

MEETING OF THE SOCIETY,

May 14, 1908.

J. RUTHERFORD HILL, Esq., President, in the Chair.

The following communications were read:—

CASES OF ABNORMAL GERMINATION IN SEEDS OF *PEGANUM HARMALA*. By J. W. BEWS, M.A., B.Sc. (Plate XIV.)

The seeds of *Peganum Harmala* contain a high percentage of two alkaloids, Harmine and Harmaline.

While investigating the behaviour of these alkaloids during germination, I had occasion to germinate large numbers of the seeds. They were germinated under somewhat artificial conditions, being spread out on moist blotting-paper in a germinator which was kept at a temperature of about 30° C.

The seeds of this plant are roughly tetragonal in shape. The seed coat consists of two layers of large cells, and it is in the inner layer of the seed coat that the alkaloids occur.

There is a considerable amount of endosperm in the seed, and in the centre the embryo lies, the cotyledons also being of considerable size. An interesting fact concerning the embryo and endosperm is the peculiar fluorescence shown, especially when the section is mounted in glycerine.

Altogether several thousand seeds were germinated. In the majority of cases they germinated in a perfectly normal way, the radicle appearing first at the micropyle (fig. 1).

In about 4 or 5 per cent. of the cases, however, the cotyledons appeared first at the end opposite the micropyle, having burst their way through the seed coat, leaving the rest of the embryo inside the seed (fig. 2). In these cases the growing radicle must have been unable to force its way through the micropyle and the increasing pressure must have forced the cotyledons through at the other end. In one or two cases, however, it was noted that radicle and coty-

ledons appeared almost simultaneously, the radicle growing out as usual from the micropyle, the cotyledons appearing at the opposite end (fig. 3).

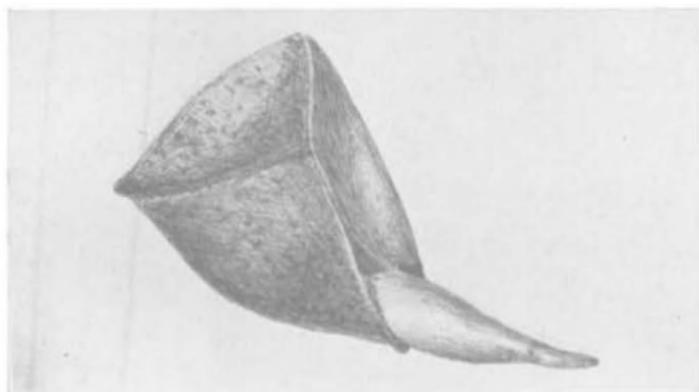
It must be borne in mind of course that the germination of these seeds took place under perfectly abnormal conditions. It is not at all safe to assume that, if they had been germinated in soil, they would have behaved in this abnormal way. At the same time it is extremely likely that, if they had been germinated in soil, and if these abnormal cases had really occurred under such conditions, they would never have been noticed. It is very improbable that such seedlings could ever become fixed in the soil, or indeed survive long enough for the cotyledons to appear above ground.

THE USE OF ARSENIC IN HORTICULTURE. By J. RUTHERFORD HILL, Ph. C.

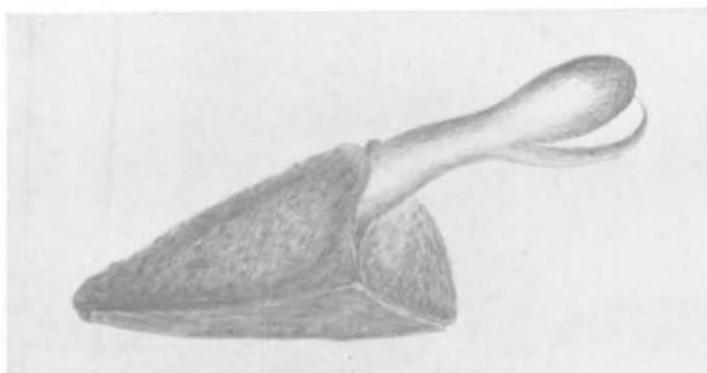
Recently I was consulted as to what could have caused the death of some domestic fowls on an estate in the south of Scotland. It was complained that the fowls were perfectly well one day and found dead the next without any apparent explanation. On inquiry it was found that the fowls frequented a piece of ground which had been treated with arsenical weedkiller fully six months previously. The weedkiller contained equal quantities of arsenious oxide and sodium hydrate. The weeds were apparently completely killed at the time, but there is now upon the ground a strong and vigorous growth of grasses, mosses, and various weeds.

The season had been unusually wet, and on chemical examination it was found the alkali had been entirely washed away and the soil had resumed its normal faintly acid condition. On looking for arsenic a very different state of affairs was found. A little earth treated with diluted hydrochloric acid gave by Reinsch's, Guitzeit's, and the hydrogen sulphide tests, abundant evidence of arsenic in the soil, and this clearly solved the mystery attending the death of the domestic fowls, who had been picking up gravel from the arsenic-laden pathway.

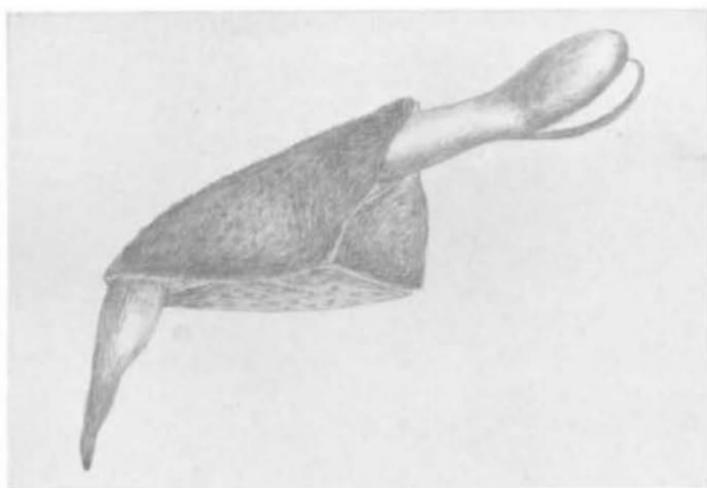
This example is typical of many similar cases which have come under my notice in different parts of the country, and



1.



2.



3.

Germination of seeds of *Peganum Harmala*.