rads in 10 fractions over 2½ weeks. One of these subjects, who had the same dose of cranial DXT, was clinically GH-deficient and has since grown significantly in response to GH therapy. Despite the biochemical evidence of impaired GH secretion, in a more recent study² the children receiving this dose of cranial DXT had high-normal somatomedin activities, no significant degree of bone age retardation, and a normal growth rate. Other workers³ have suggested that the majority of children with ALL in clinical remission and off all chemotherapy show a normal growth pattern. However, dynamic tests of GH secretion have produced conflicting results with both normal^{4,5} and abnormal GH responses^{1,6} reported. This discrepancy was almost certainly due to the variation in the effective biological dose of irradiation reaching the hypothalamic-pituitary axis. Clearly the method of DXT, total dose, number of fractions, fraction size, and duration of DXT will influence the effective biological dose. Thus, although clinical GH deficiency appears to be rare in the Manchester and Bristol centres following cranial DXT for ALL, it may be more common in other centres in the world. Whatever the incidence of clinical GH deficiency in different centres, we agree that dynamic tests of GH secretion should be performed only when there is evidence of a significant impairment of growth.

Finally, clinical GH deficiency due to radiation-induced damage to the hypothalamic-pituitary axis following treatment of brain tumours has been described with doses as low as 2500 rads⁷ and 3860 rads.⁸ Thus the high dose (5000-6000 rads) suggested by Dr Swift and his colleagues is not mandatory for this complication.

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¹ Shalet, S M, *et al*, *Archives of Disease in Childhood*, 1976, **51**, 489.

² Shalet, S M, *et al*. Submitted for publication.

³ Verzosu, M S, *et al*, *International Journal of Radiation Oncology, Biology, and Physics*, 1976, **1**, 209.

⁴ Swift, P G F, *et al*, *Archives of Disease in Childhood*. In press.

⁵ Muhlen Dahl, K E V, *et al*, *Helvetica Paediatrica Acta*, 1976, **31**, 463.

⁶ Schiliro, G, *et al*, *Lancet*, 1976, **2**, 1031.

⁷ Perry-Keene, D A, *et al*, *Clinical Endocrinology*, 1976, **5**, 373.

⁸ Richards, G E, *et al*, *Journal of Pediatrics*, 1976, **89**, 553.

Pneumonia

SIR,—In an article on the treatment of pneumonia (25 March, p 771) I advised that a 12-ml sample of blood should be taken for culture, white cell count, and virus studies. Dr D Craddock (22 April, p 1054) complains that this is "a counsel of perfection which is unlikely to be carried out routinely in many hospitals, let alone in general practice, where few doctors carry syringes larger than 10 ml." I readily accept that none of us achieves perfection, but it would surely be wrong to do otherwise than counsel it? So far as syringe size is concerned, 12 ml of blood is easily contained in most standard "10-ml" syringes and in any case the exact amount is not critical.

Dr Craddock is worried that bacteriologists may not be pleased to receive all these specimens from every case of pneumonia in their

catchment area. The bacteriologist would of course receive only the specimens for culture and, if Dr Craddock's local bacteriologist is anything like ours, his complaint will be about the many samples which have to be sent after antibiotics have failed rather than the few which should have been sent before antibiotics were given. I agree that transfer to hospital if fever persists more than four or five days may be unnecessary in viral pneumonia, but I would not be happy about making such a diagnosis with the limited laboratory and radiographic information apparently available to Dr Craddock.

I am further taken to task by Dr Craddock for advising (as recommended in *MIMS*) that amoxycillin should be given thrice daily rather than eight-hourly. He rightly points out that 15 h may elapse between the "tea-time dose" and the "breakfast dose," but I am surprised that Dr Craddock should relate treatment to such variable feasts as these. As an ex-Liverpudlian he will know that teatime in these parts may be several hours later than in Surrey—and I am told that their breakfast may sometimes coincide with our lunch. At the other extreme the rigid eight-hourly antibiotic regimen which he favours could well disrupt the sleep so vital for a patient with pneumonia. Thrice daily dosage—as evenly distributed over the 24 hours as the patient's comfort and convenience may dictate—is surely preferable to either of the alternatives mentioned by Dr Craddock.

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Poisoning with alkylmercury compounds

SIR,—Your leading article on this subject (11 March, p 599) and the article by Professor L Amin-Zaki and others on methylmercury poisoning in Iraqi children (p 613) prompt me to make a few comments and to add some personal data.

I had the opportunity to follow up three patients with mild occupational alkylmercury poisoning and to carry out some investigations on men with long-term exposure to organic mercury. The concentrations of methylmercury and ethylmercury in the air of working places frequently and appreciably exceeded the maximum allowable concentration (0.005 mg/m³). The duration in occupation varied between six and eight years. At the time when these patients were examined they had not been exposed for two to six months and their urinary excretion of mercury varied between 1.7 and 2.4 µmol/l (340 and 480 µg/l). All complained of asthenia, irascibility, headache, loss of memory, insomnia, paraesthesiae, libido decrease, and impotence. They did not complain of visual troubles but on examination all patients showed a constriction of the visual fields, especially for some colours. No abnormality was found in dark adaptation or in audiometry tests. Mild tremor (handwriting test, alterations in drawing), accentuated in two subjects by intentional movements, hyperreflexia, and decreased temperature and pain sensitivity suggesting sensitive peripheral neuropathy, as well as mild ataxia (finger-nose test), were detected. Semen analyses showed hypospermia in all patients and a considerable increase in the number of abnormal forms in the ejaculate (teratospermia). After two years the same neurological and physiological symptoms and signs were present and in almost all cases were no less severe. This evolution supports the view of Professor Amin-Zaki and his colleagues that poisoning due to long-term absorption has a different evolution and prognosis from subacute poisoning (for

example, cases reported in Pakistan and Iraq, in which recovery was more rapid).

A group of 50 men chronically exposed to increased concentrations of organic mercury (mean duration in occupation 10.5 years) were examined. Signs of poisoning were not found but an increased incidence of sexual troubles and decrease of libido were recorded. In 28 volunteers in whom other causes of insufficiency of the germinal epithelium were ruled out the incidence of hypospermia, asthenospermia (decrease in percentage of motile spermatozoa during the first three hours after ejaculation), and teratospermia was significantly higher than in an equal number of controls of similar age. The severity of teratospermia was higher in men with increased absorption of the mercury (urinary excretion in the range 1.5-4.4 µmol/l (300-890 µg/l) than in those without increased absorption at the time of examination (less than 300 µg/l).¹

In 18 exposed men (urinary excretion in the range 0.5-2.1 µmol/l (100-420 µg/l)) in whom short-term cultures (52 h, Evans's modified method) of peripheral lymphocytes were carried out, an increased incidence of chromatid breaks (though not significantly different from controls) and chromosome acentric fragments (significant difference, $P < 0.001$) was noticed.²

It would be of interest if at least chromosome studies on peripheral lymphocytes could be carried out in the future in the poisoned children, and possibly long-term fertility studies.

I thank Dr Ioana Lancranjan for the endocrine examination of the subjects as well as for an important contribution to semen examinations, and Dr Luminita Negru for help in lymphocyte culture and examinations.

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¹ Lancranjan, I, *et al*, in *Symposium on the Influence of Some Biological and Environmental Factors in Human Reproduction*, Bucharest, 1974, May 14-15.

² Popescu, H I, and L Negru, in *Second International Symposium on Chromosome Aberrations by Industrial Chemicals and Vinyl Chloride Toxicity*, Milan, October 28-29, 1974.

Whooping cough

SIR,—In your leading article on this topic (22 April, p 1007) it is suggested that cephaloridine may be especially useful in treating secondary bacterial infection which may occur in this disease and can result in fatal pneumonia. Cephaloridine is likely to be effective in pneumococcal or staphylococcal infection but is unlikely to be effective in haemophilus infections. For this latter reason it would seem to be an unwise choice and certainly should not be recommended in a leading article.

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SIR,—I read Dr D T D Hughes' paper (6 May, p 1202) on the use of cough suppressants etc with great interest and his summing up of the use of these drugs was excellent.

I must, however, take issue with him about the suppression of cough in whooping cough when it produces vomiting. The very act of vomiting in a child with tenacious sputum, as is the case in whooping cough, is the best way of clearing the bronchial tree. This is borne out by the age-old clinical observation that after vomiting the child will often be free of cough for a sufficiently long time for it to absorb some nutriment. Furthermore, the act