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| **Author(s):** | Syoji Sudo |
| **Title:** | **Hiroshi Harada** |
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| **Author(s):** | Pieter Baas |
| **Title:** | **Charles Russel Metcalfe** |
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| **Author(s):** | Roni Aloni; Carol A. Peterson |
| **Title:** | **Seasonal Changes in Callose Levels and Fluorescein Translocation in the Phloem of Vitis Vinifera L.** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
| **Pages:** | 223-234 |
| **Keywords:** | fluorescein; Vitis vinifera; sieve tube activity; phellogen initiation; Callose; secondary phloem differentiation; phloem translocation |
| **Abstract:** | The secondary phloem of Vitis vinifera L. is characterised by a radial gradient of sieve tube diameters. Sieve tubes maturing early in the growing season have the largest diameters; those maturing late in the season have the smallest. In early spring, masses of winter dormancy callose are gradually digested in a polar radial pattern, proceeding outwards from the cambium. The fluorescent dye, fluorescein, was used to detect translocation in sieve tubes. During spring, dye translocation was first observed in the wider sieve tubes produced near the end of the previous year and wh ich had reduced amounts of callose. But translocation was not observed in the very narrow sieve tubes formed at the end of the year although they were the first to be callose free. The reactivated sieve tubes functioned for about one month. New sieve tubes differentiated three weeks after dormancy callose breakdown and started to function about one week later, so that the transition of translocation activity from the sieve tubes of the previous year to those of the current year is relatively rapid. The sieve tubes formed toward the end of the growing season (but not the narrowest ones formed at the very end of the season) function during parts of two successive seasons, while the sieve tubes forrned early in the season usually function during the first year only. Callose amounts increase gradually during summer in both the old and new sieve tubes and become relatively heavy in the old ones. At this developmental stage, translocation occurs through young sieve plates with relatively high callose deposits. |
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| **Author(s):** | Robert G. Hollingsworth; Udo Blum; Fred P. Hain |
| **Title:** | **The Effect of Adelgid-Altered Wood On Sapwood Conductance of Fraser Fir Christmas Trees** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
| **Pages:** | 235-239 |
| **Keywords:** | Abies fraseri; Adelges piceae (Ratz.); Fraser fir; heartwood formation; sapwood flow; compression-like wood; rotholz; Balsam woolly adelgid |
| **Abstract:** | Potential sapwood flow rates were measured for Fraser fir sterns that previously had been infested by the balsam woolly adelgid. The amount of abnormal wood produced during infestation was inversely related to the flow rate and linearly related to the amount of heartwood area. These results support the hypothesis that abnormal wood production associated with adelgid infestation can lead to water stress in the crowns of infested trees. The data also suggest that adelgid infestation accelerates the formation of heartwood. |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Review and Announcement** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
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| **Author(s):** | Yuzou Sano; Kazumi Fukazawa |
| **Title:** | **Structural Differences of Tyloses in Fraxinus Mandshurica Var. Japonica and Kalopanax Pictus** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
| **Pages:** | 241-249 |
| **Keywords:** | Tyloses; structural diversity; Fraxinus mandshurica var. japonica; Kalopanax pictus |
| **Abstract:** | This study reports on the occurrence and structure of tyloses in Fraxinus mandshurica Rupr. var. japonica Maxim. and Kalopanax pictus Nakai. Tyloses occurred in the outer sapwood of both species, but they showed great structural differences. Tyloses of F. mandshurica var. japonica were unique in their morphology and fine structure: thinwalled, highly lignified, multi-Iamellate, lacking parallel arrangement of microfibrils and intercellular layers; they are destroyed simultaneously with the transition from sapwood to heartwood. On the other hand, in K. pictus the cell wall organisation of tyloses was similar to those of anormal cell wall; both primary and secondary walllayers, and intercellular layers were found, and the tyloses tightly occluded vessels in both the sapwood and heartwood. |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Wood Anatomy News** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
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| **Author(s):** | Li Zhengli; Lin Jinxing |
| **Title:** | **Wood Anatomy of the Stalactite-Like Branches of Ginkgo** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
| **Pages:** | 251-255 |
| **Keywords:** | stalactite-like branches; Ginkgo biloba; wood anatomy |
| **Abstract:** | The morphology and anatomy of stalactite· like branches occurring on old trees of Ginkgo biloba are described. The external morphology and structure of the bark are similar to that of normal branches. However, the growth rings are usually narrower than normal ones. The central portion contains many dark-coloured pith-flecks. Among the axial tracheids there are some zones of irregularly oriented tracheids and in some places the tracheids are arranged in whirls with tortuous rays among them. In the tracheids, 2-4-seriate bordered pits occur in the radial walls. Druse crystals are common. |
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| **Author(s):** | Editors IAWA Journal |
| **Title:** | **Association Affairs** |
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| **Publication Year:** | 1991 |
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| **Author(s):** | Lidia Helińska-Raczkowska; Ewa Fabisiak |
| **Title:** | **Radial Variation and Growth Rate in the Length of the Axial Elements Of Sessile Oak Wood** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
| **Pages:** | 257-262 |
| **Keywords:** | Wood variation; juvenile; fibres; vessel elements; mature; cell length; tracheids; density; sessile oak; ring width |
| **Abstract:** | Radial variability of the axial element length in oak-wood is most prominent in the juvenile wood which inc1udes approximately 30 annual rings. The length of fibres, tracheids and vessel elements increases from the pith outwards according to a second degree curve. This dependence is most apparent for wood fibres, whereas it is the least distinct for vesseI elements. In the mature zone, anatomical elements are, on average, 10 to 20% Ion ger than in juvenile wood. With deteriorating conditions of tree growth, the length of the anatomical elements tends to increase. There is a negative correlation between length of the measured elements and growth ring width; this is most c1early so for fibres. A similar relationship exists between the length of anatomical elements and wood density. |
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| **Author(s):** | A. E. Akachuku |
| **Title:** | **Wood Growth Determined from Growth Ring Analysis in Red Pine (Pinus Resinosa) Trees Forced to Lean by a Hurricane** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
| **Pages:** | 263-274 |
| **Keywords:** | dendroclimatology; wood growth; ring analysis; leaning trees; Red pine; hurricane; Pinus resinosa Ait.; pith eccentricity |
| **Abstract:** | Leaning red pine (Pinus resinosa) trees at Harvard Forest in Petersham, Massachusetts, U.S.A., were sampled for wood growth studies 50 years after they were displaced by a hurricane. Before the hurricane incursion, ring width varied among trees and from year to year but not among radiL After the hurricane, between-tree variation in ring width was again significant but it was not appreciably due to angle of displacement (AOD) of the bole. Wood growth distribution along the bole in the leaning trees was complex. Between- radius variation in ring width was significant in the leaning boles; ring width was largest on the lower side. On the average ring width decreased as tree age increased but the variation was much less on the upper than on the lower side. Ring area tended to decrease with increase in age but the relationship was strongest in the least displaced bole and vice versa. Asymmetrie growth ratio increased with AOD of a bole and varied with year of wood formation but was not related to cambium age. Graphs of height above the ground on percentage pith eccentricity exhibited a sinuous shape like that of the trees. Cumulative growth and mean annual increment of height and volume increased with tree age. Current annual increment of height and volurne decreased for 9 and 5 years after the hurricane and after the 64th and 69th year of the tree, respectively. Form factor increased after pruning but decreased later with age. Precipitation was not closely related to ring width in the leaning boles. |
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| **Author(s):** | Elisabeth A. Wheeler; Pieter Baas |
| **Title:** | **A Survey of the Fossil Record for Dicotiledonous Wood and its Significance for Evolutionary and Ecological Wood Anatomy** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
| **Pages:** | 275-318 |
| **Keywords:** | fossil wood; ecological wood anatomy; Dicotyledons; paleobotany; wood anatomy |
| **Abstract:** | Data on fossil dicotyledonous wood were assembled in order to 1) test the Baileyan model for trends of specialisation in dicotyledonous wood anatomy by addressing the question - were 'primitive' wood anatomieal features (as defined by the Baileyan model) more common in the geologie past than at present?, 2) infer, on a broad geographie scale, past climatie regimes, and long term climatic change, and 3) assess the extent of knowledge of fossil dicotyledonous woods. The resulting database has information on 91 anatomieal features for over 1200 fossil dicotyledonous woods. The incidence of selected anatomical features was plotted through time (by geologie epoch) for the world and for two regional groupings (roughly corresponding to the Laurasian and Gondwanan supercontinents). For comparison to the fossil wood record, the incidence of wood anatomie al features in the Recent flora was obtained from the 5260 record OPCN database for extant dicotyledonous woods. |
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| **Author(s):** | Deng Liang; Pieter Baas |
| **Title:** | **The Wood Anatomy of the Theaceae** |
| **Source:** | IAWA Bulletin NS, Volume 12, Issue 3 |
| **Publication Year:** | 1991 |
| **Pages:** | 333-353 |
| **Keywords:** | ecological wood anatomy; Systematic wood anatomy; Theaceae; Ficalhoa |
| **Abstract:** | A general wood anatomical description of the Theaceae is given on the basis of a previous study of species from China (Deng ' Baas 1990) and additional observations on genera and species outside China. The wood anatomy of Archboldiodendron, Balthasaria, Ficalhoa, Franklinia, Freziera, and Visnea are described separately. Although the Theaceae in the delimitation followed here (Table 1) are wood anatomically relatively homogeneous, the recognition of three subfamilies Camellioideae, Ternstroemioideae and Sladenioideae is supported by anatomical features (vessel grouping, bar number, type of vessel-ray pits, intervessel pit arrangement; cf. Table 4). The controversial position of Ficalhoa is discussed; its wood anatomy closely resembles that of the Camellioideae. |
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