4. The per centage (or relative quantity) of mineral matters in the excrements is higher than in the food; and finally,

5. The per centage of nitrogen (that substance which is capable of producing ammonia) is also higher (about double) in the excrements than in the food.

This much as to the relations between food and excrements, so far as they are founded on the ultimate composition of both, as well as on the peculiar changes to which the food is subjected in the animal body. With it we now leave the matters as they occur in the living animal, under the influence of the vital powers, to themselves, and turn next our attention to the changes which occur in the excrements when without the animal body and exposed to the influence of atmospheric air; I mean to say, to the changes they undergo by the process of putrefaction.

The excrements, when no longer in connection with the animal body, soon become intimately mixed with the litter straw of the stables, and remain in this state, at the barn-yard, sometimes for months, before being applied to the soil as manure. The reasons for such a delay in the application are, in no wise, to be attributed to a negligence on the part of the farmer, nor are they altogether conditioned by the necessity to await the proper season for manuring. A *rational* husbandman, one who works understandingly, is besides well aware of the fact that barn-yard manure, in its different phases of putrefaction, will exercise very different effects on a particular kind of soil, and knows, by experience, how far its decomposition has to advance to suit best the soil to which he intends applying it.

It is a well known fact that organic bodies, over which the vital powers have ceased to exercise a control, becoming exposed to the simultaneous influence of air, moisture and heat, will decompose and consequently decay. We say they are "rotting," if no stinking effluvia be evolved from them; and this is the case with all those which are composed of no other elements but carbon, hydrogen and oxygen. Wood-fibre, of which the principal mass of plants is made up, is a representative of this class of organic matters, and its decay consists simply in a slow combustion, produced by its uniting with atmospheric oxygen. Under these circumstances, carbon and hydrogen, the constituents of the fibre, become gradually transformed into gaseous carbonic acid and water, whilst that part of the fibre which remains, in the course between the first start of decay and final destruction, runs through many phases of decomposition, and represents in this form that which we call humus.

The term "putrefying," on the other hand, is applied to the decay of such organic compounds as are famous for the disagreeable and penetrating smell they evolve, and this is the case