Thomas, P.A.: **Trees: Their Natural History.** - Cambridge University Press, Cambridge 2000. Pp. 286. ISBN: 0521 45351 8 (hardback). GBP 42.50, USD 64.95; 0521 45863 X (paperback). GBP 15.95, USD 24.95.

Peter Thomas, a lecturer in environmental science at Keele University, United Kingdom, collected and selected essential data gained by generations of arboriculturists and foresters. Written in a simple technical language and filled by instructive illustrations the book describes the biology of arboreal plants, mainly those encountered in the "western" temperate zone, with additional examples from other geographical zones. The book can be regarded as a kind of "general dendrology", *i.e.*, a synthesis of morphological and functional features which (*1*) distinguish the woody species from other members of the plant kingdom, (*2*) are useful for foresters, gardeners, and landscape designers, and (*3*) are commonly looked for by authors of regional field guides, botanical atlases and encyclopaedias. Urgent demand for such a synthesis is a long lasting matter. In the earlier period, this request was saturated by Büsgen and Münch's *Structure and Life of Forest Trees* (1931, German edition 1927), Wilson's *The Growing Tree* (1970), Kozlowski's *Growth and Development of Trees* (1971), or Hallé, Oldeman, and Tomlinson's *Tropical Trees and Forests* (1978). In the last two decades, possibly due to the increasing specialisation and accumulation of data in particular botanical branches, summaries of dendrological knowledge seldom appeared in a unified textbook. One of the few recent textbooks is the German written *Bau und Leben der Bäume* compiled by H.J. Braun (1992); about three hundred pages in size and similar in destination, this work is well comparable with the book under review.

Trees are, primarily, an excellent construction with a remarkable external and internal fabric. Understandably, four chapters of the book are arranged according to the dominant organs: leaves, trunk and branches, roots, and reproduction organs. Important anatomical features and growth-physiological processes are explained without physical equations and chemical formulas, but with occasional references to solid scientific papers and monographs attached to the individual subchapters. The topics covered by the book explain and illustrate common questions discussed with regard to the variety of trees: the nature of evergreen and semideciduous species, radial growth in monotyledonous arboreal forms, xylem structure and hydraulic architecture, flood tolerance, pollination, cost of reproduction, *etc.* The growth factors in widespread forest trees are described in quantitative terms. A chapter on the underground organs (pp. 72-111) is exceptionally large, with numerous growth-physiological and ecological details. The reviewer, himself a specialist in tree rhizology, welcomes the multilateral description of the "hidden tree", and comprehensive presentation of the total array of root modifications encountered in trees, including the aerial roots described according to latest observations in the tropics; remarkably, the pneumorrhizae in a temperate tree (*Salix pentandra*) discovered only recently are also mentioned.

Four chapters are devoted to the patterns and processes governing the external shape of woody plants: their vegetative and sexual reproduction, seed dormancy, germination, health, and death. Common questions appear right in the title of many subchapters: What limits the size of a tree? What controls tree growths? How does the tree control shape? The reader gets information on growth rings and dendrochronology, but only few lines refer to the architectural analysis by Hallé, Oldeman, and Tomlinson, an approach generalising the vegetative growth and reproduction in 23 models of trees world wide. On the other hand, essential transformation of the both shape and metabolism in very old trees and is not omitted. Elements of „biomechanical design" of trees, following the German physicist Mattheck, are quoted to the benefit of the book – with one exception: adventitious roots inside a hollow trunk never develop on the rotting wall of a hollow stem, as suggested by Fig. 9.6. Internal tree roots arise always in connection with a crack in the demaged bole or a scar left after a broken limb, which develop the necessary callus basis for an adventitious root, and enable its linkage with active floem and xylem tissues situated close to the vascular cambium; afterwards, the new born young root readily penetrates into the rotten wood or wet litter inside the cavity. Compartmentalisation of decay, *i.e.*, appearance of three chemical barrier walls preventing the disintegration of wood in a wounded tree is another interesting process described after Alex Shigo, an American forester. In comparison with the above mentioned Braun's *Bau und Leben der Bäume* the book under review offers a more comprehensive and up-to-date information.

Excessive felling, drainage of soil, air pollution and expansion of concrete roads and buildings, steadily constrain the space left for the trees and spoil their suitable habitats. So far, all historical civilisations eventually got rid of trees and suffered by the loss of hospitable environment. In the forthcoming century, Europe will generate new environmental problems, and its landscape will need tree-friendly management. Only improving knowledge of trees may preserve mature tress and rejuvenate their stands. Hopefully, the shape, growth and life history of arboreal species will become a public interest and subject of highly cultural activities. The handy outline of tree biology and ecology by P. Thomas will be a good guide at the start.

J. JENÍK (*Praha*)