makes multiple tracer studies more complicated."

In reply to their query the method used to measure the loss of potassium from the dialysate, which was 150 mEq in my series¹, was a direct measurement. The statement by them that: "there is a wide range of potassium status in patients with chronic renal failure being maintained with haemodialysis" contradicts their next statement that: "The absence of a positive relation between the duration of regular dialysis treatment and the total body potassium, together with the balance studies in two patients, indicates that twice-weekly dialysis against a dialysate potassium content of 1 mEq/l. is compatible with the maintenance of potassium balance." This conclusion is reached from two patients only.

Finally, I would like to reiterate a statement in my paper¹ that "a level of 1 mEq/litre in the dialysate fluid may be too low" for use in prolonged haemodialysis and suggest that this level should be adjusted according to various factors such as dietary intake of potassium; variation in potassium states found among non-dialysed patients with chronic renal failure as suggested by Boddy *et al.*; duration of prolonged haemodialysis; and the type of dialyser and the number of hours necessary for patients to be dialysed per week.—I am, etc.,

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¹ Seedat, Y. K., *British Medical Journal*, 1969, 2, 344.

² Veall, N., and Vetter, H., *Radioisotope Techniques in Clinical Research and Diagnosis*, p. 202. London, Butterworth, 1958.

Urinary pH and Excretion of Gentamicin

SIR.—Gentamicin is excreted mostly through the kidneys.^{1,2} Since it is a weak base its renal clearance might be expected to be non-ionic diffusion across the tubular epithelium, and so vary according to urinary pH. So far as we know, the excretion of gentamicin in relation to urinary pH has not previously been investigated, and we therefore decided to measure simultaneously the renal and venous (total) clearances of gentamicin and inulin (as a reference) in three healthy men volunteers, aged 31-36, after acid and alkali loading.

After a priming dose of inulin 50 mg/kg and gentamicin 0.4 mg/kg, inulin and gentamicin in isotonic saline (after acid load) or isotonic

sodium bicarbonate (alkali load) were intravenously infused continuously at the rate of 30 mg/min (inulin) and 0.2 mg/min (gentamicin). Clearances were measured twice in each subject—firstly, after oral administration of ammonium chloride 15 g and, secondly, under an intravenous load of sodium bicarbonate given in a primary dose of 8.4 g (M/2 solution) and then in a sustaining dose of 8.4 g (M/6 solution). Samples of blood, urine, and perfusate were taken initially, and after about one hour of infusion a blood sample was taken and the bladder emptied. Exactly one hour later a further blood sample was taken, the bladder contents were collected directly into a measuring cylinder, and the urine pH immediately measured. After a further exactly-timed period of one hour the urine was again collected and a final sample of blood taken. Renal clearance measurements, protein binding studies, and inulin and gentamicin assays were carried by standard techniques, which are not described here for sake of brevity, but which we would gladly communicate to any interested correspondent.

The results are summarized in the Table and in Figures 1 and 2. The mean urinary clearance of gentamicin was 92 ml/min after acid load and 98 ml/min after alkali load. The correlative venous clearances were 122 ml/min and 106 ml/min. The (U/P gent.)/(U/P in.) was 0.786 in acidosis and 0.861 in alkalosis, and the (p/P gent.)/(p/P in.) was respectively 1.078 and 0.886. Applying Student's *t* test to these results there is no significant difference between (U/P gent.)/(U/P in.) in alkalosis and acidosis (*t* = 2.54, *P* > 0.05), whereas (p/P gent.)/(p/P in.) is significantly higher in acidosis than in alkalosis (*t* = 2.79, 0.05 > *P* > 0.02). Protein binding was lower in alkalosis (less than 0.10) than in acidosis (0.34).

Fig. 1—Effect of acid and alkali loading on urinary clearance of gentamicin with inulin as reference.

Fig. 2—Effect of acid and alkali loading on venous clearance of gentamicin with inulin as reference.

We were satisfied that tubular diffusion trapping was not a significant problem and that glomerular filtration of free gentamicin is the principal way of renal clearance of this drug. Moreover, the kidney is the principal way of total gentamicin clearance,^{3,4} and our findings show that this does not vary with changes in the urinary pH. It is not therefore necessary to alter the dosage of gentamicin according to the patient's acid-base state.

We thank Laboratoire Unilabo-Schering, France for a grant in support of this work; Drs. C. Desroches and F. Billard, who performed the inulin assays; and Drs. C. Gaudebout and J. J. Pocidallo for advice and statistical help.

—We are, etc.,

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- 1 Jao, R. L., Jackson, G. G., *Journal of the American Medical Association*, 1964, 189, 817.
- 2 Gingell, J. C., and Waterworth, P. M., *British Medical Journal*, 1968, 2, 19.
- 3 Black, J. B., Calesnick, B., Williams, D., and Weinstein, M. J., *Antimicrobial Agents and Chemotherapy*, 1963, 3, 138.
- 4 Chisholm, G. D., Calnan, J. S., Waterworth, P. M., and Reis, N. D., *British Medical Journal*, 1968, 2, 22.

Smoking and Pregnancy

SIR.—I was interested in the observation by Dr. John McGarry and Miss Joan Andrews (8 April, p. 74) that during pregnancy the

Comparison Between Acid and Alkali Urinary and Venous Clearances

	Acid Loading							Alkali Loading							S
	Cu gent	Cv gent	Cu in	Cv in	U/P gent U/P in	p/P gent p/P in	Urinary pH	Urinary pH	p/P gent p/P in	U/P gent U/P in	Cv in	Cu in	Cv gent	Cu gent	
1	71	102	126	91	0.561	1.028	6.18	7.60	0.710	0.666	115	112	81	75	1.98
	78	102	125	91	0.693	1.154 1.006	5.60	7.75	0.703 0.712	0.789		104	81	82	
2	109	136	134	138	0.814	1.087	5.40	7.80	0.976	0.940	128	133	135	125	2.01
	99	136	139	138	0.716	0.998 0.998	5.50	7.23	1.036 1.177	0.651		136	135	89	
3	108	128	102	114	1.057	1.259	6.00	7.88	0.847	1.120	117	103	103	116	1.90
	85	128	97	114	0.877	1.129 1.040	6.02	7.88	0.932 0.879	1.000		102	103	102	
Mean	92	122			0.786	1.078			0.886	0.861			106	98	

S Body area
Cu Urinary clearance
Cv Venous (total) clearance
gent Gentamicin
in Inulin
p Prefusate concentration
P Plasma concentration
U Urinary concentration

mean level of serum vitamin B₁₂ among smokers is significantly less than among non-smokers. They discuss various factors which may have affected the serum B₁₂ level, but they do not mention folate deficiency, which is common during pregnancy.

Low serum B₁₂ levels have been observed in over 40% of patients with megaloblastic anaemia due to folate deficiency, and the levels rise slowly to within the normal range on treatment with folic acid alone.^{1,2} As Dr. McGarry and Miss Andrews have not published the serum folate levels in their group of pregnant women, it is not possible to draw conclusions from the B₁₂ levels unless all the women were taking folic acid.—I am, etc.,

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- ¹ Mollin, D. L., Waters, A. H., and Harris, E., in *Vitamin B₁₂ and Intrinsic Factor, Europäisches Symposium, Hamburg*, ed. H. C. Heinrich, p. 737, Stuttgart, Enke, 1961.
² Forshaw, J., and Harwood, L., *Journal of Clinical Pathology*, 1971, 24, 244.

Truncal Vagotomy and Pyloroplasty

SIR.—Mr. F. I. Tovey (29 January, p. 311) is quite right in advising surgeons working in developing countries against a reversion to the old policy of gastrectomy for duodenal ulcer. In my own experience with peptic ulcer surgery among rural patients, mostly refugees from erstwhile East Pakistan resettled in this region over the past 13 years, the patients were happier after vagotomy and drainage, as they could resume their bulky diets more easily. Truncal vagotomy did not produce troublesome diarrhoea in any of our patients. The drainage procedure was to a great extent determined by the site and state of the ulcer.

According to Aird,¹ "in the 'twenties of the present century the commonest site of a duodenal ulcer submitted to operation was the anterior wall of the first part"; but he had "not since the war seen an unperforated ulcer of the anterior wall of the duodenum which could have been locally excised." He was "tempted to conclude that anterior wall ulcer of the duodenum is always acute, perforating before it can become chronic." In my series² 56 out of 95 duodenal ulcers, all chronic and unperforated, were situated on the anterior wall. This is interesting and perhaps proves that, in the natural history of duodenal ulcer, India is 40-50 years behind Britain.

An anterior ulcer, especially with gross scarring and stenosis as seen in many of our cases, may make pyloroplasty technically difficult.—I am, etc.,

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- ¹ Aird, I., *A Companion in Surgical Studies*, 2nd edn., p. 707. Edinburgh and London, Livingstone, 1957.
² Mitra, A., *Indian Journal of Surgery*, 1971, 23, 151.

Value of the M.C.V.

SIR.—Recent correspondence^{1,2} in this journal has indicated the relationship between the red cell mean corpuscular volume (M.C.V.) and mean corpuscular haemoglobin concentration (M.C.H.) when the values are

		1	2	3	4	5
Haemoglobin (g/100 ml)	1	1.00				
Haematocrit (%)	2	0.95	1.00			
M.C.V. (μ ³)	3	0.22	0.19	1.00		
M.C.H. (pg)	4	0.38	0.23	0.91	1.00	
M.C.H.C. (%)	5	0.50	0.20	0.19	0.58	1.00

obtained from a Coulter Model "S" automatic counter. We have been conducting in Coventry a haematological survey using this apparatus on a random population sample of 81 male and 89 female subjects aged 65 years and over. As the correlation coefficients were homogenous ($P > 0.05$) in the two sexes, we have pooled the data (Table). Statistically we found little to choose between M.C.H. and M.C.V., which confirms our findings in other population studies where r for this correlation lay between +0.89 and +0.98.

The poor correlation of the mean corpuscular haemoglobin concentration with either the M.C.V. or M.C.H. is not surprising in view of its curious distribution,³ which adds another statistical objection to its use.—We are, etc.,

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- ¹ Rose, M. S., *British Medical Journal*, 1971, 4, 169.
² England, J. M., Walford, D. M., and Waters, D. A. W., *British Medical Journal*, 1971, 4, 232.
³ Elwood, P. C., *British Journal of Social and Preventive Medicine*, 1964, 18, 81.

Vaccination against Rubella

SIR.—There are a few points which might, perhaps, be added to Dr. Constance A. C. Ross's comprehensive review of this subject (8 January, p. 109).

Although there is some presumptive evidence that rubella vaccine will produce a long period of immunity, perhaps lifelong, it should be emphasized that this is presumptive only and that one cannot say definitely that a girl of 12 years immunized against rubella will retain that immunity until the end of her reproductive life. In addition, natural immunity may be maintained by intermittent exposure of the immune to the natural virus, and if the epidemiology of the disease is altered radically by immunization this may prove to be a factor of some importance.

By far the most important place for the transmission of rubella infection is the primary school, and the majority of pregnant women come into contact with the disease through an infected primary school child, either directly or through an intermediate case. In spite of the theoretical advantage of protecting women in their child-bearing years against rubella by immunizing girls before they reach the reproductive age, it may be more logical to immunize children of both sexes before they attend school or kindergarten. This would produce an immune population in the group who were previously most susceptible and were the main vehicles of spread of the disease.

An advantage of this method of protection is that reactions to the vaccine are generally less in children of 4-5 years than in children of 11-14 years; this is important with regard to acceptability of the vaccine by the public. Should the duration of pro-

tection of the vaccine prove to be lasting, then adults would be directly as well as indirectly protected.—I am, etc.,

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Pantie-girdle Syndrome

SIR.—Recently in this department we have been seeing an increasing number of patients with symptoms ranging from tingling to swelling of the feet and legs, with or without ulceration. Sometimes they present with meralgia paraesthetica. All these patients are wearing pantie-girdles, of a new type which I personally have not seen before. Removal of the pantie-girdle very rapidly produces a "cure."

Most people unfortunately seem to buy one of a size smaller than they should, and all of course are overweight. The age range is from 20 to 70 and over. The older patients combine this pantie-girdle with knickers with elasticated bottoms. It needs little imagination to appreciate what happens to the venous return from the leg. When these patients sit up it acts as a very effective venous tourniquet, and when they cross one leg over another—which many of them have to do because of the brevity of their skirts—it acts as a partial arterial tourniquet.

There has been a lot of correspondence recently about deep vein thrombosis. Such people suffer from chronic venous stasis, and if they are admitted for emergency operation they run an increased risk of deep vein thrombosis. We in this department now refer to it as the "pantie-girdle syndrome."—I am, etc.,

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Inexpensive One-way Screen

SIR.—In many hospitals the advantages of a one-way window are outweighed by the cost. Not only the price of the window itself, but also that of sound equipment has to be found. While such sophistication is both desirable and possible in a large teaching hospital this is often not the case in a small hospital for the mentally ill or handicapped. A simple but effective one-way screen can, however, be made for little cost—if there is no need for the interview room to be sound-proof.

An aperture of suitable size is made in the party wall between two rooms (or even one room and a large broom cupboard). A window frame can then be fitted; it makes a neat finish but is not essential. The opening is covered by fine mesh black nylon facing material (normally used for interfacing coat collars etc. and available from most drapers at less than 50p per yard). The material may be stuck down or stapled, the latter method being preferable as wire or equipment may