high incidence of renal complications following this surgery.

In a review of 250 cases operated upon at Southampton our incidence of severe renal failure was more than 12%.¹ In the light of our experimental and clinical work on the subject for the last seven years, we think the following points from our experience are relevant.

Mr. Yeboah and others give a definition of severe and minor renal failure (to which we fully ascribe). They then state "some degree of renal impairment was observed in 130 (30%) of cases," without however mentioning what is meant by renal impairment. We think that in response to cardiopulmonary bypass there is alteration of kidney function judged by one or other renal function tests. At one end of the scale is normal, at the other extreme several renal failure, and in between renal dysfunction of variable degrees. We take the view that a temporary (one to two day) rise in blood urea in itself should not be considered as a "minor" renal failure or renal impairment. This is so constantly and frequently observed, particularly during the early postoperative phase, as to be regarded as one type of temporary dysfunction response after cardiopulmonary bypass. Only raised blood urea accompanied by a low urine urea observed over period of a few days, and a tendency to remain so, should be considered as renal impairment or minor renal failure. Taking this into account the apparently high incidence of renal failure (severe and minor) and renal impairment becomes truly lower and less alarming than Mr. Yeboah presents.

Unlike Mr. Yeboah and his colleagues we did not find any correlation between a higher pre-operative blood urea and post-operative renal failure.

We found no relation between the age of patients and renal complications, but there was a definite relationship between the type of cardiac lesion and postoperative renal failure. There was definitely a high incidence in patients with acquired valvular disease.

Analysis of our cases showed that the most important contributory factor for development of renal failure was the length of perfusion. The incidence of renal failure in those patients with under two hours perfusion was less than 5% in contrast to those having two to four hours, which was above 25%. We were later able to show experimentally the changes which took place in renal blood flow and renal functions during and following perfusion of short (up to two hours) and long (above two and up to four hours). This experimental work confirmed a definite deterioration in renal function during and after the long period of bypass.²

Mr. Yeboah claims no beneficial effects from diuretics in renal failure cases. We would agree that this is so in established and extreme cases. But in those cases of renal dysfunction (as mentioned above) diuretics play an important beneficial role, and indeed it is through the good management and careful handling of diuretics and fluid balance that these cases may and do come to a successful result. We found mannitol useful at least in three circumstances: (i) During the operation when urinary output is low (below 40 ml/hour); (ii) when there is haemoglobinuria during and after a long period of perfusion; and (iii) when one has to decide whether the

postoperative oliguria is renal or pre-renal (that is, mannitol challenge).

So far as the treatment is concerned, our results agree with the authors, in spite of early dialysis. Here it is relevant to note that observation and review of a large series indicates two types of renal failure chronologically speaking—that is, an early post-operative renal failure (second and third day) and a later (four to five days) one. In the early renal failure cases the treatment appears to be particularly difficult, and in our experience, unsuccessful, whereas in the later renal failure cases there appears to be a good chance of success.—We are, etc.,

K. MOGHISSI

Cardiothoracic Surgery Unit,
Castle Hill Hospital,
Cottingham, Yorks

I. K. R. McMILLAN

Cardiothoracic Surgery Unit,
Southampton Chest Hospital

¹ Moghissi, K., Paper presented to the annual meeting of the Society of Cardiovascular and Thoracic Surgeons, Oxford, 1968.

² Moghissi, K., Machell, E. S., and Munday, K. A., *Cardiovascular Research*, 1969, 3, 37.

Genetic Counselling

SIR,—I wonder if I might comment on some of the statements in your leading article on genetic counselling (19 February, p. 458). This is an emotional field in which hopes readily dominate facts, and the number of similar annotations vaguely implying the need to concentrate resources into selecting the unborn by exhortation or advice seems to be increasing. In such fields it is perhaps wise to consider what would be achieved, given sound diagnosis, informed prognosis, and prospective parents obedient to the dictates of what was regarded as reasonable by those advising them. If, even then, the prospects of appreciable effects are remote, then the diversion of resources, either fiscal or emotional, is difficult to justify.

The first statement "Parents make sensible use of information on the chances of a particular genetic (or part-genetic) disorder in the family recurring in future children" in fact means that they respond to information in the way the donor of this information thinks they should. In practice "information" easily becomes degraded into advice.

The next sentence welcomes the increasing demand for advice. While I welcome the increasing demand for information, and the extension of those services, especially paediatrics and pathology, on which sound information must be based, advice implies more than information, and I personally do not welcome this increasing demand, if, indeed, it exists. I agree that people who cannot interpret information are not usually ideal ancestors for our descendants, but to advise patients on their reproduction as opposed to giving the information they seek about the disorder with which they, or their children, present, is another matter.

The sentence continues "we may hope gradually to reduce the number of children born with genetically determined disorders." This implies a truly cosmic idea of gradual. If counselling is extended to include selective abortion, then some disorders can be eliminated within present technology by ensuring that death precedes birth. These include familial mongolism, and in some racial groups systematic screening for heterozy-

gotes may be effective in weeding out some homozygotes in utero. However, this is hardly counselling.

The next paragraph I also find difficult. Why should a history of near relatives be taken in an accurately diagnosed recessive? Does the class of poorly understood disorders of low recurrence rate constitute a group of known mode of inheritance? Is "polygenic" or "multifactorial" a euphemism for ignorance or a known variety of inheritance?

Should cases needing information obtain it from general practitioners, or through referral to established specialists, or by providing new categories of specialist? As most cases of clearcut severe genetic disease are already seen by specialists, the question reduces to whether, for example, neurologists are competent to advise on muscular dystrophies, or paediatricians on fibrocystic disease and mongolism, or haematologists on haemophilia. If they are, the problem is solved. If they are not, should resources be diverted to improving their education, their selection, their facilities, or their numbers, or should a supplementary service be established?—I am, etc.,

J. H. EDWARDS

Department of Human Genetics,
Infant Development Unit,
Birmingham Maternity Hospital,
Birmingham

Plasma Amino-acids of Infants

SIR,—Though plasma amino-acid levels do vary with time of day, as pointed out by Dr. D. P. Davies (19 February, p. 512), we do not believe that the variations that have been shown to occur¹ would affect the significance of our results (25 December 1971, p. 789) in any way.

The blood amino-acid concentrations in the neonate have been shown to be relatively constant between 8 a.m. and 8 p.m., but to fall to a significantly lower level at 4 a.m.² The infants we studied were in fact all bled at about the same time (9 a.m.), but this information was not included in our report as changes in plasma amino-acid levels are related to the sleep/wakefulness cycle and not to the time of day, making the significance of the sampling time difficult to assess in small infants.² Further, by direct comparison between groups of infants on different protein intakes but sampled and analysed under the same conditions, the effect of such factors is included in the means and ranges of the results obtained.—We are, etc.,

H. B. VALMAN
R. J. K. BROWN
T. PALMER
V. G. OBERHOLZER
B. LEVIN

Queen Elizabeth Hospital for Children,
London E.2

¹ Feigin, R. D., Beisel, W. R., and Wannemacher, R. W., Jun., *American Journal of Clinical Nutrition*, 1971, 24, 329.

² Feigin, R. D., and Haymond, M. W., *Pediatrics*, 1970, 45, 782.

Resistance to β -adrenoceptor Stimulants

SIR,—We still have no direct evidence of the mechanism whereby pressurized aerosols may be involved in deaths from asthma, and the work of Conolly *et al.*¹ obviously needs to be pursued.

Most of us, however, have a very strong clinical impression that the problem is one