

they assume, at the expense of their porosity and fitness to communicate freely with the atmosphere, and is, therefore, also dependent on the mechanical texture. Direct experiments have shown that the mechanical texture of loamy soils is the most favorable for the performance of this important function of soils; this class of soils, though containing a considerable quantity of clay, is famous for the porous condition of its body, in consequence of which it will permit a free access of the atmosphere to all its parts.

The means and ways for the improvement of the MECHANICAL TEXTURE of soils are various; it may be effected either by a mechanical treatment of the soil itself, as by loosening, deepening, draining, &c., or by extra additions being made to it from without. Of these two methods of improvement, only the latter is an act of manuring in the strictest sense of the term, and subject to our consideration in this place. The substances applied are such as will meet the deficiencies of the one or the other of the fundamental constituents of soil, and in this way restore a proper proportion of their relative quantities. In accordance with this, they may be divided into four classes of manure, viz: silicious, (supplying sand;) argillaceous, (supplying clay;) calcareous, (supplying lime and magnesia;) and organic matter, (supplying humus.)

After the foregoing remarks, I will now treat, in particular, of the various kinds of manure employed, whether designed for the improvement of the mechanical texture or for the purpose of increasing the directly nourishing capacity of soils, and will present them in an order which, if not strictly systematical, will best lead to a full understanding of their character and mode of action.

NITROGENOUS MANURES.

Stable or barn yard manure is indisputably the chief manure of all, as it offers to the farmer the most natural and efficient means for restoring fertility to his soil. It is formed of the solid and liquid excrements of animals, together with the litter-straw of wheat or indian corn, and is consequently composed of both classes of fertilizing substances; those which, by their physical properties, improve the mechanical texture of soils, as well as those which, being soluble in water, serve as a direct nutriment to plants.

With regard to the former, stable manure acts principally on account of its humus, the high importance of which as a fundamental constituent of soils, has been repeatedly discussed in this and my former reports. Humus promotes the