similar cases treated by various progestins alone.²

Inhibition of breast cancer growth by progestins is seen in both premenopausal and postmenopausal women but is favoured by the presence of circulating oestrogen. In the series treated with contraceptive steroids the response rate was only 6% in elderly patients with an atrophic vaginal smear, but it was 40% in younger patients with evidence of oestrogenisation in the smear. The observation is particularly interesting because Huggins³ reported that a combination of low-dosage oestradiol and high-dosage progesterone is capable of *extinguishing* the growth of the hormone-sensitive chemically induced mammary cancer in non-castrated female rats. He emphasised that the relative dose of oestrogen and progestin may be critical for success.

BASIL A STOLL

Department of Oncology,
St Thomas's Hospital,
London SE1

¹ Stoll, B A, *British Medical Journal*, 1967, **1**, 150.

² Stoll, B A, *British Medical Journal*, 1967, **3**, 338.

³ Huggins, C, Moon, R C, and Morri, S, *Proceedings of the National Academy of Sciences of the USA*, 1967, **48**, 379.

Antibodies to foodstuffs in schizophrenia

SIR,—The "food allergy" theory of schizophrenia mentioned in your leading article (15 October 1977, p 976) holds that the primary lesion lies in the small bowel or liver, where a defective "gut barrier" permits undegraded dietary antigens to reach the circulation and there cause damage, either by direct toxicity or via hypersensitivity.^{1,2} We have therefore looked at schizophrenics' sera to see whether they contain antibodies to foodstuffs.

Sera were obtained from 41 patients attending mental hospitals in the Maidstone and Medway Health Districts. The principal diagnoses were: schizophrenia (31), "neurotic" (4), brain damage (3), and dementia (3). Control specimens were obtained from 57 unselected patients attending Manchester Royal Infirmary (leftover samples from the biochemistry laboratory). Sera were examined for antibodies against whole pasteurised cows' milk (tanned cell technique³), wheat, barley, rice, soya bean, lentil, and haricot bean (indirect fluorescent antibody technique⁴). There was a highly significant association between mental illness and antibodies against one or more of the seeds tested, as shown in the table. Excluding the brain-damaged and demented patients from the "mentally ill" group increased the significance of the difference ($\chi^2=13.9$). The commonest seed implicated was barley (13), followed by lentil (8), wheat (5), haricot bean (5), soya bean (3), and rice (1). There was no association between mental illness and antibody against cows' milk.

This preliminary study may be open to

Antibodies to seeds in sera from mental and control patients

	Antibodies present (to one or more seeds)	Antibodies absent	Percentage positive
Mental patients (41)	22	19	54
Control patients (57)	11	46	19

$\chi^2=12.61$; $P<0.0005$.

objection on the grounds that the control patients were not well matched. Their average length of hospital stay was shorter than that of the psychiatric patients, they lived in a different geographical location, and their diet was likely to be different. Conversely, they may have included some who were mentally as well as physically ill.

Of course our findings do not prove the causal relationship of the food allergy theory, but the absence of this association would have been strong evidence against it. Further clinical studies are being prepared.

We thank the "Sanity" organisation for bringing us together and Dr Ifeonye for doing the venepunctures on the psychiatric patients. This study was inspired by the Schizophrenia Association of Great Britain.

IAN MASCORD
DAVID FREED

Department of Bacteriology
and Virology,
University of Manchester

BARRY DURRANT

Maidstone and Medway Health
Districts

¹ Dohan, F C, *et al*, *British Journal of Psychiatry*, 1969, **115**, 595.

² Singh, M M, and Kay, S R, *Science*, 1976, **191**, 401.

³ Law Chin Yung, L, and Freed, D L J, *Lancet*, 1977, **1**, 1056.

⁴ Eterman, K P, *et al*, *Journal of Immunological Methods*, 1977, **14**, 85.

Fetal abnormalities after abortion

SIR,—It is to be hoped that Dr Alistair Gardiner and his colleagues (22 April, p 1016) will extend their study on spontaneous abortion and fetal abnormality in subsequent pregnancy to another index series following artificially induced abortions, which could provide a crucial test of their hypothesis that trophoblastic "rests" may be responsible for causing developmental abnormalities in the next child.

A spontaneous miscarriage must usually be a sign that all was not well with either the mother or the fetus, for otherwise why should it have occurred? If so, there is likely to be an above-average chance that, for the same reasons, the next pregnancy will be similarly affected—which by itself could explain the observed increased incidence of fetal abnormalities, with no question of trophoblastic rests arising.

With artificially procured abortions, however, if the very few done for genuinely medical reasons are excluded, there is no reason to suppose that the pregnancies would have been otherwise than entirely normal. If the subsequent pregnancies showed the same higher incidence of fetal developmental abnormalities as in the spontaneous abortion series that would be consistent with the trophoblastic rest hypothesis, as would not be the case if the induced abortion series did not differ in this respect from the controls.

The authors do refer to two published studies involving induced rather than spontaneous abortions. The first¹ is not really relevant since although a large series of abortions induced by dilatation and curettage showed a strikingly high incidence of infertility, and of miscarriages, stillbirths, and premature births in subsequent pregnancies, there was no mention of any specifically fetal abnormalities. But the second series,² of 571 women with histories of previous induced abortions, mostly by suction techniques, and matched pair controls, showed no increase in fetal abnormality, nor indeed any other

adverse effects on the subsequent pregnancy. It is true that the numbers were small (seven fetal defects after abortions and nine in the controls) and that developmental abnormalities were not distinguished from other fetal defects, and it is also true that a large majority of the previous abortions had been induced early in pregnancy (only 58 out of the 571 after the 12th week), when the effect of trophoblastic rests might be less important. But, so far as they go, these results would appear to be inconsistent with the trophoblastic rest hypothesis and, since it is a matter of some importance to arrive at a proper assessment of the risks of subsequent pregnancies involved in therapeutically induced abortions, this question ought to be pursued further, to an unequivocal conclusion.

C B GOODHART

Gonville and Caius College,
Cambridge

¹ Pantelakis, S N, Papadimitriou, G, and Doxiadis, S A, *American Journal of Obstetrics and Gynecology*, 1973, **116**, 799.

² Daling, J R, and Emanuel, I, *New England Journal of Medicine*, 1977, **297**, 1241.

Maintenance treatment of duodenal ulcer with cimetidine

SIR,—The results of long-term maintenance treatment of duodenal ulcer with cimetidine described by Dr E Gudmand-Hoyer and others (29 April, p 1095) are almost identical with those described by others using similar or different maintenance regimens with the drug.¹ We would, however, like to comment on the statement of the authors that they designed their trial "to imitate the expected future use of cimetidine in clinical practice" and therefore employed radiological diagnosis on the basis of treatment. We will not comment now on the lack of validity of a clinical trial based on the presence or absence of radiological evidence of duodenal ulceration. However, we consider that treatment costing over £200 per annum per patient should not be given without a proper indication, and radiological deformity of the duodenal cap is not a proper reason and will not, we hope, become the basis of "expected future use" of cimetidine.

There is no reason, in the UK, why patients with suspected duodenal ulcers cannot have the benefit of having their diagnosis confirmed or disproved endoscopically.

K G WORMSLEY
N R PEDEN

Ninewells Hospital,
Dundee

¹ Langman, M J S, and Wormsley, K G, *Lancet*, 1978, **1**, 932.

Serum ionised calcium concentration

SIR,—Dr S C Conceicao and his colleagues (29 April, p 1103) demonstrate the discrepancy which may exist between the directly measured serum ionised calcium concentration and the value derived by correcting the total serum calcium for the serum albumin. Unfortunately they omit to provide the explanation for this phenomenon.

The serum calcium circulates in two main states. Approximately half is normally bound to albumin and is largely physiologically inactive. The remainder circulates in the free ionised state. The equilibrium between the two is determined not only by the serum