**IAWA Bulletin New Series - Volume 13(4)**

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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Preliminary material** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | i-iii |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001289](http://dx.doi.org/10.1163/22941932-90001289) |

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| **Author(s):** | Fritz Hans Schweingruber |
| **Title:** | **Annual Growth Rings and Growth Zones in Woody Plants in Southern Australia** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 359-379 |
| **Keywords:** | southern Australia; growth zones; shrubs; climate; Annual growth rings; ecology; dendrochronology |
| **Abstract:** | Cross sections of 760 trunks of approximately 670 species from 47 families of shrubs, dwarf shrubs, and trees were examined to study the incidence and appearance of different categories of growth zones. In montane/alpine sites with relatively cool winter temperatures all the woody plants form distinct growth rings similar to those seen in boreal and temperate regions throughout the world, and thus these rings are considered to represent annual rings. Most species from this phytogeographical zone are useful for crossdating. In the savannahs, the jarrah and karri woodlands of the southwest and the subtropical rain forests of the southeast identifiable growth zones are formed in most species. The approximate age of the woods can be determined, but crossdating is difficult or impossible. In the desert areas woody plants form irregular growth zones, the number of which may correspond to the incidence of rainfall, and age determination and crossdating is mostly impossible. Members of the well-studied families Cupressaceae, Epacridaceae and Myrtaceae form growth zones that are more distinct than the Mimosaceae and Proteaceae. Included phloem is present in all Chenopodiaceae, one Loranthaceae and two species of Verbenaceae. |
| **DOI:** | [10.1163/22941932-90001290](http://dx.doi.org/10.1163/22941932-90001290) |

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| **Author(s):** | L.A. Donaldson |
| **Title:** | **Lignin Distribution During Latewood Formation in Pinus Radiata D. Don** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 381-387 |
| **Keywords:** | middle lamella; secondary wall; Pinus radiata; lignification; latewood |
| **Abstract:** | Lignin distribution during formation of latewood tracheids in Pinus radiata, was determined by quantitative interference microscopy, and by potassium permanganate staining combined with transmission electron microscopy. Lignin distribution varied among trees sampled on the same date in late winter. In one tree, latewood tracheids were fully lignified up to the growth ring boundary. However in most trees sampled, latewood was only partially lignified. The extent of lignification varied from tree to tree but in all cases, at least some lignin was present in the middle lamella and primary wall at the growth ring boundary. Latewood was ideal for examining the lignification process because of the large number of different stages present in a single specimen. |
| **DOI:** | [10.1163/22941932-90001291](http://dx.doi.org/10.1163/22941932-90001291) |

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| **Author(s):** | E.A. Wheeler |
| **Title:** | **Wood anatomy of the Rosaceae. Shu-Yin Zhang, 211 pp., illus., 1992. Rijksherbarium/ Hortus Botanicus, P.O. Box 9514, 2300 RA Leiden, The Netherlands.** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 388-388 |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001292](http://dx.doi.org/10.1163/22941932-90001292) |

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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Light microscopy. D.J. Rawlins, xii + 144 pp., illus., 1992. Bios Scientific Publishers, Oxford. ISBN 1-872748-11-2. Price: UK£ 14.50; US$ 29.00 (paperback).** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 388-388 |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001293](http://dx.doi.org/10.1163/22941932-90001293) |

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| **Author(s):** | Helena Pereira; José Graça; Cecília Baptista |
| **Title:** | **The Effect of Growth Rate on the Structure and Compressive Properties of Cork** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 389-396 |
| **Keywords:** | Young's moduli; Quercus suber L; growthrate; Cork; compression properties |
| **Abstract:** | Cork samples with an age of 9 years and with different growth rates, corresponding to calibre classes 'small', 'medium' and 'large', were observed by scanning electron microscopy and tested mechanically in compression. Differences in calibre correspond to different widths of annual growth rings; widths differ because both the number of cells produced per year and cell dimensions differ. For instance, small and large calibre cork had, respectively, 50 and 151 cells in one row of an annual growth ring, with an average prism height of 32.6 and 39.8 )µm. The stress-strain curves obtained in compression parallel to the three main directions showed that cork with the higher growth rate (large calibre) has lower strength in compression for all strains and lower Young's moduli. |
| **DOI:** | [10.1163/22941932-90001294](http://dx.doi.org/10.1163/22941932-90001294) |

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| **Author(s):** | Shinji Fujiwara |
| **Title:** | **Anatomy and Properties of Japanese Hardwoods II. Variation of Dimensions of Ray Cells and their Relation to Basic Density** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 397-402 |
| **Keywords:** | dimensions of ray cells; hardwoods; Ray proportion; basic density |
| **Abstract:** | Ray volume and dimensions of ray cells as seen in tangential section were measured in 50 Japanese hardwoods and their relation to the basic density of hardwoods was investigated. Rays are primarily composed of procumbent ray cells but a few species have a larger volume of upright ray cells than procumbent ray cells. The basic density was closely related to the wall thickness of the fibres, cell wall materials of the fibres and cell wall materials of the rays. |
| **DOI:** | [10.1163/22941932-90001295](http://dx.doi.org/10.1163/22941932-90001295) |

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| **Author(s):** | R.J. Murphy; K.L. Alvin |
| **Title:** | **Variation in Fibre Wall Structure in Bamboo** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 403-410 |
| **Keywords:** | fibres; Phyllostachys virideglaucescens; Bamboo; mechanical properties; polylamellation; cell walls |
| **Abstract:** | The degree of polylamellation in the fibre cell walls of the bamboo Phyllostachys virideglaucescens has been investigated. The extent of polylamellation was found to be influenced by position of the vascular bundle in the culm wall, in certain positions by age of the culm and, most strikingly, with position within the vascular bundle. The number of wall lamellae was variable but tended to be greatest in fibres adjacent to either vascular elements or ground tissue at the periphery of the fibre bundles. A similar pattern of variation in fibre wall lamellation was also observed in two other species of bamboo. The characteristic pattern of fibre wall lamellation probably influences mechanical properties and warrants further investigation. |
| **DOI:** | [10.1163/22941932-90001296](http://dx.doi.org/10.1163/22941932-90001296) |

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| **Author(s):** | Hisashi Abe; Jun Ohtani; Kazumi Fukazawa |
| **Title:** | **Microfibrillar Orientation of the Innermost Surface of Conifer Tracheid Walls** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 411-417 |
| **Keywords:** | microfibrillar orientation; Field emission scanning electron microscopy; S3 |
| **Abstract:** | The orientation of the microfibri1s deposited on the innermost surfaces of the tracheid wall was observed in three conifer species, Larix leptolepis, Picea jezoensis, and Picea abies, using field emission scanning electron microscopy (FE-SEM). The microfibrillar orientation is different in each tracheid and exhibits either an S- or a Z-helix. The latest microfibrils deposited were normally joined into small bundles having various widths and had a different orientation from the microfibrils beneath them. When the latest deposited microfibrils on the innermost surface were oriented in an S-helix, the microfibrils beneath them were oriented in either a flatter S-helix or in a Z-helix, and when they were oriented in a Z-helix, the microfibrils beneath them were oriented in a steeper Z-helix. This is because, as seen from the lumen side, the microfibrillar orientation changes counterclockwise from the outer S23 to the innermost S3. These microfibrillar orientations varied throughout a single annual ring in each of the three species. The commonly observed angles of these microfibril were: Larix leptolepis: 70-80°, Picea jezoensis: 60-70°, and Picea abies: 40-50° in an S-helix, and the maximum range of angles was limited in extent to about 90 degrees in all species. |
| **DOI:** | [10.1163/22941932-90001297](http://dx.doi.org/10.1163/22941932-90001297) |

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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Review** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 418-418 |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001298](http://dx.doi.org/10.1163/22941932-90001298) |

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| **Author(s):** | Y. Zhong; P. Baas; E.A. Wheeler |
| **Title:** | **Wood Anatomy of Trees and Shrubs from China. IV. Ulmaceae** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 419-453 |
| **Keywords:** | China; wood identification; ecological wood anatomy; systematic wood anatomy; Ulmaceae |
| **Abstract:** | The wood anatomy of 37 species belonging to the eight genera of Ulmaceae native to China is described. The wood of Chinese Ulmaceae is characterised by mostly simple perforations (sporadic scalariform plates occur in Hemiptelea and Zelkova); altemate, non-vestured intervessel pits; relatively short vessel elements and fibres; non septate fibres with simple to minutely bordered pits confined to the radial walls; mainly paratracheal parenchyma; rays rarely higher than 1 mm. Tanniniferous tubes are reported for the first time in Ulmaceae; they are limited to the genus Pteroceltis. Other, sporadically occurring features such as perforated ray and axial parenchyma cells and perforated fibres are also reported for the first time. |
| **DOI:** | [10.1163/22941932-90001299](http://dx.doi.org/10.1163/22941932-90001299) |

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| **Author(s):** | E. A. Wheeler |
| **Title:** | **Proceedings, 2nd Pacific Regional Wood Anatomy Conference. J.P. Rojo, J.U. Aday, E.R. Barile, R.K. Araral and W.M. America (eds.), 477 pp., 1992. Forest Products Research and Development Institute, College, Laguna 4031, Philippines. Price: US$ 40.00 (price includes the cost of airmail postage, pre-paid orders preferred, checks made payable to Forest Products Research and Development Institute, and sent care of the Director, FPRDI).** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 454-455 |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001300](http://dx.doi.org/10.1163/22941932-90001300) |

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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Biology of Plants, 5th Edition. P.H. Raven, R.F. Evert and S.E. Eichhorn, xvii + 791 pp., iIlus., 1992. Worth Publishers, New York. ISBN 0-87901-532-2. Price: US$ 46.95 (hard cover).** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 455-455 |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001301](http://dx.doi.org/10.1163/22941932-90001301) |

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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Defense mechanisms of woody plants against fungi. P.A. Blanchette and AR Biggs (eds.), xx + 458 pp., illus., 1992. Springer Series in Wood Science (ed. T.E. Timell). Springer-Verlag, Berlin, Heidelberg, New York, etc. ISBN 3-540-54643-X (Berlin) and 0-387-54643 (New York). Price: OM 388.00 (hard cover).** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 455-456 |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001302](http://dx.doi.org/10.1163/22941932-90001302) |

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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Wood Anatomy News** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 456-457 |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001303](http://dx.doi.org/10.1163/22941932-90001303) |

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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Association Affairs** |
| **Source:** | IAWA Bulletin NS, Volume 13, Issue 4 |
| **Publication Year:** | 1992 |
| **Pages:** | 457-458 |
| **Keywords:** |  |
| **Abstract:** |  |
| **DOI:** | [10.1163/22941932-90001304](http://dx.doi.org/10.1163/22941932-90001304) |