

Book Reviews

Tropical Trees and Forests – An Architectural Analysis. Hallé, F.; Oldeman, R. A. A.; Tomlinson, P. B. 441 pp., 111 figs. Berlin, Heidelberg, New York: Springer 1978. \$ 62.50

Wood technologists are familiar with the foresters concept of tree form with emphasis on bole shape as it relates to growth conditions and length of clear stem. They are perhaps less familiar with the ecologists concept of tree architecture that places far greater emphasis on branching habit and structure of the crown. The concepts are complementary because they are derived from the same trees. Yet, there is much to be learned from those who observe and analyze trees from a non-commercial or non-exploitive point of view.

The book may be conveniently discussed in three sections. The first concerns the elements of tree architecture. It is a concise, but informative, discussion of the many facets of tree morphology that are necessary for understanding and appreciating how a tree attains its final size and shape. Tropical species often exhibit unique and bizarre morphological modifications when compared to the more familiar temperate species. However, we learn that “there is a wider array of growth expressions in woody plants (in the tropics) than anywhere else in the world.” In fact, “one can understand a temperate forest better when one has grasped principles of tree growth in the tropics, but scarcely the reverse.” The point is made that it is perhaps the temperate forests with their paucity of species and with trees exhibiting seasonal growth habits that are unique.

The second section, the heart of the book, describes 23 models of “inherited tree architecture”. These are qualitative models based principally on branching patterns and the proliferation of meristems. The models ignore both taxonomic and phylogenetic affiliations and related taxa may occur in different models. Moreover, a model may include representative trees, shrubs, herbs and lianes. Although models should be viewed as biological concepts, it is nonetheless surprising how one model “evolves” from another. An illustrated key to these architectural models is included, and each model is profusely illustrated with both photographs and highly descriptive line drawings. Much of the material from the 1970 edition of Hallé and Oldeman is incorporated in this section of the book.

The final section, consisting of two chapters, describes the development of individual trees toward a particular model and the integration of these trees within a tropical forest canopy. This is a book of concepts, and few quantitative data are presented. Foresters will recognize many of these concepts in the final chapters, but they may not be familiar with the ecological terminology or the manner in which the concepts are presented. This reviewer found it necessary to frequently refer to the four-page glossary of term developed by the authors.

Although this is a book on forests, it is not a book on tropical forestry and few forestry papers are cited in the extensive bibliography. It is, however, a book of interest to foresters because it not only contains a wealth of information on tropical forests, but also a refreshingly unique way of analyzing their development and structure. A detailed index of plant names and their models and a comprehensive subject index aid the more dedicated reader in relocating these valuable tidbits of knowledge.

Philip R. Larson

Meylan, B. A.; Butterfield, B. G.: The Structure of New Zealand Woods. 250 pp., 805 scanning electron micrographs and two pages of maps of New Zealand. DSIR Bulletin 222. Wellington: New Zealand Department of Scientific and Industrial Research 1978.

Meylan and Butterfield pioneered in applying scanning electron microscopy to wood structure studies and in some respects this new work is a sequel to “Three-dimensional Structure of Wood” which appeared in 1972 as a Reed Education publication. The same book was sold in other parts of the world under the Chapman & Hall (Europe and UK) and Syracuse University Press Syracuse Wood Science Series (U. S. and Canada) imprints. The same high quality of specimen preparation and microscopy is reflected in this new book, “The structure of New Zealand woods”. In my opinion, the quality of reproduction in this case is much improved over the earlier work.

One cannot help but wonder for whom such a book is intended. Having produced picture atlases, that was the first question I asked myself in each case. Certainly an atlas can have multiple uses in both teaching and research activities. Since this book contains information that may be

useful to the forester as well as to the botanist and wood scientist, the potential market of such students and professionals in New Zealand probably justified its preparation and production. To others in areas around the world it offers insights into species that are unfamiliar to many. But if the New Zealand market is considered to be the primary one, it would have seemed desirable to offer a key to help in the identification of the timbers of that country.

Upon re-reading some of the authors' introductory material it becomes clear that "The structure of New Zealand woods" is not meant to provide comprehensive coverage of all woody plants grown in that country. Rather, it is indeed a "survey", but a rather special survey in which 115 out of 157 significant species have been selected for inclusion in this publication. Plants growing to less than 5 meters height were excluded as were species with limited distribution. In effect, this answers the question about the lack of a key for identification of the New Zealand woods. Only about one-third of the woody plants found in New Zealand are illustrated and a key would be restricted to those species. No doubt future plans of this productive scientific team include the expansion of coverage since at press time more than 200 New Zealand tree species had been recorded via SEM.

Taking a more positive view of what has been included in this fine work, the table of wood characters of the New Zealand gymnosperms can certainly be used by an experienced wood anatomist in sorting out the distinguishing features of the softwoods grown there. Similarly, the discussion preceding the section on Angiosperm woods categorizes the principal features to be used in separating the hardwoods included in this volume and lists those families, genera and species which exhibit certain features. For example, vested pits are described as occurring in the families Proteaceae, Onagraceae, Myrtaceae, Papilionaceae, Loganiaceae and Rubiaceae which have representative species growing in New Zealand. Reference is then made to plate numbers which illustrate the great variety of vestures. An advanced student of wood anatomy or a teacher of wood structure should derive considerable benefit from these aspects of the book.

We applaud the appearance of this new book on the wood science scene and are confident that many of our colleagues and our students will join us in making full use of the new graphic evidence that it offers. As one whose interests include microscopy, I should add that this new Meylan and Butterfield publication confirms what many of us suspected some years ago: the scanning electron microscope must now be included among the tools of the wood anatomist, along with the pocket knife, hand lens, microtome and light microscope.

W. A. Côté