third trimester low levels were found. The Table compares the maximum binding capacity (S) for insulin in 20 pregnant patients in the

Maximum Binding Capacity (U/L)	Pregnant Patients (Third Trimester)	Non-pregnant Women (Aged under 40)
>2.5 ..	0	3
0.25-2.5 ..	1	8
<0.25 ..	19	11

third trimester with that in 22 non-pregnant patients of similar age and duration of insulin treatment. The effect is significant at $P < 0.0003$ (χ^2 test).

This finding suggests that in human pregnancy the production of humoral antibodies to antigens unrelated to the fetus is also depressed. A detailed description of this work is in preparation.—We are, etc.,

P. D. EXON
K. DIXON

The General Hospital,
Birmingham

¹ Woodrow, J. C., Elson, C. J., and Donohoe, W. T. A., *Nature*, 1971, 233, 62.

Respiratory Distress Syndrome

SIR,—In referring to the stable-foam test devised by Clements *et al.*¹ to provide a rapid semiquantitative measurement of fetal pulmonary surfactant in amniotic fluid, your leading article on respiratory distress syndrome (7 October, p. 2) noted that these workers reported good correlation between the foam test and the lecithin/sphingomyelin ratio. As this comparison was made in only 13 amniotic fluid samples your readers may be interested in similar comparisons made by us in 137 samples.

In our series the foam test was clearly positive (at 1/2 dilution) in 76 samples, in 73 of which the ratio was also in the "safe" zone (>2.0) with intermediate ratios (1.5-2.0) in the other 3 cases. A clearly positive foam test would therefore seem always to indicate adequate surface activity in the fetal lungs. On the other hand, 20 out of 45 clearly negative foam tests were also associated with safe ratios, and we understand that other centres share this experience of a high incidence of false-negative results. Ten clearly negative foam tests were associated with dangerously low ratios (<1.5) and the remaining 15 were associated with intermediate ratios. So far we have performed foam tests on only 36 amniotic fluids obtained within less than 24 hours before delivery; four such tests were clearly negative, but two of them were associated with safe ratios and all four babies were free from respiratory difficulty.

The foam test should therefore be regarded as a possible simple screening method, and either the lecithin/sphingomyelin ratio or the lecithin concentration should be determined when it is not clearly positive. When measured on thin-layer chromatograms (rather than by densitometry) the ratio test is relatively simple and does not require expensive equipment, a batch of fluids can easily be tested simultaneously, and samples can be posted in to a central laboratory (whereas the more com-

plex estimation of lecithin concentration must be made on either fresh or immediately deep-frozen samples).

A further point to be clarified concerns our reported findings in pregnancies complicated by diabetes or severe rhesus incompatibility.² Serial tests showed that the expected terminal rise in the lecithin/sphingomyelin ratio fails to occur in a proportion of patients in both these categories, but normal trends were observed in the remainder (and this continues to be our experience).—We are, etc.,

C. R. WHITFIELD
W. B. SPOULE
E. M. GREENE

Belfast City Hospital

¹ Clements, J. A., *et al.*, *New England Journal of Medicine*, 1972, 286, 1077.

² Whitfield, C. R., Chan, W. H., Sproule, W. B., and Stewart, A. D., *British Medical Journal*, 1972, 2, 85.

Gas Gangrene and Hyperbaric Oxygen

SIR,—Your leading article on gas gangrene and Hyperbaric Oxygen (23 September p. 715) is welcome in supporting and publicizing the great advance in the management of this rare and terrifying disease.

No one who has seen a patient toxic with gas gangrene improve with one or two hyperbaric oxygen exposures¹⁻³ can doubt its value. With the cessation of alpha-toxin production the general condition improves so that the surgeon may wait for elective surgery for the excision of sloughs rather than perform emergency and mutilating surgery, sacrificing tissue unnecessarily in a toxic and deteriorating patient. It is beyond doubt that the mortality rate has been notably reduced and that hyperbaric oxygen is the most effective treatment for gas gangrene at present available.

The advantages of a large chamber with continuous nursing may seem attractive but it is not essential. In our small unit at Heatherwood Hospital we have managed 30 patients with gas gangrene without significant nursing problems and a mortality of less than 10%. Indeed, the advantages may lie with the small unit not only in terms of cost, ease of administration, and lack of risks to staff from pressure but also because the large unit, if it is used realistically, may have a research programme that would compete with clinical use.

It cannot be emphasized enough that if hyperbaric oxygen is used it must be used promptly. This requires many chambers in a country as large as Britain, not just two as you suggest. Provisional arrangements to transfer the patient to the nearest unit should be made on suspicion of gas gangrene. There are already over 20 small units in Britain, and every surgeon would be wise to know where his nearest unit is.—We are, etc.,

ROY H. MAUDSLEY
G. P. ARDEN

Heatherwood Hospital,
Ascot, Berks

¹ Boerema, I., and Brummelkamp, T. H., *Nederlandsche Tijdschrift voor Geneeskunde*, 1960, 104, 2549.

² Colwill, M. R., and Maudsley, R. H., *Journal of Bone and Joint Surgery*, 1968, 50B, 732.

³ Slack, W. K., Hanson, G. C., and Chew, H. E. R., *British Journal of Surgery*, 1969, 56, 505.

Uganda Asians

SIR,—I was interested to read Dr. F. C. Harris's letter (21 October, p. 178) advocating laboratory screening of Ugandan Asian refugees. I am the doctor responsible for the medical arrangements at Stradishall camp, Suffolk, and would like to make the three following points.

Firstly, refugees receive on admission a full clinical examination and an x-ray of the chest, the only exceptions to radiography being women in the first 16 weeks of pregnancy and children under 13 years of age, the latter being offered B.C.G. vaccination. Both during this screening procedure and during the refugees' subsequent stay in the camp we have found no overt signs of exotic or tropical disease, though we had expected to do so. We have also taken faeces specimens from intending food handlers, and the results so far available have shown no pathogenic organisms or parasites. In addition, the sera of intending food handlers at another camp have been examined for salmonella agglutinins, when the results suggested that the majority of the group investigated had not experienced infection with the organisms causing enteric fever.

Secondly, it is incorrect to describe the camp as a holding one, though it is true that the stay of some of the refugees is longer than expected. We are receiving small numbers daily and received a further 135 refugees on 22 October. By 23 October we had admitted 2,661 and no fewer than 1,295 had left the camp. There is thus a continual turnover.

My third point is logistic. The task of collecting faecal specimens and blood films from all the refugees is quite beyond the resources at my disposal. We are a relatively small health authority and the work at the camp has placed very great strains on our staff, despite generous help from outside doctors and nurses. Staff fatigue has indeed been one of our greatest problems.—I am, etc.,

D. G. H. PATEY
County Medical Officer of Health,
West Suffolk

Health Department,
Bury St. Edmunds

Research into Alcoholism

SIR,—Dr. Ann L. Owen (Points from Letters, 2 September, p. 594) would be interested to know that the Medical Council on Alcoholism, founded in 1967 and now with a widely-spread membership throughout the United Kingdom and an affiliation with the International Council on Alcohol and Addictions, has been supporting research projects on alcoholism for the last four years and has several further projects under consideration. The council has promoted symposia for general practitioners and hospital registrars and has a library and information service for professional and lay workers in the field. It is a charitable organization and has subcommittees which meet regularly and are concerned with research, education, and occupational health—all, of course, in the field of alcoholism.

In the last year a film has been produced for showing to general practitioners and a collection of papers written by experts on all aspects of alcoholism was published in the form of a loose-leaf folder in July. Apart

from the activities of our council I could mention the Department of Health and Social Security's grant towards treatment and rehabilitation of alcoholics, and also the Medical Research Council's support of research being carried out at the addiction unit of the Institute of Psychiatry, and also at the University of Glasgow.

There is much to do in terms of education, early detection, and prevention, and communication among the many bodies working in this field is of paramount importance in dealing with a problem of national health which has been so seriously neglected in the past.—I am, etc.,

DICK CALDWELL
Executive Director,
The Medical Council on Alcoholism

London W.1

Luteinizing Hormone and Progesterone Levels after Hysterectomy

SIR.—Removal of the uterus has a profound effect on ovarian function in many lower animals,¹ suggesting that the uterus secretes a luteolytic substance necessary for normal cyclical activity. The psychological effects of simple hysterectomy in woman also suggests a disturbance of ovarian function, though the available evidence does not support this.² Methods of assessment of ovarian function hitherto employed, such as the appearance of the ovaries at laparotomy, vaginal cytology, temperature charts, and urinary oestrogen and pregnandiol excretion, have been imprecise. We have therefore studied the circulating levels of hormones in women who had undergone hysterectomy with conservation of the ovaries and who presented with psychological and other complaints.

Seven subjects whose ages ranged from 26 to 35 years and who had had a hysterectomy 3 to 42 (mean 19) months previously were studied. In each case the ovaries had been conserved. In none was there evidence of major physical or endocrine disease. Blood was taken on the second, fourth, and sixth day of each week over a period of four weeks and was immediately centrifuged and deep frozen while awaiting assay. All specimens from any one subject were assayed together. Luteinizing hormone (LH) was assayed in all samples by a double antibody radioimmunoassay technique.³ Progesterone assays (by a competitive protein-binding technique⁴) were performed only on selected samples chosen either to show the presence of luteal activity after high LH values such as might be associated with "mid-cycle peaks" or to show the absence of such activity during other phases of the cycle. The results were similar in all seven patients and are shown for one typical patient (see Fig.).

Plasma LH (graph) and plasma progesterone (histogram) levels in typical patient.

LH values showed fluctuation from a basic tonic level to short-lived high values consistent with a mid-cycle peak. The mean LH level preceding the presumptive peak was 13.6 mU 2nd I.R.P./ml (range 4.5-38), the mean "peak" value was 67 mU 2nd I.R.P./ml (range 40-130), and the mean level after the peak was 14.2 mU 2nd I.R.P./ml (range 4-49). Progesterone values preceding the LH "peaks" were uniformly low, but rose to between 11 and 23 ng/ml during the presumed luteal phase in each patient. In two of the patients two LH "peaks" were observed, one near the beginning and the other towards the end of the period of sampling. The time between these peaks was respectively 23 and 26 days. The mid-cycle LH peak is of short duration and may easily be missed unless daily specimens are obtained. Though our samples were taken at 48- or 72-hour intervals, fortunately we were able to show rises in LH levels in all our subjects. Nevertheless, most of the values we have ascribed to the mid-cycle peak were probably related to the days immediately preceding or after the peak itself. This may be the main reason why the mean peak level for our subjects is rather low. Considering the shortcomings of the sampling technique our LH and progesterone values are surprisingly close to those reported in normal women when samples are collected daily.^{4,5}

It seems that in the years immediately after a hysterectomy with preservation of the ovaries cyclical ovarian functioning was maintained in our seven subjects.

We thank Professor M. G. Gelder and Drs. B. M. Mandelbrote and P. C. B. MacKinnon for advice and facilities and Mrs. M. Daly for work in collecting blood samples. The work was supported by a grant from the Medical Research Council (Grant G.970/227C). Miss S. Turnbull was supported by a grant from the Oxford Regional Hospital Board.—We are, etc.,

P. J. V. BEUMONT

Department of Psychiatry,
Groote Schuur Hospital,
University of Cape Town,
South Africa

P. J. CARR
D. H. RICHARDS
S. TURNBULL

Department of Psychiatry,
University of Oxford, and
Littlemore Hospital,
Oxford

- 1 Bradbury, J. T., Brown, W. E., and Gray, L. A., *Recent Progress in Hormone Research*, 1950, 5, 151.
- 2 Beavis, E. L. G., Brown, J. B., and Smith, M. A., *Journal of Obstetrics and Gynaecology of the British Empire*, 1969, 76, 969.
- 3 Midgley, A. R., Jr., *Endocrinology*, 1966, 79, 10.
- 4 Johanson, E. D. D., *Acta Endocrinologica*, 1969, 61, 592.
- 5 Midgley, A. R., Jr., and Jaffe, R. B., *Journal of Clinical Endocrinology and Metabolism*, 1968, 28, 1699.

Estimating Fibrin Products in Urine

SIR.—The immunochemical method of estimating F-R antigen in urine based on the tanned red cell inhibition technique is not only tedious, because urine concentration is required, but also expensive. We have therefore used a method based on precipitation of fibrin from urine with protamine sulphate.

To 2.0 ml clean unconcentrated urine from a 24-hour collection in thymol preservative is added 3.0 ml 0.9% saline and then 0.5 ml 1% protamine sulphate. After 24 hours the precipitate is spun down and redissolved in 2.0 ml 40% urea in 0.2N sodium hydroxide pH 7 and the optical density read at 280 mU in a spectrophotometer. The result is read as fibrin (milligrams per ml) from a standard curve.

The figure shows that there is a good relation ($r=0.7$) between the immunological method and the protamine sulphate (PS)

precipitation technique. The discrepancy in the actual quantitation is yet to be explained. Nevertheless, the results indicate that this is a much simpler method for estimation of fibrin products in urine.—We are, etc.,

E. N. WARDLE
J. MARSHALL
C. CURTAIN

Royal Victoria Infirmary,
Newcastle upon Tyne

Dietary Fibre and Calcium Metabolism

SIR.—Dr. J. K. Anand (14 October, p. 112) queries the effect of the phytate content of additional dietary fibre on calcium metabolism. Mr. N. S. Painter and his colleagues (15 April, p. 137) recommend the use of All-Bran, Weetabix, porridge, wholemeal (not brown) bread, and two teaspoons of unprocessed bran (which contains the germ naturally present) three times a day, to be increased after two weeks if necessary. This quantity, according to the size of teaspoon used, gives 20-30 g bran a day.

The average phytate phosphorus content of mill-bran is approximately 1%.¹ Each millimole of phytic acid, containing 186 mg of phosphorus, requires 240 mg of calcium for neutralization; 30 g bran containing 1% phytate would require 387 mg Ca for neutralization. This quantity added to the recommended intake of 500 mg Ca a day² would give a total well within the average national intake of over 1 g Ca a day for the past seven years³ and would therefore presumably be safe. But if true wholemeal bread not fortified with creta praeparata and other foods with a high percentage of phytic acid phosphorus are used the safety limit may be exceeded. A better recommendation when bran is prescribed would be to use brown or white bread—lower in phytate content but higher in calcium content because of fortification.

A further factor which may need to be considered is the reduced fermentation time in modern bread-making processes, which limits the action of phytase in flour used. There may certainly be a danger of deficiency of calcium if bran is added to diets of reduced calorie value for treatment of obesity, when the quantities of the main calcium-containing foods (milk, cheese, and fortified bread) are considerably reduced. In such cases an additional source of dietary calcium of comparatively low calorie content