

other portion of the food which furnishes the material for excrements, must, therefore, necessarily contain less of organic matter, and as the whole amount of the inorganic constituents remain undivided with it, relatively more of mineral matter than the original food from which it is derived. An examination into the ultimate composition of both, as found by direct analysis, proves the correctness of this conclusion beyond doubt, and discloses, besides, a fact which at once appears interesting and important in its relation to the efficiency of stable manure as a fertilizer. It is the fact, that the excrements of animals contain relatively more of nitrogen than the food from which they are derived, or, in other words, the processes of life transform the food when passing through the animal body into a series of compounds which contain the nitrogen in a form the more concentrated, the more they approach their ultimate destination and final composition. We have seen before, that a portion of the organic part of the food which evolves in the form of water, carbonic acid and ammonia, is all that is subtracted from it whilst under the influence of the vital powers; here we find that, in consequence of this very process, the remaining part, that which furnishes the material for excrements, has increased its quantity of nitrogen far above the proportion in which it originally constituted the food. What is the cause we ask, of so close a connection of two facts, apparently contradicting each other? It admits of but one explanation, as it indisputably proves that the relative quantities of water, carbonic acid and ammonia, as they are evolved from the lungs and through the skin of the animal, do in no way correspond with the proportion in which their ultimate constituents, carbon, hydrogen, oxygen and nitrogen, have originally formed the component parts of the food; there is, in the form of carbonic acid and water, more carbon, hydrogen and oxygen evolved, and consequently, in the form of ammonia, less of nitrogen than it would be the case if the different constituents of food had equally participated in the production of these substances.

In recapitulation of the different processes above alluded to, to which the animal food is subjected whilst under the influence of the vital powers, we may accordingly collect the following conclusions relative to the composition of the excrements if compared with the composition of the food from which they were derived:

1. The absolute quantity of the excrements derived from a certain quantity of food, amounts to not more than about three-fifths by weight of the latter.

2. The absolute quantity of carbon, hydrogen, oxygen and nitrogen in the excrements, is less than their absolute quantity in the food.

3. The absolute quantity of mineral matters is equal to that contained in the food.