was placed in a solution of fermenting manure, the disagreeable smell, which has been previously emitted, gradually disappeared.

If these experiments have not quite settled the question, they have at least strengthened the opinion that plants appropriate to themselves soluble substances in very different proportions. Chemical analysis of different plants grown on the same soil, also completely establishes this proposition. With regard to the oxygen, carbon, hydrogen, and nitrogen, chemical analysis has also proved that they are present in plants in proportions varying with the species, but agreeing very closely in the same plant. Analysis has also most clearly established the great diversity of the proportions in which different plants assimilate the alkaline and earths. For example, some plants will be found to contain common salt in large quantities, whilst wheat grown on the same soil will contain none. Other plants again, as the wall pellitory, the nettle, and borage, will be found to contain nitrates in large quantities, though they may be grown alongside of plants containing none at all. It seems, therefore impossible to avoid the conclusion that plants possess the property of choosing, or at least of retaining, certain substances in preference to others, and, consequently, that different plants require different food.

But this opinion does not rest on the authority of chemical analysis alone; it is confirmed by the experience of agriculturists. For instance, it is known that certain manures seem especially to favour the growth of certain plants—as gypsum for clover—that certain plants only thrive on soils where they can obtain an abundant supply of special ingredient, as the fern and the chestnut, on soils rich in potash, of such as are derived from slate rocks, and those of volcanic origin; that a mixed husbandry is the most productive; that a plantation containing a variety of trees produces more wood than if one species alone had been planted. These multiplied facts prove that it is not a certain quantity of a nutritive principle, but a choice amongst several that is necessary to vegetation.

Researches respecting the Food most suitable to different Plants.

The difficulties which are encountered in attempting to settle the general question becomes still more serious as the attempt is made to descend from general to particular cases.

It is rarely that an opportunity occurs which enables us to decide upon the effect of such or such a manure upon plants. To do this with certainty the substances tried must be in a state of chemical purity; and as plants are composed of a great number of different substances, it would be necessary to try each one of these separately, and to observe the effect of their application, and of the want of them—an admirable subject for the study of those who are ambitious to establish on sure grounds the principles of scientific agriculture. The long and difficult experiments necessary for this purpose have as yet hardly been commenced, and our knowledge of this important subject is as yet merely empirical. But the information we already possess must not be despised because it has not as yet arrived at the perfect solution of the question, especially as the benefit of certain mixed manures to certain plants is well known. In addition to the examples quoted in a former part of this paper, the benefits of lime to cereals, and of the sulphates to leguminous and cruciferous plants, are well known. But the very limited number of instances we can quote, is a significant proof of the state of our knowledge. The most of manures used contain a great number of the elements of vegetation, and it is difficult to distinguish what each plant carries off, and what is left for future crops.

In the mean time, until the experimental application of different manures shall have pointed out what is most suitable to the plant we wish to cultivate, we have no other guide than chemical analysis, or examination of the quantity of nitrogen, carbon, and mineral matter present in the ashes of the plant. Such an analysis shows us the substances which a plant has absorbed. But it is only after having submitted the growing vegetable to an experimental test, that the effect of these various nutritive matters, and the theory of vegetable food, can be established on a settled basis. When we shall have arrived at results from the combination of these two methods, first ascertaining by *analysis* the materials, and thus satisfactorily ascertaining their individual effect,, the science will then be perfect.—*Farmers Magazine.*

ON THE FOOD OF PLANTS.

If we imagine a soil properly pulverized, and yet retaining such a degree of firmness and consistency as to give a secure hold to the roots, a plant situated in it will find a matrix at fluence, and also to supply the moisture necessary for the wants of the plant. But if the mineral ingredients of such a soil are insoluble and fixed (as it is expressed in chemical phraseology), a plant will certainly live in such a situation by deriving much of the food it requires from the atmosphere. But vegetation, in such a situation, and under such circumstances, will not suffice for the farmer. It is only by means of certain soluble ingredients in the soil that this normal state is attained; and if the soil does not contain these soluble substances, or does not contain them in sufficient quantities, it then becomes our business to supply them. These supplementary substances (if the expression may be allowed), this sustenance for the plants, to which the name of "manures," or "stimulants," have been given, according to the point of view under which they are contemplated, is therefore an