from the first pair and resemble those of the maple as usually seen. Later, a third joint shoots up from the summit of the second, bearing a third pair of leaves, and so on until the plant likeness of the seed becomes a fully developed tree. The three organs, root, stem, and leaves, which exist in the embryo in a rudimentary state, are called the fundamental organs or organs of vegetation, because they have for their object the development and nutrition of the plant; while all the parts which succeed the leaves, such as the flower and its organs, are only modifications of them designed for a special purpose, and are called the organs of reproduction, since on them depends the increase of the plant in numbers, or the continuance of the species.

Proceeding onward with his reading the student will obtain some general knowledge of the various sorts and forms of these two sets of organs, and afterward will get an insight into the life of plants, and the mode in which they do the work of vegetation. He will discover that all plants possessing leaf-green (Chlorophyll) as the pigment which gives the green color to the leaves is called, possess also the power of assimilation, that is of making starch and similar organic compounds out of inorganic elements, such as water and carbonic acid: which transformation, briefly speaking, is thus effected. The plant through its roots, by the process known as osmose, takes in, dissolved in water, various compounds containing carbon, oxygen, hydrogen, nitrogen and other materials. The pressure exerted by the liquid as it comes into the roots, together with the attraction exerted by a constant process of evaporation from the leaves, causes the "sap," which is the plant food, to rise, and gives us what is known as the plant circulation. When, by this osmotic action, the sap finally reaches the leaves, it, in conjunction with carbonic acid derived from the air, is converted, in the chlorophyll grains under the influence of sunlight, into organic materials, which pass into a whitish granular liquid called protoplasm, and are used in "growth," that is in the building of new cells to form plant tissue. Assimilation takes place only in sunlight, but growth goes on most rapidly at night. In the former process oxygen is set free and given off through the leaf-pores, or stomata, but in the latter, air is taken in through the stomata, and, as its oxygen is used up, carbonic acid gas is