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Morphogenesis in Plants. A Contemporary Study by C. W. Wardlaw

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Morphogenesis in Plants. A Contemporary Study. C. W. Wardlaw. 451 pp. illus. Methuen and Company, London, 1968. 90s.

In his introduction to the monumental volume XV ("Differentiation and Development") of the *Handbuch der Pflanzenphysiologie* (1965) Dr. A. Lang, the editor, stated, with some misgivings, that the volume may be the "epitaph of an era to which future generations of biologists will refer . . . as the dark ages of developmental physiology." His concern was that knowledge of genetic and molecular mechanisms underlying all phenomena of development and differentiation was just beginning to become available but had not yet been brought to bear on our understanding of plant development. Thus the 3,000-odd pages of this massive encyclopaedic work comprise an exhaustive statement of developmental phenomena in the plant kingdom described in morphological, anatomical, and physiological terms and not in ultrastructural, molecular, and genetical parameters.

In writing *Morphogenesis in Plants*, Professor Wardlaw (who, incidentally, contributed substantially to the *Handbuch* volume) faced the same dilemma. He seems to have sensed that he was attempting to summarize the work of an era about to end, that whole new dimensions were just opening up which would lead to an understanding of development and differentiation in plants at a much more profound level. This book is up to date, including references through 1965, yet no serious attempt was made by the author to bring the new ideas of molecular genetics and biochemistry to bear on the problems of morphogenesis. As Wardlaw says (p. 302), in citing examples of new ideas derived from electron microscopic studies on plant ultrastructure, "The reader may well ask where all this is getting us in our understanding of morphogenesis. It is still too soon to say."

As a summary of morphogenetic phenomena in higher plants, this is a useful and accessible source book and text. Unlike the 1952 book of the same title, this volume includes, in its much enlarged treatment of morphogenesis, discussions of all the major organs of the plant, vegetative and reproductive, and of the processes of tissue differentiation, pattern formation (including phyl-

lotaxis), and induction. A brief chapter is devoted to development in lower plants. Many examples discussed in the text are well illustrated by line drawings. The bibliography conveniently assembled at the end of the volume makes no attempt to be exhaustive but does refer to a wide range of research in this field and opens the literature to an interested student. The book should serve well as supplementary reading for a course in plant development, providing a wealth of examples of morphogenetic problems. It will be up to the teacher and the student and future researchers to attempt to interpret these phenomena in more molecular terms.

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Leonhard Rauwolf. Sixteenth-century Physician, Botanist and Traveler.

Karl H. Dannenfeldt. 321 pp. illus. Harvard University Press, Cambridge, Massachusetts, 1968. \$7.95.

Rauwolf, memorialized in the genus *Rauwolfia* that has become so important in medicine as a source of reserpine, is one of the stars of botanical history. His pioneer work in the Near Eastern flora in the 16th Century set the pace for much of the plant exploration that was to follow two centuries later.

The author, academic vice-president of Arizona State University, has given us a human yet thoroughly reliable and accurate historical picture of this early Bavarian physician-botanist-traveller. This book is a fine example of how delightfully readable a scholarly history can be in the hands of a skillful writer. It is far more than a chronicle of Rauwolf's own writings, for it draws upon a number of other contemporary and later travellers for supplemental or contrasting information. To be sure, Dannenfeldt's book will be of major importance to botanists, but, as a document recording and interpreting the historical annotations and impressions of an all-round, educated gentleman of the late 1500s, it will contribute much to general historical writings of the period. One might wish that the author could have included more illustrations, perhaps from other con-