schizophrenia can learn a great deal from these families, and the efforts of organisations such as the National Schizophrenia Fellowship to promote the welfare of patients and their families deserve professional encouragement and collaboration.

J K WING

Medical Research Council
Social Psychiatry Unit,
Institute of Psychiatry,
London SE5 8AF

Disturbed behaviour induced by high-dose antipsychotic drugs

SIR,—The account by Drs Thomas R E Barnes and Paul K Bridges (26 July, p 274) of disturbed behaviour related to high-dose antipsychotics raises some interesting questions. The suggestion that increasing anticholinergic activity is shown with increased neuroleptic doses receives support from some open studies of high-dose versus low-dose treatment,[1 2] in which at very high doses extrapyramidal effects diminished or disappeared but were present when dosage was in the standard range. This could be regarded as being due to a continuing increase of anticholinergic activity after basal ganglia dopamine receptors had been blocked. However, several double-blind studies[3 4] have failed to show this effect and increasing dosage merely resulted in increased extrapyramidal side effects.

The issue might have been partly resolved if it had been shown that the form of disturbance described was that which might be expected with anticholinergic toxicity. However, other than pointing out that both their patients and those reported by MacVicar[5] became excited and aggressive the authors give no further information. The "toxic psychosis" to which they refer would presumably include disorientation in time and place together with a greater likelihood of visual hallucination than in non-toxic states. In addition, anticholinergic poisoning may cause blurred vision, dry palms, and flushed skin inter alia,[6] none of which are mentioned.

The distinction is important, for if the change in the patients' behaviour was due to neuroleptics acting as dopamine agonists it is interesting that the form of the illness changed to one atypical for the patient. If it was due to anticholinergic activity of neuroleptics then we might expect to see some of the changes outlined above. If, on the other hand, increasing dosages merely increase extrapyramidal effects, then akathisia, a physical and mental restlessness which is a side-effect of neuroleptics, might have contributed to the excitement and agitation described.

STEPHEN BROWN

Maudsley Hospital,
London SE5 8AZ

[1] Ayd FJ. *Proc R Soc Lond* 1976;**69**, suppl 1:14-22.
[2] Rifkin A, Quitkin F, Carrillo C, *et al. Arch Gen Psychiatry* 1971;**25**:398-403.
[3] Quitkin F, Rifkin A, Klein DF. *Arch Gen Psychiatry* 1975;**32**:1276-81.
[4] Carscallen HB, Rochman H, Lovegrove TD. *Canad Psychiat Assoc J* 1968;**13**:459-61.
[5] MacVicar K. *Am J Psychiatry* 1977;**134**:809-11.
[6] Laurence DR. *Clinical pharmacology*. 4th edn. Edinburgh: Churchill Livingstone, 1973:16.

Prostaglandin E_1 in affective disorders and alcoholism

SIR,—In support of the theory of ethanol enhancement of prostaglandin (PG)E_1 synthesis followed by a reduction in its synthesis, put forward by Drs D F Horrobin and M S Manku (7 June, p 1363), I report remission of severe hangovers in two patients whom I treated with safflower oil, a PGE_1 precursor.

Case 1—A 56-year-old man with chronic depression experienced debilitating hangovers characterised by dysphoria and lethargy following an evening's consumption of 170-227 ml (6-8 oz) of spirits. Isocarboxazid, 50 mg a day, remitted the depression but did not affect the hangovers. I introduced linoleic acid in the form of safflower oil, 4 g a day, and within a few days he was entirely free of hangovers. This benefit has continued during eight months of linoleic acid therapy.

Case 2—A 48-year-old man took lithium in an attempt to halt a 20-year history of episodic excessive drinking. Drinking 114-170 ml (4-6 oz) of vodka was followed by a tachyarrhythmia and an incapacitating hangover. After taking lithium 150 mg twice daily for two days he had a precipitous onset of anxiety, dysphoria, and polyuria, and an irregular pulse. He took 3 g of linoleic acid in the form of safflower oil and within 20 minutes these symptoms abated. Lithium was stopped and he continued to take linoleic acid, 5 g a day. The alcohol-precipitated arrhythmia and the hangovers have remitted on this regimen.

Ethanol temporarily abolishes familial tremor and the tremor associated with alcoholism but after drinking stops the tremor intensifies.[1] The mechanism for this, as discussed by Drs Horrobin and Manku, could be an initial increase in PGE_1 synthesis, which abolishes the tremor, followed by a reduction in PGE_1 synthesis secondary to depletion of dihomogammalinolenic (DGLA) stores. Lithium inhibits the mobilisation of DGLA and its conversion to PGE_1[2] and in some patients linoleic acid appears to be an effective remedy for the tremor and other neurological manifestations of lithium toxicity.[3]

The time-honoured belief that eating an oily meal before heavy drinking mitigates intoxication and hangover may have had substance. Linoleic acid and other prostaglandin precursors may be of benefit in some alcohol withdrawal states.

JULIAN LIEB

Yale University School of Medicine,
New Haven, Connecticut, USA

[1] Critchley M. *Brain* 1949;**72**;113-39.
[2] Horrobin DF. In: Johnson FN, Johnson S, eds. *Lithium in medical practice*. Baltimore: University Park Press, 1978.
[3] Lieb J. *Prostaglandins and Medicine* 1980;**4**:275-9.

Physical training and coronary risk factors

SIR,—It is a pity that exercise, as a possible preventive measure against coronary disease, should get an apparent let-down in the paper by Mr Antony W Sedgwick (5 July, p 7) before the possible benefits have had a chance to come to us across the Atlantic.

Fortunately, the authors admit that, firstly, they were looking at risk factors rather than the actual incidence of heart disease and, secondly, their criteria for the intensity of exercise may not have been stringent enough. On the first point, the quoted paper by Morris *et al*[1] uses far larger numbers, and reports the actual onset of coronary symptoms or death. Their figures indicate the protective effect of violent exercise. On the second point, Cooper, also quoted, gives us precise criteria for adequate exercise. His *Aerobics*,[2] a book for the public, advises the weekly acquisition of 30 "aerobic" points. This can be done cycling or swimming; but, as an example, a two-mile jog in 16 minutes every Monday, Wednesday, and Friday is just adequate. And for those of us who are initially unfit he has a carefully graded programme for the first 16 weeks.

I understand that some ex-marathon runners have wide coronary arteries when examined post mortem, and there is also the suggestion that they only rarely die prematurely from infarction. As this specialty is taken up by the athlete late in his career, the implication emerges that wide coronaries can be acquired in the otherwise mature male—not a new idea, I'm sure, but surely good news if we all got our exercise just right?

Meanwhile would Minerva (28 June, p 1626) kindly stop knocking joggers? Of course, we *look* miserable—try looking happy with your jaw maximally open for air intake.

PETER MOFFITT

Hanham, Bristol BS15 3EL

[1] Morris JN, Chave SPN, Adam C, Sirey C, Epstein L, Sheehan D. *Lancet* 1973;i:333-9.
[2] Cooper K. *Aerobics*. London:Bantam, 1972.

Right bundle-branch block

SIR,—I was most interested to read your leading article on right bundle-branch block (14 June, p 1392). In 1948, aged 30 years, while teaching undergraduates I suddenly developed typical symptoms of coronary thrombosis unassociated with hypertension, previous coronary, vascular, or congenital heart disease, pulmonary embolism, or cardiomyopathy. Various cardiac symptoms and signs occurred during the succeeding two months, after which time I returned to normal hospital and university duties, eventually becoming a first-class life insurance risk. Details of this illness were published in 1971.[1]

In 1977 I developed symptoms and signs of mild-to-moderate hypertension, which are well controlled by the effective treatment of colleagues. Since 1948 the currently accepted electrocardiographic criteria of right bundle-branch block have persisted.

E K BLACKBURN

Royal Hallamshire Hospital,
Sheffield S10 2JF

[1] Blackburn EK. In: Greene R, ed. *Sick doctors*. London: Heinemann Medical Books, 1971:63-4.

Propranolol and thyroid hormones

SIR,—We have read with interest the report of Dr Paul Heyma and his colleagues (5 July, p 24) in which they describe giving propranolol (DL-propranolol) and D-propranolol to six euthyroid subjects receiving L-thyroxine (T4), and giving D-propranolol to six hypothyroid patients receiving T4 replacement.

They conclude that the effect of DL-propranolol on T4 to triiodothyronine (T3) conversion is unrelated to its β-adrenergic-blocking activity and is related to its "membrane-stabilising activity". The lack of effect of atenolol, a cardioselective β-adrenergic-blocking drug devoid of membrane-stabilising activity, that we (unpublished observations) and others[1] have observed would seem to support this suggestion. We have also studied, however, the effect of oxprenolol, a non-cardioselective drug with membrane-stabilising activity, and acebutolol, a cardioselective drug with membrane-stabilising activity, on circulating thyroid hormones in