suspected until a few months before death when increased pain necessitated surgery.

All these patients had severe anaemia (Hb 55-60%) at diagnosis. All had a long-standing history of duodenal ulcer and were then found to have gastric cancer. It seems, therefore, that such cases need very careful examination if they come to operation for a duodenal ulcer. Tragically, all were late diagnoses chiefly because dyspeptic symptoms were wrongly interpreted in the 16-12 months before laparotomy.

It is said that duodenal ulcer and gastric cancer only rarely coexist,¹ and a report from the Birmingham Regional Cancer Registry and the United Birmingham Hospitals stated that no association was found between cancer and peptic ulcer.²—I am, etc.,

M. MACLEOD

Wallasey, Cheshire

¹ *World Medicine: Review of the Year*. 20 February 1968.

² *British Medical Journal*, 1965, 1, 1567.

Multiple Crashes on Motor Ways

SIR,—I would certainly endorse the remarks made by Dr. J. A. Fraiss (1 April, p. 49) regarding blood sugar levels in road traffic accident victims.

On several occasions, particularly in the last twelve months, we have had brought in to this department lorry drivers who, for no apparent reason, have crashed across the central reservation of the nearby motorway. Many of them have started driving in the early morning with a minimal breakfast, if any at all. We have made a point of carrying out blood sugar estimations and found them to be extremely low in many cases, to the extent that now we are instituting a system of checking blood sugar levels on every driver who has been involved in a road traffic accident.

I am in the process of doing a survey of 6,000 road traffic victims and one of the questions in the fairly lengthy survey is designed to establish the relationship between the time of the accident and their last meal.—I am, etc.,

M. S. CHRISTIAN

Wexham Park Hospital,
Slough, Bucks

Monitoring Heparin Infusions

SIR,—One is grateful to Dr. Judith M. Chessells and others for their work showing 5% dextrose to be a suitable vehicle for heparin infusions (8 April, p. 81). The situation was difficult, with dextrose allegedly unsuitable and the infusion of a litre of normal saline a day often contraindicated.

However, in their final paragraph they imply that all heparin infusions should be monitored by partial thromboplastin times with kaolin. On the one hand this would mean a great deal of extra work for haematology departments. On the other hand even on their own evidence laboratory control hardly seems necessary. The dose required varied only between 28,000 and 40,000 units per 24 hours; and there was no evidence of increasing sensitivity to heparin, so presumably the dose remained constant in each patient. Hence the practice of giving a set regimen of 30,000-40,000 units per day seems quite reasonable, and the theoretical risk of haemorrhage seems not to materialize.

In any case under the circumstances any bleeding ought to be instantly detected and effective treatment instituted at once. Compare this situation with that of outpatient oral anticoagulant therapy.—I am, etc.,

MICHAEL KLABER

London N.W.11

Need for Continued Oral Therapy in Diabetes

SIR,—Drs. A. M. Tomkins and Arnold Bloom say (11 March, p. 649): "there is now an onus on clinicians not to use this form of therapy (tolbutamide or phenformin) unless it can be shown that simple dietary restriction alone is unsuccessful in preventing hyperglycaemia." The great practical problem is to determine the right course of action when dietary restriction is ignored, not when it is "unsuccessful."

I see numerous obese maturity-onset diabetics who, in spite of all that I and the dietician say, refuse to restrict their diet indefinitely. If they are given sulphonylurea drugs or insulin they become more and more obese. Which is the less harmful situation—more obesity without hyperglycaemia or less obesity with hyperglycaemia? This question is hardly ever posed—much less answered—in writings about diabetes.—I am, etc.,

JOHN W. TODD

Farnham, Surrey

Bullous Lesions in Poisoning

SIR,—There has been much discussion on the aetiology of the bullae seen in barbiturate poisoning and other states of unconsciousness.¹⁻⁴ While it is generally agreed that coma, pressure, and anoxia play important roles, there is no unanimity about the possible local effects of drugs on the skin. The following case provides further evidence of the prime importance of anoxia and pressure.

A 48-year-old woman, previously well, was admitted to hospital 24 hours after taking about 20 Tuinal capsules (quinabarbitalone sodium and amylobarbitone sodium, 100 mg of each per capsule). She had been found at home semiconscious, lying on her right arm. On examination she was drowsy and complaining of pain in her right hand and forearm which were cold and oedematous. There were large tense bullae over the medial side of her forearm including a linear arrangement of small blisters where, it was thought, her night-clothes had rucked up. There was global weakness and anaesthesia of the hand, the latter to about 10 cm above the wrist. The radial pulse was initially impalpable but readily felt when the oedema subsided. Her blood pressure was 130/85 mm Hg. Her urine was dark and gave a positive chemical test for blood.

Investigations showed considerably elevated levels of serum glutamic oxaloacetic transaminase, lactic dehydrogenase, and creatine phosphokinase. Electromyography revealed evidence of widespread denervation of the small muscles of the hand. Further specimens of urine were normal on microscopy and chemical testing.

A diagnosis of brachial arterial and venous occlusion with ischaemic muscle necrosis, nerve damage, and myoglobinuria was made. With initial elevation and continuing inten-

sive physiotherapy, Volkmann's ischaemic contracture has not developed four months later although there is considerable forearm muscle wasting. The area of anaesthesia is much less. The bullae healed rapidly without scarring.

The occurrence of ischaemic damage to muscle and nerves in barbiturate poisoning has been known for many years and undoubtedly occurs more frequently than reports suggest.⁵ The association here with bullae strongly suggests that anoxia and local pressure are important causative factors for these skin lesions. Local pressure is probably important, since skin blood flow is fairly well maintained in anaesthesia induced by long-acting barbiturates, as was demonstrated in a recent experimental study, albeit on monkeys.⁶ The marked progressive reduction in skeletal muscle blood flow found in this investigation may indicate a predisposition to muscle ischaemia and necrosis in barbiturate poisoning.—We are, etc.,

B. I. HOFFBRAND

C. M. RIDLEY

Whittington Hospital,
Archway Wing,
London N.19

¹ Ridley, C. M., *British Medical Journal*, 1971, 3, 28.

² Seddon, H. J., and Howse, A. J. D., *British Medical Journal*, 1971, 3, 371.

³ Berlyne, N., *British Medical Journal*, 1971, 3, 371.

⁴ Beveridge, G. W., *British Medical Journal*, 1971, 4, 116.

⁵ Howse, A. J. D., and Seddon, H. J., *British Medical Journal*, 1966, 1, 192.

⁶ Forsyth, R. P., and Hoffbrand, B. I., *American Journal of Physiology*, 1970, 218, 214.

Chinese Burn

SIR,—A girl of 14 presented with an area of cellulitis 4 in (10 cm) by 2 in (5 cm) on the extensor surface of the lower third of her left forearm. I could find no break in the skin, nor was there any local sepsis elsewhere on the hand or arm. I administered an injection of Triplopen (benethamine, procaine, and benzyl penicillin combined) and asked her to return in 48 hours.

On her return the cellulitis was slightly more extensive and I therefore changed to a course of erythromycin. On further review three days later, the cellulitis had largely resolved and there was now palpable, something that felt like a thick knitting needle about 4 in (10 cm) long in the subcutaneous tissues. Neither the patient nor her mother were able to recall any incident suggestive of penetration by a foreign body.

Four days later I undertook an exploration of the forearm under local anaesthetic and was surprised to find that the presumed foreign body in fact consisted of a linear streak of fat necrosis. This was confirmed by histology. The explanation lay in the fact that a few days before the onset of symptoms, the girl's brother had subjected her to a so-called "Chinese torture," consisting of gripping the wrist with both hands and twisting in opposite directions to produce a shearing stress which resulted in an acute fat necrosis.—I am, etc.,

B. S. MILNER

Edenbridge, Kent

Cardiac Arrhythmias during Laparoscopy

SIR,—I read with interest the article by Drs. D. B. Scott and D. G. Julian on the occurrence of cardiac arrhythmias during laparo-

scopy (12 February, p. 411). During the past 12 months I have anaesthetized 75 patients for either laparoscopy or laparoscopic sterilization, during which carbon dioxide has been used to inflate the peritoneal cavity. Continuous electrocardiographic monitoring has been carried out throughout each procedure and no cardiac arrhythmias have been observed.

All patients are premedicated 1½ hours prior to operation with Pamergan S.P. 100 (pethidine 100 mg, promethazine 50 mg, and hyoscine 0.43 mg) and anaesthesia is induced with methohexitone in a dose of 2 mg/kg body weight to which D-tubocurarine in a dose of 25-30 mg has been added. Intubation using a cuffed Oxford tube is then performed and anaesthesia maintained with nitrous oxide and oxygen 8:5 litres per minute in a semi-closed system with an absorber using intermittent positive pressure respiration with a Commonwealth Industrial Gases auto-hand respirator. Atrophine and neostigmine in doses of 1.2 mg and 2.5 mg respectively are administered routinely to all patients at the conclusion of the operation.

Under the conditions which exist when laparoscopy is performed—that is, gross distention of the peritoneal cavity and considerable degree of tilting of the table—one is not surprised that some arrhythmias will occur if the patient is subjected to the added trauma of spontaneous respiration without intubation, and I would suggest that cardiac arrhythmias observed are not due to the laparoscopy but are iatrogenic.—I am, etc.,

T. R. MORLEY

King Edward Memorial Hospital for Women,
Western Australia

Erythropoietin

SIR,—It was with interest that I read your leading article "Erythropoietin" (29 January, p. 263) in which you refer to one of our articles.¹

However, I disagree with the following quotation about the results of these studies: "Such a bioassay has obvious disadvantages, but papers⁴⁻⁶ presented at a conference in Tel Aviv in 1970 showed that search for a satisfactory alternative in vitro method had been unsuccessful." In fact, in the article we stated:¹ "The immunochemical technique is exquisitely sensitive allowing measurement of quantities in the 2 milli immunochemical range. This permits the determination of ESF levels in normal plasma or serum: a procedure which is not routinely possible by bio-assay. As a consequence, investigations of normal or decreased circulating levels of the hormone are possible with the use of hemagglutination inhibiting (HAI)."

"The HAI technique is a relatively simple, reproducible method, and an experienced technician in a single day can easily determine the ESF units in two dilutions of 100 test materials. By contrast only 20 to 30 determinations can be carried out in a week-long bio-assay. Although many more laboratories need to evaluate the HAI technique for the assay of ESF, we think that the method fulfills the criteria for the ideal assay as outlined by Jacobson *et al.*"² We certainly do not feel that our efforts have been unsuccessful. The HAI method is

now being used in other laboratories for the routine testing of clinical samples.

It may be of interest that we have extended our studies and developed an in vitro screening test for erythropoietin. The results were presented at the International Conference on Erythropoiesis last year (in press). It would seem that a reasonably simple in vitro method of estimating erythropoietin is available. Thus, the exploration of the role of erythropoietin in many conditions can most certainly proceed.—I am, etc.,

ROBERT D. LANGE

Memorial Research Center and Hospital,
University of Tennessee,
Knoxville, Tennessee, U.S.A.

¹ Lange, R. D., McDonald, T. P., Jordan, T. A., Mitchell, T. J., and Kretschmar, A. L., *Israel Journal of Medical Sciences*, 1971, 7, 861.

² Jacobson, L. O., Gurney, C. W., and Goldwasser, E., *Advances in Internal Medicine*, 1960, 10, 297.

Methotrexate Hepatotoxicity in Psoriasis

SIR,—Dr. M. G. C. Dahl and others (11 March, p. 654) suggest that fibrosis of the liver is an invariable consequence of methotrexate when given by mouth in frequent small dosage if sufficiently prolonged. Methotrexate is still the best of available drugs for the very few severe cases that need systemic therapy, and it is important to ascertain the safest schedule. We believe that terms such as invariable are not yet justified, and not even Dahl *et al.* have sufficient evidence to rule out low-dosage oral regimens. We were the first to publish a detailed account of the hepatotoxic effects of methotrexate in live psoriasis patients,¹ but it has not deterred us from continuing to prescribe 2.5 mg methotrexate daily for 6-8 days with 3-7 days' rest. Of our original series we have reinvestigated four patients who have been on this regimen for almost 10 years. This is presumably sufficiently prolonged to fulfil the criteria of Dahl *et al.* The reason why some patients develop cirrhosis and others escape fibrosis must be clarified before frequent small-dosage regimens are blamed. Two patients show no fibrosis, one of whom has an alcohol intake of 6 pints (3.5 l.) of beer per week. Of the other two patients one presented with a full picture of cirrhosis one year ago and the other has histological evidence of cirrhosis.

Four other patients who showed abnormal liver function tests in our original series have been on parenteral methotrexate since that time. In spite of their initial oral low-dosage regimen for over two years their present liver histology shows no fibrosis.—We are, etc.,

T. J. RYAN
G. H. M. SADLER
C. GUERRIER
H. R. VICKERS

Radcliffe Infirmary,
Oxford

¹ Ryan, T. J., Vickers, H. R., Salem, S. N., Callender, S. T., and Badenoch, J., *British Journal of Dermatology*, 1964, 76, 555.

Pulmonary Disability in Coal Workers' Pneumoconiosis

SIR,—I was surprised that the article on the above subject (18 March, p. 713) did not cite Dr. Anthony Caplan's classical paper "Correlation of Radiological Category with Lung Pathology in Coal-workers

Pneumoconiosis."¹ This publication is pertinent to the present article, and I quote briefly one of its several findings to confirm the relevancy.

Dr. Caplan recorded that all category O cases showed very little evidence of simple pneumoconiosis at necropsy and most category 1 cases showed little evidence of the disease (amounting at the most to moderate numbers of dust foci in 14.8% of cases and sparse numbers of fibrotic modules in 11.1%). The findings of this recent investigation revealed differences as: (1) A few category O cases showed a comparatively substantial degree of pneumoconiosis at necropsy; (2) several category 1 cases had similar pathological findings. Additional quotes from Dr. Caplan's comprehensive paper would emphasize further that its recognition would be only quantum meruit.—I am, etc.,

G. B. MURRAY

Salisbury, Cheshire

¹ Caplan, A., *British Journal of Industrial Medicine*, 1962, 19, 171.

Sustained Relief of Hemiballismus

SIR,—I was interested in Dr. J. Shafar's letter on the sustained relief of hemiballismus by thiopropazate hydrochloride (25 March, p. 806). I have been using thiopropazate hydrochloride in doses of 5 mg twice a day increasing to three times a day for the past 15 months for the relief of hemiballismus with equivocal results.

In Huntington's chorea I have found it of little value. But in two cases of hemiballismus following a contralateral lesion of the pyramidal tract there was improvement within seven days. One lady of 85 whose throwing movements of the arm (of wide amplitude) had resulted in considerable traumatic bruising against the restraining cot side of the bed, showed amelioration within 72 hours, and it became possible to feed her orally. To avoid induced parkinsonian syndrome I have kept to a small dosage (5 mg three times a day) and have discontinued the drug after six weeks. I would agree that there has been no effective therapeutic approach to the problem of hemiballismus until last year, when thiopropazate hydrochloride (Dartalan) became available.—I am, etc.,

I. P. ROWLANDS

Newbridge, Wrexham

Alginate Casting Method for Recording Dermatoglyphs

SIR,—A major drawback of conventional methods for recording dermatoglyphs is the possibility of smudging prints. Hand or foot deformities create additional problems. These difficulties may be overcome by making impressions of the hands or feet in an alginate compound. A rubbery mould is obtained from which plaster-of-Paris casts may be made. The fine details of the epidermal ridges are recorded and distortion of the shape of the hands or feet or of the pattern configurations is avoided. A casting technique using latex materials has already been described,¹ but it is much more expensive than using alginate. Of the many dental-impression alginate samples tested Zelgan gave specially good results.

To make an impression of a hand alginate