

digestive function of such plants is reduced, do they become incapable of fixing carbon and forming the ordinary carbohydrate products such as starch and sugar. Some of the most notable of parasites are to be found in the celebrated banyans of India, which often begin their growth in the tops of lofty trees, upon which they feed until killed.

We again find a very large class of plants feeding upon the products of organic decay. These contain no chlorophyll, have no proper roots and no leaves, or at most mere rudiments of such organs. Like the parasites, they cannot appropriate carbon, except in the form of organic compounds; their existence thus implies their dependence upon previous life. They do not liberate oxygen, but eliminate carbon dioxide as one of their characteristic products. Such plants are designated by botanists *saprophytes*, and are represented by the mold of stale bread and cheese, by the common mushroom and puff-ball, and also by the Indian pipe, one of our common wild flowers.

We thus find that any extended consideration of the subject with which we are now dealing, must recognise the special characteristics of plants in their relation to the appropriation of food, but as more detailed statement would lead us too far from our main purpose, we shall for the remainder of our discussion, confine ourselves to those plants in which the digestive function is fully developed, and with which we are more largely concerned as the producers of our food.

The special functions of the various elements appropriated by the plant, are not at all well understood, but the results of investigations so far made, indicate their value in a general way and show in what direction other inquiries should be made. For the purpose of determining how far each element present is essential to growth, we resort to special methods of culture, either in water or pure quartz sand, under such conditions that the number of elements and the exact quantity of each may be known and controlled.

From such a series of investigations we learn that potash