unwanted effects might be avoided by using a combined preparation containing a short-acting diuretic and potassium supplement.¹

While I agree that the diuresis produced by frusemide or bumetanide can interfere with social activities, it should be possible to avoid this problem by judicious timing of the dose. To test this, 40 patients with congestive cardiac failure requiring maintenance diuretic therapy took Burinex K (a slow-release preparation containing bumetanide and potassium chloride) at 9 am or 5 pm during a series of two-weekly alternating periods. Patients were questioned about their preference for a morning or evening diuresis and how this related to their daily routine. Almost three-quarters of the patients preferred to take their diuretic at 5 pm on the grounds that a predictable evening diuresis allowed a normal routine during the day. Moreover, in an additional cross-over study the 24-h excretion of sodium was significantly greater when bumetanide was given in the evening, although the diuretic was, of course, effective irrespective of the timing of administration. Giving a diuretic in the evening may help those patients who tend to get breathless later in the day and it should help to avoid nocturia and nocturnal dyspnoea.

Your leading article avoids the conflicting arguments about the relevance of intra- and extracellular potassium and emphasises what is actually practised—namely, that potassium supplements should be given to all patients receiving digitalis and diuretics and that they are probably justified in most other elderly patients on diuretics. However, having alluded to patients' difficulties in swallowing large Slow-K tablets and patient non-compliance, no reference is made to the extensive practice of giving diuretics and potassium supplement as a combined preparation.

Turning to our experience again and to that of others,² patients appear to find the more elongated shape of Burinex K easier to swallow than the more rounded shape of Slow-K. This can only encourage patient compliance, the vagaries of which are so well recognised, particularly in the elderly, confused subject. Moreover, combined medication ensures that the potassium supplement is actually taken. It has been argued that combined preparations do not contain enough potassium, but the mean serum potassium levels remained well within the normal range during our eight-month study; of 198 individual serum potassium estimations, only one fell below 3.5 mmol/l.

To answer other criticisms, it is relevant that despite the unusually short duration of action of bumetanide none of our patients reported postural hypotension, urinary incontinence, or acute retention that could be related to the diuretic. Furthermore, we found no significant alteration in glucose tolerance tests in 30 patients, even though five were shown initially to have impaired glucose tolerance. Although uric acid retention is recognised with most diuretics, at the end of our study twice as many patients showed an actual fall in serum urate concentration as showed a rise.

In conclusion, since maintenance doses of "loop" diuretics and thiazides are said to be equally effective in the treatment of heart failure³ it should be possible to base the decision to prescribe one or the other on the patient's preference for the pattern of diuresis that causes least inconvenience to the daily routine. The use of combined tablets containing a short-acting diuretic and potassium supplement avoids hypokalaemia and appears

to overcome some of the practical problems involved.

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¹ Singh, B B, and Watt, D A L, *Current Medical Research and Opinion*, 1976, 4, 117.

² Murphy, J E, et al, *Journal of International Medical Research*, 1975, 3, 104.

³ Playfair, A S, *British Medical Journal*, 1975, 3, 42.

Inactivation of agent of Creutzfeldt-Jakob disease

SIR,—Like Dr A M M Wilson (25 March, p 789) I too was confused by the description in your leading article (25 February, p 463) of the requirements for inactivation of the agent of Creutzfeldt-Jakob disease by autoclaving and, in fact, wrote both to the *New England Journal of Medicine* and to the authors of the paper cited¹ to clarify the matter. Others had noted the discrepancy and a correction has now been published in the *New England Journal of Medicine*.² This sets out the conditions as 121°C at a pressure of 15 psi (2 kg/cm²). The authors note that they recommend one hour arbitrarily since the heat resistance of these viruses exceeds that of all microbes for which autoclaving standards have been determined.

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¹ Gajdusek, D C, et al, *New England Journal of Medicine*, 1977, 297, 1253.

² Gajdusek, D C, et al, *New England Journal of Medicine*, 1978, 298, 976.

Oesophageal stricture: a late complication of endoscopy?

SIR,—The proposal by Dr G E Holdstock and his colleagues (6 May, p 1183) that fiberoptic oesophagostomy may be complicated by oesophageal stricture formation cannot be allowed to pass unchallenged. There are three points to be made.

(1) Each of the four patients cited by them as examples of such a phenomenon had ample cause for stricture formation without the need to invoke the unlikely possibility of endoscopic trauma. One patient, they freely admit, had a demonstrable hiatus hernia with some degree of frank oesophagitis—sufficient cause, surely? Another patient had recently undergone partial gastrectomy, a well-recognised precursor of benign oesophageal stricture¹ even in the absence of a demonstrable hiatus hernia.² A gastric ulcer and a duodenal ulcer had been detected in the third and fourth patients respectively. Both these patients were therefore likely candidates for excessive duodenogastric reflux of bile-contaminated juices, a potent cause of oesophagitis.⁴ The fact that neither of these patients had an obvious hiatus hernia or easily demonstrable gastro-oesophageal reflux is not a matter of particular concern. It can be difficult when performing a barium meal in the presence of stricture to obtain sufficient gastric filling with barium to test reliably for hiatus hernia and/or reflux. For example, in a series³ of 21 patients with benign oesophageal stricture treated by antrectomy and Roux-en-Y bile diversion, three, who showed a good response to surgery, had no radiological evidence of hernia or reflux.

(2) The suggestion that local trauma can

lead to oesophageal stricture formation requires, at the very least, the production of a major mucosal tear with extensive haematoma formation in the submucosal planes. Injury of this severity would probably be associated with frank perforation (especially in the elderly) and would in any case be apparent to the endoscopist.

(3) The contention that transient intubation with an instrument not much larger than a food bolus can lead to a disturbance of lower oesophageal sphincter function sufficiently prolonged to be complicated by stricture formation may be rejected on a priori grounds.

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¹ Cox, K R, *British Journal of Surgery*, 1961, 49, 307.

² Cenni, L J, Cox, W F, and Hands, S, *Journal of the Kansas Medical Society*, 1966, 67, 421.

³ McKeown, K C, *British Medical Journal*, 1958, 2, 819.

⁴ Rees, W, and Rhodes, J, *Clinical Gastroenterology*, 1977, 6, 179.

⁵ Dowling, B L, and Hay, A M. In preparation.

SIR,—I was interested in the paper by Dr G E Holdstock and others (6 May, p 1183), which I feel has wider implications than they were able to discuss adequately within the compass of a short report. I note that their unit performs about 1500 endoscopies yearly; while I am convinced of the value of endoscopy I am able to provide what I believe to be an adequate service (to perhaps a slightly smaller district) with about 200 examinations annually by careful clinical assessment of all referrals and with the aid of an excellent radiological service. Of the four cases reported, on the evidence given I would not be convinced that endoscopy was essential in three. In case 1 was the obstructive airways disease in a man of 75 years severe enough to preclude surgery? In case 3 would not conservative treatment alone have been adequate, and did endoscopy affect management? In case 4 would not barium meal alone have been sufficient?

The Health Service is in severe financial difficulties and we are being asked to make all reasonable economies. May I suggest that endoscopists should critically examine their case load to see if their findings are really influencing the management of their patients. I suspect that there could be an appreciable reduction in the number of examinations, with consequent savings in staffing, drugs, and provision and maintenance of instruments, without harm to the population and possibly, as implied by Dr Holdstock's paper, even with benefit to a few.

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PVU treatment of psoriasis

SIR,—We were interested to read the letter from Professor M J Ashwood-Smith and Dr S Igali (29 April, p 1138) suggesting a mechanism for the chromosomal changes which are associated with photochemotherapy (PUVA treatment) of psoriasis. It seems to us that there is another possible risk which may be of even greater significance.

On exposure of the skin to long-wave ultraviolet light at 365 nm the psoralen molecule becomes excited to its elevated but transitory singlet state, which can then undergo intersystem crossing to produce the longer-lived, more stable triplet state. At this energy level the psoralen normally reacts to form an

addition compound with two pyrimidine (that is, thymine) substrate molecules on opposite strands of the DNA spiral and, by blocking cellular division, reverses the psoriatic process.¹ However, extraneous reactions could occur and we would consider the following to be an important possibility.

The excited psoralen molecules which do not enter into chemical reaction with thymine groups still require to dispose of their energy. Because reversion from the triplet level to a singlet ground state by a radiative process is slow a competing mode will be that of energy transferred by collision without chemical interaction to the thymine substrate molecules. These can then react in their own excited states—that is, the psoralen is acting as a true photosensitiser in the photochemical sense of the word.

It is known that molecules such as acetophenone which also absorb at about the same wavelength can act as photosensitisers for the dimerisation of thymine in solution.² It therefore appears possible that 8-methoxypsoralen itself might be able to act as a photosensitiser for the dimerisation of adjacent thymine molecules on the single DNA strand—the basis for mutagenic and possible carcinogenic changes.

Reactions which take place directly only at certain optimum wavelengths do not occur to any significant extent at longer wavelengths owing to poor ultraviolet absorption. From this reasoning it has been assumed that whereas the high-energy 260 nm is mutagenic and even carcinogenic, the lower-energy 365 nm is relatively safe even in the presence of a photosensitiser. However, since the actual energy required for single-strand mutation on DNA is considerably less than that corresponding to a wavelength of 260 nm,³ it seems perfectly feasible that this can be obtained via an energy transfer from the psoralen molecule when excited at 365 nm.

Furthermore, since the purines and pyrimidines of nucleic acid absorb strongly at 260 nm and only poorly at 365 nm, it is evident that longer wavelengths penetrate much more deeply than the shorter wavelengths.³ Since the psoralens are normally taken by mouth and are therefore distributed throughout the whole skin tissue the toxic effects of the PUVA treatment would be likely to be much more widespread than the effects of the short-wave ultraviolet alone.

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¹ Walter, J F, *et al*, *Archives of Dermatology*, 1973, **107**, 861.

² Lamola, A A, *Photochemistry and Photobiology*, 1968, **7**, 619.

³ Parrish, J A, *Archives of Dermatology*, 1977, **113**, 1525.

If I had . . .

SIR,—Mr H H G Eastcott (6 May, p 1212) may very well put the bell of his stethoscope on the middle of his right carotid and on the carotids of the patients selected for him by non-surgical colleagues and hear a bruit. However, if he had done the same to the last 36 unselected patients with carotid-distribution transient ischaemic attacks (TIAs) whom I

have seen he would have heard bruits in only five of them. Carotid bruits are uncommon in carotid-distribution TIAs since (a) the heart may be the source of embolism to the brain, (b) there may not be an atheromatous lesion at the carotid bifurcation but elsewhere in the carotid artery, (c) even if there is a lesion it may not cause a bruit, and (d) it is easy to confuse a carotid-distribution TIA with a vertebro-basilar TIA. Like Mr Eastcott, surgeons commonly accuse us snail-like physicians of "beating about the bush" since they seem unable to understand that we do so in order to select patients who are suitable for their very considerable surgical skills.

Unfortunately, although a carotid bruit often indicates an operable lesion of the carotid artery, there is no satisfactory evidence, unless Mr Eastcott has some figures to present, that carotid endarterectomy prevents stroke or the commonest cause of death after a TIA, which is myocardial infarction.

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SIR,—Forty years ago, when I was privileged to be the resident surgical officer to the late Ernest Miles and his brilliant junior Lawrence Abel, who died so recently, these gentlemen and their nurses and assistants did not waste their time covering colostomies with the English equivalent of the *Scotsman* or the *Edinburgh Evening Post* but meticulously taught their patients how to care for their stomas by the so-called irrigation technique. Virtually this consisted of administering an enema into the colostomy each morning, thus producing an evacuation which completely emptied the colon of its content. Provided the irrigation was carried out each day and provided a few foods such as onions were avoided the stoma soon responded only to the distension produced by the instillation of the water and there was no discharge whatsoever for the rest of the 24 hours. No bags or bulky dressings were therefore required, just a small lubricated dressing to prevent abrasion of the mucosa. There was no aroma and no faecal poulce on the abdominal wall, and the patient was free to follow his or her every activity carefree. Twenty to thirty minutes of morning attention to the colostomy, a procedure which rapidly became only more irksome than shaving, allowed the patient to live an otherwise normal life.

I learnt this method, and every patient upon whom I have carried out an abdominoperineal excision has been introduced to it. It is not an American method, as Professor H A F Dudley (22 April, p 1035) suggests, but as English as was the oak-like Mr Miles himself. He devised the radical excision and he devised the irrigation treatment too. The apparatus he used was somewhat primitive and it was left to American designers to produce completely safe irrigation sets, which are now used by 90% of colostomies in America and increasing numbers in this country and in Europe. There is no need now and there was no need then for a man to evacuate his bowel into somewhere near his left trouser pocket when talking to a beautiful girl. Sadly, however, unless Professor Dudley enlightens his students on the irrigation technique of colostomy care, it will happen over and over again.

Professor Dudley's suggestion of pro-

ctocolectomy as a method of choice when excision of the whole of the rectum is essential is, as he rightly implies, mad. Does he not appreciate that, apart from an inevitable increase in operative mortality, an ileostomy is often accompanied by many complications too numerous to detail here? Does he not know that in any large series of total colectomies late obstructions follow, some fatal, the result of adhesions and alteration in the lie of the small intestine consequent upon the removal of the supporting large bowel? I have yet to see an obstruction following abdominoperineal excision after the discharge of the patient from hospital.

Please, Professor Dudley, don't have a panproctocolectomy. Settle for a colostomy and be instructed by an expert in its care. If you are not fully satisfied, but I am sure you will be, you can always have the rest of the colon removed later.

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SIR,—Mr Brian Harcourt (29 April, p 1121) gives an all-round view of the problems of cataract, and by a medical man the problems are probably more feared than by the lay public. For instance, the problems of spectacles loom large and I think are exaggerated. I am pleasantly surprised that the benefit of spectacles in most cases greatly outweighs any difficulties of magnification etc, to which the patient usually adapts quickly. Of course the spectacles have to be properly dispensed, with lenses kept small so as to avoid excess thickness, and sad to say there has been much deterioration in spectacles in the last decade, suitably small frames being difficult to obtain. I have had patients prefer the ordinary 40 mm+10 spheres given as temporary lenses to an accurate larger lens prescribed later. I have even had patients with unilateral aphakia fitted with spectacles without having diplopia. So contact lenses and the even more risky intraocular lenses are not necessarily required.

The problems of driving for both the patient with early cataract and the aphakic are again, I think, exaggerated. Of course oncoming headlamps cause glare and not just to early cataract cases but to most people. The important thing for driving is visual field rather than acuity and I had one general practitioner patient driving round his practice quite happily in the daytime at 80 in spite of his acuity being reduced to 6/36 because of cataract. Another colleague whose cataracts I took out many years ago drove all over Europe seeing, in ordinary aphakic spectacles, sights he had never before realised were so bright and beautiful.

Another great worry for medical men needing any operation is the anaesthetist and this is indicated by Mr Harcourt. But why have a general anaesthetic at all, with its upsets of the day's routine and possible risks, when the operation can be perfectly easily done under local anaesthesia without even missing a meal? Many of my cases would be turned down by those who only operate under general anaesthesia. Age and poor general health are no object if one uses a local. The patient can also be mobilised quicker if one wishes. I suspect many surgeons use general anaesthesia mainly to save their own nerves, for of course it is worrying to the surgeon when difficulties arise and the patient is conscious. The most disconcerting event I have had with a patient