he has not even begun to grasp the fundamentals.

I find it surprising that students should be uncritical of any system which includes several personal assessments. Consultants come in all shapes, sizes, and personalities, as do housemen and ward sisters. Most students who qualify here have suffered a wide range of personal assessment and many can quote injustices. It is not the student who is the variable in these instances.

Certain ideas in the article seem curious. Five-day gaps between exams can only encourage cramming, the very thing that continuous assessment hopes to avoid. Faster feedback in the form of computer printouts is suggested. Only the most self-deluded fail to understand the cause of an exam failure. In Birmingham one failure in clinical subjects is quite likely to bring the student back for a pass-fail viva in his final year. A computer printout would be small consolation following such a failure.

A feature not brought out in the article is the very different style of both teaching and learning required in clinical and preclinical years. A tutorial at 2 am in the hospital mess, amid flat beer, fag ends, and newspapers, can indelibly imprint on the student's mind a particular patient, his problem, and his disease. Preclinical material, less emotive and less interesting but no less voluminous, is harder to get across by any method.

MARK GOLDMAN

Birmingham

Adrenaline in treatment of anaphylaxis

SIR,—In my letter (13 September, p 649) I suggested that the cautious intravenous administration of adrenaline might still be the best choice of therapy for a patient suffering from profound anaphylactic shock. Dr A W Frankland and Professor R Abdel-Maguid (18 October, p 162) have rightly drawn attention to the side effects of this treatment, but it seems unlikely that a profoundly shocked patient, unconscious owing to a sudden loss of circulatory volume, will either notice the subjective effects they mention or suffer a cerebral haemorrhage. As I said in my letter, the risk to the heart is a real one and this is confirmed by Lawrence.[1] Nevertheless, for the treatment of anaphylaxis his reasoning and conclusions are similar to my own, and he recommends the slow intravenous administration of 0·5 ml of 1/1000 adrenaline, diluted 1/10, when the patient is gravely shocked. Lawrence also adds the valuable suggestion that for the less shocked patient adrenaline can be given intramuscularly. In the most recent edition of *Martindale's Extra Pharmacopoeia*[2] it is suggested that in an extreme emergency caused by anaphylaxis up to 0·25 ml of 1/1000 adrenaline, well diluted, should be injected intravenously.

Dr Frankland and Professor Abdel-Maguid believe that it would be irresponsible for general practitioners to give intravenous adrenaline, but this stricture would seem unwise since severe anaphylaxis can lead to death in a few minutes. Goodman and Gilman,[3] whom they cite, do not mention the special problem of anaphylactic cardiovascular collapse in their sections on the treatment of allergic reactions (pp 157 and 642-4).

L M MCEWEN

Henley-on-Thames,
Oxon

1 Lawrence, D R, *Clinical Pharmacology*, 4th edn, pp 6 and 59. Edinburgh, Churchill Livingstone, 1973.
2 *Extra Pharmacopoeia: Martindale*, 26th edn, ed N W Blacow, p 5. London, Pharmaceutical Press, 1972.
3 Goodman, L S, and Gilman, A, *The Pharmacological Basis of Therapeutics*, 4th edn. London, Macmillan, 1970.

Contraceptive practice and unplanned pregnancy in students

SIR,—I should like to comment on the remark of Dr J B Cole and his colleagues (25 October, p 217) that in their sample of students at an Australian university "both the