Chapter VII.

Physiology of Plants.

Empirical Stage—Influence from Animal Physiology—Nutrition in Plants—Movement and Feeling in Plants—Sachs—Reproduction in Plants—Ancient Conjectures as to Sexuality of Plants—Camerarius—Kœlreuter—Sprengel—The Act of Fertilization—Sexuality of Cryptogams—Experiments on Sex and Reproduction.

The lore of the gardener embodied from ancient times not a little knowledge which we would now call *physiological*, but it was long in acquiring scientific value. It is impossible to believe that the old practice of caprification (concerned with the pollination of the fig), or the equally ancient device of dusting the female date-flowers with pollen, were in any real sense understood; and the same must be said of simpler matters, such as pruning and manuring. The old lore was empirical and not scientifically understood. Empirical Stage.

Just as discoveries as to the functions of the human body raised inquiry in regard to the functions of animals, so the facts of animal physiology have from time to time prompted the botanists to look for similar phenomena in plants. Thus Harvey's discovery of the circulation of the blood raised the question as to the movements of the sap. On the whole, it must be confessed that vegetable physiology has always lagged behind animal physiology, and this is not unnatural, since there is much less division of labour in the plant than in most animals, and the analogy of the human body, always suggestive to the animal physiologist, is hardly relevant. Influence from Animal Physiology.

There are few more striking examples of the slow and often devious progress of science than the history of the physiology of nutrition in plants. The details are skilfully set forth in Sachs's *History of Botany*, on which the following summary is based. Nutrition in Plants.

The Aristotelian theory that the food of the plant is prepared for it in the ground seems now crude enough,