or infection, may have become constipated, a few among them developing an anal fissure as a result. Infants with an anal fissure rarely become incontinent in later years, but this may be due to early treatment. Moreover, in a hitherto unpublished series of 266 cases of encopresis, 166 of them since birth, only 17 had a history suggestive of anal fissure, and from the age at which rectal bleeding was first noticed it appeared that in most of them the fissure was secondary to "colonic inertia" and an aggravating rather than a causative factor. Most of these cases with an anal fissure were found in a small group of 29 children whose encopresis was acquired, unassociated with enuresis, and in which the sex incidence was parity, unlike that found in the rest of the soilers. But in the whole series primary constipation was deemed to be the sole operative factor in relatively few instances.

There remains the 73% of Coekin and Gairdner's cases in which a history of constipation within the first six months was not obtained. In my series, 89% of the children who were soiling from birth onwards had resisted their toilet-training, in contrast with cases of simple constipation without incontinence who in general complied with their training. Bowel negativism, arising out of personality factors in child and in mother, is so common, therefore, as to suggest cause and effect, and in my view this is the chief operative factor. If bowel negativism is psychogenic, soiling from birth is even more so.

However much our opinions may differ on the aetiology of constipation itself, and consequently on its prevention, our views on treatment are identical. I am certain Drs. Coekin and Gairdner are correct in treating the constipated child by mechanical means, whether the constipation is psychogenic or not. It is necessary to restore the elasticity of the over-distended bowel, but equally one agrees that psychiatric help is needed, especially for the non-constipated child. Both paediatrician and psychiatrist have their roles to play in a manner complementary to one another. It is indeed a pity that in so distressing a condition as faecal incontinence a closer co-operation between the two is not more often forthcoming, and one may hope that this stimulating paper will achieve this very object.—I am, etc.,

London W.1. S. B. DIMSON.

SIR,—I was interested to read Drs. Marian Coekin and Douglas Gairdner's article (October 22, p. 1175) on faecal incontinence in children. In the last three years I have personally treated thirty patients suffering from this condition: of this number, twelve undoubtedly fall into the group of retention-overflow incontinence, in which "constipation" is an important factor. In these patients I do not consider constipation to be primarily a mechanical problem. In all these patients the faecal incontinence was but one symptom of many, and all showed other retentive phenomena.

Such a patient is Case 1 described by Drs. Coekin and Gairdner, who is still under my care. When first referred he was a very withdrawn depressed child who seldom spoke and showed marked dyslalia; he suffered from insomnia and nightmares, and had periods when he became anorexial. His mother dated the onset of his soiling to when he first started school, which coincided with the birth of a sibling. When first examined he was experiencing intense anxiety over leaving mother to go to school, and at school was described as sensitive and withdrawn. During treatment it became apparent that his retention, not only anally, but orally, was highly emotionally significant for both himself and his mother. His mother was aware of this and found his "unproductiveness" intolerable; her own psychopathology was intricately interwoven with the patient's symptoms. During the first 12 months of treatment the patient was a poor attender: his mother found it difficult to modify her attitudes to him. She felt that his failure to "perform" on the pot could only be dealt with by forcing, and could not tolerate therapy which was directed towards allowing the child freedom, and away from his bowels and his constipation.

At the mother's request the case was reviewed by my paediatric colleagues and it was decided that physical methods should be reinstituted *in conjunction with the continuance of psychotherapy*. For a period following physical treatment the child ceased to soil, but he became constipated again and has since started soiling again. At present he is now soiling freely, but it is no longer a retention overflow. His speech is more spontaneous, he is no longer depressed, and is able to express his resentments much more openly and normally. His mother can now tolerate the absence of physical treatment, and during the last six months the child has had no enemas.

In my opinion there are cases of faecal incontinence where the withholding of physical methods of treatment may defeat the psychological aims. It is necessary to have a close liaison between paediatric and psychiatric departments—a dogmatic approach by either specialty does not help the patient, and treatment must be directed towards the patient's needs, not the doctor's.—I am, etc.,

Addenbrooke's Hospital, Cambridge. B. F. WHITEHEAD.

SIR,—Drs. Marian Coekin and Douglas Gairdner's article (October 22, p. 1175) helps to simplify the approach to this troublesome condition. A warning is, however, called for in the use of enemas in children with chronic constipation. Cases of water intoxication induced by tap-water enemas are probably commoner than is realized.[1] The symptoms include vomiting, pallor, polyuria, convulsions, and coma. Death may ensue in severe cases[2 3] unless energetic measures are taken. Specific treatment consists in intravenous hypertonic saline to re-establish isotonicity and electrolyte balance. Normal saline would seem to be the vehicle of choice for enemas in children; as an added safeguard, the amount of fluid should be limited and every effort made to retrieve it.

There can be little justification for running 1 to 2 litres of contrast medium into the lower bowel of a child. Water can be absorbed in a surprisingly short time from a large bowel, which, due to chronic constipation and dilatation, presents a much increased absorptive surface. The authors point out that radiological investigations add little to what can be learned clinically and are being increasingly little used. If radiological investigation is required, the requisite information can usually be obtained by the use of only a small amount of barium, the flow being observed with the child in different positions.—I am, etc.,

The Royal Infirmary, Huddersfield. W. P. SWEETNAM.

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Leukaemia and Prenatal *X*-rays

SIR,—A recent follow-up of 39,166 children who were *x*-rayed *in utero* produced 9 cases of leukaemia when, even if prenatal *x*-rays carried no risk of this disease, between 10 and 11 cases were expected.[1] At first sight these prospective data were more suitable for testing the effects of prenatal *x*-rays than the retrospective data which first suggested that such exposures increased

the risk of leukaemia and cancer[2]; at least they are free from the suspicion that mothers of live children are less reliable witnesses than mothers of dead children.

There are, however, several reasons why the children included in the recent survey are unlikely to be typical of all children *x*-rayed *in utero*. All we know at present is that they were born in eight hospitals in Edinburgh and London some time between 1945 and 1957; that their names were checked with the names of children who died of leukaemia between 1945 and 1958, and that children *x*-rayed elsewhere than in the hospitals where they were born were not included. It is important to know the following additional facts: (1) what numbers of children were born in each successive year and what proportion were first-born children, (2) what were the expected and observed numbers of leukaemia deaths among the first-born and later-born children in each year.

It has already been shown that leukaemia risks for first-born children differ from those of later-born children,[2] the former having a greater chance of developing lymphatic and stem-cell leukaemias during the peak incidence years (2–4 years). There are also some unpublished data, presented at the September meeting of the Society for Social Medicine, which suggest, first, that the early peak of leukaemia mortality is produced by lesions which predate conception and result in so-called lymphatic or stem-cell leukaemias (prezygotic leukaemias); secondly, that relatively more first-born children suffer from these lesions than later-born children; thirdly, that the maximum incidence of leukaemias and cancers due to prenatal *x*-rays occurs, not between 2 and 4 years, but between 6 and 9 years.

It is possible that the close correspondence between the observed and expected numbers of leukaemia deaths reported by Drs. Court Brown and Doll is due to a deficiency in certain cohorts and an excess in others. This is one of the facts we need to know, for if there is a significant deficiency in the younger cohorts it would raise the suspicion that some leukaemias were missed; a suspicion which is already aroused by the fact that only two girls were found among the leukaemia deaths, compared with seven boys.

No doubt the authors of the recent report have considered all these points and will eventually publish their data in full. The point I want to make is that the children included in this survey were probably biased in favour of children who are not suitable for studying the effects of prenatal *x*-rays—that is, first-born children under 6 years of age. Also any survey which is confined to eight hospitals in two cities runs a risk of producing misleading results. If children from several hospitals in different parts of the country had been included in the survey it might have been possible to collect a large group of children who were either *x*-rayed in the first half of pregnancy or had had several prenatal exposures. If such a group had failed to reveal an excess of leukaemia and cancer deaths, there would have been good reason to suspect the Oxford data. But if, as I suspect, most of the children were first-born children and were still under the age of 6 years at the time of the follow-up, it will be wise not to draw far-reaching conclusions until we know how many of them have died of leukaemia or cancer by 1965, the first year when all the children will have passed their ninth birthday.—I am, etc.,

Department of Social Medicine, Oxford University. ALICE STEWART.

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B.C.G. Vaccination

SIR,—I would like to congratulate Dr. Margaret I. Griffiths on her excellent report on the "Multiple-puncture Vaccination in the Newborn with Freeze-dried B.C.G. Vaccine" (October 15, p. 1116). Dr. Griffiths has given much thought to modifications of guns and needles and has devised a method of vaccination which gives a very satisfactory conversion-rate within four weeks of vaccination. The report covers the vaccination of 2,221 newborn. Under our scheme in Dublin city approximately 6,000 newborn are vaccinated each year with Danish liquid vaccine, using the intradermal method, and the vaccinations are made only by the medical staff. With the present modified strength of the Danish liquid vaccine, complications such as axillary adenitis are rare nowadays, and the complication rate is considerably less than in the earlier years—the few which occur yield readily to treatment.

The multiple-puncture method appears more time-consuming, as following each vaccination the base-plate requires to be immersed in the ether–alcohol mixture described for not less than 30 seconds. The possibility of human error in curtailing this immersion time appears to equal the possibility of making too deep an injection in the rush of a busy clinic. I think Dr. Griffiths has made a very valuable contribution to B.C.G. work in this report, but with the exception of the more rapid conversion-time achieved the advantage of the multiple-puncture method does not appear outstanding. The follow-up of multiple-puncture vaccinations in five years' time will be of interest.

Dr. K. Neville Irvine's article in the same issue (p. 1119) is of special interest, as he stresses the elimination of routine post-vaccinal testing. I agree with his observation that the presence and size of the local reaction following Danish liquid vaccine serves as an index of successful vaccination. He considers that only those with no local reaction require a conversion test. In Dublin we have for some time limited post-vaccinal testing to contacts, and to those who show little or no local reaction at the vaccination site. Otherwise, post-vaccinal testing is not routine, except sample testing as a check in the efficiency of the vaccine. In the newborn group, the infants are seen three months after vaccination, mainly to observe any possible complication and to record the size of the vaccination nodes. The omission of the post-vaccinal test saves the mother an unnecessary visit for the reading of this test, and from an administrative viewpoint prevents overcrowding at the clinics. I congratulate Dr. Irvine on his valuable paper and I agree that, with experience gained over the past twelve years, inspection of the nodes is sufficient in the majority of cases.—I am, etc.,

B.C.G. Section, Dublin Health Authority. M. DUNLEVY.

False-positives with "Phenistix"

SIR,—A recent trial was carried out at Digby Section of Digby-Wonford Hospital, using "phenistix" (a strip impregnated with a mixture of ferric ammonium sulphate, magnesium sulphate, and cyclohexylsulphamic acid) for the detection of phenylketonuria. The subjects were ten adult male patients, suffering from mental subnormality (mental defect) and the test was positive in four (40%), the quantitative reading in each case being 15 mg. A confirmatory test using ferric chloride was carried out on each patient of the series at the Pathological Department, Royal Devon and Exeter