

considered that the laws for the nutrition of plants are changed by culture; that the sources of carbon for fruit or grain, and for grass or trees, are different."

It is admitted that manures favour the developement of plants; but they do not furnish Carbon, for manured lands do not yield any more than those lands which have not been manured, therefore, "the Carbon must be derived from other sources; and as the soil does not yield it, *it can only be extracted from the atmosphere.*"

The origin of carbon, and the origin of *humus*, are questions intimately connected. *Humus* arises from the decay of plants; "no *primitive humus*, therefore, can have existed, for plants must have preceded the *humus*." "Now whence did the first vegetables derive their carbon, and in what form is the carbon contained in the atmosphere? These two questions involve the consideration of the most remarkable natural phenomena—which by their reciprocal and uninterrupted influence, maintain the life of the individual animals and vegetables, and the continued existence of both kingdoms of organic nature."

These questions refer, 1st, to the invariable condition of the atmosphere, as respects the proportion of oxygen in it; and 2dly, to the consumption and appropriation of carbonic acid, produced during the respiration of animals, and the process of combustion; and the enquiry will disclose the wise and wonderful economy of nature in the composition of the atmosphere, the respiration of animals, and the respiration of vegetables. In this process animals absorb oxygen from the air, which effects a necessary and most important change upon the blood in the lungs, converting venous into arterial blood, and fitting it for its various

offices in the animal economy. Oxygen is absorbed during each inspiration, and carbon is thrown out from the animal body, as useless and injurious to it, during each expiration. Vegetables require carbon, and in the process of respiration effected by their leaves, which are the vegetable lungs, they absorb carbon from the air, and give out oxygen to it, and in this manner each contributes to the necessities of the other, and by their reciprocities assist in preserving and continuing the wholesome and important constitution of the atmosphere. We shall resume this interesting inquiry in our next number.

In our future extracts from Leibeg, we shall condense his opinions respecting the *assimilation of carbon; vegetable mould; the decay of woody fibre; growth of plants; origin and action of humus; action of carbonic acid; assimilation of hydrogen; origin and assimilation of nitrogen; the inorganic constituents of plants; the art of culture and use of humus; the influence of food and light on plants; the object of agriculture and the fertility of soils; fallow crops; theory of the use of the interchange of crops; manures—their composition, essential elements, and effects; concluding with the chemical processes of fermentation, decay, and putrefaction.*

DAIRY HUSBANDRY.

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THE Farmer, in the selection of his stock, should bear in mind the difference of form between a cow intended for the dairy, and one intended for the shambles. The dairy cow should be long and thin in the head, with a brisk, quiet eye, lank in the neck, narrow across the shoulders, broad across the haunches, no