

been formed in the leaves, it is carried to the roots of the beet by the downward flow of the sap or juice. In the root of the beet, the sugar is deposited in cells, which very closely resemble those of the honey-comb in structure.

You will naturally ask : Does the beet go to all the trouble of manufacturing and storing up sugar for our special benefit ? Not at all. As you all know, the sugar beet does not produce seed during the first year of its growth. If we take a beet root from the cellar and plant it we observe that it again begins to grow. From the crown of the beet, a strong leafy angular stem is sent up. This stem bears the flowers which are the forerunners of the fruit. The flowers, you will notice, are arranged at short intervals along the stem and its branches, and are usually in clusters of four or five. Below each cluster is a small bract.

The flower possesses a perianth, which is composed of five small green leaves. The lower part of the perianth is united with a fleshy substance called the receptacle. We also notice five stamens opposite the perianth. The ovary, or sac, encloses a small body called the ovule. The ovule eventually changes into a seed or fruit.

After fertilization, the receptacle and base of the perianth of each flower enlarge considerably. In this way, the perianth of each flower becomes more or less firmly attached to each other. The fleshy portions, with the ovaries, eventually become hard. These spurious fruits finally come into the market as "seeds."

During the period of growth and development of the fruit, what has become of the bulb or fleshy root ? Upon examination, we find that only the walls of the former bulb remain (Notice Figs. 84 and 85). What is the cause of this change ? The reply is : The store-house has become emptied of its contents. By what agency ? The sap or juice has carried it up for the young seeds in the course of their development. We see therefore, that the sugar and other contents of the cells in the roots were stored up by the plant for the purpose of supplying the food necessary to fruit or seed, production. In obtaining sugar from the beet, we, therefore, simply intercept Nature's plans, and are thus able to appropriate that which was not originally intended for us. This sugar is stored up by the beet plant in the root that it may feed itself the next season when it is forming seed.

We shall now examine the process of the manufacture of sugar from the beet. The beets are at the close of the first season removed from the soil, and are taken to the factory. At the factory, they are put into large sheds with V-shaped bottom, which are connected with the factory by means of channels. Through these channels a moderate flow of water carries the beets into the first washing machine. By means of a spiral arrangement, the beets are tumbled about, washed, and carried along until they drop into an elevator. This elevator carries the beets to the top of the building, where they are weighed and sliced in such a manner as to open up the cells of the beet as much as possible.

We have already noticed that the cells of the beet in which the sugar is deposited are very similar to those of the honey-comb. Therefore, it is very important that the knives used in the slicing operation be sharp, so