of ours who is in long-term remission after chemotherapy of acute myeloblastic leukaemia in childhood. He is now married and has two normal children.

In September 1963, when aged 9 years, he was found to have acute myeloblastic leukaemia, was treated with prednisone and 6-mercaptopurine, and went into remission. He relapsed in January 1965 and was then treated with prednisone and methotrexate, achieving a further but short remission and relapsing in July 1965. This second relapse was treated with prednisolone and cyclophosphamide and was followed by complete clinical and haematological remission which has been maintained ever since. Treatment was stopped at the end of 1967.

The patient married in 1972 and has a daughter aged 4 and a son aged 2 years, both clinically well. He was last seen (with his family) in June 1976 and found to be in continued haematological remission. Between her two normal pregnancies his wife had a miscarriage, but nothing is known about the condition of the fetus.

There are presumably other children who have achieved long-term remission after chemotherapy of acute leukaemia and have grown up to raise a family.

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The myth of phenelzine acetylation

SIR,—The assertion was made by Rawlins¹ and again in your leading article on monoamine oxidase inhibitors (10 July, p 69) that phenelzine is metabolised by acetylation. That this acetylation can be either fast or slow is the rationale behind the clinical studies with phenelzine in which patients are classified according to their acetylator phenotype. Evans *et al*² showed that slow acetylators complain of severe side effects but found no difference in improvement between fast and slow acetylators. On the other hand Johnstone and Marsh³ and Johnstone⁴ found that slow acetylators are more likely to improve but that there was no difference between the phenotypes in terms of side effects. The results from these studies are clearly conflicting.

In view of the possibility that acetylator phenotype is an important prognostic indicator for treatment with phenelzine perhaps it is time that the biochemical evidence for acetylation of phenelzine be considered.

A possible pattern for the metabolism of phenelzine (see figure) is based on the metabolism of isoniazid in man as outlined by Hughes⁵ and Peters *et al*.⁶ A necessary prerequisite for the polymorphic acetylation of phenelzine is the formation of acetylphenelzine, which has not been demonstrated in man or animals.

The pathway from phenelzine to phenylacetic acid has not been demonstrated in man although it is known to exist for mice.⁷ Whether metabolism proceeds by way of acetylphenelzine or directly to phenylacetic acid is still in question.

Clineschmidt and Horita⁸ have shown that in rat liver preparations phenelzine produces phenylacetic acid but suggest this to be by way of oxidative dehydrazination by monoamine oxidase (MAO), producing phenylacetaldehyde. The possibility exists that MAO activity has a bimodal distribution similar to slow and fast acetylation. Our studies in which pre-treatment MAO levels and acetylator phenotypes were measured in patients before treatment with phenelzine suggest that this possibility is unlikely.⁹

A third possible metabolic route has been described¹⁰ in which phenelzine is oxidised by MAO to a hydrazone, phenylethylidene hydrazine (PEH). This could, in fact, be the first step in the pathway suggested previously.⁸

Such studies with phenelzine on animal tissues may be criticised on the grounds of species difference, but claims that phenelzine is acetylated in man ought to be derived from evidence that acetylphenelzine exists and that it is synthesised polymorphically. The question remains not whether polymorphic acetylation exists but whether phenelzine is acetylated.

Meanwhile continued clinical investigation into the effectiveness of treatment with phenelzine based on acetylator phenotype must be considered only in the knowledge that the case for phenelzine acetylation is not yet proved.

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- ¹ Rawlins, M D, *British Medical Journal*, 1974, **4**, 91.
- ² Evans, D A P, Davison, K, and Pratt, R T C, *Clinical Pharmacology and Therapeutics*, 1965, **6**, 430.
- ³ Johnstone, E C, and Marsh, W, *Lancet*, 1973, **1**, 567.
- ⁴ Johnstone, E C, *Psychopharmacology*, 1976, **46**, 289.
- ⁵ Hughes, H B, *Journal of Pharmacology and Experimental Therapeutics*, 1953, **109**, 444.
- ⁶ Peters, J H, Miller, K S, and Brown, P, *Journal of Pharmacology and Experimental Therapeutics*, 1965, **150**, 298.
- ⁷ Leverett, R, Leeson, G A, and Dubnick, B, *Abstracts of the American Chemical Society*, September, 1960, p 65C, quoted by Clineschmidt and Horita.¹¹
- ⁸ Clineschmidt, B V, and Horita, A, *Biochemical Pharmacology*, 1969, **18**, 1011.
- ⁹ Marshall, E F, and Campbell, I C. Unpublished observations.
- ¹⁰ Tipton, K F, and Spire, I P C, *Biochemical Pharmacology*, 1972, **21**, 268.
- ¹¹ Clineschmidt, B V, and Horita, A, *Biochemical Pharmacology*, 1969, **18**, 1021.

Postoperative pain

SIR,—If the recommendations in your leading article on postoperative pain (18 September, p 664) were more widely implemented much suffering would be prevented. In this hospital a technique is being developed that may improve the comfort and convalescence of patients following major thoracic and abdominal operations.

When postoperative pain first requires relief papaveretum is injected in boluses of 2 mg each minute intravenously until adequate analgesia is produced. This is assessed by the patient saying that he is comfortable and confirmed by the ability to cough effectively without pain. An hour later double this dose is injected intravenously over 12 hours by a Handley clockwork pump or a Lund lymphangiogram pump.

Since the technique is at present confined to the intensive care unit no adequate comparisons can be made with patients treated with conventional analgesia routines. But it is hoped to extend the facility to general surgical wards in the near future. Observations indicate that the initial dose varies within wide limits and shows little correlation with age, weight,

or severity of pain. But once established, the initial dose provides a safe and reliable guide to subsequent continuous intravenous infusion during the next two days. After the first 24 hours the 12-hourly dose may be reduced by one-quarter each 12-hour period.

The patients are comfortable, alert except during periods of natural sleep, cough and move about the bed, and even out of bed, in comfort, suffer no respiratory depression and remarkably little nausea and vomiting, and in particular experience fewer and less severe spasms of the rectus muscles. On two occasions only out of more than 50 cases so treated analgesia has been insufficient during the maintenance period. In both relief was obtained by emptying a distended bladder. It is pleasant to be able to record that this work has received the enthusiastic support and encouragement of the surgeons and gynaecologists of this hospital.

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Hysteria today

SIR,—In your leading article "The search for a psychiatric Esperanto" (11 September, p 600) there is the interesting comment that hysteria is "virtually a historical curiosity in Britain."

This kind of statement depends very much on what one means by hysteria. The notion of the disorder has changed in that now we believe there is usually some underlying nosological entity, but this new attitude cannot by itself imply that hysterical behaviour has subsided. Hysteria may be occurring less frequently in young women, but it appears perhaps even more often in older women, among whom in the last couple of years I have seen at least nine patients with hysterical ataxia, collapsing, pseudocyesis, and hemiparesis.

This change in distribution carries some interesting sociological connotations. Possibly younger women as they become more emancipated in progressive societies react to stress in ways other than hysterical, such as becoming depressed and behaving violently to themselves and others, not to mention losing their sexual drive, whereas their older sisters respond according to the mores of their upbringing.

Among males, those who are in some kind of submissive role and therefore like the young women of the last generation seem to be no less subject to hysteria.

Even in developed countries hysteria will, in the words of Sir Aubrey Lewis, outlive its obituarists.

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Burning feet

SIR,—Professor G A Fitzgerald and his colleagues (8 May, p 1149) have provided a full and interesting case report of their patient with "burning feet" associated with polycythaemia rubra vera. They may not, however, be correct when they state that this condition has not been described before. Whitby and Britton¹ draw attention to erythromelalgia accompanying polycythaemia rubra vera. I have mentioned it also in my book *Arterial Surgery*.²

The condition may be combined with an ischaemic form of erythromelalgia, as in the