tion necessary. The one case had taken only small oral doses of ergotamine; the other was receiving subcutaneous dihydroergotamine. This report was referred to in our article² in the *British Medical Journal* four years ago. Our own report was on gangrenous ergotism in a woman of 45 who had taken only 7 tablets, each containing 1 mg. ergotamine tartrate, over three days—not for migraine. Amputation of both legs, the right thumb, and tip of right index finger had to be performed.

We believe that migraine confers immunity to possible side-effects from ergotamine, and further that the route of administration is probably of little importance. In some cases side-effects may arise because of abnormal response to accepted therapeutic dosage. The smallest possible dose that will control the symptoms of migraine must be found by gradually increasing the dose with each attack—increasing from 1 mg. by 1 mg. increments, respectively, in subsequent attacks until either a satisfactory dose is thus safely found, or side-effects are too severe. Paraesthesiae, coldness, and pains in the extremities should be reported at once.—We are, etc.,

E. A. CAMERON.

Ashington General Hospital,
Northumberland.

E. B. FRENCH.

Western General Hospital,
Edinburgh.

REFERENCES

- 1 Fuchs, M., and Blumenthal, L. S., *J. Amer. med. Ass.*, 1950, 143, 1462.
- 2 Cameron, E. A., and French, E. B., *Brit. med. J.*, 1960, 2, 28.

Typical Medical Students

SIR,—Studies defining various types of student will be of increasing importance if we are to work out educational programmes that will best fit the teaching to be taught. Dr. H. J. Walton and his colleagues (19 September, p. 744) have done an important piece of work in attempting to sketch the typical medical student. But in presenting just four types I think they have over-simplified the picture. Their technique of delegate-analysis produces bipolar factors. Unless they have treated the data in some way not described in the text, then I would think for each type outlined another composite student with "mirror, or opposite, characteristics" exists; eight in all.

The authors describe No. 4, the "patient-centred graduate," as the potential psychiatrist. Equally there is 4 (b). He is the man who does not care much for contact with patients though, perhaps because he does not look too deeply, is not disturbed by them; he is judged a good student by his teachers, often in the top quartile of medicine and of surgery; his standing in the community is important to his satisfaction as a doctor; he has little interest in research; he favours technical procedures more than problems of personality; whilst at university he has had enough time for sport, physical exercise, etc.; he has not considered following a career in psychiatry. Who is 4 (b), then? A good provincial radiologist perhaps?—I am, etc.,

NICOLAS MALLESON.

Research Unit for Student
Problems,
University of London,
London W.C.1.

Neurological Symptoms with Phenothiazines

SIR,—It has recently been reported in the daily press that phenothiazines—in particular chlorpromazine (Largactil)—are dangerous drugs which may induce irreversible neurological changes. This followed a paper read by Hunter *et al.*¹ at the Royal Society of Medicine. The authors suggested that permanent brain damage may result from these drugs when given over a prolonged period. They described thirteen patients who exhibited choreiform movements, a Parkinsonian syndrome, and dystonic spasms affecting head, neck, face, mouth, and tongue. They suggested that much greater caution is indicated in the prolonged use of the phenothiazines, because in these cases the neurological side-effects were irreversible and apparently permanent.

This widely reported picture has worried some of my patients who have been taking chlorpromazine. All psychiatrists would agree that the discovery of the phenothiazines has been one of the major advances in psychological medicine, and it would be a pity if this report deterred doctors and patients from using these drugs.

The cases reported by Hunter and his colleagues were all brain-damaged, and every one suffered from dementia. Six of the 13 had been leucotomized, nine had had E.C.T. from 14 to 212 times, and two had had insulin-coma treatment. They had all been on phenothiazines for 1½ to 5 years before abnormal movements were first recorded.

The fact that all of these patients were brain-damaged and demented prior to the administration of the drug surely invalidates the suggestion that phenothiazines may produce irreversible neurological change. Hunter *et al.* surveyed 450 patients in this review and presumably they saw many who were not brain-damaged being treated with phenothiazines. It is significant that only the brain-damaged reacted permanently to the drug. I would suggest that where there is no organic damage to the brain phenothiazine-induced extrapyramidal movements are entirely reversible on stopping the drug.

I have observed that the earliest sign of phenothiazine-induced abnormal movements is a hesitancy in speech sometimes leading to difficulty in enunciating words. If this symptom appears the dose should be reduced or the drug changed.—I am, etc.,

London W.1.

S. BOCKNER.

REFERENCE

- 1 Hunter, R., Earl, C. J., and Thornicroft, S., *Proc. roy. Soc. Med.*, 1964, 57, 758.

Ampicillin for Typhoid Carriers

SIR,—Dr. K. F. Anderson in his letter on the use of ampicillin for typhoid carriers (29 August, p. 571) states that, "to obtain negative faecal cultures for at least a year tells us nothing about the condition of the gall-bladder or whether viable bacilli are still present in one or more calculi." This is very obviously true, but the findings do tell us that, irrespective of the condition of the gall-bladder, the carrier has ceased to excrete the organism for one year. This is really all that matters.

The pathological conditions that underlie the carrier condition are well known to all who deal with typhoid carriers. The investigations which should ideally be carried out are also familiar, but carrying them out is not always so easy. Has Dr. Anderson ever tried to pass a duodenal tube on a mentally deranged patient? In any case, does it matter? If a patient who has been excreting *Salmonella typhi* in every specimen of faeces for, say, 20 years stops excreting it for a year, after any form of treatment, is it essential to intubate that patient, or can it not be assumed that the organism has disappeared from the faeces because it has ceased coming down the bile duct? Does it really matter if typhoid bacilli are locked up inside some calculus, or if Vi titres remain high, so long as *S. typhi* is no longer being excreted from the body?

Dr. Anderson claims that "ampicillin . . . can never replace surgery for the removal of irreversibly diseased foci which cannot be sterilized by antibiotic therapy." How does he know? Ten or twelve years ago resection of lung was the approved treatment for some forms of pulmonary tuberculosis: this has now been replaced by antibiotic therapy, and in the process of healing some tubercle bacilli are probably locked up in lung-scar tissue. Would Dr. Anderson still insist on surgery? Yet the analogy with the typhoid-carrier state may be a close one.

The problem of the typhoid carrier is possibly greater than Dr. Anderson realizes. I have recently heard from one European doctor who has over 400 carriers in his area, and in another European city at least 900 are known—a great deal of surgery, and a lot of gall-stones to grind. If ampicillin can help to deal with such problems, then it will be a most valuable addition to our therapy. Only painstaking follow-up of treated carriers can answer the question.—I am, etc.,

Fazakerley Hospital,
Liverpool 9.

A. B. CHRISTIE.

REFERENCE

- 1 Christie, A. B., *Brit. med. J.*, 1964, 1, 1609.

Ruptured Uterus after Buccal Oxytocin

SIR,—Following the report by Dr. P. M. Leney (12 September, p. 689) of a case of ruptured uterus after buccal oxytocin, may I record two cases with violent contractions which gave rise to considerable anxiety and near death in one case? Both cases were given buccal Pitocin citrate (oxytocin) 24 hours after failed surgical induction.

The first case, para 2+0, was given an Edinburgh course,¹ 100 units oxytocin citrate to start, then 200 units to alternate parabuccal spaces at 30-minute intervals. After 1,300 units strong uterine contractions lasting 50 seconds were occurring every two minutes. The remaining linguets were removed from the mouth, which was thoroughly rinsed out. At vaginal examination the cervix was found to be dilated to 4 cm. Pethidine, 100 mg., was administered intravenously. The contractions continued unabated, the second stage being completed 20 minutes later. The foetal heart rate remained regular. The baby was in good condition at birth. The husband was impressed by the rapidity of the labour but the obstetrician was acutely distressed.

The second case, para 2+0, was started on a Worcester course²—at half-hourly intervals 100, 100, 200, 200, 400, 400 units. After

1,400 units the patient was having strong contractions lasting 50–60 seconds every 90 seconds. The remnants of the tablets were removed. Pethilorfan (pethidine hydrochloride and levallorphan tartrate), 150 mg., was given intramuscularly. The contractions continued at the same frequency, the second stage being complete 50 minutes later. The foetal heart rate was regular. The baby cried lustily on arrival.

The secundines were delivered complete in 10 minutes. Steady vaginal bleeding continued in spite of a well-contracted uterus and further ergometrine. The patient felt faint and collapsed, being nauseated and sweating with a thready pulse. Two pints (1.1 l.) of blood were transfused, using a Martin pump, prior to anaesthesia. At exploration the cervix was found to have bilateral bleeding lacerations extending for 3 cm. and 4 cm., which were sutured. Three pints (1.7 l.) were transfused in the immediate post-operative period, making a total of 8 pints (4.5 l.) of blood in all. The patient recovered. Haemoglobin estimation on the fourth day, 11.3 g. per 100 ml. (antenatal 11.7 g. per 100 ml.).

These patients had frequent, violent, uncontrolled contractions but no uterine tetany or foetal injury. The total oxytocin administered was less than 1,300 units and less than 1,400 units. The rate of dosage increase was slow when compared with reports in the literature.^{3–5} Perhaps the most logical dosage scheme is that of Newman and Hon,⁶ removing the undissolved remnants every 30 minutes and replacing with double the dose until labour is established.

We have experienced difficulty in judging the optimal time for removal of tablets; too cautious early removal in some cases results in labour halting, whereas waiting longer may result in uncontrolled racing of uterine contractions and precipitate labour. It is well known that uterine sensitivity to oxytocin varies from patient to patient, and even in the same patient from hour to hour. The rate of absorption from the buccal mucous membrane certainly varies and seems to be irregular: the writer found it took 125 minutes for 100 units oxytocin citrate (half a tablet) to dissolve completely from its own parabuccal space.

I would like to plead for carefully observed and low controlled dosage intravenous pitocin and stress that oral pitocin may give rise to distress and danger.—I am, etc.,

H. OLIPHANT NICHOLSON.

Queen Elizabeth Hospital,
Birmingham 15.

** Attention was drawn to the hazard of uterine hypertonus in our leading article of 19 September (p. 705).—Ed., *B.M.J.*

REFERENCES

- Maxwell, A. W., *J. Obstet. Gynaec. Brit. Cwlth*, 1964, 71, 37.
- Spence, D. N., and Chalmers, J. A., *Lancet*, 1964, 1, 633.
- Dillon, T. F., et al., *Obstet. and Gynec.*, 1962, 20, 434.
- Rice, R. D., and Benson, R. C., *ibid.*, 1961, 17, 297.
- Blair, R. G., *Lancet*, 1964, 1, 637.
- Newman, J. W., and Hon, E. H., *Obstet. and Gynec.*, 1963, 21, 3.

Maternal Syndrome in Hydrops Foetalis

SIR,—We seem to go to great lengths to try to prove that Mr. G. J. Sophian is wrong about the renal origin of toxæmia (29 August, p. 572). I am sure it would be more reward-

ing if we reversed this process and tried to see if he could be right.

When Benjamin and Craig¹ described two cases of advanced extrauterine pregnancy complicated by severe pre-eclamptic toxæmia, they were demonstrating the very thing that Sophian has talked about. If the uterus sometimes objects to being stretched and causes renal ischaemia, how much more ought one to expect the Fallopian tube which is grossly stretched to produce the same thing.

Professor Norman Morris, in a discussion at the Royal Society of Medicine in February 1957, similarly described a case of advanced ectopic pregnancy causing severe toxæmia. Even free blood in the peritoneum will cause renal ischaemia and suppression of urine.

I understand that at the International Congress on the kidney in Prague in 1963 the renal origin of toxæmia was acknowledged, and also that the term "toxæmia" was condemned and the word nephropathy substituted.—I am, etc.,

Bromley Hospital, Kent. C. K. VARTAN.

REFERENCE

- Benjamin, F., and Craig, C. J. T., *J. Obstet. Gynaec. Brit. Cwlth*, 1961, 58, 827.

Complications of Arterial Puncture

SIR,—In answer to Professor W. W. Mushin's letter (1 August, p. 310) and further to Dr. S. Ray's case (19 September, p. 758) I should like to describe another complication following arterial puncture.

The patient, a man aged 40, was admitted for investigation following the discovery of a cardiac systolic murmur by his general practitioner. He had been rejected at his Army medical in 1943 for the same reason but had not sought further advice at that time. He had no symptoms. Clinically he was fit with a blood-pressure of 150/80 mm. Hg. Both femoral pulses were weak but palpable. The first heart sound was split at the left sternal border and the second sound normal. A loud systolic murmur was heard all over the praecordium, loudest at the second right interspace and transmitted up the carotids. Radiological examination revealed a prominent aortic knuckle and a pulsatile opacity in the superior mediastinum which was thought to be due to an innominate artery aneurysm. Aortography was required to confirm or refute this diagnosis, and this was performed routinely with a grey Kifa catheter passed via the right femoral artery. The resulting films showed there to be a coarctation of the aorta at the usual site, with a post-stenotic dilatation.

The following day the foot was found to be cold, although the patient complained of only a slight tingling which had not disturbed his sleep. A small haematoma was present in the groin, and although femoral pulsation could be felt weakly no pulses could be felt below the groin on the right side. A diagnosis of femoral thrombosis was made, and the same day a thrombectomy was performed removing a piece of clot, approximately 5 cm. long, from the femoral artery below the puncture site. Post-operatively the leg was warmer but still pulseless, but subsequently the patient has not suffered any claudication on walking.

This case therefore illustrates a further complication of arterial puncture with catheterization. It may be argued that thrombosis may not have occurred if the blood-flow had been normal through the affected artery, and that without this investigation a correct diagnosis may never have been made. However, it is fortunate that there were no serious effects resulting from

this properly indicated procedure, and it may serve as a word of warning for anyone who is contemplating arterial catheterization for purely research purposes.

My thanks are due to Dr. K. Shirley-Smith and Mr. A. R. Makey for permission to report this case.

—I am, etc.,

JOHN C. NICHOLLS.

Department of Cardiology,
Charing Cross Hospital,
London W.C.2.

The Hydrocephalus Association

SIR,—Dr. R. M. Forrester's letter (5 September, p. 629) raises an interesting and rather fundamental point. On the whole, I agree with him that the multiplication of voluntary societies dealing with separate handicaps, and competing for funds, is a somewhat alarming development and will probably prove self-defeating. I would go further and say that the existence of any such societies is a reflection of the inadequacy of national and local health services, and that the long-term aim should be for these societies to work themselves out of a job.

I am sure Dr. Forrester will realize, however, that in practice voluntary societies must draw a line somewhere in deciding how far to open their doors. Wherever it is drawn, a good case can be made out for including other deserving children. In the specific case of hydrocephalus with cerebral palsy, however (and I assume, of course, that he is not referring to non-handicapped hydrocephalics), I am a little puzzled by his experiences, since I can assure him that the Spastics Society already accepts all cases of cerebral palsy that are thought to be in need of, and able to profit by, its facilities, irrespective of aetiology (and this includes, as well as hydrocephalus, less common causes such as post-natal trauma, infection, etc.).

Dr. J. Lorber's letter (19 September, p. 755), of course, widens the issue considerably. He is now bringing in hydrocephalus associated with spina bifida, which is probably more than Dr. Forrester had in mind. This illustrates my point about the need to draw a line somewhere, and it is true that at present such children would not come within the ambit of the society, though this is not so much from consideration of a charter as from the tremendous pressure on the society from spastic children and the long waiting-lists for schools and centres.

Whether to press for an amalgamation between some—or all—societies dealing with handicapped children would be a subject for a most interesting debate, or even meeting, but I fear it would prove too lengthy for your columns.—I am, etc.,

Royal Northern Hospital, JOSEPH LUDER.
London N.7.

Itching and Diabetes

SIR,—Dr. Wilfrid Oakley (26 September, p. 818) believes that generalized pruritus, only rarely encountered in association with diabetes, is no more common in the elderly diabetic than in the non-diabetic of comparable age. With this view I entirely agree. It is noteworthy that the complaint may persist after diabetes is controlled, and I greatly