enteral administration of hypertonic saline. Apparently the surgeon wished to use physiological saline (so-called 0·9% w/v) but prescribed "normal saline"; so the pharmacist made up normal saline (58·5 g/l), which is six times as strong, and this was given to the patient.

This regrettable accident reinforces the need to abandon the use of "normal" (and of %) in medicine and in chemistry to describe the concentration of a solution; this must be specified in appropriate SI units except for substances such as insulin where arbitrary units are still necessary. So physiological saline is 150 mmol/l (strictly 154) or 9 g/l, and chemically normal saline is 1 mol/l. "Isotonic saline" is an acceptable alternative name for the former. Regrettably in Britain both Boots (Polyfusor) and the *British Pharmaceutical Codex* maintain the dangerous "normal" name.

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Salt overdosage

SIR,—Salt overdosage in adults is extremely rare, and conclusions about treatment will inevitably be open to debate. The fact that only two of the patients reported in the literature have survived would suggest that conventional treatment, which recommends a slow reduction in serum osmolality, is ineffective. Of those referred to by Dr R A Goodbody and others (29 November, p 517) Capper's case is in fact a report of my patient, and Schatz's case is difficult to assess as accurate estimations of serum osmolality were not available in 1937.

It is difficult within the confines of a short report to do more than state the facts of the case. However, I attempted to emphasise that the treatment of my patient involved a rapid reduction in serum osmolality and to explain why, in the light of published animal experimentation, this might theoretically be successful provided treatment was started early enough. Dr Carol Fitzpatrick (29 November, p 517) suggests that convulsions in my patient were due to cerebral oedema. In fact I wrote (15 November, p 386), "there is an . . . increase in CSF volume, and this, with brain cell overhydration, explains the abnormal lumbar puncture results in our patient." I had thought that brain cell overhydration and cerebral oedema were synonymous. The important point is that treatment was started too late. The fact that cerebral oedema developed implies that the brain cells were already hyperosmolar, owing either to an increase in intracellular sodium or to the formation of idiogenic osmoles as described by McDowell.[1] Treatment, to be successful, should be started before the situation arises.

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1 McDowell, M E, Wolf, A V, and Steel, A, *American Journal of Physiology*, 1955, **180**, 545.

Activated charcoal in treatment of poisoning

SIR,—We read with interest your recent leading article on childhood poisoning (29 November, p 483) and are in agreement with the opinions it contains. We note, however, that you make no mention of the role of activated charcoal. Although this material has been recommended as part of the initial treatment of poisoned patients[1-3] and there is both in-vitro[4] and in-vivo evidence in animals,[5] we have been unable to find any reports of its efficacy in the treatment of poisoned patients.

We are currently undertaking a study on the role of activated charcoal in the initial treatment of poisoned patients and we would therefore appreciate hearing from any of your readers who have had personal experience in this field, especially with objective findings.

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1 Holt, L E, and Holz, P H, *Journal of Pediatrics*, 1963, **63**, 306.
2 *British Medical Journal*, 1972, **3**, 487.
3 Corby, D G, and Decker, W J, *Pediatrics*, 1974, **54**, 324.
4 Decker, W J, Combs, H F, and Corby, D G, *Toxicology and Applied Pharmacology*, 1968, **13**, 454.
5 Lipscomb, D J, and Widdop, B, *Archives of Toxicology*, 1975, **34**, 37.

Volunteers and the aftermath of stroke

SIR,—I greatly admire the work of speech therapists and have worked happily and fruitfully with them now for 2½ years in the Volunteer Stroke Scheme. We hope to extend this splendid co-operation in the future. Therefore I have no heart to enter into any argument about the few points Miss Margaret Edwards raises in her letter (22 November, p 460).

Mildly, I would simply say a few words. Volunteers should be untrained specifically so that they work on the ordinary human-fellowship level and do not fall into the old trap of a little learning proving dangerous. In this way the work of professional and amateur can complement each other, with speech therapists advising the volunteer, as already happens within this scheme.

If there is any "magic" in untrained volunteers working with stroke patients, it is only the power of an actively caring community. Therefore please let no one fear we are usurping or competing with a professional function. These very hard-hit patients and their families need both expert professional treatment and amateur help in the home and community.

V EATON GRIFFITH

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C-Film as a contraceptive

SIR,—Drs N Raabe and O Frankman (1 November, p 286) imply that the reason for the high failure rate in the Family Planning Association's trial of C-Film was poor patient instructions.

We too are surprised at the difference between our trial results and those obtained by Drs Raabe and Frankman, but we want to point out that, besides receiving detailed verbal and written instructions on the use of C-Film, our patients were given a demonstration on how to insert the film.

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Disposal of disposable colostomy appliances

SIR,—In 1971 we published the results of a survey we had conducted into the problems of patients with permanent colostomies following resection of the rectum for cancer (14 August 1971, p 413). We then noted that 48% of the patients reviewed were using disposable appliances and many of these patients complained of difficulties in disposing of the appliances after use. Recently we have conducted a further study, this time of patients here in the Cleveland area. We find that now some 92% of colostomy patients are using disposable one-piece plastic appliances and many of them are having increasing difficulties in getting rid of the used appliances. Refuse collectors are reluctant to take fouled appliances away and indeed many patients are too embarrassed to use dustbins for this purpose. The full plastic appliances are difficult to burn, so that patients are increasingly resorting to a policy of puncturing or cutting the appliance to make it sink and then flushing it down the toilet.

However, this is not the end of the story. These appliances are virtually indestructible and when flushed into the local sewers they pass through the system intact and end up in the North Sea. Anyone walking along the beaches of North Yorkshire and Cleveland can now count many indestructible plastic stoma appliances with their contents almost intact at the high tide mark. Surely this is not the ideal place for us to dump these sequelae of modern surgical technology?

These used appliances represent both an aesthetic and a health hazard on our seashores, but they also represent the failure of many local authorities to provide the adequate disposal facilities which many stoma patients require in order to enable them to dispose of their excreta in a humane and socially acceptable way.

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JOSEPHINE A PLANT

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Venous thromboembolism and anticoagulants in pregnancy

SIR,—In your leading article on this subject (22 November, p 421) emphasis is naturally first given to pulmonary embolism. However, I was sorry to see that no mention was made of the apalling morbidity which affects women who suffer deep vein thrombosis during pregnancy or the puerperium—namely, the subsequent development of the postphlebitic limb syndrome.

The diagnosis and treatment of deep vein thrombosis is of primary importance in the prevention of pulmonary embolism. The prevention of the development of a deep vein thrombosis is essential to spare the patient years of suffering from oedema, pain, eczema, and ulceration and the likely development of a subsequent deep vein throm-

bosis later in her life with perhaps fatal embolism on that occasion.

Jarvinen and Asp[1] found that the post-thrombotic state developed with unexpected rapidity—after one to three years 87% of patients already had symptoms and/or signs of venous insufficiency and after eight years at the latest all patients had such symptoms and/or signs. Bauer[2] found that 80% of patients with a venous ulcer had had a deep vein thrombosis. In the varicose vein clinic in this hospital, where approximately 2000 patients are seen each year, we have found that over 50% of the female patients with a postphlebitic limb give a history of ante- or post-partum deep vein thrombosis and in some cases it had occurred after several deliveries.

While the 30 deaths from pulmonary embolism per million deliveries are of extreme importance in the maternal mortality figures they do not give any picture of the hundreds of women with the postphlebitic limb for the remainder of their lives.

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1 Jarvinen, P, *et al*, *Annales Chirurgiae et Gynaecologiae Fenniae*, 1975, **64**, 96.
2 Bauer, G, *Acta Chirurgica Scandinavica*, 1942, suppl 74, p 86.

Treatment of Wilson's disease

SIR,—We have read with interest the letter from Dr D P Vaughan and Mr R Kaderbhai (29 November, p 519) in which they suggested that metronidazole should be tried in the treatment of penicillamine-intolerant patients with Wilson's disease in preference to triethylene tetramine dihydrochloride. All suggestions for new orally active chelating agents are valuable and deserve investigation, but we have learned from experience that many chelating agents which bind copper in vitro do not act as cupruretic agents when given to patients with Wilson's disease. A chelating agent which will bind copper in vivo and result in its precipitation in the tissues is theoretically dangerous since the possibility exists that the copper will eventually be freed from the ligand, resulting in a massive increase in "free copper" at some vulnerable site in the body.

Over the years we have investigated a number of compounds which may have this action—for instance, sodium diethyl dithiocarbamate, a very powerful copper-binding agent, when given to rats results in a fall in the urinary excretion of copper. Similar findings have been made for aminotriazole and benzotriazole; it was therefore with some doubts that we set up the following study to test the cupruretic activity of metronidazole. Two patients who had presented with hepatic Wilson's disease and who had each been taking penicillamine for two years volunteered to test the compound. The test procedure was as follows. No drugs were given for 72 hours, a 15½-hour overnight urine sample was collected to estimate basal copper excretion, the patients were then each given 450 mg of penicillamine hydrochloride, and urine was collected for six hours. After 48 hours the test was repeated, only on this occasion penicillamine was replaced with a dose of 500 mg of metronidazole (a slightly larger dose on a molar basis, the molecular weight of metronidazole being 171 and that of penicillamine HCl 176). The findings are given in the table below.

It is apparent from these results that metronidazole does not have a sufficient cupruretic action to warrant long-term trial in patients with Wilson's disease. Until an alternative compound is found which will actively promote the excretion of copper, triethylene tetramine dihydrochloride remains the best available therapy for penicillamine-intolerant patients with Wilson's disease.

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Copper excretion	Basal urine 1 (15½ hours)	Six hours after penicillamine	Basal urine 2 (15½ hours)	Six hours after metronidazole
Case 1				
Total (μg)	15·1	155	20·7	13·0
Rate (μg/min)	0·017	0·430	0·022	0·034
Case 2				
Total (μg)	33·0	210	26·8	21·5
Rate (μg/min)	0·035	0·583	0·029	0·060

Tests on overseas doctors

SIR,—Your leading article on "Tests on overseas doctors" is indeed interesting reading (6 December, p 542). The Overseas Doctors' Association, since its formation in early June, has been in constant touch with the BMA, the royal colleges, and the General Medical Council and is concerned and conscious of the problems of overseas doctors who are coming to work in the United Kingdom. The DHSS, the Temporary Registration Assessment Board, and the GMC are concerned in examining overseas doctors as to their competence by clinical testing and language tests before they are given registration to practise in the United Kingdom. Unfortunately these tests have been organised rather in a hurry and some of the procedures of this are far from desirable.

As chairman of the Overseas Doctors' Association I attended as an observer at one of the examinations and my comments have been sent to the chairman of the TRAB. It was a pity, as you rightly said, that no representatives of the overseas doctors were asked to explain their position at the meeting of the National Association of Clinical Tutors at the Royal College of Physicians on 25 November. If an opportunity like this arose again the ODA will be happy to express their views and give constructive suggestions regarding these tests. Our views are that a test of this sort is absolutely essential. The test should be carried out three months after a preliminary acclimatisation period during which these doctors would be attached to a district hospital to go through the various departments and work as a clinical clerk. At the same time, in the evening, they would attend evening courses in the English language so far as it relates to their practice, and such courses are now being organised in various universities and polytechnics. At the end of the three-month period these doctors would then be asked to sit for the examination. The present examination is far from satisfactory and space does not allow me to elaborate on this at present.

Sir, the whole question of junior doctors training in the United Kingdom is in turmoil and in this situation the overseas doctors feel that they are being made scapegoats. It is indeed interesting to note that in the *BMJ* you publish the pass lists for the MRCP and FRCS but you do not mention the number of candidates who sat for the examination and the number of candidates who failed. But in the overseas doctors' test examination you publish both the figures.

While we do not oppose a test we do object to the ways and means with which the test is carried out. I feel confident that, given time, we shall be able to solve this problem with good will on both sides.

S S CHATTERJEE
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Overseas Doctors' Association

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SIR,—We are very worried about the effect of the new examination which is being run by the General Medical Council for foreign doctors wishing to work in Britain, as it seems that the standard set is so high that the majority are doomed to failure.

To quote a recent example, we have had for several years a connection with Barcelona and have had three excellent men who came here as orthopaedic house officers and progressed to registrar level. A fourth man came recently with a strong recommendation for further training in orthopaedics. His English was excellent and his background entirely satisfactory. He has failed the examination and has had to go back to Spain. We have no doubt that the three previous men would also have failed and yet they all turned out to be excellent in every respect.

If it is made exceptionally difficult for a foreign doctor to pass this examination our supply of such people is going to run out, with obvious effects on the staffing of many hospitals. It also means that Britain will quickly lose its image as a place for the training of doctors from many countries and this would be to our detriment as well as theirs. Obviously there must be some kind of test of reasonable competence, but we feel strongly that this examination is too difficult, and it would be interesting to know whether other consultants have formed the same opinion.

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Vocational training for general practice

SIR,—There are suggestions that the period of vocational training for general practice