

to-night, is dependent in a very large degree for its value upon the fact that it adds vast quantities of this material to the soil. I shall endeavour to do this very briefly.

THE AGRICULTURAL IMPORTANCE OF HUMUS.

1st. It is the natural store-house and conservator of nitrogen, which element is the most expensive of all plant foods when it becomes necessary to purchase it in commercial fertilizers.

2nd. It furnishes the food upon which the soil micro-organisms live and which by their life functions convert its organic nitrogen into nitrates.

3rd. It possesses considerable amounts of the mineral food constituents. These, in the further decomposition of the humus—a process continually going on in summer—are liberated in forms available to growing crops. We have reason to believe from recent research that the mineral humates furnish a large proportion of the potash, lime, etc., used by crops.

4th. It serves to increase the absorptive and retentive power of soils for moisture.

5th. It regulates and protects against extremes of soil temperature.

6th. It opens up and mellows heavy soils.

7th. It serves to materially diminish the loss of fertilizing elements by drainage, thus permanently improving in the best way light soils.

From these considerations, it is evident that humus is to be regarded as a soil component of a very high order.

The relation of humus content to nitrogen present in soils of similar origin under similar meteorological conditions, is practically constant. It has been noticed that the amount of humus present gives an excellent though not an infallible indication of the amount of organic nitrogen the soil possesses. Further, it has been observed that as the humus disappears the nitrogen goes with it. Cultivation, that is, exposing the substance of the soil to the air, as by our ordinary farm methods with the plow, harrow, etc., tends to dissipate the humus and, as a natural consequence, to decrease the nitrogen. Soils growing grain exclusively year after