monary embolus and no more bleeding at the operation site than would have been expected.

Of the 14 patients withdrawn because of failure to observe the protocol, one was in the heparin group (the preoperative dose was forgotten) and the remaining 13 in the stimulator group: in seven of these the surgeon omitted to use the machine and in six the machine failed to function.—We are, etc.,

I. LAWRENCE ROSENBERG

St. James's Hospital,
Leeds

MARY EVANS
A. V. POLLOCK

Scarborough Hospital,
Scarborough, N. Yorks

Survival after Postoperative Avascular Necrosis of Lesser Curve of Stomach

SIR,—I read with interest the paper by Dr. J. F. Halvorsen and others (14 June, p. 590) reporting the third death due to avascular necrosis of the lesser curve of the stomach following highly selective vagotomy (H.S.V.) for duodenal ulcer. I should like to describe a similar case in which the patient survived.

An otherwise healthy male patient aged 46 with a long history of chronic duodenal ulceration underwent H.S.V. on 28 November 1974. His condition remained satisfactory until the third postoperative day, when he developed left lower chest pain associated with fever, mild hypotension, and a pleural friction rub. It was assumed that he had developed a chest infection and he was treated accordingly with physiotherapy, systemic antibiotics, etc. Several hours later his condition deteriorated: his blood pressure fell, abdomen became distended, and bowel sounds were absent. An abdominal tap was performed and the fluid obtained was mistakenly thought to be blood. Intraperitoneal haemorrhage was therefore diagnosed and appropriate resuscitation was carried out. Once a suitable blood pressure was attained laparotomy was carried out, when a large defect was found in the lesser curve and about 2½ l of blood-stained fluid, mostly gastric contents, in the peritoneal cavity. The defect was sutured and peritoneal toilet carried out. The patient's postoperative condition was satisfactory but he subsequently developed a left subphrenic abscess which required treatment with drainage and antibiotics. He was discharged on 10 January 1975 and when last seen at the clinic in May 1975 he was very well, had no recurrence of dyspepsia, and was prepared to go back to work.

This case also demonstrates the difficulty in diagnosis of this rare condition, which nonetheless should be thought of if deterioration occurs after H.S.V.

I should like to thank Mr. G. E. Schofield for permission to report this case which was under his care.

—I am, etc.,

STUART W. BRODIE

Law Hospital,
Carlisle, Lanarkshire

G.M.C. and Indian Qualifications

SIR,—Mr. A. K. Varshneya (5 July, p. 43) writes that there is an increasing number of teaching schools in India with poorly equipped departments and that the standard of medical education has gone down in recent years. I spent nearly 13 years in the Indian Medical Service, so that I know the background, and I have been back twice, in 1969-70 and 1972, touring the Indian states on behalf of the World Health Organization. During these tours I visited a large number of primary health centres and district and

general hospitals and some teaching hospitals. Though I saw in the primary health centres many examples of Indian doctors supplying a cheerful and unselfish service to their countrymen, the lack of even the simplest equipment and the elementary nature of the procedures in these centres was striking. In the district and general hospitals laboratory equipment was of the scantiest and in the teaching hospitals there was a conspicuous lack of the sort of modern equipment one would have expected to find there.

In the hospitals the few laboratory tests attempted were carried out usually in one room and there was a grave lack of adequately trained technical staff. I noticed that doctors generally had a knowledge of only the simplest techniques such as blood cell counting, examining malaria slides, or examining faecal specimens for helminth ova, and while one could argue that medicine could possibly be practised in rural India without a knowledge of laboratory procedures, such inadequately trained doctors would not be suitable for participating in a highly technical hospital service such as Britain's.

No doubt some graduates of the good Indian medical schools display a wider knowledge of medical practice, but those of us who know India well are aware that there are a great number of doctors coming to this country who are simply not well enough trained. It is absolutely imperative that there be a sorting-out examination, and no matter how disappointing its results may be for some candidates an exacting standard must be maintained.

It would be futile to run a three-month course (as has been suggested by an Indian doctor on the radio from Birmingham) to prepare doctors who have arrived in the U.K. to take the G.M.C. examination. How could a three-month habilitation course, especially for someone whose English is weak, make up for the deficiencies of several years in an inferior medical school?—I am, etc.,

R. J. HENDERSON

Public Health Laboratory,
Royal Infirmary,
Worcester

Sodium Nitroprusside in Anaesthesia

SIR,—We should like to amplify your brief statement (7 June, p. 524) on the metabolism of sodium nitroprusside (SNP).¹

In patients infused with SNP we have found that there was an increase in blood cyanide (HCN) levels, even with small doses of the drug. Of this HCN, 98% was present in the red cells. Though β -mercaptopyruvate sulphur transferase occurs in the red cells of the rat,² it has not yet been shown to play any significant role in the direct detoxication of HCN in human erythrocytes. The blood HCN is slowly detoxicated to thiocyanate (SCN) by tissue rhodanese so that plasma SCN levels showed only a gradual rise. The ratio SCN:HCN in body fluids is normally around 1000:1 and so at the relatively low levels of SCN attained during hypotensive anaesthesia using SNP there would be insignificant formation of HCN from SCN by the ill-defined thiocyanate oxidase system.

You suggest a maximum SNP dose rate of 3 mg kg⁻¹ h⁻¹, but this may be too high. Death due to cyanide poisoning is attri-

buted to inhibition of cytochrome oxidase. In vitro 50% inhibition occurs at a concentration of 1.5 μ mol HCN/l.³ In vivo there will no doubt be a plasma/tissue concentration gradient and so plasma levels at which inhibition would occur would be somewhat higher. In dogs given a single intravenous dose of 1 mg SNP/kg, resulting in peak plasma levels of 3 μ mol HCN/l, we have found evidence for histotoxic hypoxia.

Our studies in man have shown that plasma HCN levels immediately following short-term infusions (over a period of two hours or less) show a linear relationship to the total dose of SNP. A plasma level of 3 μ mol HCN/l would be reached by the infusion of about 1.5 mg SNP/kg.

Deaths have been reported⁴ following SNP infusions in which doses of approximately 4 mg/kg per two-hour period have been given. It therefore seems reasonable to suggest that plasma HCN levels should not be allowed to rise above 3 μ mol/l and the maximum total dose of SNP be set at 1.5 mg/kg for hypotensive anaesthesia of relatively short duration. In the event of untoward symptoms attributable to SNP we would certainly encourage the use of hydroxocobalamin and sodium bicarbonate as you suggest, and in addition sodium thiosulphate.—We are, etc.,

CYRIL J. VESEY
PETER COLE
PETER SIMPSON

Department of Anaesthesia,
St. Bartholomew's Hospital,
London E.C.1

1 Vesey, C. J., et al., *British Medical Journal*, 1974, 2, 140.

2 Sorbo, B., in *Proceedings of the First International Pharmacological Meeting*, ed. B. B. Brodie, et al., vol. 6, p. 21. London, Pergamon, 1962.

3 Schubert, J., and Brill, W. A., *Journal of Pharmacology and Experimental Therapeutics*, 1969, 162, 352.

4 Merrifield, A. J., and Blundell, M. D., *British Journal of Anaesthesia*, 1974, 46, 324.

Emigration of Doctors

SIR,—Dr. M. P. White (7 June, p. 561) writes from his experience as a district medical officer, but many of us who have served from the grass roots up to Ministry levels in many developing countries are unable to agree with his statements. There is no such thing as tropical medicine; it is the medical care of poverty, national and individual; and the paramedical and auxiliary cadres, urban and rural health centres, and a reconsideration of medical student training are all appearing in the so-called developed countries as they face up to the economic problems of medical care.

Dr. White specifically raises four points as some of the "certain facts . . . always ignored" by the protagonists of community health care.

I agree that in the developing countries there is a decline of morale, discipline, and output of the health services paralleling those of the U.K. But the root causes are very different. In the developing countries the indigenous are now taught by indigenous physicians and paramedicals who in turn were taught by expatriates. Thus the indigenous students continue to be taught an inappropriate medical care system. Indigenous training in many areas is still not orientated to a country's individual epidemiological and social needs and priorities. Doctors and paramedicals soon discover this

after qualification and it is this inappropriate training and unfulfilled expectations which lead to a rapid decline of morale at all levels.

I would disagree that paramedicals and auxiliaries are reluctant to work in the rural areas—unless they have been trained in the capital. It is essential that these cadres be selected and trained in the provincial areas where they will work. Auxiliaries are invariably in a service situation and realize that their opportunities lie in the under-doctored areas—not in competition with physicians but as an extension of medical care. Medical students should also be trained at a provincial level and in a provincial hospital instead of a capital-based national teaching hospital. For all cadres the vital essential is a job description with training founded on that job description.

I fully agree that an isolated worker, doctor or "lesser-trained worker," develops extraordinary habits, both professional and social. It has long been known that without regular supervision, consultation, and encouragement peripheral workers at all levels will fail. The onus lies on those who should supervise them. I take serious exception to the term "lesser-trained worker." They are appropriately trained for their job requirements after a careful analysis of the job requirements. The degree of training for one cadre cannot be judged in the context of another cadre's job description.

Curriculum adjustment may lower standards but only if the curriculum is not in accordance with the requirements of the job. For this reason many African and Eastern countries are now holding their own post-graduate examinations—the U.K. training failed them in the work they require their own nationals to undertake. For this reason this school's M.Comm.H. course includes a three-month problem-solving exercise in a developing country and the teaching is orientated towards the developing countries and minorities. We are now unable to keep up with the increasing demand for this course.

The first commandment is to formulate a full job description, the second to formulate a training course to meet that job description, and the third is to supervise and assess in the field.—I am, etc.,

F. M. SHATTOCK

Department of Tropical Community Health,
Liverpool School of Tropical Medicine
Liverpool

The Suicide Profile

SIR,—Might I take issue with you on two points raised in your timely leading article (7 June, p. 525)?

You state that "depressive illness accounts for at least two-thirds of cases" of suicide. I assume the source of this statement to be the recent study of Barraclough *et al.*¹ Suicide has been dealt with by many eminent writers of fiction. Invariably a meaningful connexion is drawn between an intolerable life situation and the suicide bid. Are we now to conclude that these writers have all got it wrong? How reliably can a psychiatrist retrospectively diagnose depressive illness on the evidence of distraught relatives? Since there are no objective criteria for such a diagnosis and since it merges quite arbitrarily into ordinary unhappiness it is a matter of chance where he draws the line. It is noteworthy that in Sainsbury's study,² which you quote,

the incidence of depressive illness was only 27%. It is unlikely that many people have killed themselves in anything but a state of unhappiness, but this is not to say that the unhappiness accounted for the suicide. One might equally say that since a high proportion of brides were happy during the month before marriage the wedding was accounted for by the happiness.

You further state that "any depressed patient may and many do" commit suicide and that "depression can be and frequently is a fatal complaint." "May" and "can," yes, but "many do" and "frequently is," hardly. The proportion of depressed patients who kill themselves must be very small indeed. Barraclough *et al.*¹ reported that only 6% of a series of depressives had even attempted suicide, whereas almost half of their depressed suicides had previously done so. One may conclude that in every general practice there is a pool of chronically suicidal individuals. The problem, as you rightly stress, is how to identify them. Here you spoil your case by referring to some statistically derived variables, which are of little help in assessing an individual. Rather than totting up points for and against, the general practitioner could more profitably employ his valuable time creating an atmosphere of confidence in which the patient would feel able to confess his suicidal thoughts. Barraclough *et al.* reported that a staggering two-thirds of suicides had visited their general practitioners during the month before death. At this time most were probably harbouring suicidal thoughts. It is alarming that 80% had been prescribed psychotropic drugs. Couple this with the recent finding of Morgan that 80% of suicide attempters had been prescribed the drugs they took by a doctor.

Were we to view suicide not as the possible fatal outcome of an illness but as the temporary loss of hope of a fellow mortal we might save more lives.—I am, etc.,

JOHN BIRCHNELL

Graylingwell Hospital,
Chichester, Sussex

- 1 Barraclough, B. M., *British Journal of Psychiatry*, 1974, 125, 355.
- 2 Sainsbury, P., *Suicide in London*. London, Chapman and Hall, 1955.
- 3 Morgan, H. G. Personal communication.

SIR,—Dr. C. A. H. Watts (5 July, p. 42) says that "the coroner today bends over backwards to avoid the verdict of suicide, so that the statistics are an underestimate of the true state of affairs."

The question of what is or is not a suicide is a matter of law and not of medicine and it is interesting to recall that on 2 July *The Times* newspaper carried a news report (p. 5) under the heading "Suicide Verdict Quashed and Coroners Warned."

In the Queen's Bench Divisional Court the Lord Chief Justice said, according to the press report: "The coroner's approach seems to have ignored one of the most important rules—that suicide must not be presumed because it seems the most likely explanation. If it cannot be proved by evidence he should find an open verdict."

This is the latest of a series of similar pronouncements by the Divisional Court and the rule which it states must be followed by coroners as judicial officers. It is not a question of bending over backwards, side-

ways, or forwards but of giving a decision in accordance with the law of the land.—I am, etc.,

F. G. HAILS

H.M. Coroner,
Staffordshire No. 1 District

Stoke-on-Trent, Staffs

Cost-benefit Analysis of Long-term Haemodialysis for Chronic Renal Failure

SIR,—To rely on the average wage as an indicator of economic benefit to society of the use of dialysis (Mr. M. J. Buxton and Dr. R. R. West, 17 May, p. 376) is highly misleading. For instance, it excludes the benefit of life to patients who do not work and also evaluates the lives of those women who work as half that of men. Policy conclusions which might be derived from this are therefore absurd.

Cost-benefit analysis is about measurements of social costs and benefits of activities. The measurement of benefits of health care presents great problems because the society and individuals stand to gain far more from health care than their ability to contribute to the productive capacity of the nation, and indeed wages are a poor measure even of the latter.—I am, etc.,

J. A. ROBERTS

Centre for Extension Training,
London School of Hygiene and Tropical Medicine,
London W.C.1

A Question of Diagnosis

SIR,—I was interested in Dr. D. C. Anderson's presentation of "A Unique Case of Iatrogenic Cushing's Syndrome" (5 July, p. 37). Is the diagnosis correct? Could this not be just a case of Wilson's disease?—I am, etc.,

B. H. BASS

Good Hope General Hospital,
Sutton Coldfield,
W. Midlands

Slow-K Ulceration of Oesophagus with Aneurysmal Left Atrium

SIR,—Drs. A. D. Howie and R. W. Strachan (26 April, p. 176) draw attention to the danger of oesophageal ulceration when Slow-K tablets are administered to patients with left atrial enlargement. In their own case the dysphagia and ulceration followed insertion of a mitral prosthesis, as in the examples they quote from the literature. The following case shows that this complication may occur in the absence of surgical intervention.

A woman was found at the age of 33 to have aneurysmal dilatation of the left atrium with mitral stenosis and regurgitation and aortic regurgitation. She was in atrial fibrillation but was well compensated on digoxin. At the age of 44 she was admitted in heart failure and frusemide 80 mg per day together with Slow-K two tablets twice daily was prescribed. After 51 days of this regimen she died from a massive haematemesis. No dysphagia was recorded, but an episode of retrosternal pain occurred early during the treatment and this lasted for some days.

Necropsy showed moderate mitral stenosis and aortic stenosis with incompetence. The left atrium measured about 15 cm across, with a characteristically normal-sized atrial appendage. There was ulceration of the oesophagus below the carina. The ulcerated area involved about 5 cm of the oesophagus leaving 4 cm of apparently normal oesophagus