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1. Fundamental relations. A plant is an organism capable of nourishing itself under the control of external conditions, and of modifying its form and structure in accordance with this fact. Hence the most important matter in the study of plants as living things is to find out how ~~the~~ making and the using of food take place, and how the carrying out of these processes affects the structure of the plant. In seeking to explain the behavior of the living plant, i.e., its activities or functions, the first need is to discover the external factors that control it. We must next estimate the effects which these produce. These are first seen in the functions of the plant, and in some cases they become evident here alone. As a rule, however, many of them appear sooner or later as a change in the minute structure or form of the plant. The proper task of physiology is the study of the external factors of the environment or habitat in which the plant lives, and of the activities and structures which these factors call forth. The former are causes, the latter effects. The sequence of study is consequently factor, function, and form, and the primary object to discover the nature and amount of this fundamental connection between the external factors and the resulting functions and form.

Physiology was originally understood to be an inquiry into the origin and nature of plants. This is the view that pervades the following pages, and in accordance with this the subject matter of ecology is merged with that of physiology.

2. The nature of stimuli. Any factor of the habitat that produces a change in the functions of a plant is a stimulus. The real test of the latter is therefore furnished by the plant, since the presence of a stimulus can only be