The Professor then announced his intention of addressing the meeting on the subject of fruit trees, "looking at the inside of the tree," and giving a scientific statement of the manner in which the growth of the fruit tree and fruit proceeds.

The speaker proceeded to illustrate his subject by diagrams on the blackboard, drew representations of longitudinal and cross sections of growing tree, showing the arrangement of cells and layers of wood, and proceeded to describe the process of formation. The outer cells which are continually forming are filled with a mucilaginous substance. Under the influence of heat, water (sap) rises in the tree uniting with this mucilaginous matter and necessarily causing the cells to increase in size and extend in length. This process continues until the cells change to tubes of woody matter, forming each summer another circle of wood around the tree. This explains imperfectly, said the Professor —the manner of growth of the tree. To explain from whence the material was derived, it would be necessary to go on to the production of leaves and the relation of leaf and root to the production of woody matter. As agriculturists, said he, you know that certain substances applied to the soil increase the growth of plant, but of substances thus applied little trace can be found in the tree or plant. The plant derives its food mostly from water and air. An apple consists, besides water, of certain solid substances, acids, and sugar. Its odors are derived from ethers, its taste from sugar and acids. These are produced from oxygen and hydrogen, the elements constituting water, and carbon derived from carbonic acid gas found in the atmosphere. These three gases are the elementary substances concerned in the production of the tree, fruit, and everything connected with the growth thereof. The Professor further explained that while cells formed early in the season between the wood and bark were continually changing, the inner ones to wood and the outer to bark, those formed in the autumn remained in the cell state until another spring.

Large quantities of starch and sugar, substances formed from the elements previously mentioned, and which are the main constituents of vegetable growth, are stored in the plant during the summer. Starch, which is insoluable in cold water, in the spring under the action of heat and moisture in the living plant changes to sugar, and is rapidly used in the formation of wood and growth of tree, the plant being found to have the least quantity of these substances just before the formation of the leaves.