midline. This included one case seen two hours after attendance at hospital where the patient was given ampicillin and paracetamol.

Detorsion relieves the pain immediately and dramatically and the testis descends in the scrotum with immediate relief to the patient. Analgesics may not be needed to do this.

This does not of course reduce the need for operation on both sides, since recurrence is likely, but it does make operation less urgent, and may be a useful practical procedure while awaiting anaesthesia or make the operation an elective one.—I am, etc.,

JAMES A. BURTON.

Student Health Service,
University of Sheffield,
Sheffield.

Herpes Hepatitis

SIR,—In the case of herpetic hepatitis in a pregnant woman (26 April, p. 204) products of conception were examined. Unfortunately by the time they were available maceration was so far advanced that no evidence of infection could be established histologically. Attempts to isolate virus from the foetus were unsuccessful.

This was not surprising; the half-life of herpes simplex virus at 37° C. is only three hours.¹—I am, etc.,

T. H. FLEWETT.

Regional Virus Laboratory,
East Birmingham Hospital,
Birmingham 9.

REFERENCE

- 1 Farnham, A. E., and Newton, A. A., *Virology*, 1959, 7, 449.

Tracheostomy

SIR,—The two letters on the subject of tracheostomy (19 April, p. 185) refer to the possible role of cuff pressure in producing tracheal damage. There is an often unrecognized danger in the current method of reinflating tracheostomy tube cuffs with a predetermined volume of air. When a syringe is used for inflating the cuff much of the travel of the plunger is taken up in compression of the contained air. If a Portex polyvinyl tube cuff is inflated with 5 ml. of air from a syringe which contained 20 ml. initially, the pressure in the cuff will be about 100 mm. Hg; if 5 ml. is delivered from a syringe which contained only 5 ml. initially, the pressure is likely to be about 250–300 mm. Hg. If the initial volume in the syringe is not described it is possible for gross over-inflation of the cuff to occur if a smaller initial volume is used during reinflation of the cuff. This is dangerous, as it can be shown that the pressure applied to the tracheal wall increases rapidly as the cuff is inflated beyond the point at which the trachea is first completely sealed.

There is a strong case for inflating cuffs to a predetermined pressure, particularly where deflation and reinflation is part of the routine management of tracheostomies. This can be done simply and cheaply using any aneroid pressure gauge, such as an aneroid sphygmomanometer, connected to the inflating syringe through a Y-piece. The point at which a satisfactory seal occurs can be found by auscultating over the larynx while inflating the lungs.

I would agree that tracheal stenosis following the use of cuffed tracheostomy tubes has become more common. Analysis of the complications occurring in a group of 320 consecutive tracheostomies done during the last five years showed an incidence of tracheal stenosis of 4.3% among the survivors. However cuff pressure is not the only factor, and tissue reaction to the material used must be remembered when looking for alternatives.—I am, etc.,

FRANCIS PIGOTT.

St. Thomas's Hospital,
London S.E.1.

SIR,—I was rather surprised to read the letter by Drs. R. G. Bannister and R. A. Beaver (19 April, p. 185) on the use of plastic cuffed tracheostomy tubes.

I wish to clarify that the Portex endotracheal and tracheostomy tubes conform to U.S.P. XVIII page 905 (modified) implantation test. The Portex plastic tracheostomy tube has been available throughout the world for over five years, during which time a considerable amount has been written on the advantages of polyvinyl chloride versus rubber. The incidents of tracheostomy complications at the National Hospital are, of course, disturbing, but many will question the statement that the Portex tube is a hard material. It is important that the polyvinyl chloride cuffs should not be over-inflated, since this will indeed bring about a hardening situation and defeats the object of using a pliable material which will soften at body temperature and mould to the mucosal surfaces.—I am, etc.,

D. S. ALLEN,
Product Manager,
Portex, Ltd.

Hythe, Kent.

SIR,—The letter from Drs. R. G. Bannister and R. A. Beaver (19 April, p. 185), suggesting that the use of tracheostomy tubes made of rubber may be followed by few of the severe late complications of tracheostomy, agrees with an impression that was gained during a recent survey of more than one thousand tracheostomies in patients admitted to the United Oxford Hospitals.¹ When tracheostomy was done in any unit but one in Oxford, the patients who required a cuffed tube were normally cannulated with modern red rubber tubes of the Radcliffe pattern² (which incidentally are readily available), and so far there have been no tracheal stenoses at the level of the cuff or the tip of the tube in this group. Polyvinyl chloride tracheostomy tubes have been employed routinely for about six years in one unit where the operation is carried out about ten times each year. Among these patients there have been two tracheal stenoses, both involving the stoma and the trachea between the stoma and the carina.

The comparative scarcity of late structural complications which was observed in this series after sometimes very prolonged (several years) intubation with Radcliffe red rubber tubes can perhaps be attributed partly to the inertness of the constituent material, partly to the shape of the tube, which allows it to sit securely in the trachea and stoma, and partly to the long and compliant cuff. This last feature, and the practice of employing a tube

that fits snugly into the trachea, allows the use of minimal cuff inflation pressure to obtain an airtight seal in the trachea.—We are, etc.,

A. CRAMPTON SMITH.

J. H. KERR.

J. M. K. SPALDING.

Nuffield Department of Anaesthetics,
Department of Neurology,
Radcliffe Infirmary,
Oxford.

REFERENCES

- 1 Kerr, J. H., Spalding, J. M. K., and Crampton Smith, A., *International Anaesthesiology Clinics*, 1969, in press.
- 2 Salt, R. H., Parkhouse, J., and Simpson, B. R., *Lancet*, 1960, 2, 407.

Anaesthesia for Dental Patients

SIR,—I would like to draw attention to what appears to be an anomaly in the terms of service of the consultant anaesthetist.

A National Health Service patient receiving National Health Service dental treatment from a National Health Service dentist (in his surgery) can receive anaesthesia only from a doctor who is acting in a private capacity, but who is paid a fee indirectly supplied by the National Health Service.

Having regard to the wide range of services available on the Category II list¹ it seems reasonable to suggest that dental anaesthesia of this sort should also be included in Category II. It certainly appears anomalous that the services of a private practitioner must be enlisted for this single small feature of what is otherwise a completely National Health Service provision. Anaesthesia for private dentistry in surgery or nursing-home would, of course, remain the prerogative of the private anaesthetist.—I am, etc.,

Cardiff.

D. WAKELY.

REFERENCE

- 1 *National Health Service. Terms and Conditions of Service of Hospital Medical and Dental Staff (England and Wales) and Headquarters Medical Staff of Regional Hospital Boards (England and Wales)*, 1 February 1967.

Allergic Intolerance to Tetracosactrin

SIR,—With the introduction of tetracosactrin (Synacthen) it was expected that the problem of allergic reaction to administered adrenocorticotrophic hormone was finally overcome.^{1,2} This was anticipated, as it was a synthetic, and therefore pure, preparation, and also through the omission from the polypeptide chain of the terminal 15 amino acids responsible for the immunological and antigenic properties of naturally occurring A.C.T.H. The remaining chain of 24 amino acids was shown to have unimpaired adrenocortical stimulating activity,³ while patients hypersensitive to natural A.C.T.H. were shown to tolerate tetracosactrin in all publications to date.²

We report here a case of allergic intolerance to tetracosactrin believed to be the first encountered.

The patient, a female aged 51, had been attending the department of dermatology for three years for the treatment of a persistent eczema. She had for a period required oral corticosteroids, but these were stopped in September 1968. Her skin deteriorated steadily thereafter and treatment with weekly injections of Synacthen Depot, 1 ml. containing 1 mg. tetracosactrin, was commenced in January 1969.

Neither this nor A.C.T.H. had ever previously been given to this patient. Twelve weekly injections were tolerated without incident and with marked improvement in her eczema. A few minutes after the thirteenth injection, however, she developed a severe widespread urticaria associated with nausea, dizziness, and exhaustion. She was treated with intramuscular chlorpheniramine and 1:1,000 adrenaline. One hour prior to injection the following week she was given chlorpheniramine 12 mg., but despite this proceeded to develop widespread urticaria with trembling and irritation, again requiring adrenaline.

At this point the patient was referred back to hospital for further investigation. Sensitivity to pure tetracosactrin rather than to the zinc phosphate also present in the depot preparation was shown by the immediate reaction to 0.005 mg. (0.5 I.U.) given subcutaneously. A vivid erythema, 5 cm. in diameter, appeared at the site of injection and a red flare spread up the arm to the shoulder. There was a transient widespread irritation. There was no reaction at the site of a control injection of a similar volume, 0.1 ml., of 0.9% saline. An equivalent dose of A.C.T.H., 0.5 I.U., manufactured from hog pituitary, was later given subcutaneously. An area of erythema 2 cm. in diameter appeared at the injection site with subjective itching. A control injection of 0.9% saline again showed no reaction.

She was finally tested with 0.1 ml. of a preparation identical to Synacthen Depot but minus tetracosactrin, kindly supplied by Ciba Laboratories Ltd. No abnormal response was observed to this or to a control. It is therefore evident that the patient is sensitive to both tetracosactrin and natural hog A.C.T.H.

We are most grateful to Dr. Robert Keay, the patient's general practitioner, for referring the case and also for the excellent notes.

—We are, etc.,

N. E. JENSEN.
IAN SNEDDON.

Rupert Hallam Department
of Dermatology,
Royal Infirmary,
Sheffield, Yorks.

REFERENCES

- 1 El Shaboury, A. H., *Lancet*, 1965, 1, 298.
- 2 El Shaboury, A. H., *British Medical Journal*, 1968, 3, 653.
- 3 Wood, J. B., Frankland, A. W., James, V. H. T., and Landon, J., *Lancet*, 1965, 1, 243.

Pin or Prosthesis?

SIR,—In your leading article on pin or prosthesis (26 April, p. 201) the opinion is expressed that prosthetic replacement for intracapsular fractures of the femoral neck is less satisfactory than internal fixation. Although this opinion is contrary to that held by many orthopaedic surgeons I have no doubt that it is correct.

The results of arthroplasty using the Moore or Thompson prosthesis leave much to be desired, and, although there can be no complacency with the results of internal fixation by whatever method, they can be improved if due attention is paid to two factors. In those cases where an accurate reduction of the fracture can be achieved by closed methods low-angle nailing achieves the double objective of early weight bearing without an increase in the rate of failure. In those cases where an accurate reduction cannot be achieved by closed methods open reduction by an anterolateral extension of the incision

is not unduly difficult or hazardous, even to the elderly patient. Further damage to the capital blood supply is unlikely if the capsule is opened in the line of the femoral neck and the dissection is carried out gently. In the event of failure, arthroplasty of the Moore or Thompson type is still possible, though the Charnley low friction arthroplasty is preferable both functionally and economically.—I am, etc.,

Guy's Hospital,
London S.E.1.

W. A. CRABBE.

Neuropathy and Diet

SIR,—I am grateful to Dr. A. F. Tuboku-Metzger (26 April, p. 249) for the reminder about factors influencing the cyanide and cyanogen content of various foods of which my colleagues and I are well aware and have acknowledged elsewhere. While it is true that the methods of preparation of cassava reduce the cyanogen and hydrocyanic acid content, it is questionable whether or not these levels can be considered "safe." Moreover, the hydrolysis of glycoside in the gastrointestinal tract may be a very important factor contributing to the release of cyanide *in vivo*.

It is our argument (1 March, p. 247) that these residual quantities, although small in comparison with the original amounts, may nevertheless in the long term have an insidiously damaging effect in malnourished subjects.—I am, etc.,

JOHN WILSON.

Medical Research Council
Clinical Genetics Research Unit,
National Hospital,
London W.C.1.

Clotting and Dialysis

SIR,—I read with interest the paper on clotting problems with the Teflon-Silastic arteriovenous shunt in patients on regular haemodialysis by Dr. M. Papadimitriou and others (5 April, p. 15), and I should like to make a few comments based on my own experience as a patient on maintenance haemodialysis for over six years. During this period I have been dialysed exclusively by a two-layer modified Kiil dialyser, initially on a twice-weekly schedule in hospital and more recently three times weekly, overnight, and in my home. The dialysate supply and monitoring unit which I am currently using is the Dylade System B. Access to my vascular bed has always been with a Teflon-Silastic arteriovenous shunt which was formerly of the type first developed by Scribner and his colleagues,¹ and which incorporated a detachable Teflon U-tube with a "double-break" system, but has since been modified to include only a "single-break" joint.² In six years I have had three arterial cannula revisions and four venous cannula revisions.

There are various interesting points which Dr. Papadimitriou and colleagues mentioned in their report, but I feel that they have omitted to discuss certain important factors which concern the viability of a shunt. My first comment refers to postoperative management, with special regard to the two-week period immediately following a cannulation. I believe that it is advisable to exercise the cannulated limb as infrequently as is practicable during this period, thereby

making allowance for the early formation of granulation tissue in the subcutaneous tunnel, with minimum disturbance. It is quite obvious that excessive movement of the wrist joint, as well as pronation and supination of the forearm, will affect the stability of the subcutaneous segment of forearm cannulae, especially in the early stages. Likewise, movement of the ankle joint and weight bearing on the cannulated leg may have the same adverse effect. Personally, I use a light-weight removable back-slab, which can be conveniently attached to the cannulated forearm and give adequate immobilization of the wrist joint.

My second comment concerns the assessment of blood flow through the shunt. At present there is no inexpensive reliable method of measuring blood flow which is easily used and generally available. The introduction of an air-bubble with a "race-track" on the arterial blood line and the monitoring of the "venous pressure" (or, more correctly, the pressure in the bubble-trap) give only limited information, and these techniques cannot be used between dialyses. What is needed is an efficient method of assessing the flow between dialyses, especially after a declothing procedure. I have found that a simple and useful technique is to auscultate the bruit, which usually can be heard best over the venous cannula tip. By becoming familiar with the intensity and quality of the sound produced when the blood flow is good it is often quite easy to recognize changes signifying a poor flow. I contend that it is not essential to have medical training in auscultatory methods to become reasonably expert in this technique. Another trick which may help to detect early signs of clotting is to transilluminate the shunt and look for small specks of white platelet thrombi, which tend to stick to the inside wall, especially at the joints.

Thirdly, my experience of long-term oral anticoagulation is limited, but frequently I have found it helpful to anticoagulate with subcutaneous heparin (0.5 ml. 6–8 hourly with a solution of 25,000 units per ml.). A fine-bore needle is used, and so far I have suffered no complications except from an occasional minor haematoma. Rapid anticoagulation is of course better via the intravenous route.

Fourthly, I believe that successful declothing of the shunt depends mainly on two factors. The first is that a clot should be removed as soon as possible after clotting, and the second is that the declothing procedure should be carried out only by a person suitably familiar with it. For these reasons I think that, where possible, patients or their relatives should be trained in the technique, and that they should take with them a portable declothing set, especially when travelling. The early removal of a clot, in particular from the venous side, may critically affect the prognosis of a shunt's life.

My fifth and final point is to advise that the shunt is handled as little as possible. Many intravenous drugs (for example, antibiotics) tend to cause irritation and may lead to phlebitis. Therefore it is preferable to inject these drugs, when necessary, into an alternative vein rather than through the venous cannula.—I am, etc.,

London N.1.

R. A. J. EADY.

REFERENCES

- 1 Quinton, W. E., Dillard, D. H., Cole, J. J., and Scribner, B. H., *Transactions of the American Society for Artificial Internal Organs*, 1962, 8, 236.
- 2 Sevvit, L., Comty, C., Rottka, H., and Shaldon, S., *Proceedings of the European Dialysis and Transplant Association*, 1964, vol. 1, p. 271. Amsterdam, Excerpta Medica Foundation.