culated form of it, limiting it to inhibitions only, but giving cogent reasons showing its merits. So far as I know, this note of Professor Kistiakowsky is the only paper on olfaction published in SCIENCE mentioning the catalyst theory.

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A Proposed New Name for the Cohesion Theory of Water Ascent in Plants

AFTER many years of experience attempting to teach students in general botany and plant physiology something about the Dixon theory—or cohesion theory, as it is usually called—of the ascent of water in plants, the writer has reached the conclusion that a better and more descriptive name for this process is needed.

The term "cohesion theory" merely describes a property of water which makes possible this method of flow. It does not give an indication of more fundamental factors, such as the source of energy involved in the flow or the state of the water while it is moving. The terms "transpiration pull" and "transpiration stream" are to some extent immune from these objections, but they imply that transpiration is an essential factor in the process and fail to make clear that any process in cells of the shoot that uses water operates in the same way as transpiration in increasing the DPD of the water in the cells and in effecting a consequent ascent of water. The use of the term "cohesion theory" in a sentence often results in a rather awkward statement.

The writer is proposing the term "shoot tension" as being more precise and descriptive, and definitely homologous with the term "root pressure." The term shoot tension localizes the source of the motive power in the cells of the shoot, whether they happen to be in a leaf, stem, or reproductive organ; it describes the state of the water in the xylem during its ascent; and it avoids undue stress of the role of transpiration. Note how much easier it is to say, "The ascent of water in plant A is due to root pressure, whereas its ascent in plant B is due to shoot tension," than it is to say, "The water in plant A is ascending because of root pressure, whereas the water in plant B is ascending in accordance with the cohesion theory (or cohesion, or cohesion of water)."

Students on whom the term shoot tension has been tried seem to grasp the idea faster than when the term cohesion theory is used. The writer is considering using the term shoot tension in a general botany textbook on which he is now working, and would therefore be interested in having the reactions of plant physiologists, teachers of general botany, and other botanists to the term. The writer is under no illusions as to the difficulty of introducing a new term as a substitute for a widely used old one, even though it may be much better. The slow progress in the substitution of "ovulary" for "ovary" is an example from another phase of botany. However, even slow progress is probably better than none.

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Book Reviews

The Chemistry and Action of Insecticides. Harold H. Shepard. New York–London: McGraw-Hill, 1951. 504 pp. $7.00.

Insect Control by Chemicals. A. W. A. Brown. New York: Wiley; London: Chapman & Hall, 1951. 817 pp. $12.50.

Two books have recently appeared that are of particular interest to the entomologist, the agriculturalist, the agricultural chemist, and the pesticide manufacturer. More than this, since insect control by chemicals cuts across many fields, these works discuss subjects of wide importance that should commend them to the attention of all those concerned with the effects of toxic chemical substances on animals and plants.

The Chemistry and Action of Insecticides is the enlarged and extended outgrowth of *The Chemistry and Toxicology of Insecticides* (1939), by the same author. In the opening chapter one is introduced to the enormous losses to crops, farm animals, and foodstuffs caused by insects and to the important place insecticides hold in reducing these. The history of insecticides is discussed briefly here (and frequently again in later chapters); a table presents the important events in the development of insecticides from about 1000 B.C. through 1948. U. S. federal regulations concerning adulteration, misbranding, and pesticide residues on food products receive brief comment, and a list of important books, periodicals, and abstract journals is appended. This chapter, like the succeeding ones, is concluded by a list of literature citations.

Then follow chapters on the various groups of insecticides—the elements, inorganic compounds, and mixtures that have received experimental trial or have gained a place in the practical control of insects; insecticides derived from plants; the oils, soaps, and creosotes; and the synthetic organic insecticides. Separate chapters are devoted to the more general aspects of chemical control (particle size, shape, and density of dusts; wetting and spreading of sprays; adsorption of gases; and related subjects), to relative toxicity and mode of action, and to the attractants and repellents. An appendix contains a conversion table of weights,