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.