Subjects		Dibucaine Numbers			Gene Frequency		χ^2	P
		>70	40-70	<40	E ₁ ^u	E ₁ ^a		
Normal	O	328	14	1	0.9767	0.0233	3.62	>0.1
	E	327.20	15.61	0.19				
Lepromatous .. .	O	65	130	17	0.6132	0.3868	18.17	<0.001
	E	79.72	100.56	31.72				
Tuberculoid .. .	O	76	100	2	0.7079	0.2921	22.87	<0.001
	E	89.20	73.61	15.19				

if assumptions are made that there are abnormally high frequencies of the fluoride or silent genes present in these groups. Assuming that only the usual (E₁^u) and atypical (E₁^a) genes are present, the observed (O) and expected (E) distributions of phenotypes by D.N. number are indicated in my Table.

In both patient groups there appears to be selection of marked degree, apparently in favour of heterozygotes or against homozygotes. The abnormally high frequency of the E₁^a gene suggests that the selection is largely against the atypical homozygotes. On this basis the real frequency of this gene in leprosy patients may be much higher than the data suggest.

One can merely speculate on the nature of the selection involved but analysis of the data in respect of age of the patients and severity of their disease seems warranted.—I am, etc.,

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¹ Pantuck, E. J., in *Advances in Anesthesiology: Muscle Relaxants*, eds. L. C. Mark and E. M. Popper, p. 63. New York, Hoeber, 1967.

Fluorides and Dental Decay

SIR,—With reference to your leading article on fluorides and the prevention of dental decay (19 August, p. 431), while there is some doubt about the long-term effects of compulsory fluoridation of all water and some evidence that it can be harmful in certain cases it would be wrong to put this policy into effect.

As you point out, there are local applications which can be used at individual choice, and it is well known that nothing will prevent dental decay fully so long as children are allowed (and encouraged) to consume vast quantities of white sugar, lollies, and ice creams, especially between meals. Fluoride also destroys catalase. People should be allowed freedom of choice and action and not have compulsory fluoridation of water thrust upon them.—I am, etc.,

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Gastrin and Gastrointestinal Disease

SIR,—In your leading article on gastrin and gastrointestinal disease (9 September, p. 604) you observe that it may well be that hiatus hernia, oesophageal reflux, and reflux oesophagitis, so long regarded as a surgical condition, may have an endocrinological basis, and I write to support this view.

In a Hunterian lecture I put forward the thesis that disorders of secretion and motility of the oesophagus and stomach are likely causes of some cases of incompetence of the oesophagogastric sphincter and hiatus hernia.

It is unlikely that all cases of hiatus hernia are so caused, for if so the failure rate following operative repair would surely be very great. In fact, though all reported series of cases show a failure rate in experienced hands it is very small, though ever persistent despite increasingly elaborate techniques of construction of valve mechanisms, fixation, and repair.

One of the principal points of my thesis is that some cases of hiatus hernia are anatomical hernia and nothing more. These will respond to a simple surgical repair. Others are due to a motility disorder of the oesophagus and stomach—probably of the foregut. These will not respond to a surgical repair directed to the hiatus and oesophago-gastric junction as if they formed an isolated and independent structure.

A second important point is that hiatus hernia has always been considered due to abdominal pressure pushing the stomach through a lax hiatus. It may well be due to traction by the longitudinal oesophageal muscle pulling the stomach up, especially in cases due to secretomotor disorder. While we can now measure the effects of gastrin and of many drugs on the circular muscle of the oesophagus we cannot measure the activity of the longitudinal muscle, which forms by far the larger proportion of the oesophageal muscle coat. An excessive longitudinal pull will exert a distracting effect upon the lower sphincter and accentuate any tendency to incompetence. A technique for measuring longitudinal muscle activity would be most welcome.—I am, etc.,

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¹ Mullard, K. S., *Annals of the Royal College of Surgeons of England*, 1972, 50, 73.

Continuous Intra-gastric Feeding in Infants

SIR,—We were interested in the paper by Dr. H. B. Valman and others (2 September p. 547), as we have been using continuous intra-gastric feeding for the last two years. However, we have restricted the technique to babies under 1,500 g weight in whom it has proved difficult to maintain an adequate intake with frequent aliquots of feed by nasogastric tube.

We have tended to stop continuous feeding at a point when the babies were able to tolerate adequate volumes of feed in two- or three-hourly aliquots via a nasogastric tube, with a view to moving on to bottle-feeding when tolerated. It is not clear to us how long the authors maintained continuous intra-gastric feeding and whether this was continued past the time when the babies might have been expected to begin feeding from the bottle. The data given in Tables II and III suggest that some of the babies might have progressed to taking satisfactory amounts of feed by bottle within a relatively

short time. Surely some "light-for-dates" babies who are approaching 2 kg in weight will relatively early accept adequate volumes of feed from the bottle. In such babies we consider it important to encourage sucking and to allow the mother to feed and to handle the baby as soon as possible.

We have found that continuous intra-gastric feeding has been most helpful in babies of very low birth weight, particularly those less than 1,250 g. To achieve an adequate fluid and calorie intake in these babies (with a more modest aim of 40 ml/kg body weight of feed on the first day) has proved difficult via nasogastric tube even with very small aliquots hourly. Often with such babies we have found the problem of increasing volumes of gastric residue and a risk of regurgitation. We have found continuous intra-gastric feeding to be more successful, as judged by checking gastric residues. In very-low-birth-weight babies this regimen may require very low rates of between 1 and 2 ml feed per hour. We have found that the ease and accuracy of this technique have been considerably increased by the use of a constant-infusion pump, the one which we use being the Ho'ter pump.

The use of drip feeding from a conventional chamber requires considerable nursing supervision, especially at low rates of flow, and at the low rates described may be impossible. The unit in which we work, like that of the authors, is staffed mainly by pupil midwives and the optimum use of nursing time is important.—We are, etc.,

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Renal Dialysis and Transplantation

SIR,—The report just published¹ on dialysis and transplantation in the treatment of chronic renal failure gives a clear account of the influence of treatment on mortality. That nearly two out of three patients dependent on a machine can expect to be alive after three years is worth hailing as a real milestone in the advance of therapeutics.

Nevertheless it seems regrettable that the report is restricted to a survey of mortality with no evaluation of morbidity. There is now an established literature on the symptoms associated with the stress of living dependent on a machine. Such stress can produce not only an impaired capacity to work but significant disturbance in mood and in the harmony of family life. For example, it is not uncommon for patients to develop an apparent inability to co-operate in dietary and fluid restriction, resulting in hyperkalaemia. There is often good reason to suspect that many of those who die do so for reasons related to an impaired desire to live. Yet many patients enjoy living with a remarkable lack of distress.

It is not our purpose in drawing attention to the extensive morbidity to discourage implementing facilities for treating all who need it. However, those responsible for implementing these recommendations should be aware that staff to assist distressed patients will be required as an essential contribution to an effective unit. A social worker must be in contact with all patients and their relatives to ensure that every aspect of morbidity is