12-week period. Half-way through his first 2·3-l 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 ($\chi^2 = 5{\cdot}81$; $0{\cdot}01 < P < 0{\cdot}025$). Furthermore, there was no significant difference in the incidence of vincristine neuropathy in male lymphoma patients (13/20) and female lymphoma patients (3/8) ($\chi^2 = 1{\cdot}77$; $0{\cdot}2 > P > 0{\cdot}1$).

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 departments[1] 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] Gompels, 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 contraindication 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

now achieved a total of six pregnancies, two ending in early abortion, three resulting in normal delivery at term, and one being undelivered. Each patient showed radiological evidence of an expanded sella with localised erosion of the fossa but no suggestion of suprasellar extension. Pituitary function tests showed no abnormality apart from an impaired response of growth hormone to insulin-induced hypoglycaemia in two cases. One patient, who miscarried during the first trimester on two occasions within four months, has not shown any radiological changes. Two of the three who delivered at term had uneventful pregnancies and confinements. There were no changes in the radiological appearances of the fossa or the visual fields during pregnancy or following delivery. The other patient developed minimal impairment of her visual fields at the 37th week of gestation, but these changes were not progressive and she was delivered normally. Radiological examination of the pituitary fossa at mid-pregnancy and shortly after delivery showed no significant changes from the prepregnancy appearances and the visual fields have returned to normal. In addition, one patient with radiological suspicion of a tumour has had two pregnancies.

We therefore support the view of Dr Bergh and his colleagues that it is reasonable to manage such patients conservatively, keeping them under close supervision during the pregnancy and considering bromocriptine as the first-line treatment should complications arise.

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[1] Thorner, M O, *et al*, *British Medical Journal*, 1975, **4**, 694.
[2] Franks, S, *et al*, *British Journal of Obstetrics and Gynaecology*, 1977, **84**, 241.

Factors influencing the incidence of neonatal jaundice

SIR,—The paper by Louise Friedman and her colleagues (13 May, p 1235) deals mainly with obstetric factors affecting jaundice. It suffers the handicap of most retrospective studies that not all infants had plasma bilirubin estimations carried out. The arbitrary allocation of a figure of 77 μmol/l (4·5 mg/100 ml) to those not showing clinical jaundice is not acceptable. We have shown in work awaiting publication that despite a high index of suspicion it is possible to miss up to 4% of infants with bilirubin levels of 205 μmol/l (12 mg/100 ml) or more.

The observation that amniotomy showed no effect on the incidence of jaundice while gestational age was the most important factor is not surprising as it is likely that those patients whose labour was induced preterm were balanced numerically by those induced for prolonged pregnancy. This was certainly true in our experience when, if the inductions for prolonged pregnancy were excluded, the remainder of induced infants had a much higher incidence of jaundice, as would be expected.

More importantly, no account is taken of feeding,[1-3] weight gain,[3] or drugs given to the mother,[4] all of which have significant effects on the incidence of jaundice. Indeed, an earlier report from Dr Friedman's hospital[5] showed that while only 2·7% of infants received breast milk only, the ratio of jaundiced to non-jaundiced was over 3:1. Our results have shown that wholly breast-fed infants have double the incidence of jaundice compared with their artificially fed peers. A similar effect was seen as regards weight gain. Their conclusions may not apply to other hospitals, where the wholly breast-feeding rate may approach or exceed 50%, and as jaundice is multifactorial other factors such as oxytocin or epidural analgesia may, and in our experience do, have a rather different effect.

Retrospective studies, however large, and questionnaires on clinical impressions, however widely distributed, are no substitute for prospective work measuring plasma bilirubin levels in all infants included and continuing their observation over the period concerned.

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[1] McConnell, J B, Glasgow, J F T, and McNair, R, *British Medical Journal*, 1973, **3**, 605.
[2] Eden, O B, Revolta, A D, and Adjei, S K, *British Medical Journal*, 1974, **3**, 573.
[3] Sims, D G, and Neligan G A *British Journal of Obstetrics and Gynaecology*, 1975, **82**, 863.
[4] Drew, J H, and Kitchen, W H, *Journal of Pediatrics*, 1976, **89**, 657.
[5] Campbell, N, Harvey, D, and Norman, A P, *British Medical Journal*, 1975, **2**, 548.

Myelography and lumbar venography

SIR,—The advocacy by Dr A K Clarke and others (29 April, p 1143) of ascending lumbar venography as a replacement for myelography is strictly a minority view. The great majority of radiologists with experience of examining the spinal canal and its contents prefer the more direct and informative method of myelography. The indirect methods of visualising the lumbar subarachnoid space, epidurography and lumbar venography, provide significantly less detail and do not demonstrate the spinal cord or its nerve roots. They are therefore not widely practised for this purpose for, although useful, their information content is indirect.

The technique of lumbar and dorsal myelography has been radically changed in the past five years by the introduction of the low-osmolality water-soluble contrast media—at first meglumine iocarmate (Dimer X) and later metrizamide (Amipaque).

Every new radiological technique and every new contrast medium produces its occasional problems and even disasters. Such a disaster is that reported by Dr J B Eastwood and others (18 March, p 692)—central fracture dislocation of the hips following myelography with iocarmate. Mild muscle spasm occurs in 0·5-2% of patients investigated by iocarmate myelography; the spasms are usually mild and almost always respond to intravenous diazepam if it is given in sufficient dosage, early, and repeated if necessary. Very rarely the spasms become severe, usually when the spinal cord has been bathed for many minutes with the contrast medium, because of too large a dose, a low spinal block, or inadequate post-myelographic posture. Early administration of a sufficient dose of diazepam is a very important factor in preventing severe and damaging muscle spasm, which occurs very rarely with a careful water-soluble myelographic technique using iocarmate. Dr Eastwood's patient appears to have been one of these very rare cases.

It is very important to realise that *metrizamide* lumbar myelography does *not* cause muscle spasm, and no such complication has been reported in the first 100 000 such examinations. Metrizamide is considerably less neurotoxic than iocarmate; it can therefore be used in considerably higher dose (3000 mg iodine compared with an absolute maximum dose of 2000 mg of iodine when using iocarmate). Metrizamide lumbodorsal myelography is a very safe, reliable and informative technique.

The other complication of water-soluble myelography mentioned by Dr Clarke and his colleagues is headache. This occurs in about 25-30% of patients subjected to either iocarmate or metrizamide myelography. It is due mainly to cerebrospinal fluid leak through the puncture hole in the arachnoid as the patient is propped head up after the procedure. It is therefore important to use a lumbar puncture needle no larger than 22 SWG. Headache, nausea, vomiting, and buttock pain occur with approximately equal frequency in oil- and water-soluble myelography.

Metrizamide lumbodorsal myelography is considered by very many experienced radiologists to be the preoperative investigation of choice for the investigation of the lumbago-sciatica syndrome. It is a precision procedure, producing very much better anatomical detail of the lumbosacral nerve roots than any other technique (oil myelography, epidurography, or lumbar venography), with a very low incidence of adverse reactions. Water-soluble myelography is very different from oil myelography and it is essential to follow carefully the details of technique and radiographic interpretation as fully described in the literature.[1-3] It is my firm belief that lumbodorsal myelography with metrizamide (or one of the even newer contrast agents now being evaluated) will increasingly become the radiological investigation of choice for disease of the lower spinal cord, its nerve roots, and its meninges, and especially for the lumbago-sciatica syndrome.

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[1] Grainger, R G, *et al*, *British Journal of Radiology*, 1976, **49**, 996.
[2] Grainger, R G, in *Recent Advances in Radiology, 6*. Edinburgh, Churchill Livingstone, 1978.
[3] *Acta Radiologica*, 1978, suppl 355.

Pilots' hearts

SIR,—Your leading article (29 April, p 1089) discusses the difficult question of the detection of coronary artery disease in apparently healthy pilots or in those with atypical chest pain. The limitations of both resting and exercise electrocardiography are stressed, but the role of other non-invasive investigations is not considered. Radioisotope imaging of the myocardium is a technique which has potential value in this setting. Recently it has been shown[1-7] that gamma-camera images of the myocardium obtained after intravenous injection of the radionuclide thallium-201 during maximal exercise or symptom-limited exercise have a high sensitivity for the detection of coronary artery disease. The detection rate with such images is higher than with exercise electrocardiography and most series also