CORRESPONDENCE

Correspondents are asked to be brief

Serum Alkaline Phosphatase and Rickets

SIR,—The paper by Dr. W. T. Cooke and others (10 February, p. 324) raises important questions about widespread vitamin D lack in the community. There are, however, serious problems about their interpretation of the data.

The authors themselves question the validity of their sample; it is, however, not possible for the reader to evaluate this point because the sampling method used to choose the schools is not stated. To determine their normal range for serum alkaline phosphatase they used a method described by Hoffman[1] for establishing normal ranges from a mixed population of "clinically normal" and "sick" subjects. An essential prerequisite to the use of Hoffman's method is that the results from clinically normal patients should be known to follow a normal or gaussian distribution. This method is sensitive to departures from the assumed distribution. In particular, if the results from a group of normal subjects follow a log-normal distribution, application of the method will "succeed" in identifying a normal range and will also show a large proportion of the normal subjects to be "sick." In fact, inspection of the data from the authors' survey suggests a log-normal distribution, a feature also demonstrated in previous studies of alkaline phosphatase in healthy children. Furthermore, the survey data show that the alkaline phosphatase levels varied considerably with the age of the children. Thus even if the results followed a normal distribution in every age group, we would not necessarily expect the combined data to conform to a normal distribution. In any case, interpretation of a single normal range where the mean values at age 14 are over 60% higher than at age 16-17 is, at best, difficult.

The incorrect application of Hoffman's method must then cast doubt on the validity of choosing a serum alkaline phosphatase level of > 30 K.A. units as the criterion for recall of children for further investigation. The only evidence for putative "biochemical rickets" from this study remains an alkaline phosphatase level of 30 K.A. units or more, as all other objective tests for metabolic bone disease on these children did not support such a diagnosis. Furthermore, the alkaline phosphatase level was both the sole selection criterion and also the index of a response to a therapeutic trial with calciferol, which was uncontrolled. The loss of half of this important test group further detracts from the value of the data. If, in spite of these objections, the alkaline phosphatase level is accepted as a possible index of subclinical and subradiological rickets, then the interpretation of the response to treatment with calciferol is crucial. The rate of fall of the level was greatest in the first month of treatment, at the end of which the patient would have received 38 mg of calciferol. No account appears to have been taken of a possible effect of pharmacological doses of calciferol on the alkaline phosphatase levels associated with the physiological growth spurt, or of the possible contribution of physiological decline of alkaline phosphatase with ageing to the observed response to treatment throughout the later months of the study.

It is always difficult to prove the existence of a subclinical deficiency disease; this can be done only with a very carefully controlled trial. In the mean time the report of Dr. Cooke and his colleagues provides no evidence that genuine childhood rickets can be demonstrated without radiological abnormalities.

Rickets is increasingly recognized among children from inner-city immigrant communities, but a 4% incidence of undoubted radiological rickets in such a community is a disturbing discovery. However, this is a population particularly at risk and it would be quite wrong to extrapolate too readily to the whole community and to use the evidence to support a policy of increasing the vitamin D fortification of food.—We are, etc.,

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1 Hoffman, R. G., *Journal of the American Medical Association*, 1963, **185**, 864.

An Academy of Medicine

SIR,—I was delighted to read the letter from Sir Thomas Holmes Sellors and others (24 March, p. 737) on a proposed academy of medicine. I know that this has been in Sir Thomas's mind for some time and he has already done a great deal to promote the idea among his associates in many medical disciplines. I am sure that my colleagues on the council would approve of my expressing the view that the Royal Society of