functions of plants. Sachs was the first to show that the starch which Von Mohl and others had recognized as almost universal in the chlorophyll grains (or chloroplasts), is the first visible product of elaboration by the chloroplasts under the action of light, and that it passes from its seat of formation to growing and storing tissues. It may be said that no small part of his life-work was concerned with starch and allied substances. In general terms, he devoted himself to the micro-chemical study of the active tissues, a method now familiar, but when Sachs began his work, quite novel. He applied it in particular to the internal phenomena of germination, and to the movements and changes of formed materials within the plant.

(*b*) *Environmental Stimuli.* Sachs made equally great advances by his researches on the reactions of plants to external stimuli. He defined the optimum temperature for germination, studied the heat-rigor and cold-rigor of sensitive organs, showed that heat as well as light is necessary for the formation of chlorophyll, and analysed the various influences of light, and of some rays in particular. By his investigations of the reactions which occur in response to the stimuli of gravity, light, and moisture he placed the study of the irritability of plants on a secure basis.

(*c*) *Methods.* His great manual dexterity and ingenuity of device enabled him to do exact work with very simple instruments, and some of his appliances are now familiar in the botanical laboratory. He made the first growth-measurer (auxanometer); he devised the simple "hanging-sieve", with which he studied reaction to moisture; and he introduced the "klinostat", for studying the reactions of growing parts to gravity. In connection with methods, we may also notice that he gave great attention to the culture of plants in artificial nutrient solutions, a method begun by Duhamel (1758), and of great importance in the determination of the relative physiological value of the different mineral constituents in the plant's food. Sachs also devised the "Lithium-method" of studying the rate of the passage of water and salts up the stem.