PLANT PATHOLOGY IN ITS RELATIONS TO OTHER SCIENCES.

E. S. REYNOLDS.

In pursuance of the thought that science is a unit and not merely an aggregation of separate sciences, the relations of various sciences to plant pathology are to be considered. This science is defined as the study of the diseased conditions of plants, and its importance, as indicated by the large losses to the farmer caused by plant diseases, can not be overestimated.

The relations existing between pathology and botany are very close: In morphology we must study the natural and diseased forms and structure of plants, as well as the morphology of the attacking parasites; in physiology the normal and abnormal functions of host and of parasites must be investigated; from bacteriology many methods have been adapted to pathological study, and, as many diseases are caused by bacteria, the paths of the pathologist and of the bacteriologist cross; many diseases attack our woody plants and greatly endanger our forestries, thus bringing forestry and pathology into intimate relations.

When we turn to the other sciences, zoology attracts our attention, for insects and other animals either cause or carry many diseases. The diseased conditions in plants may cause disease in those animals which feed upon them. Between chemistry and pathology some intimate relations exist. The manufacture and use of fungicides, and the contributions of chemistry to our knowledge of the normal and abnormal plant products make evident these relations. The problems in plant pathology which relate to physics as well are even more subtle, for in these we must study such questions as involve the process of osmosis in plants, the ascent of water in trees, etc., and the influence of parasitic growth upon these processes.