any effect upon their growth, or, to replace what they have lost.

The quantity and quality of substances generated by the vital processes of a plant will vary according to the proportion of the different kinds of food, with which it is supplied. The developement of every part of a plant in a free and uncultivated state depends on the amount and nature of the food afforded to it, by the spot on which it grows. A plant is developed on the most sterile and unfruitful soil, as well as on the most luxuriant and fertile; the only observable difference is in the height, size, number of twigs, leaves, branches and blossoms. The individual organs of a plant increase on a fertile soil, and diminish on a sterile one.

The fundamental principles of agriculture must be based upon a knowledge of those certain conditions which favour the developement of the stems, leaves, blossoms and fruit of plants, and upon which they are dependent. There is no profession, continues Leibig, which can be compared in importance, with that of agriculture. There is in no other profession, in which, the application of correct principles is productive of more beneficial effects, or, is of greater, and more decided influence.

The methods employed in the cultivation of land are different in every country, and in every district; and when we inquire the cause of these differences, we receive the answer, that they depend upon circumstances. No answer could show ignorance more plainly, since no one has ever yet devoted himself to ascertain what these circumstances are.

A similar answer is given to the inquiry respecting the manner, in which manure acts. It is referred to an "incomprehensible something." This answer has been received without an effort to discover "the component parts of manure, or, to become acquainted with its nature."

In addition to the general conditions, such as heat, light, moisture, and the component parts of the atmosphere, which are necessary to the growth of all plants, certain substances are found to exercise a peculiar influence on the developement of particular families of plants. These substances either are already contained in the soil, or are supplied to it in the form of *manure*. Until these points are satisfactorily determined, a rational system of agriculture cannot exist. The power and knowledge of the physiologist, the agriculturist and the chemist must be united for the complete solution of these questions.

The general object of agriculture is to produce in the most advantageous manner certain qualities or a maximum size in certain parts or organs of particular plants. This object can only be attained by the application of those substances, which we know to be indispensable to the developement of these parts or organs.

The rules of a rational system of agriculture should enable us, therefore to give to each plant, that which it requires for the attainment of the object in view.

The special object of agriculture is to obtain a developement and production of certain parts of plants or of certain vegetable matters, which are employed as food for men and animals, or for the purposes of industry.

The means employed for effecting these two purposes are different.—Thus, the mode of culture employed for the purpose of procuring fine pliable straw for Florentine hats, is very opposite to that, which must be adopted in order to produce a maximum of corn from the same plant. Peculiar methods must be used for the production of nitrogen in the seeds; others, for giving strength and solidity to the straw as will enable it to bear the weight of the ears.

The increase or diminution of vital activity depends only on heat and solar light, which we have not arbitrarily at our disposal: all we can do is to supply those substances, which are adapted for assimilation by the power