level of the third lumbar vertebra. On the thirty-sixth day a third barium examination revealed the metal marker in roughly the same position, and it was thought highly probable that arrest had occurred at the duodeno-jejunal junction.

On the forty-third day it was decided that, as no progress had been made, the boy should have an exploratory laparotomy with a view to removal of the tube. Shortly before the date arranged for operation, on the fifty-third day, the boy was screened again, and this time the metal weight was clearly seen lying in the pelvis. Digital examination of the rectum confirmed the presence of the tube, which was hooked by the finger and withdrawn.

COMMENT

The interesting point in this case is the unusually long time (53 days) the tube remained in the alimentary canal; yet, despite this, the patient suffered no ill effects of any kind.

It seems probable from the radiological findings that the point of arrest was the duodeno-jejunal flexure, which must surely be unusual. Furthermore, after a delay there, known to have lasted 34 days and which was probably longer, the tube became dislodged and passed without further trouble.

It is reasonable to conclude, therefore, in dealing with cases of this kind, that, provided there are no symptoms, a delay of six to eight weeks is warranted before surgical removal is considered, and that, in addition, a failure of the tube to advance in the alimentary canal for as long as three to four weeks does not preclude the possibility of a natural passage.

I thank Dr. A. J. Moon for permission to publish this case.

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Occupational Calcium Necrosis of the Skin

Necrosis of the skin due to calcium chloride solution appears to be a rarity in that only two cases have so far been published. Oppenheim (1935) described its occurrence in an ice-cream maker who accidentally allowed the concentrated solution of calcium chloride used as a freezing bath to come into contact with his skin. Heppleston (1946) described it in an operator using a 40% solution of calcium chloride as a dust-laying spray in a South Wales coal-mine. The following case, in a maker of anti-freeze solution, serves to confirm the existence of calcium chloride necrosis and to stress the need for protecting the skin from this substance.

CASE REPORT

A 29-year-old Turkish labourer was employed in making a 40% solution of calcium chloride. This was marketed as

FIG. 1.—Necrosis of friction areas on the legs due to calcium chloride solution.

an anti-freeze agent to add to water used for mixing mortar and concrete in cold weather. The manufacturing arrangements were primitive, and one day he splashed his trousers with the solution, but did not change them or wash his legs. That night he noticed considerable pain in the parts of his legs where the tops of his gum-boots had rubbed.

The next morning he reported to the industrial clinic and his legs appeared as in Fig. 1. On each was a thick black eschar surrounded by a thin border of inflammation. The appearance was similar to that of the coagulum produced by the old tannic acid treatment of burns. The eschar was obviously necrotic skin involving the full skin thickness.

With conservative treatment the coagulum began to separate along the edges on the 19th day, and was half separated on the 30th day. Healing was not complete until the 90th day.

A biopsy (Fig. 2) showed coagulative necrosis of the epidermis and underlying dermis. The latter was crowded with nuclear fragments and there was slight proliferation of fixed tissue cells in the surviving connective tissue. Von Kossa's reaction showed obvious impregnation with calcium.

FIG. 2.—Lesion of right leg, showing necrosis and calcium impregnation. Haematoxylin and eosin, Von Kossa.

COMMENT

The microscopical appearances in Heppleston's case were similar, except that in the less severe lesions there was necrosis and calcium impregnation of the dermis only. As in this case, severe lesions were present on those parts of the legs where friction from the tops of the gum-boots had occurred. Healing was prolonged, and it is for this reason that it is so important to protect the skin from calcium chloride solutions.

The cause of the lesions is probably the alkalinity of the solution combined with its necrosing effect. In the present case the pH of the solution was 9.4, and it was found by titration to have an alkalinity equivalent to N/50 NaOH. Calcium is a well-known necrosing agent, as shown by the dire results of its accidental injection subcutaneously or intramuscularly. The alkalinity would soften the horny layer of the skin so that penetration and subsequent necrosis could occur.

I would like to thank Dr. L. E. Glynn for kindly preparing and reporting on the section in this case.

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REFERENCES

- Heppleston, A. G. (1946). *Brit. J. Industr. Med.*, 3, 253.
Oppenheim, M. (1935). *Wien. klin. Wschr.*, 48, 207.