exercise may well persist in an individual after other evidence of asthma has disappeared.¹ Secondly, I believe that doctors should be prepared to advise parents on appropriate forms of exercise for their asthmatic children and that schools should encourage such children to pursue sporting interests within their physical capabilities. A long cross-country run in cold, wet weather strengthens neither the character nor the body of a young asthmatic boy. There is room for education of both parents and teachers in this matter and this task must lie with the medical profession.

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¹ Sly, R M, in *Bronchial Asthma: Mechanisms and Therapeutics*, ed E B Weiss and M S Segal. Boston, Little Brown, 1976.

Liver biopsy in "difficult" jaundice

SIR,—I would concur with the comments of Mr I S Benjamin and his colleagues (27 August, p 578) on the place of fine-needle percutaneous transhepatic cholangiography (PTC) in the investigation of obstructive jaundice. Liver biopsy in puzzling diagnostic situations (Dr P Lance and others, 23 July, p 236) may be avoided and the question of surgery solved if the bile ducts are visualised in this way. This has been achieved with a very low incidence of untoward effects in 87-100% of cases in various published series.¹⁻⁴ My colleagues and I have also argued the value of the delayed (two-hour) film in demonstrating gall bladder or ducts initially only faintly opacified.⁵

It may be fairly argued now that in the investigation of difficult jaundice with obstructive features PTC should logically precede needle biopsy of the liver. The latter may be reserved for those cases in which PTC has not visualised the biliary system or in which a non-mechanical cause seems likely.

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¹ Elias, E, Hamlyn, A N, and Jain, S, *Gastroenterology*, 1976, **71**, 439.

² Okuda, K, et al, *Digestive Diseases*, 1974, **19**, 21.

³ Redeker, A G, et al, *Journal of the American Medical Association*, 1975, **231**, 386.

⁴ Jain, S, et al, *British Journal of Radiology*, 1977, **50**, 175.

⁵ Lavelle, M I, et al, *Clinical Radiology*, 1977, **28**, 453.

More bird lore

SIR,—The contribution to *Materia Non Medica* (3 September, p 633) by my old friend Dr B E Schlesinger stimulates me to record another interesting episode of bird life; not this time about a robin, but swallows. In the good old days when I employed a man to wash my car swallows enjoyed my garage as an ideal nesting place, though this was not reciprocated by my car cleaner. One spring, as soon as the swallows arrived, he persuaded me to shut the garage door each time I left for work. This I did for a fortnight. I then left the door open and in came the swallows. I was persuaded to exclude them for another week and in they came again.

I refused any further shutting of doors, particularly as it was a wet spring, and compromised by placing large sheets of hardboard

under the nesting areas. The first brood arrived safely and the parents settled down to their second. These came safely too, but now they were three weeks late in the year. Early one morning as I was shaving I saw a flock of about 500 swallows land in the field alongside the garage. The headman flew in at the window, doubtless to inquire why my swallows were not ready for migration. There was some coming and going and eventually away they flew. But they had left behind one extra bird to help the parents with feeding the family—a sort of wet-nurse—and they stuffed the youngsters at all hours of the day.

At last came the day when they all flew. No swallows returned to nest in my garage again. How many queries these actions evoke. How did the flock know to call at my garage? Is the leaving of a wet-nurse a sign of intelligence? As no swallows returned to nest in the garage was it somehow blacklisted in the way tramps mark unsuitable houses?

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Salbutamol-induced diabetic ketoacidosis

SIR,—We were interested to read that Dr D J B Thomas and others (13 August, p 438) found that salbutamol induced diabetic ketoacidosis. We have had a similar experience and we feel that the following case illustrates some important aspects of this problem.

A 19-year-old insulin-dependent diabetic presented for the first time at 33 weeks of pregnancy with ruptured membranes and in labour. On admission to the diabetic pregnancy unit her lecithin: sphingomyelin ratio was 0.85. Therefore, in order to delay delivery, isoxsuprine 24 mg/h was continued and she was maintained on dexamethasone 4 mg thrice daily, both of which had been started at another hospital. She was given an insulin infusion (soluble insulin 4 U/h) and the blood glucose concentration was maintained at 4-7 mmol/l (72-126 mg/100 ml). Dextrose infusion remained constant throughout the period to be described at 6 g/h. She continued to have contractions and salbutamol 1.2 mg/h was introduced in place of isoxsuprine. She rapidly became ketoacidotic and the details of her blood glucose concentrations and insulin requirement are shown in fig 1. The contractions abated, the salbutamol was reduced and then stopped, and the insulin requirement decreased. Further contractions occurred while she was still on dexamethasone and when diabetic control was good. Salbutamol was restarted at 0.6 mg/h and we anticipated the in-

FIG 1—Blood glucose concentrations (○—○) and insulin dosage (●—●) during first infusion of salbutamol.

FIG 2—Blood glucose concentrations (○—○) and insulin dosage (●—●) during second infusion of salbutamol.

Conversion: SI to traditional units—Glucose: 1 mmol/l $\approx$ 18 mg/100 ml.

creased need for insulin by increasing its infusion rate immediately from 4 U/h to 20 U/h and later to 32 U/h. Blood glucose was thus maintained in the range of 6.0-11.6 mmol/l (108-210 mg/100 ml) without ketoacidosis (fig 2). It will be noted that the insulin requirement during infusion of salbutamol at 0.05 mg/h was identical with the insulin requirement without salbutamol. A live, healthy baby was delivered one week later.

From these observations we confirm that salbutamol given intravenously by infusion at 1.2 mg/h causes a rapid deterioration of diabetic control with development of ketoacidosis and that this does not occur when a much smaller dose (0.05 mg/h) is used. We have shown in this case that this may be anticipated and prevented by increasing the insulin infusion rate simultaneously with starting the salbutamol. It is of interest that much more insulin is required in these instances than in severely ketoacidotic cases, which usually require no more than 6 U/h.

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Skills of the nurse

SIR,—I read with much interest Dr P J Tomlin's excellent article "Psychological problems in intensive care" (13 August, p 441). His presentation of the case studies fitted in well with his thoughtful subject matter. Only further care and research may enable us to find out why patients at times become almost paranoid in intensive care units.

I am sure Dr Tomlin, whose care and teaching is so much appreciated, would not consider himself to be élite among his colleagues who specialise in their different chosen work. He would be the first to say that this was not so. However, he describes the nursing staff in intensive care units as "among the élite of their profession." I have been in charge of intensive care units for four years during my professional clinical experience. I am not élite. I am mindful of my colleagues in the community, in our geriatric wards, in our "State" and psychiatric hospitals, and those in the busy general wards with their high patient turnover. As a profession our training and experience enables us to develop skills and we choose where these skills are used. None of us are élite. Indeed, all are equal in the sight of God.

We are trained professional nurses working alongside and with our medical friends and colleagues and in our own right, when qualified to do so, in certain spheres of professional nursing activity.

Dr Tomlin's concern for the prevention of stress in nurses is much appreciated and it is upon us all to work together to prevent stress in all its disguises along the lines he suggests and in other ways. Fortunately developments are taking place. Unfortunately, stress does develop in both nurses and doctors and is not confined to those who work in intensive care units.

Myself, I have always been so thankful for the support and gratitude of my medical colleagues with whom I have worked and to whom I owe so much.

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Tuberculin testing in hospital staff

SIR,—In your leading article on this subject (3 September, p 592) you give an excellent synopsis of an ideal policy to protect hospital personnel from contracting tuberculosis from patients or specimens. However, in reviewing our paper¹ you say that an unsatisfactory time test may have been one reason for the unexpectedly high number of negative reactors (68%). This would be true if doubtful time reactors were regarded as negative, because we found that all of them were Mantoux-positive. However, in our results they were included as positive in calculating the overall incidence of 68% negative reactors among the high-risk group of hospital staff.

An official policy should encompass prophylaxis of all hospital workers not only against tuberculosis but also against other infections. The present unsatisfactory situation emphasises the need for an occupational health service within the NHS.

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¹ Holley, M P, and Bartzokas, C A, *Journal of Hygiene*, 1977, 78, 325.

Screening children for visual defects

SIR,—Your recommendation (3 September, p 594) that there should be a proper administrative structure for a revised scheme to screen children for visual defects would have been enhanced by a more accurate account of current arrangements. Since April 1974 there have been no local authority child health clinics and the former school health service has been replaced by a medical and dental inspection and treatment service for those children at local education authority maintained schools whose parents can be persuaded to avail themselves of it. The repeal of the greater part of section 48 of the 1944 Education Act has seriously weakened the power of the school doctor (or dentist or nurse) in providing an effective regular inspection service.

The suggestion of continuing an "annual school vision examination" (presumably applying to all schoolchildren) is rather naive. Such annual inspection was never mandatory or commonplace and would probably be considered by most school doctors and by

ophthalmologists to be a complete waste of time. Your mention of the "child health visitor" seems unusual, the concept advocated by the Court Committee for this type of nurse having been rejected by the BMA and by most other professional bodies representing doctors and nurses. Reference to the BMA *Members' Handbook* would have made it clear that the profession itself had considered (ARM, 1950) that it was not necessary for a school doctor to have prior consultation with a child's own doctor if referring a child for ophthalmic examination only. It is, of course, a usual courtesy to do so.

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Shortage of anaesthetists

SIR,—Mr A W Fowler (27 August, p 576) mentions fear by patients as a possible deterrent to the use of local anaesthetics. In contrast to this situation in the UK, when working in Malawi I found that many patients were more afraid of a general anaesthetic than of surgery and some would refuse major surgery until offered it under local anaesthesia. Local anaesthesia made surgery possible in some extremely shocked patients when modern anaesthetic facilities were not available. It proved possible to operate successfully on women with ruptured uterus brought in after prolonged labour, using 100 mg of pethidine plus local anaesthesia, and to do major resections of bowel with the same combination.

In district and mission hospitals in Malawi it was usual for a single doctor to provide a wide range of services along with locally trained medical assistants and other staff. Some local medical assistants, with 2-4 years' training after primary school education followed by more training on the job, developed great skill as anaesthetists, in general anaesthesia and in other methods. I had the good fortune to work with two medical assistants who had been trained by an Israeli surgeon to give epidural anaesthesia and did it superbly.

If we in the "over-developed" countries are to have satisfactory health services in the future we may have to learn from some of the less developed countries about the appropriate use of limited resources of cash and manpower. Medically qualified anaesthetists should feel in no way threatened by recognition that non-physicians can be trained and employed to provide excellent anaesthetic services. The same applies in many other aspects of health services.

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Fetal monitoring and fetal deaths in labour

SIR,—Professor R W Beard (23 July, p 251) states that "with good monitoring facilities there should be no fetal deaths during labour." However, as the following case report illustrates, this is not always so.

A 29-year-old para 1+2 patient whose only previous successful pregnancy had ended in the normal delivery of a 3500-g infant presented at 39 weeks' gestation following an uneventful antenatal course complaining of backache and diminished fetal movements. On examination full systems review was normal, urine analysis was clear, and

she was normotensive. The uterus was soft, with a fundal height equivalent to the dates, the lie was longitudinal, and the head was engaged. Vaginal examination showed a closed cervix with intact membranes. In view of the symptoms the patient was admitted and continuous fetal heart rate monitoring and uterine pressure recording was started using external cardiotocography with ultrasound (Sonicaid FM3).

A technically excellent cardiotocographic tracing was obtained. The fetal heart pattern showed a rate between 120 and 130 beats/min, with normal beat-to-beat variation. There were no decelerations. One hour later, however, the pattern changed, with variability between 190 and 80 beats/min. Within four minutes the fetal heart stopped. On re-examination it was noted that the cervix had dilated to 4 cm, allowing artificial rupture of the membranes to be carried out. Clear liquor (200 ml) was obtained. Within 90 min the patient was delivered of a fresh, stillborn male infant weighing 3000 g. The placenta followed immediately upon the delivery of the infant and approximately 800 ml of retroplacental clot was noted. Post-mortem examination confirmed that death was due to acute anoxia in a normal infant.

Although others^{1,2} have described precise (pathological) cardiotocographic patterns during fetal death in utero, in our case fetal monitoring failed to give timely warning of death. It would appear that the initial fetal insult was too slight to cause distress until placental abruption was so sudden and acute that cardiotocographic evidence of fetal distress was of little value to the clinician.

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¹ Tushuizen, P B, Stoot, J E G M, and Ubachs, J M H, *American Journal of Obstetrics and Gynecology*, 1974, 120, 922.

² Cetrulo, G L, and Schiffrin, B S, *Obstetrics and Gynecology*, 1976, 48, 521.

Stress incontinence

SIR,—I should like to reply to the numerous points raised in the letter from Mr D H Lees and Mr A Singer (27 August, p 575).

I emphasised in my own letter (23 July, p 261) that simple stress incontinence does not need elaborate investigation; this probably applies to 70-80% of cases of female incontinence presenting to the gynaecologist for the first time. It is, however, for those patients in whom incontinence surgery has failed or symptomatology is mixed that urodynamic investigation is imperative. It has been amply demonstrated^{1,2} that the patient's description of her symptoms is by no means reliable either for its accuracy or in enabling the clinician to make a precise diagnosis. While this might have sufficed some years ago, investigative facilities are available today to help diagnose just these difficult cases to which they refer.

It is well known that detrusor instability can present with stress incontinence and minimal urgency incontinence. There is at the moment no adequate method of determining in advance whether or not continence surgery will control incontinence due to instability; we do know, however, that the cure rate for incontinence due to instability is less than that due to urethral sphincter dysfunction (genuine stress incontinence). The purpose of having an accurate urodynamic investigation beforehand is to inform the patient that surgery is less likely to provide an effective cure and that it is reasonable to defer this until conservative methods have