

Let us now direct our attention to the root of the beet. Removing the earth carefully, we find that there is one well developed root pushing straight downward into the soil, and that smaller roots are sent out from it in two side rows. We notice also that for some distance below the surface of the soil the main root is smooth, and free from these smaller rootlets. How is it that so very little of the fleshy root of the beet appears above the surface of the soil? In reply to this question, we would ask you to observe the great length of these rootlets. "It has been frequently found that from four and five feet below the surface of the soil have been blocked by them." As the rootlets develop, therefore, they exert a downward force upon the bulb, and this force tends to draw the bulb into the soil.

Conditions being favorable, the beet plant grows quickly. The main root thickens rapidly for a time; then we observe a less marked increase in size, and finally we can detect little, if any, development in this direction. During its development, small sacs, or cells, are formed within the root. These cells act as store-houses for the food material of the plant.

Let us again observe the leaves. The first thing that attracts our attention is the color of the leaf. Have you ever thought of the cause of

this shade in the leaves of growing plants? It is due to the presence of a certain green substance known as *chlorophyll*. This big word has been made up from two Greek words that simply mean "leaf green." This chlorophyll plays a very important part in the life-story of sugar. The particular use of this green matter is to change the raw material into plant food. One of the chief materials of plant food is carbonic acid gas. This gas comes from the lungs of animals. All living creatures are continually breathing out carbonic acid from their lungs.

This gas is poisonous to

man, but is an essential food of plants. Without this food, the plant could store up no sugar, nor could it even live.

Carbonic acid gas passes into the leaves of the plant through small openings situated on the underside of the leaves. Large quantities of this gas are taken in by the leaves of the beet plant. This gas under the influence of chlorophyll is made to unite with water, and thus form a compound from which sugar is ultimately derived. After the sugar has



Fig. 85.—Shows the stem sent up from the crown of the beet. Second year of growth. The flower of the beet (in upper corner on right.) The ovary cut down through the centre (in lower corner in right.)