The great object of all cultivation is to introduce into plants those substances which are adapted to the food of man. In their natural state they receive, from the air and the soil, merely food enough for their own support, the elements required to form the blood of man are contained in them in very small quantities. It must always be borne in mind by the farmer, that our cultivated crops are in a state as much unlike that intended by nature as the stall-fed ox, which has been made to attain an enormous development of fat by excessive supplies of the most nutritious food, is unlike the cow which is obliged to seek its nourishment over the extensive range of scanty mountain pasture. Transplanted by man from their native soil, and collected for his convenience around his dwelling, there has been produced by art a forced and unnatural development of all their parts, but especially of their seeds, and to maintain this forced development the utmost care of the farmer is required; for should he trust his fields to nature, his crops would again return to their natural state, or perhaps entirely disappear. It is well known that the produce of an acre of the wild potato in Chili, its native country, would scarcely suffice for the daily consumption of an Irish family, yet the wild plant and the cultivated are equally exposed to the influence of the atmosphere; the difference in their value as food must therefore depend entirely upon the amount of nourishment supplied by the soil. When the incombustible matter which remains behind after burning a piece of animal matter, such as bone, is examined by the aid of chemistry, we find that it consists chiefly of an acid containing phosphorus, called *phosphoric acid*, with some *lime* and *magnesia*. The composition of the ashes of animal matter is similar to that of the incombustible part of vegetables, and we find if we examine a table in which the composition of bone, and of the grain of wheat is given, that the bones of animals contain from 67 to 68 per cent. of inorganic matters, consisting chiefly of compounds of phosphoric acid, (*Phosphates*), while wheat contains so much as 96 per cent. of the same substances. It was evident then, that upon the presence of the phosphates in our wheat, its value as food chiefly depends. The successful practice of agriculture requires that the farmer, whose object it should be to produce the largest amount of food upon the smallest possible ground, should make himself acquainted with the mode of supplying his crops with those substances which are indispensable to their full development. If those substances do not exist in his fields in sufficient quantity, his wheat and his other crops may spring up, but they will not thrive—and even if they did grow they would be useless as food; for, unless the plants which we consume contained phosphoric acid, magnesia, and lime, our system could no more form bone or muscle, than a carpenter could form a table if we kept from him the wood.

For thousands of years men have been content to remain ignorant of the beautiful relations which, ever since the creation, have connected together animal and vegetable life. They composed learned treatises upon the geography of the moon, and the nature of its inhabitants, while they neglected to investigate the composition of the soil of this globe, and of the plants which ministered to their own existence.

The careful study of the food of plants by Liebig, gave us the first correct notions respecting the true constitution of the soil, and of those curious processes by which