# PLANS & CALL FOR PAPERS – 68TH ANNUAL MEETING of the AMERICAN SOCIETY FOR HORTICULTURAL SCIENCE Kansas State University, Manhattan – August 1-4, 1971

The 68th Annual Meeting of the American Society for Horticultural Science will be held August 1-4, 1971 at Kansas State University, Manhattan. **All facilities for the meeting are air conditioned.**

Registration will be on Sunday, August 1. Program sessions will begin on Monday, August 2, and continue through Wednesday, August 4. The Board of Directors will meet on Sunday, August 1, and the Finance and Executive Committees will meet on Saturday, July 31. Other committees wishing to meet prior to the Board meeting should plan to do so on Friday evening, July 30 (prior to tours), or on Saturday evening, July 31 (although committee meetings can be scheduled at other times during the period August 1-4). Arrangements can be made for housing and meeting rooms for those who plan to arrive early for committee meetings. All requests for meeting rooms should include dates, hours, and approximate attendance. Committee chairmen should send such requests to the Program Committee Chairman: Dr. Charles V. Hall, Department of Horticulture, Kansas State University, Manhattan, Kansas 66502.

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# About Our Covers

Although the Long Ashton Research Station of the University of Bristol, England, became internationally noted for its pioneer work on plant nutrition and plant protection, advances of equal significance have been made in other subjects. One of these is the study of Plant Surfaces, under the direction of Dr. J. T. Martin whose survey, (with Dr. B. E. Juniper), *"The Cuticles of Plants"* has recently been published.

For several years at Long Ashton extensive investigations have been made of waxes and other components of the leaf surface to ascertain the part they play in susceptibility and resistance to attack by pests and diseases, and in the efficiency of crop-protecting materials used in their control. The relation between the wettability of a leaf and the physical nature of its surface waxes has been resolved by transmission of electron microscopy which has shown that crystalline waxes are water repellent, whereas those of an amorphous nature are more readily wetted. In the course of this work many long-established ideas have been challenged, and the need to consider the distinctive characteristics of each species is now evident. The introduction of the scanning electron microscope has provided a major break-through in research work on surfaces, and offers a much better opportunity of examining the physical characteristics of the leaf surface in greater detail. The Stereoscan instrument was developed from investigations by C. W. Oatley and his associates at the Department of Engineering of the University of Cambridge, England, and the equipment has been commercially available since 1965. Much of its application so far has been concerned with surfaces of metals, crystals, and similar inert substances, but until recently, comparatively little attention has been given to biological material. A coat of gold/palladium (200Å thick) is first evaporated onto the surface to make it conducting. Under a 30 kV electron beam, focused to a fine probe (100 Å diam) secondary electrons are generated in the surface, the irregularities of which control the number of such electrons and hence the corresponding areas of light and shade on the visual screen of the cathode ray tube, i.e. ridges and slopes appear brightest, with valleys and depressions as darker areas.

The representative micrographs[1] from recent investigations by Dr. P. J. Holloway and Mr. E. A. Baker, illustrate how the instrument's high magnification and depth of focus enable surface characteristics of leaves to be photographed with great precision, and a wealth of information is being accumulated which will aid the understanding of the distribution and character of stomata, the process of character of stomata, the process of applying crop-protecting sprays, herbicides, etc., and also the mechanism of natural resistance to pests and diseases.

The fascinating trichomes illustrated on the front and back cover are found on the upper surfaces of leaves of *(a) Chrysanthemum* (x 370) -- **front cover**; and *(b) Lavender* (x 450) and *(c) Hamamelis* (x 180) -- **back cover**, the T-shaped formation of the chrysanthemum being especially elegant. The regular striations of formations on the upper surface of the lilac leaf *(d)* (x 540), emphasize the extreme care that has to be taken in the preparation of specimens. But apart from displacements and damage caused by abrasions, it must be ensured that artefacts do not result from the scanning process itself.

The range of stomatal variation is indicated by the examples of *(e) Iris foetidissima* (x 2100), where the projection of the guard cells is seen; *(f) Iris germanica* (x 1300) with its surrounding fine wax structure, the formation of this being preserved by using a beam voltage only one-third of the usual 30 kV, and *(g) Sansevieria trifasciata* (x 500) where the stomatal cavity forms part of the inner surface of the isolated cuticular membrane, the penetration of which can be seen between the anticlinal walls of the epidermal cells. Careful removal of cellulose material without affecting these membranes is achieved by zinc chloride-hydrochloric acid solution.

Along with these structural studies, there are parallel investigations made of the chemical composition of the waxes and allied materials. Some 100 compounds have been identified, and although any association of composition with physical characteristics is still being resolved, it appears, so far, that the presence of hydroxy acids is related to the occurrence of the more definitive forms of cuticular structure.

Readers who are interested to pursue this matter further will find further details in *The morphology and composition of isolated plant cuticles* by E. A. Baker in *New Phytologist*, 67:1053-1058, 1968. **(See also p. 470 of the current issue of** *HortScience*. Ed.)

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[1]Photomicrographs by Elizabeth Hull (Physical Chemistry Section).