The Correlation of Certain Lesions in Animals With Certain Soil Types.—J. G. Hutton, South Dakota State College.

For many years it has been observed that certain lesions in animals occur in certain localities and that stockmen and farmers believe that these lesions are definitely related to certain soil types.

The lesions consist, so far as may be observed externally, in the loss of hair (alopecia) from certain parts of the body, particularly mane and tail in horses, although other parts of the body may become bare, and in the case of hogs the body may become almost hairless. Chickens may lose their feathers and the eggs of chickens produced in the area may not hatch or may produce chicks with abnormalities particularly as to feathers. Animals often lose their hoofs and develop stiffness of joints and frequently die.

A survey of a typical region in 1922 found that the lesions mentioned above are apparently related to the grain and forage produced upon certain undetermined small areas within the larger area of soils weathered from Cretaceous shales.

The Nature of Phosphate Fixation in Soils.—A. Floyd Heck and E. Truog, University of Wisconsin.

When soluble phosphates are applied to soils, a fixation takes place which results in the formation of phosphates which have a low solubility in water. If there is an abundance of readily available lime present, all or at least a large portion of the phosphate will be fixed as tricalcium phosphate which has a relatively high availability to plants. On the other hand, if the soil is sufficiently acid so that readily available lime is lacking, the phosphate will usually be fixed largely as basic iron and aluminum phosphates.

Soils of high fixing power, that is, those containing an abundance of readily available lime or certain hydrated oxides of iron and aluminum, fix the soluble phosphates very quickly and, as a result, the downward movement of soluble phosphates applied as fertilizer may be restricted largely to the surface inch or even one-half inch. Soils vary greatly in their rate and character of phosphate fixation. This is a very important factor which should always be considered in phosphate fertilization.

By means of chemical methods, it is now possible to distinguish, with a fair degree of satisfaction, between the readily and difficultly available phosphorus as well as between soils of low and high fixing power.


On many soils requiring relatively large amounts of fertilizer it is more economical to make delayed application of part of the added plant food than to apply all at one time, either before or at planting. This fact furnishes the economic basis for the practice of side-dressing and top-dressing, as now widely followed in heavy fertilizer-using sections.