

STARCH IN LEAVES.

Sachs now demonstrates on a number of plants that the starch formed in the leaves during the day may disappear completely during the night and that the leaves shown to be full of starch in the evening may be quite empty of starch the next morning. This depends upon the temperature and health of the plant, but occurs normally during the summer in plants growing in the open air * * * * *

The experimental proof is very simple. A leaf is halved longitudinally at night, after a fine, sunny day, and the excised half is shown to be filled with starch by the iodine test described. The remaining half is tested early next morning, and shows at once if any material diminution has occurred during the night. A simple and obvious modification of this experiment gives an idea of the quantity of starch formed between sunrise and sunset. The half leaf tested before sunrise shows no trace of starch; the other half left on the plant during the day is found to be more and more filled with starch during the afternoon. * * * * *

Differences in the weight of the leaves and in the intensity of the color produced by the iodine test as well as some other observations, lead to a better understanding of a fact already known generally, viz: that the starch disappears from the leaves in the form of glucoses, which travel by way of the vascular bundles into the stems, and thus pass to the places where they are used up in growth.

Leaves used as fodder, etc, must differ in nutritive value to a very great extent if their starchy contents vary so largely during the day and night; it thus becomes of primary importance whether such leaves are gathered in the morning or the evening, in cold or warm weather, etc. The same applies to *tobacco* and *tea*, etc. It must make a vast difference to the smoker whether his tobacco abounds in carbohydrates or is relatively richer in the alkaloids. It appears that tobacco is habitually cropped in the morning in some countries, a fact which suggests what experience has already shown, that a difference in the quality exists; it will be interesting to inquire further into these matters.—*H. Marshall Ward in Nature. XXIX, 554; (from Bot. Gazette.)*