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BOOK REVIEW

WILLIAMS, R. F.: **The Shoot Apex and Leaf Growth. A Study in Quantitative Biology.** — Cambridge University Press, Cambridge 1975. 256 pp. £ 6.50.

Shoot apices have been examined using anatomical, cytological and histochemical methods. Such studies resulted in a comprehensive knowledge of developmental events in the apical meristems. On the other hand, quantitative examinations of apical growth are rather exceptional. It is not an easy task to provide adequate data for mathematical handling in the case of the heterogeneous shoot apex.

The present monograph attempts to furnish precise quantitative descriptions of some apical systems up to the meristematic region and to provide a theoretical basis for measurement of quantity and time in those systems. The application of available mathematical methods of growth analysis makes possible a better understanding of plant morphogenesis. Development of the old technique of serial sections and reconstructions is the main experimental basis of the objective procedures for the quantitative descriptions. Shoot apices of very diverse types are described. Most of the plants used are crop plants such as *Linum usitatissimum*, *Nicotiana tabacum*, *Trifolium subterraneum*, *Brassica oleracea* etc. Other plants were selected for some special morphological aspects. The parameters studied are the length and volume of successive leaf primordia, plastochron ratio, phyllotaxis index, axial and radial growth of the uppermost internodes of the shoot apex. Remarkable changes in relative growth rate and in phyllotaxis are noticed in the course of vegetative growth. In *Triticum* limited examinations of inflorescence formation were conducted, too.

This book does not deal so much with physiological and cellular problems of growth and morphogenesis, the shoot apex is studied rather as a geometrical system. Physical constraints are considered by the author as an important determinant of the growth rates in the bud. This quantitative study of morphogenesis, although largely descriptive, represents a new approach to the functioning of shoot apical meristems. A better insight into the events taking place in the shoot apices may be achieved by applying quantitative methods. The book supplied with excellent drawings will be stimulatory for students of plant morphogenesis and will be of interest to all plant physiologists engaged in the study of growth and development. It will also serve as a source of information on initial growth of shoots and leaves in some important crop plants.

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