3. The reserve starch is least during active growth and greatest just after the fall of the leaves.

4. The amount of stored material is most variable in the bark, and least variable in the wood and pith.

5. Reserve material appears most abundantly in the oldest tissues and those which are most strongly lignified, least abundantly in the tissues where the vitality is greatest.

6. The storage of the carbohydrate is first in the old and lignified cells, and last in the most active structure.

7. The solution of the stored starch is first in the active parenchyma cells, and last in the permanent tissues.

8. There is a gradual solution of the stored starch during the period of rest.

9. Leaves normally contain an abundance of starch during the period of their greatest activity, but as they ripen the starch is replaced by oil.

In 1871, Nobbe and Schroeder demonstrated the influence which may be exerted upon this distribution by an abnormal food supply. Their experiments with buckwheat, to determine the specific value of chlorine and potash, were found to have an important bearing upon the products of assimilation. The potash, as is now so well known to be the case, was found to be essential in the first instance to the formation of the reserve material, while the chlorine was observed to bear a most important relation to its final distribution. Withholding the chlorine, the starch accumulated in the tissues where formed, so that the bark and leaves became abnormally charged with it, particularly in the young growth. At the same time there was marked atrophy, together with high discoloration of all the growing parts, showing a failure of proper nutrition and, therefore, of distribution of the digested material. Restoration of chlorine to the food-supply gradually effected distribution of the starch and restoration of the normal growth. This then shows what may be produced by artificial treatment, and clearly demonstrates the dependence of the physiological activity upon the presence of special elements and compounds. It also leads us to infer that similar abnormal conditions may develop whenever the plant is deprived of these special elements of food under conditions of ordinary growth.

Acting upon these suggestions, Dr. Goessmann and I have, for