based on H titres of 1/80 or 1/160, and the medical officer of health was informed that he had an epidemic on his hands. *Salmonella paratyphi* B was subsequently isolated from all four persons. Rapid diagnosis was also helpful in patients living outside the main epidemic area and one of these provided the key to cause of the outbreak: 12 days before onset she had been into the area to play tennis and had drunk a glass of water.

Infection was confirmed by my laboratory in 49 cases, in 24 of which serum was examined. H antibodies were present in all sera taken more than five days after onset, and in two of four taken earlier. In four cases H antibodies to *S. typhi* were also found and diagnosis had to await the result of stool or clot culture. Clot culture was positive in 11 of 14 cases examined in the first week of illness; conventional blood cultures, even if used, could not have been much more successful. Faeces were not available on demand and often reached the laboratory several days later.

The exceptional value of serology in this outbreak is attributable to the fact that most patients were children or young adults, and in only four cases was the significance of a raised H titre to *S. paratyphi* B in doubt. In contrast, food handlers examined serologically often showed evidence of past immunisation; serology would therefore have been of much less value had the outbreak occurred in the adult population.

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¹ George, J T A, et al, *British Medical Journal*, 1972, 3, 208.

Shoes for growing feet

SIR,—I write to support the views of Dr M J Illingworth (11 March, p 651) regarding the difficulty of buying suitable shoes for children.

I have twin daughters aged 7 years who have very slim feet. It is virtually impossible to purchase shoes which fit them properly, and one is usually forced to buy shoes which are slightly short in length because of the excess width. On asking shopkeepers about this they state that we are not isolated in this situation and have to send away frequently for narrow shoe fittings. There has recently been the suggestion that shoe manufacturers should adjust the width scale of fittings to make wider the narrowest fitting at present manufactured. This means that it will become impossible to obtain any narrow shoe fittings of any description.

Surely, in the interests of our children, the medical profession should make its views clear.

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Do people smoke for nicotine?

SIR,—In your leading article on this subject (22 October 1977, p 1041) the nicotine-dependence view of smoking was brought into question. One piece of evidence which is claimed to show that smoking behaviour over a period of years is unrelated to the availability of nicotine from a cigarette is that the consumption of cigarettes has not doubled over the 15-20-year period in which the nicotine yield of cigarettes has dropped by about half.

On a crude self-regulation of nicotine intake view one might indeed expect smokers to compensate for the reduced availability of nicotine per cigarette by increasing the number smoked. The recent release of cigarette consumption figures by the Tobacco Advisory Committee prompted me to take a closer look at the available information on this point.^{1,2}

I take it that the figures central to the argument are those relating to the number of cigarettes consumed per adult smoker, since any figures for overall consumption will confound changes in the individual's smoking habits with those of the population as a whole. The accompanying figure strongly suggests that as the average nicotine delivery of UK cigarettes has declined the annual consumption of manufactured cigarettes per smoker has in fact greatly increased. Data on consumption

Average nicotine delivery and annual consumption per smoker of UK-manufactured cigarettes, 1935-75.

per smoker (based on consumer surveys) seem not to be available until 1949 and information on nicotine delivery is very incomplete. However, if the clear trends shown in cigarette consumption since 1949 are extrapolated back to 1935 it can be seen that over the period in which the average nicotine delivery of cigarettes decreased by 53% the number of cigarettes smoked per annum more than doubled in the case of men and increased over six-fold in women. The rise in cigarette consumption by women is presumably due in part to the increasing social acceptability of such behaviour, but no similar explanation is likely in the case of men.

More complete and reliable information covering the past 10 years also reveals an association between the declining nicotine delivery of cigarettes and increased consumption per smoker. In the period 1965-75 the sales-weighted nicotine levels of cigarettes decreased by 35.1%. Over the same period cigarette consumption per smoker increased by 17.9% in men and 30.7% in women.

The smoker has ways of compensating for reduced nicotine delivery by altering the way he smokes individual cigarettes as well as by increasing total number smoked.^{3,4} In view of this the association between increased cigarette consumption and decreased nicotine delivery is perhaps rather greater than might be expected. Such an association cannot, of course, be used to establish any causal relationship, and a way of explaining the rise in consumption per smoker without reference to nicotine delivery has been suggested. If the number of smokers giving up the habit completely has been drawn more from light than from heavy smokers, heavy smokers will have come to form a larger proportion of the total smoking population and per caput consumption will have increased. However, until this is shown to have happened the association between reduced nicotine delivery and increased consumption will tend rather to support than undermine the nicotine-dependence view of smoking.

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¹ *Statistics of Smoking in the UK*, ed P N Lee. Tobacco Research Council Research Paper No 1, 7th edn, tables 7 and 17. London TRC, 1976.

² Todd, G F, *Changes in Smoking Patterns in the UK*, Tobacco Research Council Occasional Paper No. 1. London, TRC, 1975.

³ Ashton, H, and Watson, D W, *British Medical Journal*, 1970, 3, 679.

⁴ Stepney, R, *British Journal of Clinical Pharmacology*, 1977, 4, 653p.

Gastrointestinal bleeding in acute respiratory failure

SIR,—Your leading article (4 March, p 531) left many things unsaid. Stress ulceration is commonly found in patients who require artificial ventilation of the lungs, especially when this is prolonged, and seems to be identical with that found in burns, trauma, etc. It has a high mortality and in 1938 Harkins¹ reviewed all the published reports of Curling's ulcer he could find and reported 107 patients, only 13 of whom had recovered.

Because stress ulceration occurred so commonly among battle casualties during the Vietnam war the American National Research Council held a conference on the subject.² They could come to no clear conclusion as to its aetiology. It has, however, become evident that stress ulceration can develop in the absence of any free hydrochloric acid (HCl) and that a low titratable acidity of the gastric contents and high pH is by no means an uncommon finding.³⁻⁶ The pH of the gastric contents before massive haemorrhage can be as high as 7.0 and is frequently 5.6 or 6.0.⁶

Patients who have undergone open heart surgery and develop postoperative respiratory failure are known to suffer from stress ulceration. A continuous infusion of sodium bicarbonate, either in water or in milk, through a nasogastric tube into the stomach maintaining the pH above 7.0 has been ineffective. When in America I measured the pH of the gastric fluid and found that when it had a pH of 2.0 or less it was sterile, even after it had been discarded and left exposed for a long period. If the pH was 5.0 it contained numerous bacteria. Patients whose gastric fluid contained bacteria were prone to develop stress ulceration. Those patients whose gastric fluid had no bacterial content did not suffer from this problem. Numerous organisms were found and it appeared that the lack of acidity in the

gastric contents allowed bacterial growth and that erosion of the gastric mucosa was of bacterial origin. Examples of these cases were reported in 1972.⁶ It would appear that in some cases treatment with alkali is contraindicated. The methods used to stop massive bleeding have been irrigation of the stomach with iced saline, partial gastrectomy, and cannulation of the superior mesenteric artery and infusion of pitressin.⁸⁻⁹ None of these has been totally successful.

There is a further aspect to this problem. When samples are obtained during endo-bronchial suction culture revealed that the organisms in the respiratory tract were identical with those in the stomach. It appeared therefore that the stomach provided a reservoir of organisms and possibly prolonged the respiratory infection. Following these investigations, patients with a high intragastric pH with proved bacterial contamination were treated with antibiotics given down the naso-gastric tube. In two of these patients bleeding stopped. In Britain we have had one patient⁷ in whom a high pH, organisms, and free blood or accumulation of red cells were found in the intragastric contents. This patient was treated with dilute hydrochloric acid and no stress ulceration occurred even though artificial ventilation of the lungs proceeded for more than seven weeks.

Further investigations into this highly lethal condition are required. Antacids, however, as a "prophylactic approach" are not to be recommended without prior and repeated measurement of the pH and acid content of the gastric secretions.

DAVID BROOKS

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¹ Harkins, H N, *Surgery*, 1938, **3**, 608.

² Eiseman, B, and Heyman, R L, *New England Journal of Medicine*, 1970, **282**, 372.

³ Bryant, L R, and Griffin, W O, *Archives of Surgery*, 1966, **93**, 161.

⁴ Dragstedt, L R, et al, *American Surgeon*, 1956, **144**, 450.

⁵ Skillman, J, et al, *American Journal of Surgery*, 1969, **117**, 523.

⁶ Brooks, D K, *Advances in Surgery*, 1972, **6**, 289.

⁷ Brooks, D K, and Gilchick, M, unpublished observations.

⁸ Nusbaum, M, et al, *Annals of Surgery*, 1969, **170**, 506.

⁹ Baum, S, and Nusbaum, M, *Diagnostic Radiology*, 1971, **99**, 27.

Wessex Adjuvant Breast Study

SIR,—At a recent meeting organised by the Breast Trials Co-ordinating Committee a number of adjuvant chemotherapy studies were criticised on the grounds that they were unlikely to achieve an adequate patient recruitment.

The Wessex Adjuvant Breast Study was set up because of the desire of a group of clinicians to offer chemotherapy to node-positive breast cancer patients. We accepted that it was unethical to offer this form of therapy outside the context of a study and we therefore agreed to establish our own, no satisfactory alternative being available.

Since our study opened a number of surgeons have agreed to participate, but despite this recruitment remains low and it will be some years before we reach adequate patient numbers. Newer and larger trials that meet all our requirements for an adjuvant study are now available and we feel therefore that it is unethical for us to continue our protocol. Our reason for writing to you with this information is that we hope that the closure of our study may encourage others critically to examine the practicability of their own

programme, since there are obviously many British groups of comparable size to ours which are likely to experience very similar recruitment problems.

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Surgery after irradiation

SIR,—I should be grateful if any reader could give me some help with the management of a group of patients which have become a surgical nightmare. I refer to those with primary malignant disease of the tongue, floor of mouth, or laryngopharyngeal region who have failed to respond to radiotherapy. These hopeful and brave patients are subjected to surgery which is frequently followed by delayed healing and fistula formation and may require a series of reconstructive procedures carried out under the most difficult surgical conditions. In some cases inoperable recurrences appear by the time repair is complete. I have tried most of the techniques described in the literature (and a few that are not), but the high mortality and morbidity make me wonder whether surgery has any place in management. It certainly speeds up the demise of some of the patients, but that is not what surgery is for.

I should like to know, for example, whether it is better to carry out the resection and reconstruction very soon after the completion of irradiation, or will this mean unnecessary surgery on some who have been cured by radiotherapy?

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Appointments in Iran

SIR,—Dr E Grey-Turner, Secretary of the British Medical Association, writes (11 February, p 371) referring to disturbing reports which he has received concerning the conditions of service of some British doctors working in Iran.

The undersigned, all doctors working in this hospital, which is staffed by British-trained consultants, would like to make it clear that so far as we know these reports do not emanate from doctors now working in this hospital.

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H HEGGARTY
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Doctors to tradesmen

SIR,—It has become part of certain consultants' symptomatology to behave in a

self-righteous manner whenever they discuss the role of the junior hospital doctor. Repeatedly we hear how they, as junior doctors, were forced to work Olympic hours on slave-like wages in sometimes primitive and inhumane conditions as if these criteria were part and parcel of the making of a good doctor with subsequent better patient care. They not only see their counterparts today as living a life style which makes them spoiled degenerates but also see their tame efforts at reform as outright insubordination and militant trade unionism.

In his recent letter entitled "Doctors to tradesmen" (11 March, p 633) Dr Eoin O'Brien subscribes to the idea that patient care is in jeopardy because of the shorter hours now worked by junior hospital doctors. Dr O'Brien equates continuity of care with quality of patient care, but is this always the case? Is it one doctor working 24 hours, seven days a week or is continuity provided under the present system whereby a junior hospital doctor works a basic 140 hours a fortnight (often being required to work longer)? Does he imply that leisure and sleeping hours be exchanged for a "thriving hospital mess" life? Dr O'Brien may have spent "many... entertaining hours" in this establishment. However, the present more mature doctors would prefer to spend their hours with their family and loved ones.

We hold that quality of care is maintained under the present system because an equally well trained alert doctor is assuming duties from his tired, overworked colleague who, contrary to Dr O'Brien's belief, always ensures that the former is fully briefed on all sick patients. Not to do this would constitute gross irresponsibility. ("Doctors and administrators may argue against the concept of continuity of care, but will the patient? Since the substitution of cross-cover for continuity of care, the patient, whether acutely or chronically ill, may be cared for by his own doctors during normal working hours, but when 5 o'clock, the weekend, or a bank-holiday comes God knows who will be called to him in his greatest need.")

It is unfortunate that the issue of adequate remuneration is central to the quality of patient care. Overworked, underpaid doctors do not provide a good service in a society imbued with social pressures and high standards of living. Times change and we change with them.

PHIL HARRINGTON
and 23 other junior
hospital doctors

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Reform of the GMC

SIR,—I would like to add my voice in support of what you have stated in your recent leading article "Most of Merrison" (4 March, p 532). The Overseas Doctors' Association believes that the Medical Bill now going through Parliament with the amendments concerning overseas doctors will be of great benefit to the medical profession and maintenance of high standards of medical practice. I wish the Medical Bill a speedy and successful passage through the House of Commons and plead with members of Parliament to give it their unanimous blessing.

Some doctors appear to have misunderstood my comments (17 December, p 1600) on