ultrasonography is non-invasive, safe, and reasonably cheap. The results can be very accurate. In a recent prospective study of 124 patients¹ there were no false-normal reports. Ultrasound correctly identified all 33 patients with chronic pancreatic disease and correctly classified them as suffering from cancer or pancreatitis. There were four false-positive reports.

No doubt the results of ultrasonography and isotope scanning are both subject to the individual operator's expertise and experience. The crucial question for any promising diagnostic method is whether or not it is "exportable"—whether the same results can be obtained in less committed hands. The answer for isotope scanning is already clear; for ultrasonography we must wait a little longer.

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¹ Lees, W R, *et al*, *Gut*. In press.

Psychiatric problems after mastectomy

SIR,—May I take issue with the choice of controls in the investigation reported by Dr G P Maguire and others (15 April, p 963)? The authors may be confusing the psychiatric effects of cancerophobia, those of mutilating surgery, and those of benign breast disease. Control groups should surely include, for example, women who have undergone other types of mutilating surgery (for example, limb amputation for benign lesions), those who have undergone mastectomy for benign lesions, as well as those who have experienced non-mutilating cancer surgery. If such obvious measures are not taken, surely one cannot disentangle the specific psychosocial blame attributable to mastectomy for neoplasm?

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Cimetidine and protective effect of mucus in gastric ulcer

SIR,—In a previous letter (18 March, p 718) we reported changes in gastric mucin after four weeks' treatment with cimetidine in patients with duodenal ulceration. Our data seemed to suggest that relapse of peptic ulceration after interruption of cimetidine treatment might be due to a reduced protective effect of gastric mucus. The present study was undertaken in order to determine whether in patients with gastric ulcer cimetidine could induce similar changes in gastric mucin.

Eight patients aged 34-62 years with endoscopically confirmed gastric ulcer were studied. Several gastric biopsy specimens were taken to exclude malignancy. Cimetidine was given at a dose of 1 g daily for four weeks. Gastric mucin fractions in fasting gastric juice were measured by Glass's method¹ before and after treatment, samples of gastric juice being obtained by gastric tube, left in situ for 30 minutes. Patients who showed no endoscopic evidence of healing at four weeks continued cimetidine treatment in full dosage for a further two weeks. Patients whose ulcers had healed were given a maintenance dose of 400 mg at bedtime.

The ratio of neutral glycoprotein-mucoprotease complex to acid mucoprotein complex was expressed as a "mucoprotective index" calculated from the formula $B \div (A+B) \times 100$, where A =

acid mucoprotein complex (g/l) and B = neutral glycoprotein-mucoprotease complex (g/l). No significant changes in mucoprotective index were found after cimetidine treatment ($P > 0.05$ by Student's *t* test). The mean values for the mucoprotective index were 41.7 ± 15.5 (SEM) before treatment and 29.2 ± 6.5 at four weeks.

The behaviour of gastric mucin in cimetidine-treated patients with gastric ulcer seems to be different from that previously found in duodenal ulcer. However, it must be pointed out that the initial values of the mucoprotective index in these patients were considerably lower than those observed in the patients with duodenal ulcer. Obviously it cannot be expected that cimetidine should worsen an already poorly protective gastric mucus. Nevertheless, it must be remembered that, in spite of the healing of gastric ulceration by cimetidine, the gastric mucosa is still subject to relapses because of the persisting lack of protective mechanisms. A possible rise in the potential difference across the gastric mucosa² does not mean that cimetidine has a protective effect on the gastric mucosal barrier.³

The unchanged poor quality of mucus in patients whose gastric ulcer has healed may possibly explain relapses when cimetidine is discontinued just as reduced mucoprotective function may explain relapses in patients with previous duodenal ulceration. The use of carbenoxolone as mucopoietic agent during or after cimetidine treatment could be helpful, and this is under investigation.

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¹ Glass, G B J, *Annals of the New York Academy of Sciences*, 1967, **140**, 804.

² Ivey, K J, *et al*, *Lancet*, 1975, **2**, 1072.

³ Read, N W, and Levin, R J, *Lancet*, 1975, **2**, 1314.

Painful young bellies

SIR,—Your leading article (29 April, p 1090) omitted what in my experience is the commonest cause of abdominal pain in children and the commonest cause of unnecessary investigation and referral for unnecessary psychotherapy.

Injury to the abdominal wall during games and physical education is frequently seen by the general practitioner. The tender, painful lesion is usually palpable in the rectus abdominis or oblique muscles. It does not change in intensity when the child folds its arms across its chest and raises its shoulders off the couch. It is cured immediately by an injection of a mixture of triamcinolone acetonide and 2% lignocaine.¹

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¹ Bourne, I H J, *British Medical Journal*, 1977, **2**, 1158.

SIR,—In your leading article on this subject (29 April, p 1090) there was no mention of the parasitic causes of abdominal pain.

In Africa, the Middle and Far East, and Eastern Europe, and to some extent in the rural areas of Northern Europe, *Ascaris lumbricoides* (the roundworm) is very well known to surgeons as a cause of abdominal pain. The worm measures 20-30 cm in length

and gives rise to colicky abdominal pain in young children because of the small lumen of their intestines. The pain may be acute or recurrent depending on the number of parasites eventually reaching the bowel. In adults it does not give rise to abdominal symptoms. The blood film shows eosinophilia. The plain abdominal x-ray is often unhelpful but barium studies may show the parasites. The stools will almost always contain the ova of the worms.

Surgeons in the endemic areas are very well aware of the problem and often the parasites are seen in the stool after the patients have been admitted for observation, with relief of symptoms.

In conclusion, I would stress that the investigation of a painful belly in a child is not complete unless the stools are examined microscopically.

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"Innovation in the Pharmaceutical Industry"

SIR,—Without wishing to come between David Schwartzmann and Professor M D Rawlins in their debate on the effects of increased regulatory demand on drug discovery (22 October, p 1076, and 8 April, p 919) I think the following is relevant to their discussion.

In recent years Parke Davis, Nicholas, and Twyford Laboratories have all closed down their research and development groups in Britain, with resulting redundancies of substantial numbers of scientists. Macfarlanes, Duncan Flockhart, British Drug Houses, Horlicks, Evans Medical, and Riker Laboratories have each terminated their individual research and development following take-overs; in certain cases major research groups were disbanded as a result.

This evidence supports David Schwartzmann's contention that the cost of drug development is now so great that pharmaceutical innovation is in danger of drying up.

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Plasmapheresis

SIR,—In your leading article (22 April, p 1011) we were surprised to find no mention of plasmapheresis in hyperviscosity syndromes in patients with Waldenström's macroglobulinaemia and myeloma, particularly of the IgA type.

We would like to report our experience with plasmapheresis in a 47-year-old man who was admitted to hospital in January 1977 with pneumonia. Our investigations showed that he suffered from IgA myeloma with a plasma monoclonal IgA concentration of 61 g/l and 30% myeloma cells in the marrow. He was entered into the Medical Research Council trial for multiple myeloma and was selected at random to receive cyclophosphamide 1 g at 2-3-weekly intervals. In February 1977 he started complaining of blurring of vision, which worried him considerably. Plasma viscosity was found to be 0.4 Pa.s (4.4 cP) at 25°C. We therefore carried out plasmapheresis on six occasions over a

12-week period. Half-way through his first 2-3-1 exchange session he noticed marked improvement of his vision and this improvement was permanent. He is now able to carry on with his job.

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Vincristine-induced neuropathy in lymphomas

SIR,—Dr M G Mott (29 April, p 1145) raises the interesting question whether a sex difference in sensitivity to vincristine could provide an explanation for our findings (11 March, p 610). We described a 61% incidence of neuropathy in patients with lymphoma treated with vincristine compared with an 11% incidence in a group of other malignancies treated with vincristine. As Dr Mott states correctly, the lymphoma group was predominantly male, whereas in our comparison group were 23 patients with breast cancer who were exclusively female.

However, in eight female lymphoma patients (the five original cases plus three more recent ones) there were three cases of vincristine neuropathy. Comparing these with the one case of neuropathy in 23 breast cancer patients there was a significant difference ($\chi^2 = 5.81$; $0.01 < P < 0.025$). Furthermore, there was no significant difference in the incidence of vincristine neuropathy in male lymphoma patients (13/20) and female lymphoma patients (3/8) ($\chi^2 = 1.77$; $0.2 > P > 0.1$).

Thus the higher incidence of vincristine neuropathy in the lymphoma group does appear to be disease-related rather than sex-related.

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Geriatric beds

SIR,—You reported a written answer given by Mr Roland Moyle in the House of Commons on 3 March, listing the numbers of available geriatric beds in NHS hospitals (8 April, p 930). Regrettably those of us who are interested find quite often that such figures are incorrect. In the case of my own Northamptonshire Area Health Authority the figure quoted for beds per 10 000 population aged 65 and over is wrong, the table over-crediting Northamptonshire with geriatric beds and under-crediting Buckinghamshire.

The figure of 112.62 beds per 10 000 population aged 65 and over is almost certainly based on the area SH3 figures for 1976 and the Office of Population Censuses and Surveys population estimates for Northamptonshire for the same year. The SH3 data includes a hospital managed by the Northamptonshire AHA but sited in Bucks. The population of elderly in north Bucks who are within the Northamptonshire AHA catchment is not credited. If the total geriatric beds managed by the Northamptonshire AHA is divided by the OPCS elderly population for Northamptonshire only, excluding those in north Bucks, a figure of 112.62 is obtained. By excluding the hospital in Bucks from the calculation the

numbers of beds per 10 000 elderly is 100.60, a considerable discrepancy.

I write for two reasons. Firstly, the figures are incorrect. Secondly, Mr Penhaligon, who asked the Secretary of State for information, may with others believe the figures to be reasonably up to date. Since 1976 bed numbers under the Northamptonshire AHA have been reduced quite drastically and the population has increased.

Clinicians and community physicians should scrutinise these sorts of figures closely. There are possibly even more ludicrous examples of error in other areas. I have already a complete inpatient and day case diagnostic index of patients under my care in 1977 from the Oxford Regional Health Authority; one would expect that in these modern times up-to-date and accurate figures could be provided for members of Parliament and the public at large. I am not interested in a blood glucose of a week ago; members of Parliament are probably not really interested in the geriatric beds available a year ago or more.

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Ultrasound and work load in the radiology department

SIR,—You recently published a Personal Paper by Dr B Goldberg on the "department of inappropriate investigations" (12 November 1977, p 1274), which referred to the waste of material and manpower within x-ray departments. Important issues were raised and the lack of response in your correspondence columns on the subject is very disquieting.

Radiology departments are currently undergoing a crisis which only a rationalisation of services can ameliorate. Demands for routine and special x-ray investigations continue to rise, but attempts to increase the radiology consultant establishment (in parallel with the increase in clinical consultant appointments) are frustrated at district management team level (as at Epsom in 1977) or by current Department of Health and Social Security policy of not permitting an increase in new radiology consultant posts in the south of England until those in the north are filled.

The new imaging techniques now available have considerably broadened the diagnostic range of radiology, but adequate facilities to operate them efficiently are denied us. The potential cost benefit of ultrasound in particular is considerable. Many patients are saved contrast x-ray examinations and in others laparotomy is made unnecessary. Consequent improved planning of surgical lists saves theatre time and reduces patient postsurgical morbidity. Local surgeons have estimated that since the introduction of ultrasound the length of stay of many surgical inpatients has been reduced by 2-3 days.

Paradoxically, these savings are reflected in an increased diagnostic work load within the radiology department. Some x-ray departments sadly already consider themselves over-committed with routine x-ray work, leaving ultrasound to the regrettably narrow monopoly of the obstetrician. Conversely, where responsibility has been correctly accepted no proportional increase in manpower or facilities is forthcoming. (Even where radiographers are trained in basic ultrasound techniques money cannot be found to employ them.)

Radiology departments must remain progressive and absorb modern technological developments. Clinicians and radiologists should therefore unite in a common objective of getting the best that a modern imaging department can offer. Patients should be educated into not expecting to receive benefit from the routine "therapeutic" x-ray (can the media help here?). Above all, the function of x-ray departments in their wasteful medicolegal relationship to accident and emergency departments¹ needs courageous attention and action. It is better to come to terms openly with the "inappropriate investigations" so that radiologists are able to pass to the patients the benefits of their skills and knowledge.

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¹ Gompeles, B M, *British Journal of Radiology*, 1976, **49**, 98.

Pituitary tumours and pregnancy

SIR,—The article by Dr T Bergh and others (8 April, p 875) brings into question the commonly advanced view^{1,2} that infertile patients with prolactin-secreting tumours of the pituitary should routinely undergo radiotherapy or surgery before ovulation induction therapy in view of possible dangers with pituitary enlargement in pregnancy. We also have had reservations about the wisdom of surgery or radiotherapy in such cases and like them have adopted a conservative approach, particularly since the natural history of these lesions is by no means established.

Thirty-four patients who presented with grossly elevated plasma prolactin levels have been under surveillance for up to three years. In 15 there is definite radiological evidence of an abnormal pituitary fossa, in eight the appearances are regarded as suspicious of a pituitary adenoma, while in 11 the sella appears normal. Serial radiological investigations have revealed evidence of progression of the lesion in only two patients. In one of these who also showed impairment of her visual fields institution of bromocriptine therapy resulted in suppression of prolactin levels, improvement in the visual fields, and changes in the appearance on computerised tomography which suggest that the tumour is less active. One other patient under treatment for 24 months shows tomographic evidence of slight but definite improvement in the radiological appearances.

When a woman presents with infertility due to hyperprolactinaemia and radiological evidence of a pituitary tumour we exclude suprasellar extension of the lesion by means of air encephalography or computerised tomography; more recently computerised cisternography has been employed. Assessment of her visual fields and investigation of pituitary function by means of stimulation tests were carried out. In the absence of any contra-indication we then proceed to treatment with bromocriptine. During the course of subsequent pregnancy visual field assessment is performed at monthly intervals, supplemented if need be by limited radiographic examination of the pituitary fossa. In the event of local complications arising during the pregnancies we plan surgical intervention or induction of labour depending on the stage of gestation.

Five of the 15 patients in this category have