

(*d*) *Growth and Development.* The questions which interested Sachs most keenly were concerned with the conditions of growth and development ("physiological morphology"), and he approached these in three ways. (1) In his researches on the influence of the environment, *e.g.* light, he studied some of the normal stimuli to which plant protoplasm reacts. Thus, to take a relatively simple case, he showed that the formation of blossoms depends directly or indirectly upon light and particular rays of light, for it is only by the assimilatory activity of the leaves in light that the particular materials required to produce flowers can be produced; and the development of the flowers is suppressed in plants grown in light which has lost its ultra-violet rays by passing through a solution of quinine. His investigation of reactions to gravity, moisture, &c., have also a bearing upon the same problem. (2) He was first to throw a clear light on the relations between growth and cell-arrangement, maintaining firmly that the former determines the latter, and not *vice versa*. He also formulated two general laws of cell-division. (3) He held a particular theory of specific organ-forming substances, which find their way to their proper areas within the growing plant. This theory will doubtless be developed in a work (which he left in manuscript) entitled "*Prinzipien Vegetabilischer Gestaltung*" (Principles of Vegetable Form). As far as we understand, in his evolutionary views he agreed with Nägeli rather than with Darwin.

In the higher animals some of the facts of sex and reproduction are very conspicuous, and could never be hidden from the observer, though they might be, and often were, misunderstood. Man's own zoological position as a mammal gave him a clue. In plants, however, even the elementary facts of sex and reproduction eluded detection for many centuries. Not that they are in any way concealed, in the higher plants (Phanerogams) at least, for there is no more flaunting sexuality than that of the lily; it was simply that, in its superficial expression, the sexual reproduction of plants is very different from that in animals.