

have said that a living plant is always in motion. I do not mean that it travels, but that in every actual living cell there is motion going on. How does the plant grow ! The index of the growth of the plant is given by the movements of protoplasm. What are the movements of it ?

Some of you may have seen on the seashore some simple animals, consisting of soft masses like pieces of flesh, they spread out and contract themselves and undergo various modifications of form. Now the protoplasm spreads itself out and draws itself in and is continually moving about in this way, and in this protoplasm there are little clear spaces formed. How are cells formed ! How is the tissue formed in the plant ? By a change in the protoplasm when these clear spaces are formed and new cells are thus produced in the old, that is, cells within cells are formed, and thus one leaf or other part of the plant grows or extends. We have these new cells produced and ever go on increasing. Then arises the question : How does the plant feed ? These cells contain besides the protoplasm other materials which are capable of changing from one state to another, which give rise to the tissues. What is contained in the tissues ? The body of a plant is a living body, and the tissue of the plant takes up from soil and air dead matter. It is in the plant cell alone that dead matter can be changed into organized living substance. It is the plant that produces this material even for the sustenance of the animal. Where does this plant get its food ? From the soil. If we burn a plant there is a small portion of ash left, that is all the plant takes from the soil. How has that been taken by the plant ? It is only taken up in water, it is absorbed into it by the root, not at the tips of the root, that is the growing point, but at the other part and further back. It was formerly thought that the tips absorbed the moisture, but recent enquiry has found that they do not absorb. Then the matter held in solution in the soil is taken up, but how is this solution conveyed to the other parts of the plant ? It would be of no use to the root so it passes up through this beautiful system of tubes. These capillary tubes are exceedingly minute and the water passes up through these from the soil and ultimately it gets to the leaves, carrying with it the potash and phosphates from the soil. What takes place in the leaves ? The leaf of the plant is made up of those little cells, just like the other parts of the plant, and they are arranged in a very particular