Several graphic variations have been suggested recently by other authors which give better display of cephalic descent or of the nature of contractions, and so on. Attempts to specify progress norms, "danger levels," etc., have been deliberately avoided since we felt that these might tend to be interpreted too rigidly. Such norms tend to vary and, I feel, are more appropriately recommended by other means.—I am, etc.,

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Breech Management with Fetal Blood Sampling

SIR,—At this hospital we support the concept of active intensive care for breech deliveries and have been working on similar lines to Dr. B. W. Eliot and Mr. J. G. Hill (23 December, p. 703). Recent correspondence on the subject prompts me to comment on the following points.

Fetal blood sampling of the breech as a means of monitoring fetal welfare is not novel and has been performed by many of our colleagues. The important point, however, is to realize that after 5 cm dilatation the blood sample from the breech differs from a scalp sample and this difference increases till the second stage.

Uniform compression of the scalp by the cervix against a firm skull jeopardizes the microcirculation, resulting in the caput. No comparable compression occurs in the breech, where the pelvis and the two limbs can be visualized as three cylinders inside a constricting circle. Compression of the vasculature sufficient to affect the microcirculation does not occur, so that no oedema of the gluteal area is seen. Blood from the scalp will have a lower pH than the breech samples; thus one must accept a higher pH level for distress in the breech. It is this level that we are trying to determine.

Once the body is delivered the placenta contracts, reducing blood supply to the fetus, and this is further enhanced when the splinting effect of the lower limbs is removed with their delivery, as then the cord is compressed against the cervical rim. Forceps applied to the after-coming head helps control during extraction and prevents head compression. When forceps are used there is no great benefit in excessive slow delivery of the head, as the most sudden decompression is when the blades of the forceps are removed. Understanding of the physiology with regard to breech management allows us to recommend an active technical, as well as chemical, management. —I am, etc.,

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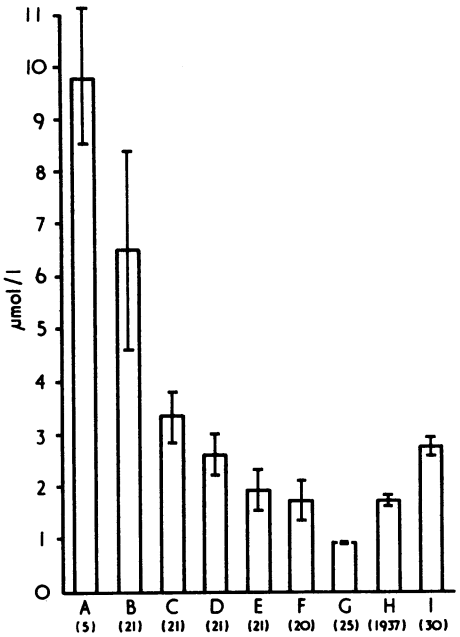
Fluoride and Osteoporosis

SIR,—In your leading article (30 December, p. 748) you refer to the treatment of osteoporosis with fluoride, calcium, and vitamin D recommended by Jowsey *et al.*[1] We have been carrying out a double-blind clinical trial of sodium monofluorophosphate as prophylaxis against senile osteoporosis on 460 patients in a municipal home for aged people over a period of eight months. Although the final results have not yet been completed, we should like in this preliminary report to draw attention to the high concentrations of ionized fluorides in the plasma resulting from this treatment.

The treated patients were given sodium monofluorophosphate in a dosage corresponding to 25 mg of fluoride per day, and sodium bicarbonate was given to the control patients. After five months the appearance of spontaneous bone fractures forced us to break the code, and it was observed that there were more side effects in the group that had received fluoride. The dose of fluoride was reduced to 25 mg twice weekly, and at the same time the plasma ionized fluoride concentration of 21 patients selected from the treated group was measured by the electrometric method[2] (see fig.). An *x*-ray revealed a recent fracture in the vertebral



Mean plasma ionized fluoride concentrations (± S.E. of mean). (A) After five months' treatment with 25 mg fluoride a day. (B) One month later (during treatment with 25 mg twice a week). (C) Two months later (during treatment with 25 mg twice a week). (D) At the end of treatment. (E) One month later. (F) Two months later. (G) Untreated patients. (H) Untreated patients in an area with artificially fluoridated drinking water. (I) Untreated patients with renal disease in an area with artificially fluoridated water. (Numbers of patients in parenthesis.)

column of one of the patients in the treated group (plasma fluoride 5·0 μmol/l.), but no signs of increased calcium concentration or osteosclerosis. Two cases of fracture of the femoral neck were also found in this group (plasma fluoride 2·1 and 4·3 μmol/l. respectively), and several joint collapses of thoracic vertebrae in another patient (plasma fluoride 4·3 μmol/l.). No cases of fracture were found in the control group of 25 patients.

Renal function was examined in patients with plasma ionized fluoride levels above 4·0 μmol/l. during the initial period of treatment. In one patient with a creatinine clearance of 35 ml/min the fluoride value was found to be 9·0 μmol/l., and in two patients with creatinine clearance of 46 ml/min the fluoride values were 5·2 and 4·0 μmol/l. respectively. One patient who had an increased serum creatinine level (2·5 mg/100 ml) had, however, an unexpectedly low plasma fluoride level (1·2 μmol/l.).

Very little information is available on the plasma fluoride levels in patients with osteoporosis. Armstrong[3] reported a significant increase in total fluoride concentration in some patients and a mild increase in others. In an earlier study[4] we found that the mean plasma ionized fluoride concentration of patients was 1·4 μmol/l. in an area with fluoridated drinking water and 0·8 μmol/l. in a non-fluoridated area. Patients with renal disease had an average level of 2·7 μmol/l. in the area with fluoridated drinking water. In our present series renal insufficiency did not play any significant part despite the very high age of the patients.

Treatment with the high doses of fluoride recommended leads to significantly increased concentrations of ionized fluoride in the plasma. These concentrations decrease very slowly after the treatment is stopped (see fig.). We cannot, of course, conclude categorically that the fractures we observed were the direct result of fluoride retention. We think it wise, however, to draw attention to the high ionized fluoride level in these patients. The relation between this level and both the effects and the side effects of fluoride treatment should be more thoroughly investigated.

The preparation used by us was sodium monofluorophosphate, and no additional treatment with calcium or vitamin D was given. According to Jowsey *et al.*[1] oral phosphate supplementation will tend to increase rather than decrease bone resorption levels. The use of sodium fluoride instead of monofluorophosphate and a combination with calcium and vitamin D might be safer. —We are, etc.,

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Anthrax

SIR,—Professor A. B. Semple in his letter (3 February, p. 293) has rightly drawn attention to the closure of the Government Wool Disinfecting Station in Liverpool some two years ago. When I wrote my paper on anthrax (20 January, p. 157), I was unaware of this information.

Mr. Ian Macdonald, of British Charcoals and MacDonalds Ltd. has referred me to a letter which appeared in *The Times* recently from Dr. E. S. Anderson and others[1] referring to the difficulty of sterilizing bone products and expressing the view that although the risk of anthrax infection from such products is probably small there is a need for some effective and economically viable method of sterilization. Since ethylene oxide gas is regarded as an efficient sporicidal agent, then the possibility of its industrial