

REVIEW AND ANNOUNCEMENT

Transport processes in wood. J.F. Siau, 245 pp., 123 figs. 1984. Springer Series in Wood Science (ed. T.E. Timell). Springer, Berlin, Heidelberg, New York, Tokyo. Price: DM 89.00, approx. US\$ 34.60 (cloth).

This second instalment of Springer's Series in Wood Science is a textbook as well as a research guide on transport processes in wood. It is a completely rewritten and updated version of the author's well-known 'Flow in Wood' published in 1971 by Syracuse University Press. Those who might deduce from the title that the subject matter covers sap movement in the living tree may be disappointed: this book is all about liquid and gas movement in commercial timber. However, this should not take away the interest from the tree physiologist or functional anatomist, because much of the sophisticated experimental research on timber impregnation, drying and swelling has resulted in data which are equally relevant in wood technology and tree biology.

There are chapters on basic wood-moisture relationships, wood structure and chemical composition, permeability, capillary and water potential, thermal conductivity, steady-state moisture movement, and unsteady-state transport. At the end of the book there is a useful list explaining the numerous symbols and abbreviations used throughout the text, which by virtue of the subject matter is rich in derivations of formulae and equations.

Wherever appropriate, wood structural information is well integrated into the explanation of the phenomena described. This applies especially to ultrastructural data (pit membrane structure and behaviour upon drying, cell wall composition, etc.). The contribution of (sub)-microscopic wood anatomy to the previously largely empirical field of timber behaviour in response to varying water content is indeed impressive. Topics in which there is still scope for improving the agreement between experimental data and ultrastructural knowledge are the effective pore size in various types of pit membranes in hardwoods and softwoods, and the permeability of parenchyma cells to wood preservatives. From the general text it also becomes clear that comparative knowledge on the role of wood structural parameters in the wide-

ly differing behaviour of various timber species is still largely missing. Too many of the explanations are based on studies in a few common softwoods, some temperate hardwoods and of course a *Eucalyptus*. Future research linking structural studies with empirical data on a wide number of species with different anatomies may prove a rewarding field.

In general this text and reference book is well written, and the complex subject matter lucidly explained. I noticed only few slips and controversial statements. For instance fig. 2.9 does not show an abrupt transition between earlywood and latewood within an annular ring in *Larix* as suggested by the legend and the text, but a ring boundary; fig. 2.15 should be labelled as latewood, rather than heartwood; the discussion of permeability in softwoods and hardwoods in relation to pit membrane structure (p.63) ignores the possible occurrence of pit aspiration and its significance in some hardwoods (cf. R.J. Thomas, 1972, Wood & Fiber 3: 236-237).

Like the first instalment in the Springer Series in Wood Science (the late M.H. Zimmermann's 'Xylem structure and the ascent of sap') this book is handsomely produced, and its binding will allow frequent consultation by student and researcher alike. As explained at the beginning of this review, it deserves a circulation well beyond the teaching and research library of timber technologists.

Pieter Baas

Frankia Symbioses. A.D.L. Akkermans, D. Bakker, K. Huss-Danell, J.D. Tjepkema (eds.), 258 pp., illust. 1984. Development in Plant and Soil Sciences Volume 12. Nijhoff/Junk, The Hague, Boston, Lancaster. Price: Dfl. 130, US\$ 50.00, UK£ 33.00 (cloth).

This volume contains the proceedings of an International Workshop held in Wageningen in September 1983. There are 22 papers on various aspects of *Frankia* symbioses, which play a vital role in biological nitrogen fixation in forest ecosystems. Indirectly this volume has practical bearing on wood production and afforestation in areas with low nitrogen content. All papers have also been published in volume 78 of the journal Plant and Soil.