

Gamaleï, Yu. V.: **Transportnaya Sistema Sosudistykh Rastenii. [Transport System of Vascular Plants.]**
- Publishing House of Sankt-Petersburg State University, Sankt-Petersburg 2004. 424 pp. ISBN 5-288-03343-9.

Russian plant cytologist Prof. Yuriï V. Gamaleï has been working for more than thirty years on the problems of transport structures and processes in vascular plants. He is author of monographs (in Russian) dealing with xylem differentiation (1972) and leaf phloem (1990). In the present monograph (let me say, unfortunately, also in Russian, only with English summary and contents) he summarized a vast amount of literature (about seven hundreds of citations, mostly in English) and his own wealthy results and ideas concerning all aspects of transport system of vascular plants.

He deals, in nine chapters, with cellular basis of transport processes in plants, origin of plant transport system and its general organization, regulatory properties of plant transport system, system of minor veins in dicotyledonous leaves, experimental interferences into plant transport system, environmental factors influencing its state, evolution of plant transport system, particularly in dicots, and with ecological and geographic distribution of dicots with regard to the structure of their transport system.

All the volume gives an unusually complex view on the chosen topic. Perhaps, author's concept of open (symplastic) and closed (apoplastic) types of terminal

phloem in leaves, and symplastic and apoplastic plants, founded on studies of many regional and local floras of Eurasia and illustrated by author's electron micrographs (unfortunately, some of them are not adequately reproduced) and drawings, forms the most interesting part of the book. However, even more interesting from the point of view of cell biology are Gamaleï's concepts of plant eukaryotic cell, its endosymbiotic origin and cell theory in plants ("cell-net model"), as well as that of symplast, endoplast and apoplast as three main types of plant structures. According to my opinion, differences between plant and animal (or other eukaryotic) cells are overestimated by the author. However, his theory is well reasoned out and explains successfully such recently described interesting phenomena as are, e.g., plastid stromuli.

As a conclusion, this monograph contains wealth of facts concerning transport system of vascular plants as well as many interesting ideas, not only on this topic, which are worth of discussion. It may be of interest for researchers and teachers in plant cytology, anatomy and physiology, as well as in general cell biology. Once more, it is a pity that it was not published in English.

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