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.,

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- ¹ Fuchs, M., and Blumenthal, L. S., *J. Amer. med. Ass.*, 1950, 143, 1462.
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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.,

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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.,

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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.,

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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