so much experience. I believe that idiosyncrasy goes for much; it seems to me that light-haired, fair-complexioned people, those who would be expected to suffer most from sunburn, are most likely to be singularly sensitive to the x rays.

Thirdly, the difficulty of estimating the dosage of x rays. Here we arrive at the crux of the whole difficulty. In the first place, x -ray tubes are most unstable and alter almost from moment to moment; and in the second, although we can measure tolerably correctly what goes into a tube, our means of estimating what comes out of it are dependent on far less reliable data.

Besides the three disadvantages mentioned above there is, fourthly, the class of case to which most of my failures belong. There is no burn, and the patient suffers no harm, but has all the bother and expense of the treatment, and still suffers from ringworm. These are cases in which the hair comes out patchily, and small scattered islets of infected hairs are still left dotted about all over the scalp. One is afraid to repeat the treatment for fear of inducing dermatitis, and when the hair grows again on the denuded areas it becomes reinfected from the older spots. These cases are most disheartening for both doctor and patient, as the only thing to do is to wait patiently for all effects of the treatment to disappear and then start again; by which time—at all events, in a hospital out-patient department—you have probably lost your patient for ever.

Another fact, which may or may not be a disadvantage, is that even when it has grown considerably the new hair is often of a different colour to the old; this change is, I should think, only temporary, analogous perhaps to the pigmentary changes observable in the skin itself after x radiation.

Coming now to the technical details of treatment at Guy's we usually work as follows:

1. The patient's scalp is kept 6 in. from the anode.
2. The tension of the x -ray tube is kept as nearly as possible at the equivalent of an electric spark of 3 in. in the air.
3. The amount of current in the secondary circuit is 0.20 to 0.30 milliampère.
4. Sabouraud's pastilles are used as a check.
5. The time—unless Sabouraud's pastilles have changed before—is not to exceed in some cases twenty, in others twenty-five, minutes.
6. A tightly fitting lint cap is fitted on the child's scalp, and on this is marked out an H, which divides the scalp into two lateral, a medio-frontal and an occipital area. These areas are treated one after the other for the time specified, the spaces not exposed being protected by fairly thick lead foil, which is held in place by a coarse elastic net, a very useful little device, this latter, which was designed by Nurse Hill of this department. The child is then seated as comfortably as can be in a chair and kept still during the radiation, which seems also to exert a decidedly somnolent effect on most children. Most workers, I believe, have obtained very consistent results with Sabouraud's pastilles. I am very sorry to have to admit that this is not my experience. Some seem to change much more quickly than others.
7. With light-haired, delicate-looking children the shorter limit of twenty minutes is sufficient; with dark-haired, strong and older children—and in cases of parasitic alopecia areata the limit may be extended to twenty-five minutes.

The careful attention to all these details requires much patience on the part of the nurse, and a single treatment with the head divided into four parts takes about two and a half hours.

I must here refer to the method introduced, I believe, by Dr. Macleod of Charing Cross Hospital, of attempting to obtain an exact dosage of x radiation by means of measuring the interruptions in the primary circuit. The method is a distinct advance, and an advance, too, on scientific lines, but it is yet too early to know if this is the last word on the subject. Speaking with due deference, it seems to me that, while it is a very beautiful and exact method of regulating what goes into the tube, it is really only an indirect way of estimating what comes out of it.

Professor Schiff, perhaps the greatest exponent of x radiation living, did me the honour a few weeks back of coming to see me in my department at Guy's. He told me that he had not found Sabouraud's pastilles reliable enough to be an absolute criterion, and that he relied on the visual appearance presented by the phosphorescent tube when excited, and his experience, when ordering the length of time the sitting should take.

I have perhaps said enough to show that the x -ray treatment of ringworm is by no means perfect as yet; it must still be considered on its trial. So long as cases are

treated by those who thoroughly understand the dangers likely to be met with, perhaps the method may be recommended; but it should be thoroughly understood that until we have an exact regulation of the x rays, and until x -ray tubes are far more stable than they are at present, it is not a treatment that is absolutely free from danger, which, if remote, is at the same time real.

DOES DIACHYLON AFFECT THE INFANT WHEN IT FAILS TO PRODUCE ABORTION?

BY
R. HEELIS, M.D., F. H. JACOB, M.D.,
AND
S. R. TROTMAN, M.A., F.I.C.,
NOTTINGHAM.

Does diachylon affect the infant when it fails to produce abortion? That this may be so is suggested by the following case:

Mrs. B., a young woman in her third pregnancy, had symptoms of abortion at the third month. She had severe paroxysmal pains both uterine and intestinal, with vomiting and constipation. The external os uteri was patulous, but there was no haemorrhage. There was a distinct blue line on the gums. She persistently denied having taken anything. She was confined to bed for two weeks, after which she remained well until her confinement at full term. At the confinement the blue line was looked for, but had disappeared. The average time necessary for the complete removal of the blue line is about six months.

Owing to considerable prolongation of labour extraction by means of forceps under chloroform became necessary. The infant breathed badly, but lived for twelve hours. The head was large, measuring 16½ in. round its largest circumference. There were no marks of injury to the head. It was at this time that Mrs. B. admitted having taken pills of lead plaster; on discovering her condition she took three to four daily for a week, and then left off, as they did not appear to be doing anything. The symptoms of lead poisoning did not appear until a month after she had taken the pills.

A *post-mortem* examination of the child was made, and showed all the organs to be normal except the brain. The brain showed a marked condition of hydrocephalus, the ventricles containing fully a pint of fluid; the cortex was markedly thinned and the convolutions flattened. Haemorrhage had occurred into and around the middle lobe of the cerebellum, partially destroying it, and covering the roof of the fourth ventricle.

Microscopic examination failed to discover any evidence of antecedent inflammation, so that probably the haemorrhage occurred during the labour. The liver was reserved for chemical examination, which showed the presence of lead in the proportion of 0.0002 per cent.

The method of examining the liver was as follows:

Two ounces were finely divided and carbonized. The carbonized residue was then boiled with strong sulphuric acid as in Kjeldahl determination of nitrogen till completely dissolved. (Both flask and acid were quite free from lead.) When dissolved the acid was diluted and treated with alcohol to throw down lead sulphate; this was filtered off, converted into carbonate, dissolved in dilute nitric acid, and the lead estimated by a calorimetric method.

Although there is no evidence that the hydrocephalus was due to the lead, yet we have here proof that lead taken by the mother does reach the fetal circulation, is deposited in the fetal tissues, and is very slowly removed. We therefore think it worth while to publish this case in the hope that the many practitioners—who in these days of diachylon-poisoning have ample opportunities of definitely deciding this question—may be on the look-out, and through the medium of the *BRITISH MEDICAL JOURNAL* let it be known whether the fetus which diachylon has failed to expel is in any way injured.

THE late Miss Louisa Frances Stains, of Ipswich, whose will has now been proved, left £1,000 for the endowment of a bed at the East Suffolk Hospital, and a sum of £200 to the Convalescent Home at Felixstowe.