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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Preliminary material** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
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| **Abstract:** |  |
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| **Author(s):** | Pieter Baas; Elisabeth A. Wheeler |
| **Title:** | **Parallelism and Reversibility in Xylem Evolution a Review** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 351-364 |
| **Keywords:** | Xylem evolution; reversibility; parallelism |
| **Abstract:** | The irreversibility of the major trends of xylem evolution, such as the origin of vessels in primitive angiosperms with long fusiform initials, and the shifts from scalariform to simple perforations and from tracheids to libriform fibres, has long been accepted by wood anatomists. Parallel development of these and other xylem features is generally accepted, and is suggested by the distribution patterns of the fibre and perforation plate type. Some recent phylogenetic analyses of seed plants suggest that there also have been some reversals in these general trends. The likelihood and extent of parallel origins and reversions of the major trends in xylem specialization are explored here by analysing a number of published hypotheses on the phylogenetic relationships within wood anatomically diverse major clades of angiosperms, and within some individual families. On the basis of these analyses, it appears that for these major Baileyan transformation series, parallelisms were more than twice as common as reversals. Functional adaptations to increased efficiency and safety of hydraulic architecture can largely explain the high incidence of parallelisms in xylem evolution. |
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| **Author(s):** | Mitsuo Suzuki; Kazuo Terada |
| **Title:** | **Fossil Wood Flora from the Lower Miocene Yanagida Formation, Noto Peninsula, Central Japan** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 365-392 |
| **Keywords:** | Distylium; Miocene; Torreya; Stewartia; Castanopsis; Aesculus; Camellia; fossil wood; Japan |
| **Abstract:** | Silicified woods from the lower Miocene Yanagida Formation were collected from two sites, Mawaki and Uchiura, in the northeastern Noto Peninsula, central Japan. Among 80 specimens, 15 species representing 13 families were identified, including six new species: Torreya mioxyla (Taxaceae), Castanopsis uchiuraensis (Fagaceae), Camellia japonoxyla (Theaceae), Stewartia notoensis (Theaceae), Distylium chiharu-hirayae (Hamamelidaceae) and Aesculus mioxyla (Hippocastanaceae). The fossil wood floras from these two sites contain evergreen and deciduous dicotyledons and have a similar composition. These floras are compared to the fossil wood flora from Monzen and to the Daijima-type compression fossil flora. The composition of the fossil wood floras of Mawaki and Uchiura suggests they represent a mixed mesic forest of conifers, deciduous dicotyledons and evergreen dicotyledons. |
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| **Author(s):** | Yuki Kondo; Tomoyuki Fujii; Yoshioki Hayashi; Atsushi Kato |
| **Title:** | **Organic Crystals in the Tracheids of Torreya Yunnanensis** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 393-403 |
| **Keywords:** | Torreyayunnanensis; low vacuum-SEM; organic crystals; nuclear magnetic resonance spectroscopy; X-ray diffraction; modified SEM; ultraviolet spectra |
| **Abstract:** | Organic crystals were found in tracheid lumina of some samples of Torreya yunnanensis Chen ' L. K. Fu imported from Yunnan, China. Tracheids with crystals were found in short to long tangential bands along the growth ring boundaries. Because the crystals were rapidly dissolved with ethanol and xylene, cross and tangential sections were mounted in de-ionized water without staining and observed by biological, polarised light, and phase-contrast microscopy. The crystals were sublimated under vacuum during routine sample preparation for conventional SEM and only the peripheral parts remained. With the aid of low vacuum-SEM and modified cryo-SEM procedure, the shape of the crystals was revealed. Some were styloid and large enough to fill tracheid lumina, while others were stacked appearing as slates filling tracheid lumina. X-ray diffraction applied to sections and isolated crystals showed that they were single crystals and orientated along the cell wall. UV spectra on isolated crystals and methanol dissolution of crystals suggested that they were composed of phenolic compounds. Crystals that were recrystallized from methanol were analysed by 1H and l3C nuclear magnetic resonance spectroscopy. These two techniques revealed that the major and minor components were o-methoxy cinnamic acid and o-methoxy cinnamic aldehyde. |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Review** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 404-404 |
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| **Author(s):** | W.E. Hillis |
| **Title:** | **Formation of Robinetin Crystals in Vessels of Intsia Species** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 405-419 |
| **Keywords:** | vessels containing robinetin; tissue variation; extractives formation; Intsia species |
| **Abstract:** | Many samples of Intsia spp. contain a few vessels which, throughout their length, possess some elements filled with bright yellow crystals. They serve as a characteristic of the genus. An examination was undertaken to elucidate the mode of formation of these crystals, which have been identified as pure robinetin, and the factors which may control their presence. It was concluded they are formed at pit membranes inside these particular vessels. The non-structural components of fibres, parenchyma and vessels in heartwood differ from each other. Also with the possible exception of the fibres, aberrant cells of each tissue formed different compounds. Heartwood extractives are not transferred directly from the parenchyma to other tissues in all species. |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Reviews** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
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| **Author(s):** | L. A. Donaldson |
| **Title:** | **Effect of Physiological Age and Site on Microfibril Angle in Pinus Radiata** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 421-429 |
| **Keywords:** | site; Microfibril angle; cuttings; physiological aging; Pinus radiata; wood quality; seedlings; juvenile wood |
| **Abstract:** | The effect of physiological age (shoot age at propagation) and site on microfibril angle was examined for seedlings (physiological age = 0 years) and cuttings (physiological age = 5-16 years) of Pinus radiata D. Don. Two trials were examined by measuring microfibril angle in alternate growth rings on breast height discs. In the first trial, two sites were compared for ll-year-old trees propagated from seedlings, and cuttings of comparable genotype, at 0 and 5 years physiological age, respectively. In the second trial, a single site was examined comparing 25-year-old trees propagated from open pollinated seedlings, and cuttings physiologically aged by 12-16 years, originating from 10 seed-orchard clones. In each trial there was a significant effect of physiological age for microfibril angle in the first 9 growth rings with a greater effect in the trees of greater physiological age. Physiological aging produced a significant decrease in microfibril angles in the juvenile wood, on average reducing microfibril angle to values below 35° in trees aged by 12-16 years. Juvenile wood size, as indicated by the point at which microfibril angle gradient changes, was reduced by an average of two rings in both sets of aged cuttings examined. There was no effect of site in the material examined. Differences were consistent among seedling/ramet pairs of similar genotype. The use of aged cuttings rather than seedlings should result in increased stiffness of the juvenile wood and reduced longitudinal shrinkage. However, other changes associated with physiological aging, such as reduced basic density and growth rate, may affect the practicality of using highly. |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Reviews** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 430-430 |
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| **Author(s):** | Mitsuo Suzuki; Kiyotsugu Yoda; Hitoshi Suzuki |
| **Title:** | **Phenological Comparison of the Onset of Vessel Formation Between Ring-Porous and Diffuse-Porous Deciduous Trees in a Japanese Temperate Forest** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 431-444 |
| **Keywords:** | water conduction; ring-porous; Diffuse-porous; vessel element formation; phenology |
| **Abstract:** | Initiation of vessel formation and vessel maturation indicated by secondary wall deposition have been compared in eleven deciduous broadleaved tree species. In ring-porous species the first vessel element formation in the current growth ring was initiated two to six weeks prior to the onset of leaf expansion, and secondary wall deposition on the vessel elements was completed from one week before to three weeks after leaf expansion. In diffuse-porous species, the first vessel element formation was initiated two to seven weeks after the onset of leaf expansion, and secondary wall deposition was completed four to nine weeks after leaf expansion. These results suggest that early maturation of the first vessel elements in the ring-porous species will serve for water conduction in early spring. On the contrary, the late maturation of the first vessel elements in the diffuse-porous species indicates that no new functional vessels exist at the time of the leaf expansion. |
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| **Author(s):** | Hua Lei; Michael R. Milota; Barbara L. Gartner |
| **Title:** | **Between- and Within-Tree Variation in the Anatomy and Specific Gravity of Wood in Oregon White Oak (Quercus Garryana Dougl.)** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
| **Pages:** | 445-461 |
| **Keywords:** | ring-porous; wood anatomy; specific gravity; wood quality; radial variation; Quercus garryana |
| **Abstract:** | In order to analyze the variation in wood properties within and between trees of an underutilized tree species, we sampled six Oregon white oak (Quercus garryana Dougl.) trees from an 80-year old mixed stand of Q. garryana and Douglas-fir (Pseudotsuga menziesii [Mirb.] Franco) in the Coast Range of Western Oregon, USA. Fibre length, earlywood vessel diameter, tissue proportions, and specific gravity were measured on samples across the diameter at two heights. Trees had a slight lean (2-12°), so we sampled separately both radii of a diametric strip that ran from the lower to upper side of lean. |
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| **Author(s):** | Editors IAWA Journal |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Wood Anatomy News** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Association Affairs** |
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| **Title:** | **Acknowledgement of Reviewers** |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Additions to e-mail directory** |
| **Source:** | IAWA Journal, Volume 17, Issue 4 |
| **Publication Year:** | 1996 |
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