(27 June, p. 1654). This attitude doubtless reflects the views expressed in "Study of Vitamin-D Intakes of Infants in 1960" by Drs. E. R. Bransby, W. T. C. Berry, and Dorothy M. Taylor (27 June, p. 1661). I quote from this, "Finally, the decisions of the Welfare Foods Subcommittee have stood the test of time. Intakes of vitamin D have been reduced, the incidence of hypercalcaemia has been more than halved, and there has been little or no increase in rickets."

This report, excellent as it is in some respects, has the inevitable fault of being out of date, since it relates to 1960. Its reported findings are certainly contrary to the situation in Glasgow during the past five years. In 1963 we¹ pointed out the increasing number of cases of infantile rickets presenting at the Royal Hospital for Sick Children, Glasgow. During the period 1953-8 the incidence of such cases averaged less than two per annum. For the period 1959-62 the figures rose to an average of eight per annum. The total number of such cases for the first six months of 1964 stands at no less than 20 children. This figure is higher than any since 1947. It is untrue to suggest that coloured immigrants are the problem in this area. Of the 20 cases seen this year only two were "coloured," and of the 47 seen since 1961 only five fell into this category.

Stated simply, since the reduction in the vitamin-D levels of infant foods in 1957 the incidence of infantile rickets in "white" children in Glasgow has risen sharply and continues to rise. The 18 "white" children seen here in six months equal the entire number for the United Kingdom for the 18-month period (1961-2) reported in the British Paediatric Association Report on Infantile Hypercalcaemia, Nutritional Rickets, and Infantile Scurvy in Great Britain (*B.M.J.*, 27 June, p. 1659). Surveys in the local Glasgow population confirm the suspicion of latent cases existing. Most of our cases have not been recognized by the general practitioners, many of whom were unaware of the recurrence of rickets, unfamiliar with the disease, and especially with its occurrence in the older age-group (12-36 months) now commonly affected.

While this rise in the incidence of rickets is disturbing, it is not (yet) of serious proportions. It would be wrong, and irresponsible, to remain complacent, to ignore the significance of these irrefutable facts, or to relax efforts to check the increase in a disease which is totally preventable. It is a glib and easy excuse to say that these patients come from "unsatisfactory" families. In fact such families have always existed in underprivileged cities such as Glasgow, and there is no reason to suppose such families have increased in numbers. It is extremely unlikely that the higher incidence of infantile rickets in the city since 1958 is not directly related to the reduction in vitamin-D content of infant foods in 1957. Our suggestion¹ that *luxus consumption* of vitamin D₂ during the first six months of life protected children of "unsatisfactory" families from rickets for many months afterwards seems the only reasonable explanation of the observed facts. We have yet to find some method whereby rickets can be prevented in our slums without the risk of hypercalcaemia arising in other babies.

In the face of disturbing facts the use of

soothing syrup seems unlikely to resolve the problems of vitamin deficiency in 1964, and a more vigorous prophylactic approach appears desirable. As suggested² modern methods of education are desirable, and B.B.C. television should certainly be used to reach the mothers of such families with information on the cause and prevention of rickets. Cod-liver oil should be replaced in the welfare services by a more palatable product and latent fortification of infant diets continued until the age of 3 years.—I am, etc.,

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REFERENCES

- ¹ Arneil, G. C., and Crosbie, J. C., *Lancet*, 1963, 2, 423.
- ² — *Practitioner*, 1964, 192, 652.

SIR,—The article on vitamin-D intake in children (27 June, p. 1661) draws attention to the gross effects of excessive intake of vitamin D, but in addition to their gross effects excessive intake of vitamins can cause and do cause frequently minor degrees of ill-health.

Well before the last war I published an article, "Hypervitaminosis as a Cause of Ill-health in Country Children," in the *Medical Press and Circular*¹ in which I gave a dissertation on a series of cases of anaemia and loss of weight in children who were taking an excessive amount of vitamins. In those days it was considered that one could not take an excessive amount of vitamin D, and my article was, of course, not considered seriously. The real danger appeared to me then that symptoms of an excess of vitamin intake were so similar to the symptoms of lack of vitamins, and the danger arises of vitamins' being given to cure a condition which is due to an excessive intake. Only too frequently in this country do we hear, "I have given him good food and extra vitamins and still he does not improve."—I am, etc.,

Petworth, Sussex.

W. A. BALL.

REFERENCE

- ¹ Ball, W. A., *Med. Press*, 1936, 192, 303.

Blood Loss in Paediatric Surgery

SIR,—Your correspondent Dr. D. Vernon Thomas (20 June, p. 1635) rightly draws attention to the possible dangers of blood-transfusion in the newborn infant. Unfortunately, however, he makes no mention of the measures which are available to minimize such dangers, and which are standard practice in many paediatric surgical centres in this country.¹ Since the timely administration of blood during the major operative procedures now carried out on the newborn infant is of such major importance in reducing mortality and morbidity rates it would be tragic if lack of appreciation of safeguards were to lead to undue reluctance to transfuse blood when needed. I would therefore be grateful if you would allow me to comment on some of the points raised by Dr. Thomas.

Allowance can be made for the low free-calcium of stored whole blood by administering 1 ml. of 10% calcium gluconate (suitably

diluted) for every 15 ml. per lb. (33 ml. per kg.) body-weight of blood transfused. By using blood which has been stored for no more than five days, the serum-potassium content is kept to a minimum. Before transfusion, blood is warmed in a water-bath to 37° C.; since the method of administration is by syringe and Heller valve directly attached to the intravenous catheter^{2,3} there is neither time nor length of drip tubing in which heat loss can occur. Blood is thus transfused at a known rate and temperature, in precise amounts related directly to the estimated loss, the aim being to preserve a constant blood volume.

Hypothermia of the newborn infant during operation is, of course, a well-recognized hazard⁴ and can be reliably prevented by methods such as those described by Auld and Munro.¹ These involve warming and humidifying the anaesthetic gases, and placing the infant on a hollow perspex "platform" heated with warm moist air. The temperatures of the infant, anaesthetic gases, and heating apparatus are monitored and easily adjusted. Experience has shown that extensive operations lasting several hours are now feasible, the infant's temperature remaining normal throughout.

The surgeon is thus enabled to operate on a normothermic infant whose blood-volume is being maintained with warm blood of relatively low serum-potassium content, who is receiving adequate amounts of calcium, and whose transfusion is performed accurately via a graduated syringe. Under these circumstances the dangers of cardiac depression would appear to be kept to a minimum, and the trouble taken is more than justified by the results.

In conclusion, may I add that the use of the above precautions only serves to underline our respect for the possible dangers of blood-transfusion. All efforts are made to keep blood-loss to a minimum, and certainly to avoid a policy of indiscriminate transfusion, which would be inexcusable.—I am, etc.,

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REFERENCES

- ¹ Auld, W., and Munro, J. R., *Scot. med. J.*, 1962, 7, 431.
- ² Heller, M. H., *Anaesthesia*, 1958, 13, 358.
- ³ Thomson, W. J., *ibid.*, 1961, 16, 104.
- ⁴ France, G. G., *Brit. J. Anaesth.*, 1957, 29, 390.

Management of Meningitis

SIR,—Dr. Esther Hendry Welbourn and Dr. M. A. Casson (27 June, p. 1705) both comment on the desirability of making concurrent blood-sugar estimations for comparison with the sugar content of the C.S.F.

Dr. Welbourn's¹ excellent paper on the ratio of C.S.F. sugar to blood sugar is well known to us, and during the past two years we have taken the opportunity of estimating this ratio in the course of our routine work on samples of blood and C.S.F. from children in the wards; blood for sugar estimation has always been taken first as recommended by Dr. Welbourn. We agree with both your correspondents that it is useful to consider the C.S.F. sugar in relation to the blood sugar, and the ratio between them will usually distinguish between a low C.S.F. sugar due