WOODfocus
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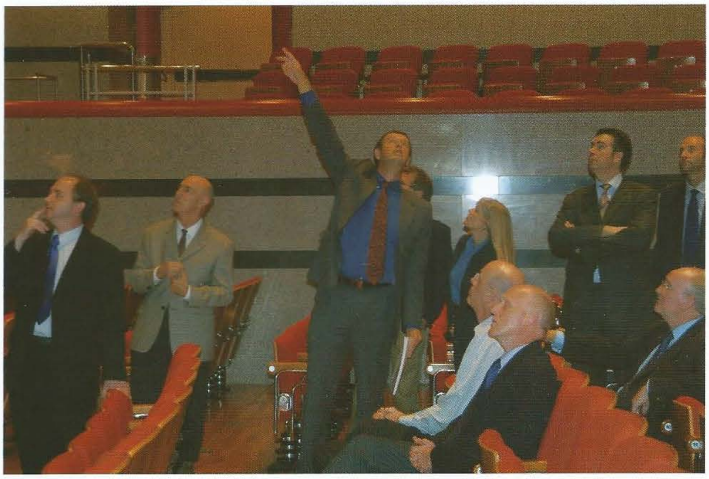
The magazine of the Institute of Wood Science

The National Conference 2004

IWSc Annual Conference Hyatt Regency Hotel, Birmingham 30th September 2004

Over 120 delegates met last month in Birmingham for an annual conference with the theme "Wood Procurement & Performance". The annual conference, which is designed to appeal to a wide audience, attracted 55% of delegates from outside the Institute's membership.

The one-day Conference was preceded by a guided tour of Symphony Hall, Birmingham, by the executive architect John Rudge, of Capita Percy Thomas, who worked on the project as executive architect. He gave a fascinating account of the challenges that were presented by a concert hall, alongside a mainline railway, in which absolute silence is required for concerts and recordings in which wood is part of the solution.



John Rudge explaining some of the features in Symphony Hall

Jim Coulson acknowledges Christine Bradshaw's work at the Institute Head Office during the past year

This was followed by the President's Dinner, at which Jim Coulson, IWSc President, paid tribute to the Director, Jim Lumsden, for his management of the Institute's affairs over the past year and thanked Christine Bradshaw "in the usual way – with a bouquet of flowers" for all her work.

Jim Coulson, in his final conference as President, welcomed the sponsors, delegates, speakers and exhibitors after which the morning session comprised a panel of experts on wood procurement from BRE, DEFRA, TRADA and Forest Industries Intelligence. The session was chaired by Richard Lambert of the British Woodworking Federation and ended with a lively discussion on wood certification, codes and procurement issues. "The next few years may offer the timber industry a chance that comes just once in a generation; and we need to tap into its advantages" he suggested. "With the Government's commitment to sustainable buildings, timber offers the answers," he added, but highlighted the need to reconcile all the forest certification schemes. Speaking on government procurement policy Bob Andrew of DEFRA said that five schemes are currently being assessed but that evidence of sustainability should not be limited to certified wood. Dr Mike Packer, of Timbmet, called for more clarification on definitions from government and better information to be distributed.

Jim Coulson, President, opening the Conference

Richard Lambert (right) chairs a discussion with Rupert Oliver and Peter Ross

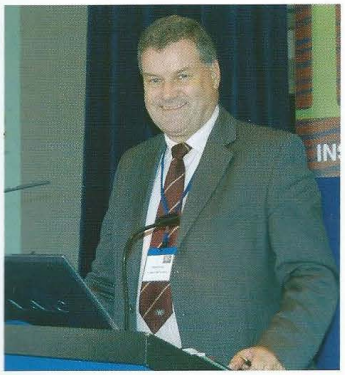
Dr Mike Packer speaking on Public Procurement and the Supply Chain

Dr Peter Bonfield, in presenting BRE's BREAM and ECOHOMES systems said that "certification is an issue, but not the

issue" when it comes to eco-building. Then he called upon wood to put its best foot forward or lose out to the new "green" campaigns of competing materials such as concrete. He concluded to delegates that "this is a good time for timber.....but the trade is very passive, yet you have inherent advantages and have good things to say."

Dr Peter Bonfield presenting Eco-Standards in Private Sector Procurement

Rupert Oliver, giving an update on certification pointed to the 200 million ha of forest certified in only 10 years (and to the similarities between schemes rather that the differences), which needs to be celebrated. Finally the morning presentations ended with Peter Ross, President of TRADA chronicling the development of codes from old British to new Euro standards. Closing the morning session, Jim Coulson remarked that he had felt rather like attending a timber revivalist meeting !

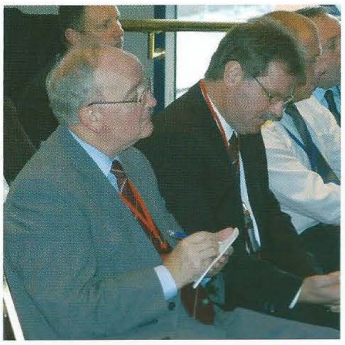


Michael Buckley, Turnstone Communications, introduces a preview of the Wood Awards 2004

The afternoon opened with a preview of The Wood Awards 2004 Shortlist presented by the organiser, Michael Buckley, and was followed by a presentation by Steve Powney of TTJ of the Timber Trades Journal Challenge Cup, awarded annually to the student who achieves that highest marks in the Certificate Course. This year it was awarded to joint winners Keith McDonough and Mark Turner, both of Howarth Timber.

Steve Powney (left) presenting the TTJ Challenge Cup to Keith McDonough and Mark Turner

The afternoon session, chaired by Dr. Peter Bonfield of BRE, featured three fascinating case studies of wood in performance. Gary Clark of Hopkins Architects discussed the long gestation of The Cake House (now renamed Inn The Park) in St. James's Park, London. Ben Tuxworth, of Forum For The Future, gave an amusing and enlightening account of a sustainable house self-build project in Cheltenham. The session was rounded off by James Greaves, Director of Hopkins Architects, who gave an overview of three award winning buildings in the UK, with particular attention to the performance of the timbers used and Hopkins' approach to wood performance.



IWSc Director, Jim Lumsden making notes during the Conference and at his side, Jim Coulson

The Conference marked the launch of IWSc's new Certificate Course, which is based on distance learning with topic modules, tutorial support and continuous assessment. The Certificate Course is part of a portfolio of IWSc courses which provide progressive and fully integrated training in timber technology and timber trade practice.

Alongside the Conference, many of the eighteen sponsors, without whose valued support the event would not have been possible, exhibited with stands located in an adjacent exhibition area. The centre-piece of this was The Wood Awards 2004 displaying every short-listed project in detail. This year was the first in which the Institute of Wood Science has become a sponsor of The Wood Awards.

2005 will see the 50th year anniversary of the Institute, and accordingly, the Council is already looking forward to a jubilee Conference that will build on the successes of the last three conferences in Cardiff, Newcastle and Birmingham. The results from evaluation forms returned in Birmingham will be considered by the Council when planning this next conference.

The Sponsors

Delegates attending to Jim Coulson's closing summary

ThermoWood® StoraEnso

by Duncan Mayes

ThermoWood® - Thermally Modified Timber

The following article relates to ThermoWood and has been prepared by Duncan Mayes, Marketing Project Manager at Stora Enso Timber Ltd, Finland. Duncan Mayes presented ThermoWood at the 2003 IWSc National conference, held last October in Newcastle-upon-Tyne.

1. The history of Thermally modified Timber - ThermoWood®

Scientifically, thermal modification of wood has been studied as early as the1930's in Germany, the United States, France and Netherlands, but most intensive and comprehensive research work has been made by VTT in Finland during the 1990s. Reference back to Viking times has found that wooden posts which were to be used in the ground were first burnt on the surface to improve resistance to biological attack.

Research and results have found that significant effects on the characteristics of wood can be obtained using the ThermoWood process.

As a pioneer in the early development of ThermoWood and a member of the Finnish ThermoWood association, Stora Enso Timber uses the patented process and markets the product under the registered name ThermoWood. Today the Finnish ThermoWood association has producing members and kiln manufacturers all based in Finland. Plans are in place to widen the membership to producers located outside of Finland.

2. The scientific background to thermal modification

As a result of the thermal modification the wood structure is re-formed. Effects on the wood material start to occur when temperatures exceed 150°C, and the most significant changes are made when the temperatures go over 180°C. The thermal modification permanently changes several of the chemical and physical properties of the wood. The change in properties is mainly caused by thermal restructuring of the hemicelluloses. As a result of the very high temperatures used in the process, sugars, carbohydrates and other substances which would normally be seen as potential food for fungi are removed. As a result of these changes swelling and shrinking is reduced, biological durability is improved and pH values are slightly decreased. In addition, due to the effects of the temperature on the lignin within the wood structure, a decrease in strength properties can be expected. Another effect of the treatment is the change in colour. Thermally modified timber gets a brown colour and this darkens the higher the temperature used. The colour is also through the entire cross section of the material.

3. Key Characteristics of ThermoWood®

As a result of the research certain key characteristics have been found to occur as a result of thermal modification. Testing has been carried out in many institutes within Europe to assess these changes. Some of the key points are listed below:

+ Improved stability
+ Reduced equilibrium moisture content
+ Improved biological durability
+ Reduced thermal conductivity
+ Resins removed
- Decrease in splitting strength
- Decrease in bending strength
- Decrease in surface hardness

Table 1 (below) indicates results on tangential swelling at different levels of relative humidity compared with other wood species often used for exterior cladding applications:

As it can be seen from these results the thermal modification process has a significant improvement on the dimensional stability.

Table 2 (below) highlights some of the other key characteristics of ThermoWood including significantly reduced equilibrium moisture content and improved biological durability.

4. Production process and quality control

At Stora Enso Timber a fully integrated production and quality control system is in place to produce the ThermoWood material. The process is broken into five stages:

1. Raw material selection

In the first stage of the process careful selection of spruce saw logs takes place. These logs are sorted to specific lengths which best match the kiln sticking later in the process.

2. Sawing and green grading

The next stage is to saw the logs and then select out the most suitable raw material for ThermoWood production. Latest technology green grading equipment is used to grade out the material. It is very important to select material which is predominantly fresh (live) knotted and other features such as large resin pockets and heart shake should be minimised. Knot size and grouping is also important depending on the end use.

Table 1

Effects of Relative humidity (RH) on Tangential Swelling from absolute dry

Wood Specie	Dry	RH 35%	RH 65%	RH 95%
Sib Larch	0%	2,3%	5,5%	10,0%
WRC Larch	0%	1,6%	2,2%	4,3%
Spruce std KD	0%	2,5%	4,2%	6,8%
Tw spruce 190c	0%	1,1%	1,6%	3,6%
Tw spruce 210c	0%	1,0%	1,3%	3,2%

(Source: Helsinki University of Technology: J.Manninen) 2004

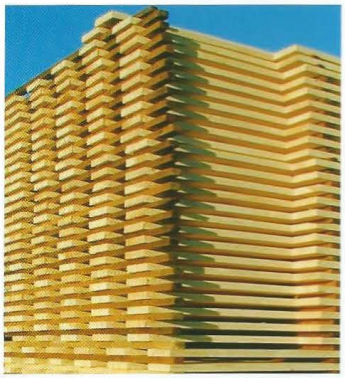
Table 2

3. Sticking

	Stability	Equilibrium Moisture Content 65% RH	95% RH	Durability (EN113 test)
Thermo-S Spruce	Very good	6-7 %	13-14 %	Moderately durable (3)
Thermo-S Pine	Good	6-8 %	14-16 %	Moderately durable (3)
Thermo-D Spruce	Excellent	5-6 %	11-12 %	Durable (2)*
Thermo-D Pine	Good	6-7 %	12-13 %	Durable (2)*

General service situations and hazard classes given in EN 335-1
1.Above ground, covered (dry); 2. Above ground, covered (risk of wetting); 3. Above ground, not covered
*If Thermo-D is used in direct contact with ground, the risk of attack by fungi Poria Placenta is higher and the durability may vary from durable (2) to moderately durable (3) depending on the situation. According to EN 113:1996 annex E Poria Placenta has practical importance in service applications such as posts in ground.

Once the material has been sawn and graded it is then taken to the sticking section where battens (stickers) are applied between each layer to allow for even airflow once inside the kiln. It is important to avoid loose and unsupported boards in the kiln stack as this can lead to distortion. Finally once the kiln stack is ready a heavy weight is applied on the top to reduce distortion in the upper parts of the stack.



ThermoWood kiln stack prior to treatment

4. ThermoWood Treatment

The ThermoWood treatment is broken into three phases.

1. Temperature increase and high temperature drying from either green or ready KD goods, ensures that there is an even moisture content in the wood which is close to zero % before phase two starts. During this stage heat and steam is used to obtain the required effects.
2. The intensive heat treatment stage takes the temperature inside the kiln to between 190 and 215°C depending on the required properties of the end product. The peak temperature is maintained for 3-4 hours. Again heat and steam are the main elements used in this stage.
3. The cool down and re-moisturising stage is carried out under similar conditions but with decreasing temperatures and additional moisture applied to re-condition the material to a moisture content which is similar to the equilibrium moisture content at 65% RH of about 5-6%.

5. Quality checking and packaging

The final stage is quality control and packaging. Sample material is taken from each kiln batch and assessed for surface and internal shakes and also any significant signs of colour variation. Standard visual grading of the sawn ThermoWood is then carried out and reject material is removed before end trimming and packaging.

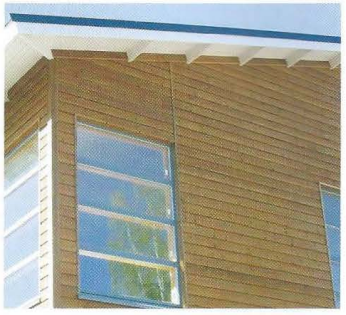
5. End uses and reference cases

Due to the many improvements in technical properties which occur as a result of the ThermoWood process, a wide variety of end uses can be found which might in the past have relied on tropical hardwoods, chemically treated or man made materials such as plastic or composites.

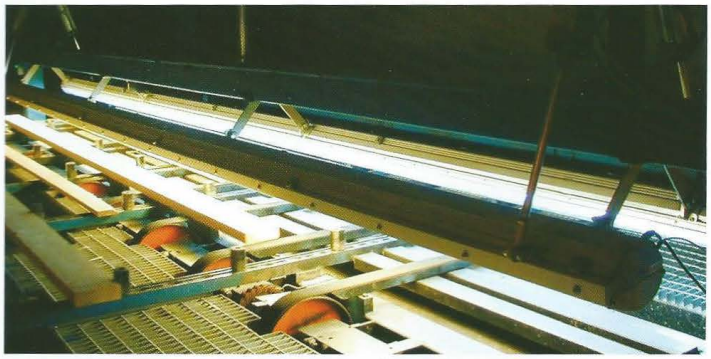
Currently the largest consumption segments are in external claddings / sidings and decking products. Significant amounts are also being used for internal paneling where a special rustic appearance is required. Due to the significantly improved stability it is now possible to make exterior cladding and decking with widths as wide as 200mm. This gives new options for architects and also allows for some reduction in installation time. For Further information about Stora Enso ThermoWood please visit the website www.storaenso.com/timber, or for general information about the ThermoWood visit the official ThermoWood association website at www.thermowood.fi

All pictures propertery of Stora Enso Timber.

Stora Enso ThermoWood cladding at the Fredrica Bremer school, Stockholm. Pigmented coating applied before installation.



Stora Enso ThermoWood cladding at the Kotka House exhibition, coated with pigmented translucent paint.



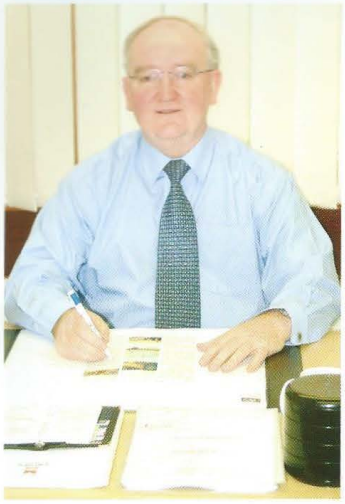
Automatic green grading equipment

End uses and benefits matrix

	Cladding	Decking	Windows	Garden Products	Internal Fittings
Great stability	X	X	X	X	X
Improved durability	X	X	X	X	X
Low thermal conductivity	X		X		X
No resin leakage	X		X		X
Attractive appearance	X	X		X	X
Environmentally friendly	X	X	X	X	X

News and views from the Director

By Jim Lumsden MCIPD; MIWSc



A New Education & Training Network

The consortium of trade associations, unions and professional bodies that formed earlier this year as the UK Wood Chain Group recently won Government approval as the industry's official lead body and will now proceed with a plan to develop resources for companies and individuals in timber and wood processing and manufacturing.

The Group took the initiative in January to address concerns that the industry was poorly served by existing arrangements and was not able to develop its competitiveness as effectively as many other industries. The disadvantage was being felt even more strongly because global trade means that Importers, processors and manufacturers are operating in fierce markets where the additional costs of environmental responsibility are often unevenly distributed. Company performance improvements and cost controls therefore rely on skills at every level and the industry has been forced to find its own solutions without assistance from Government sources.

The Group's new status as a lead body provides access to Government funds for the development of some of the solutions, which have proved successful, often involving the Institute of Wood Science's courses and the trade associations' member companies. Similar formulae will almost certainly feature in future arrangements but more money will be available to share and extend the resulting qualifications, like skills certificates and progression awards.

Justifiably, the Group has also been given sector body status so that it can participate in the Government's 'Skills Agenda', making sure that processing and manufacturing operations are fully represented in the structures and programmes driven by the Department for Education and Skills through its main agencies: the Learning and Skills Council and the Sector Skills Councils.

The Institute's involvement in this new structure places it in a strong position to take advantage of development funding and provides a platform to further promote the range of courses and training materials to a broader audience in the timber sector.

Congratulations

We offer congratulations to Keith Donough and Mark Turner, both of Howarth Timber who were joint winners of the Timber Trades Journal Challenge Cup presented at the Annual Conference held at the Hyatt Regency Hotel, Birmingham on 30th September 2004 by Stephen Powney, Senior Reporter.

Keith and Mark who were tutored by the Company's training manager, Peter Kelly, achieved identical scores in the examination were awarded a distinction. Both were nominated for the TTJ's Trainee of the Year Award. It was encouraging to note that of the twenty-three nominees for the award, twenty had completed IWSc courses.

50 Years and still going strong

The Institute of Wood Science celebrates its 50th Anniversary in 2005 and the Council are currently considering ways to mark the occasion including a Golden Jubilee Conference possibly to be held in London. The Institute was formed by several leading members of the timber trade far-sighted enough to envisage the advantages for the trade of a qualifications structure. The signatories to the Memorandum and Articles on November 30th 1955 included many well-known timber traders, unfortunately nearly all the original signatories have passed on, but they left a legacy, which we would do well to cherish.

The Institute started with 361 members, but by 1963 the then President Brookie Boulton organised a recruitment drive, resulting in a membership of about 900, and by 1966 membership had risen to 1262.

The Journal, which was first published in March 1958, has become our shop window to the world, and has always been subscribed to by the leading forest products laboratories and educational Institutions. The first national conference was held at Brighton on 5-7 April 1968 and was attended by 180 members. Since then conferences have been all over the country. All have been highly successful, well attended and this Institute activity has gone from strength to strength as can be seen from the report of this year's event elsewhere in this edition.

Much more will be written about the Institutes history as we move towards the Golden Jubilee and to this end, we would be delighted to hear from any long serving members with their recollections of the early years and activities of our professional body.

A welcome to two new corporate members

We would like to warmly welcome the following new corporate members:

WFIG (Welsh Forest Industries Group) The Welsh Forest Industries Group was formed specifically for the Joint Development Initiative by senior non-profit industry bodies representing the complete wood chain and operating as a single entity under a legally binding Agreement. Its coverage includes growing, managing, harvesting, processing, manufacturing, haulage and associated business activities, which affect the value stream of timber and wood products in Wales. The Joint Development Initiative is a £2m/30-month campaign to raise business performance and offers training and development services entirely without charge to individuals and companies in the Welsh wood chain.

Century Homes: Century Homes was established in 1990 in Monaghan, Ireland. It is the biggest timber-frame building company in Europe and at present the company has 40% of the timber frame housing market in Ireland producing over 5,000 buildings per annum or in relation to the building of new dwellings, 1 in 10 of all new Irish houses.

The company currently employs 320 in total in its Irish plants in Longford, Dungarvan, Monaghan, and 40 between its plant in Cardiff and a sales and engineering office in London.

Cedar Shingles

by Christian Brash, managing director of John Brash Group

With the growing interest in timber products, primarily due to people turning their attention towards renewable materials, Western Red Cedar Shingles are becoming increasingly popular in the UK. Cedar Shingles do satisfy environmental criteria that are placed upon projects as both Canada and North America, where they are imported from, have strict reforestation and forest management programmes to ensure that Cedar stocks are carefully managed. More than half of Canada's forests are naturally reforested, and natural regeneration is supplemented by the planting of 600 million seedlings a year.

In many cases the production of shingles from Western Red Cedar *(Thuja plicata)* uses timber that would otherwise be wasted. Parts of the log that are unsuitable for the production of sawn timber can be used to manufacture quality shingles and shakes.

Careful sourcing ensures that Cedar shingles and shakes can be obtained from suppliers that have CSA (Canadian Standards Association) or SFI (Sustainable Forestry Initiative) forestry certification. Tough Federal and Provincial Forestry guidelines ensure sound harvesting methods that protect fish habitat.

Waterside School - Cedar shingles we selected so that the new building would blend in with the surrounding coastline scenery

Western Red Cedar Shingles are an attractive and practical alternative to traditional roofing slates and tiles. They are suitable for pitches as low as 14° and can be applied to a variety of roof types – boarded roofs, metal decks, and warm roof constructions. For pitches below 22°, the gauge at which the shingles are fixed is reduced to 95mm. This gives a 4-ply roof structure, and ensures the roof is weather tight. Modern timber treatments ensure that the life span is maintained, but it is still advisable to ensure there is no build up of moss and debris on the roof.

Hampshire Schools - Cedar shingles are an attractive and practical alternative to traditional roofing slates and tiles

Cedar Shingles have a high strength to weight ratio and their light weight in comparison to traditional concrete or clay tiles is an outstanding advantage, enabling them to be used in areas subject to subsidence where the weight of traditional tiles would entail greater expenditure on foundation construction.

Although the use of Cedar Shingles in the UK is more commonly associated with roofing, in Canada and the US they are extensively used for cladding applications (locally referred to as sidewall applications). Western Red Cedar Shingles are ideal for cladding applications because they are taper sawn on both sides, come in lengths of 400, 450 and 600mm, and have a relatively smooth face and back which enables them to follow complex contours in any given design.

For both types of applications it is important that the imported Cedar Shingles are obtained from a source that meets the grades and requirements set out by the International Conference of Building Officials (ICBO) which is the recognised industry authority governing the various regional grade auditing agencies, such as the Cedar Shake and Shingle Bureau. The grades of shingles are indicated by the colour of the label in each bundle. The

Kindersley - The entire roof at the Kindersley Centre in Berkshire is clad in Western Red Cedar shingles

Number 1 grade is the Premium grade and comes with a blue label showing the grade and the grading agency.

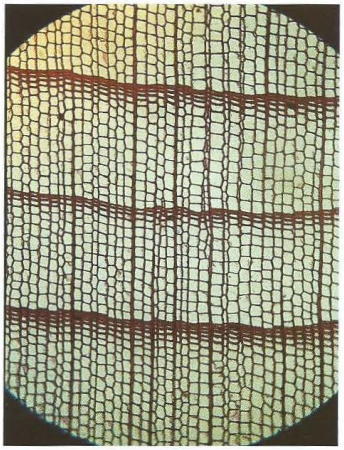
The natural attributes of cedar make it one of the most popular woods for building applications. Western Red Cedar Shingles are renowned for their insulation qualities, dimensional stability and natural resistance to the elements. The species, Thuja Plicata, contains in the heartwood naturally occurring thujaplicins and phenols that make the wood uncommonly durable in its natural state and in the UK it is classified as a "Durable Species". It will however readily accept pressure preservative or fire retardant treatments where these are required for enhanced durability or fire safety, with a special cycle being used specifically for treating Cedar. These treatments are available from a number of UK importers, some of who offer a preservative treatment with up to a 40-year guarantee against fungal decay or insect attack. They meet BS476 part 3, and are available for an "AA" rating for roofs and up to class "O" rating in respect of surface spread of flame.

The wood is also described as having "low movement" – a property that is shared by timbers such as teak and mahogany, but not by most other softwoods.

Western Red Cedar's unique cellular composition makes a roof or wall of shingles a natural barrier to heat and cold by providing a high degree of insulation and when properly applied they give outstanding rigidity and resistance against the severest hail storms and gale force winds up to 130mph. The maintenance of structural integrity is provided by the overlapping application and nailing techniques described in detailed application manuals that are available from importers or directly from the industry representative in the UK.

Western Red Cedar Shingles provide any project with a distinctive beauty. The rich warm colour and texture of Cedar Shingles can enhance the design of both traditional and modern structures to create a truly individual building that blends naturally with the environment. The shingles age well over time, with their appearance turning to an attractive silver-grey colour. However, it is important that only silicon bronze or stainless steel as the naturally occurring chemicals in Cedar accelerate corrosion in unprotected ferrous metal and this triggers unsightly blue/black staining in the timber.

The flexibility of shingles allows them to be applied to various designs. They are normally applied in straight lines starting with a double or triple course at the eaves depending on the conditions of climatic exposure. This application may be varied to produce different patterns of staggered butts, double or shadow coursing, thatch wave or ocean wave. For specific projects where the aesthetic appeal is of extreme importance, many suppliers offer sculptured shingles, which are also know as "fancy butt" shingles. These are speciality products that have undergone further manufacture and usually come in a variety of patterns. For example, round, arrow and diamond shaped. Sculptured shingles are suitable for roofs and walls, both exterior and interior applications. They can be mixed with other patterns or standard shingles to break up large areas and create a unique feature.



Tranverse section (end grain) of western red cedar x30

Whitely - Cedar shingles age well over time, with their appearance turning to an attractive silver-grey colour

Company Profile - Century Homes "The Home of Timber Frame"

Premier Lodge 80 bedroom hotel in Croydon

Century Homes was established in 1990 in Monaghan, Ireland. It is the biggest timber-frame building company in Europe and at present the company has 40% of the timber frame housing market in Ireland producing over 5,000 buildings per annum or in relation to the building of new dwellings, 1 in 10 of all new Irish houses.

Premier Lodge 120 bedroom hotel in Leeds

The company currently employs 320 in total in its Irish plants in Longford, Dungarvan, Monaghan, and 40 between its plant in Cardiff and a sales and engineering office in London. The new plant in Blyth, see below, will have a staff of 40 people. In 2003 the company announced a major expansion, which will see it grow its total workforce to 600 over the next five years and will double its turnover from its current level of €50 million to €100 million over the same time frame. As part of this ongoing development the company will open another new plant in Tullamore, in the Irish midlands, in January 2005. This will employ 120 people when operational.

Also within this expansion programme Century Homes have significantly increased their presence in the British timber frame market by signing a deal to take control of Northumberland-based timber frame company Timber Frame Solutions based in Blyth. This plant is ideally located to target both the English and Scottish markets and will excellently augment Century's existing plant in Tredegar, Wales and the Company's sales and engineering office in London.

Timber Frame Solutions (TFS), established in 1999 by Pierse Contracting of Dublin (Ireland's third largest construction business) was set up to service the Group's move into residential building in Ireland, and capitalise on its UK location to develop a strong customer base in England. TFS operates as a full function timber frame business encompassing sales, design, manufacture and erection. TFS concentrates on medium/large scale projects requiring a degree of technical

Cricklewood Nursing Home, North London

input to the design process and providing an opportunity for building strong relationships with potential clients. Areas of strength include the social and private housing markets, and the education and health sectors. TFS has earned a particularly strong reputation in developing high performance closed panel systems, offering very high thermal performance using specially selected eco-friendly materials to reinforce the environmental benefits of timber frame construction. This utilisation of eco friendly materials, and in particular softwood from renewable resources, is fully reflected in Century Homes highly innovative Eco House.

Apartment Housing in Ireland

The Eco House

The Eco House is unique to Century Homes and was built using renewable timber. Designed by Architect John Goulding, the Eco house is of advanced Timber Frame construction, incorporating a range of innovative features, with a focus on sustainability.

The Eco house is a dormer style house with 3000 sq.ft (270m²) of space. The house includes state of the art products and systems that successfully create an energy efficient home of the future. The design concept of the house allows for the expansion and eventual subdivision of the original building.

This house is a ground breaking move for the new home market in Ireland by offering new buyers an option of purchasing a house which is environmentally friendly in every way from the roof top down to the foundations.

It is aimed at the market for selfbuilders and people considering renovating or looking for alternatives to the conventional materials used in home building. It will feature a design that is visually pleasing and dynamic in its use of materials, technologies and choice of advanced heating, and insulating methods.

The house is architecturally designed, cost-effective and environmentally conscious, and offers state of the art technology in products and systems that can be used to successfully create an energy-efficient home of the future.

Technical Details

The use of an air leakage barrier which is wrapped around windows, doors and floor joists ensures that the house is as close to being airtight as possible. A 195mm I beam stud is used to reduce thermal bridging. The Eco house also contains 195mm environmentally friendly insulation. Depending on the type of insulation used U-values as low as 0.20w/m²k can be achieved, well below the requirements of current building regulations both in Ireland and the UK. The roof space of the house also contains extra insulation.

The Eco house is airtight in that there are no permanent room vents; ventilation and air quality are regulated through the mechanical means of a heat recovery system. This system extracts warm air from the house, while at the same time as taking in fresh air from outside, the air is heated as it goes into the house resulting in no noticeable drop in temperature.

The Eco house contains a fully glazed area at the back of the house which acts as a suntrap and can be used to heat the house. This is both visually attractive and functional and is a further example of the environmental benefits that have been incorporated in the design.

The Eco House

The Institute is particularly pleased to record that Century Homes became Corporate Members earlier in the year.

The Eco House showing the fully glazed sun trap

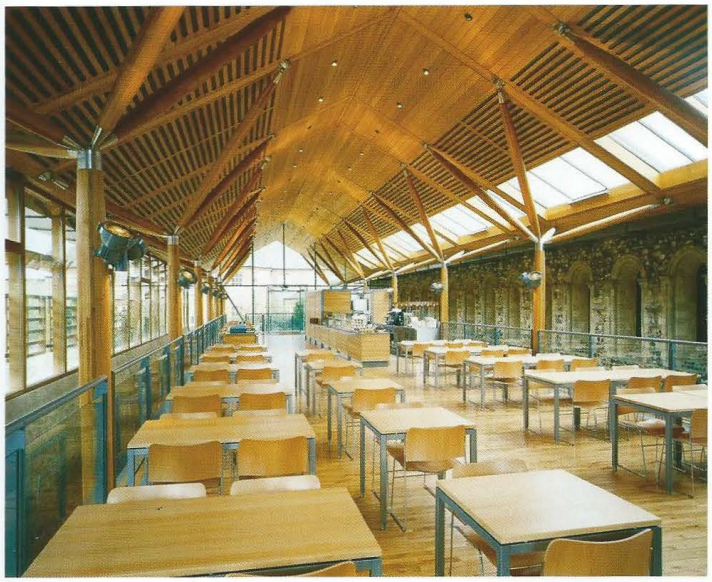
THE WOOD AWARDS 2004

Gold for Hopkins and Norwich Cathedral

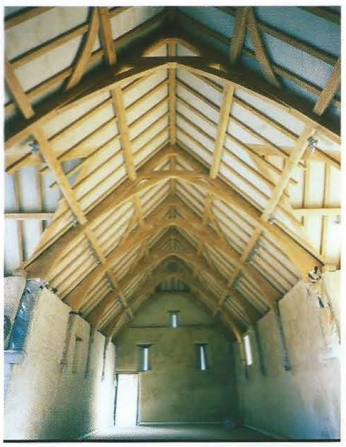
The Wood Awards 2004 Gold Award has been won by Norwich Cathedral Visitors' Centre designed by Hopkins. The awards provide a unique opportunity and a remarkable collaboration for the seventeen generic sponsors to promote wood, and includes the American Hardwood Export Council, British Woodworking Federation, Carpenters Company, English Heritage, Ghana Forestry Commission, Malaysian Timber Council, Timber Trade Federation, and wood. for good, along with the Institute of Wood Science.

Hopkins Architects worked with structural engineers Buro Happold, main contractors R G Carter, and joinery company Coulson Building Group. Norwich Cathedral Visitors' Centre won the Commercial & Pubic Access category, and was unanimously voted by the judges as overall winner, thus receiving the Gold Award. The trophy, a replica of the Norwich Cathedral spire, was carved with the same oak originally supplied by Whitmore's Timber for the project.

This year, the other winners of The Wood Awards 2004 were Wakelins in the Private category; Kingsdale School Auditorium in the Structural category, and Conservation

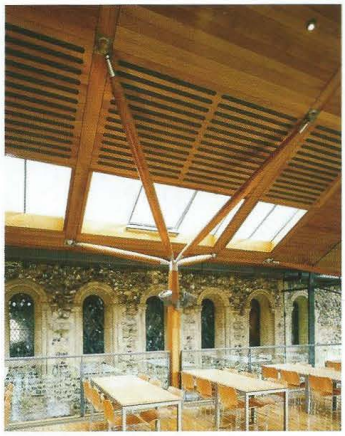


The winning project. Norwich Cathedal Vistors' centre Photo by Richard Davies



Great Barn restoration project in Devon, highly commended in Structural category

Winner of the Small project award, The Flame Feature Staircas, London
Photo by HEAT Architects



The winning project. Photo by Richard Davies

Michael Dickson presents Gordon Cowley with the Innovation award

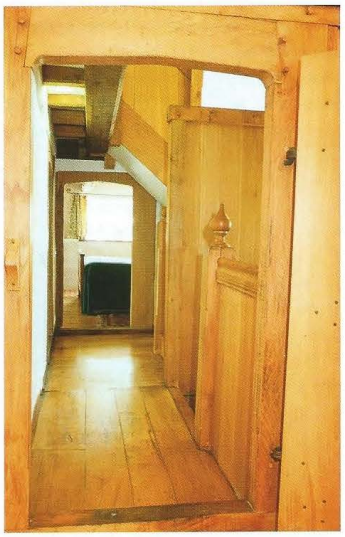
Guests at the Presentation Ceremony at Carpenters Hall London

Team from Norwich Cathedal Vistors' Centre, winner of the Gold Award 2004

Seating within the Kingsdale School Auditorium, London, winner of the Structural category
Photo by dRMM

& Repair of Southwest Quarter, Ightham Mote in the Conservation / Restoration category. Gordon Cowley received the Innovation Award for his widely used Cowley Connector, and the Flame Feature Staircase won the Small Project Award - introduced this year. Two projects - St.Paul's Church "A New Heart for Bow" and the Supreme Court Library in Edinburgh - were highly commended in the hotly contended Commercial & Public Access category; Black Rubber Beach House was highly commended in the Private category; Great Barn Restoration Project received a highly commended in the Structural category, and Dolbelydr, a 16th Century Welsh manor house renovation, was highly commended in the Conservation / Restoration category.

The presentation ceremony on 19th Oct was a very special evening with 185 invited guests representing the sponsors, judges, winners, organisers, some of the timber trade, many of the architectural and



Dolbelydr in Wales, highly commended in Conservation/Restoration category.
Photos by Barry Hamilton

External view of the Kingsdale School Auditorium Photo by dRMM

engineering professions and eight members of the press. Michael Dickson, Chairman of structural engineers Buro Happold, presented the awards, and said: "It is wonderful to see wood used so enthusiastically and in more and more buildings. Wood is our only renewable building material and the aim of The Wood Award is to encourage the use of sustainable wood in construction." Chairman of the judges, Giles Downes of Sidell Gibson added, "arriving at a shortlist was even harder than last year." All of the entries were exhibited and the audiovisual presentation recognised the sponsors of the awards including IWSc as well as UCM and Junckers who hosted the party that followed.

Letters to the Editor

Dear Sir

Institute Membership

I am writing in response to the article in the Spring 2004 issue of Wood Focus asking for comments from readers. I do not think the magazine (or the IWSc as a whole) is appealing enough to younger members. I do not know how the Institute could do it, but I think younger people should be encouraged to read the magazine and become involved in the IWSc. I get the impression, as a younger person myself, that the membership is predominantly made up of "older people" (I may be wrong, and would be happy to be corrected!) but, I feel that the Institute should do more to recruit and encourage the younger age groups. There are thousands of people involved in the wood business, in all its diversities, and the Institute is relevant to them all. I think new people coming into the trade should be encouraged to learn more about the product with which they are involved. I think the IWSc is the organization to do this, but it would have to be a lot more dynamic and aggressive to reach a new younger generation of potential members.

Yours faithfully

James White CMIWSc
Marden, Kent.

Dear Sir

Botanical Names

I was amused by the challenge of your quiz on page14 of the Spring issue of Wood Focus. It will no doubt tax those of us without forestry training. While I accept that all the trees are growing near the Institute's head office, there is nothing to indicate whether they are native or introduced. Therefore, I am shocked that an institute of science did not identify them by their Latin botanical names. Clearly, number 5 "Cherry" is *Prunus avium*, although your non-forestry readers may not know the difference in bark characteristic with *Prunus serotina* (American black cherry).
Surely this was a lost opportunity to teach. The same might also be said for number 11 "Walnut" *Juglans regia* or *J.nigra*? There are of course many American oaks and more than one European oak, etc. etc.

Yours faithfully

Michael Buckley FIWSc
World Hardwoods, London.

From the Editor

Michael Buckley has raised an interesting and relevant point about the educational value of the content of Wood Focus, in particular concerning the way in which timbers are named.

To be able to match the common name of a timber to its Latin name is often a great advantage, especially if there is any doubt as to precisely which timber is being specified or ordered.

In the Quiz to which he refers I had considered showing the Latin names. However as this was intended as light-hearted 'filler', due to an article arriving that was a page shorter than expected, I chose not to. Maybe this was an unwise choice. However the point is noted and I thank Mr. Buckley for raising the matter. Latin names for the timbers quoted in Wood Focus articles will be given in future whenever possible.

David Woodbridge, Editor.

IWSc PRESIDENT'S TRIP TO AUSTRALIA

April 2004 by **Jim Coulson AIWSc**

The Institute's current President, Jim Coulson, recently undertook a visit to Australia at the request of Professor Peter Vinden of CRC Wood Innovations at the University of Melbourne.

Although the reason for Jim's visit was ostensibly to deliver a timber-based lecture, the primary purpose behind his trip was to meet with Peter Vinden and some of his team, who have been instrumental in reviving the Australian Branch of the IWSc.

Happily, the future of technical wood research now seems to be assured, with the development of the organisation known as CRC Wood Innovations, based at the University of Melbourne.

Professor Vinden and CRC Project Manager, Dr Jeff Hann have between them re-kindled interest in the IWSc. Peter is now the new Branch Chairman and Jeff is the Branch Secretary, whilst other CRC staff are also actively involved in the new branch.

Jim's timber lecture was booked for the evening of Thursday 29th April at the University of Melbourne. He chose as his subject the six-storey timber frame house project known as TF 2000, which was built and tested as a joint project between BRE, TRADA and a number of Industry partners. This was of particular interest to Peter and his audience (who were not all academics, by any means), since TF housing is very popular in Australia and is currently fighting a "turf war" with steel framed buildings, on the basis of a perceived termite threat.

But Jim's trip didn't only take in the University in the city of Melbourne itself. On the day before his talk, Jeff Hann took Jim out to the Victorian School of Forestry premises at Creswick (about 2 hours drive inland from Melbourne - near to the old gold rush town of Ballarat) to look at the research facilities of CRC. Here, Jim met a number of other staff, including Professor Grigory Torgovnikov, who is Peter Vinden's collaborator on some very interesting projects concerned with microwave modification of timber.

There isn't room here to discuss those projects in detail; but amongst an exciting range of new work are the following:

Harvesting of 12 year old blue gum *(Eucalyptus globulus)* at a local property in southern Victoria

- A technique for relieving growth stresses in fast-grown plantation hardwoods (Blue gum can grow to harvestable diameters of 250-300mm in only 12 years!)
- Accelerated drying with minimum defects
- Improved preservative treatments for refractory timbers (by opening up the rays)
- Development of modified solid wood products with increased strength, stability and durability (patented as "Torgvin" and "Vintorg" - no prizes for guessing the origins of those names!)

Jeff also showed Jim some examples of the University's other work, including accelerated fungal decay-resistance testing (for rating durability of new species); and their pilot plant for rapid preservation treatment of microwave-modified wood, which can fill the treatment cylinder in about 60 seconds, and treat the wood in under 5 minutes!

Following on from Jim's presidential "flag-waving", it is Jeff and Peter's intention to register as many former members of the Australian Branch as possible over the next few months. But they also hope to enrol a good many new members - both from the University and elsewhere, including some of Peter's many contacts in the timber and constructions industries.

Further information on the work of CRC Wood Innovations and the fascinating projects involving cutting-edge microwave technology applied to timber, can be obtained from Professor Peter Vinden or Dr Jeff Hann at The University of Melbourne, 1 Walter Street, Creswick, Victoria 3363, Australia.

Microwave equipment with a log in place for treatment

8th World Conference on Timber Engineering

14th-17th June 2004 Lahti, Finland

The World Conference on Timber Engineering is held every two years and it is the leading timber engineering conference. Recent venues have included New Orleans (1996), Montreux (1998), Whistler (2000) and Shah Alam, Malaysia (2002). This year the location was Lahti in Finland, about a one hour drive north of Helsinki. Lahti is a city of 100,000 inhabitants on the shores of Lake Vesijärvi and it is a centre for winter sports with three ski jumps located high above the city. The world-renowned symphony orchestra, Sinfonia Lahti, plays in the Sibelius Hall, a magnificent building situated in a complex, 1.5 km from the centre of Lahti, by Vesijärvi Harbour, and this was the venue for the WCTE 2004 conference and exhibition.

Figure 1. The conference venue including the Sibelius Hall on the left, the Forest Hall in the centre and the old joinery works on the right.

The Sibelius Hall (Sibeliustalo) is a timber concert hall integrated with an old brick-faced factory building, the Puusepäntehdas, which previously housed a joinery. The competition for the concert hall was announced in 1997 with the aim of producing a unique architectural solution using wood and the successful architects were Hannu Tikka (Artto Palo Rossi Tikka Oy) and Kimmo Lintula (K2S Oy). The new buildings comprise the Forest Hall, the Conference Wing and the Concert Hall itself. The Forest Hall is a very large-scale timber structure supported by nine glue-laminated spruce pillars, each 800mm in diameter and 13m high, supporting a "foliage" of branching beams which support the roof. The Forest Hall was used for the commercial exhibition, for the extensive poster displays and as a dining area. The Concert Hall was the largest of the four venues used for the presentation of papers. The whole structure is enclosed in a glazed external skin suspended from laminated veneer lumber (LVL) beams manufactured by Kerto. The massive, tilted, solid walls within the skin are constructed from Kerto-LVL box elements filled with sand and supported by glulam girders. These structural elements eliminate external noise and provide an excellent acoustical environment. The hall is 25m in length by 16m in width by 22m in height and it is well worth a visit. Further information can be found at:
www.lahti.fi/sibeliustalo/in_english/frames.html

WCTE 2004 comprised four parallel conference sessions, a programme of technical tours and a social programme. The Chairman of the Scientific Committee was Professor Alpo Ranta-Maunus from the VTT Technical Research Centre of Finland aided by the Conference Scientific Secretary, Dr Tomi Toratti, also from VTT. The programme included 10 keynote addresses, 190 oral papers and 140 posters. Speakers were truly international with major contributions from the USA, Japan, Germany, Sweden and Canada and there were over 500 delegates. The UK was represented by 33 delegates from Bath, Brighton, Napier and Strathclyde Universities and companies including Architecture + Building, Arup, BRE, Buro Happold, Forestry Civil Engineering, James Jones, Oregon Timber Frame, Rotafix, Scottish Crop Research Institute, Scottish Enterprise and TRADA Technology. Conference sessions covered the disciplines of connections, shear walls, seismic action, timber building systems, composite structures, design methods, glue-laminated structures, bridges, grading and non-destructive testing, durability and fire resistance. Sessions were well organised allowing seamless transitions from one venue to another and plenty of time was allowed for discussion. It is impossible to highlight individual papers here but an exception is made for Professor Dr Arnold Frühwald's paper on "The Ecology of Timber Construction" which ably demonstrated the strong environmental credentials of timber in construction and the vital role that timber engineering will play in the 21st century. The exceptionally large number of high quality posters contrasted with the rather small number of commercial exhibits. However the Lukas Lang Architecture Technology unit construction system on display in the courtyard was particularly fascinating. The three volumes of WCTE 2004 conference proceedings can be purchased from:
www.ril.fi/Resource.phx/seminaari/semi-wcte/index.htx

The optional social programme, including the banquet, was predictably expensive but the enjoyable city reception on the Monday evening was complimentary and held beneath the columns of the Forest Hall with the ceiling illuminated by electric "starlight". Those delegates who managed to visit Helsinki were impressed by the city with its harbour area, fine shops, magnificent railway station and Art Nouveau quarter. The next WCTE is to be held in Portland, Oregon in August 2006 (www.wcte2006.com) and should be as stimulating and instructive as Lahti 2004. One is left with memories of the high quality of presentations, the excellent conference organisation and the dramatic position of the timber Sibelius Hall in its lakeside location.

Report by Dr Martin Ansell,
University of Bath, FIWSc

Figure 2. The city reception held in the Forest Hall.

Branch News

Canadian Branch

On April 2nd the Institute hosted a presentation by Dr. Robert Franich, Principal Scientist, Forest Research, Rotorua, New Zealand. Dr. Franich's lecture was entitled "The InduriteTM Wood Modification Process: From Science to Business". While furniture makers and other manufacturers have used New Zealand-grown radiata pine for producing value-added solid wood products for decades, the performance of the wood material has often fallen short of expectations. Furniture makers experienced less than satisfactory rates of return of products for repair or component replacement, most damage occurring during delivery to customers. In 1985, the NZ Furniture Makers Federation proposed a simple brief to Forest Research scientists; "make radiate pine perform like Formica® on MDF".

The outcome of the subsequent research program and its commercialization is the patented InduriteTM wood modification technology, based on commodity bio-material utilization, rather than the use of petrochemicals such as methyl methacrylate for wood hardening. The process is being used to produce modified solid wood material for a range of products by Pacific Hardwood Limited, Tauranga, New Zealand, and carries the GreenSealTM brand. The material has been experimented with by design students and professionals, and their creativity has been displayed at the Metaform 03 exhibitions. Some of these designs are now emerging as new commercial products, exemplifying the value of convergence of a sustainable wood resource, chemistry, engineering and design for work and wealth creation.

Robert Franich is a Ph.D. graduate in natural products chemistry and mass spectrometry from Auckland University, a Fellow of the New Zealand Institute of Chemistry and a Fellow of the Royal Society, New Zealand.

UBC launches new timber building technology group

March 11/04 was the official launch date for the Timber Building Technology Group, an important new interdisciplinary group involving the Departments of Architecture, Civil Engineering, and Wood Science, as well as the Centre for Advanced Wood Processing at UBC. Faculty members and researchers from these Departments and other institutions will undertake research and develop educational programs in the field of wood building design and construction, value-added structural wood products, advanced wood processing related to building components, and technologies for advancing the use of prefabrication and automation in the wood building sector. The Departments of Wood Science and Civil Engineering have been active in research on these areas for many years under the project leadership of Professor David Barrett and Associate Professors Frank Lam and Helmut Prion, respectively. The new group will integrate the work at UBC with initiatives at BCIT and Emily Carr Institute of Art & Design as well as with other institutions in North America and overseas.

The Timber Building Technology Group's launch was marked by a workshop involving a full day of presentations and demonstrations focused on the broad themes of market opportunities and new technologies in the field of wood buildings. Topics covered during the seminar included advances in timber building technology in Europe and North America, the industrialization of the North American home building industry, market opportunities for timber building in both the housing and non-residential construction sectors, and the future research and education needs of the sector. Speakers included timber building engineers, manufacturing automation specialists, market analysts, housing manufacturers, CAD/CAM software developers and educators.

The centerpiece of the launch was the unveiling of the Hundegger K2 Timber Processing Centre by the Timber Building Technology Group, a state-of-the-art machine centre delivered recently from Germany that will be used extensively by the Timber Building Technology Group for research and education.

The Timber Building Technology Group's education activities continued in June, with three hands-on technical workshops at CAWP, offered in collaboration with machinery manufacturer Hundegger USA and CAD/CAM software provider Dietrich's North America. The workshops begun on June 10 with a three-day course on roof design and layout of compound joinery. This was followed with a second three-day workshop: "Designing a Timber Frame Building in 3D CAD/CAM". The final event in the series was "Producing Timber Frame Structures on a CNC Beam Processor".

Training News

Report by Martin Wall AIWSc

On 5th -7th July nine James Latham employees and on 12th - 15th July four David Cover & Son employees attended Summer Schools on the Isle of Wight. They all undertook the practical work for module 3.3 strength testing, and 5.3 hardwoods. The strength testing involved using a universal testing machine for the static bending test required for this module. There were comparisons between different softwood and hardwood species as well as size and moisture content variations. For all the samples the Modulus of Elasticity (MOE) and Rupture (MOR) were calculated using graphs produced from the results on a spreadsheet package. For the hardwood structure module a video-microscope was used to illustrate the details of eighteen hardwood species. These included both tropical and temperate timbers showing ring, semi-ring and diffuse porous structure. Samples of each species were available for those students who were not familiar with them. Hand lenses and scalpels were also available to enable the preparation of the end grain and further inspection. The students were accommodated at the Newport Quay Hotel which is five minutes walk from the College. Each lunchtime a different eating establishment was visited and the overall impression was favourable! Evenings were free to catch up on the day's workload and undertake visits into Newport town centre. Overall the feedback from the participating students was very encouraging.

For information on the Summer School and attendance opportunities during 2005 please contact the Institute of Wood Science at the head office. Contact details are printed on the back page of this issue of Wood Focus.

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REGIONAL CONTACTS

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Welsh Forest Industries Group
Weyerhaeuser Europe Ltd.

Institute of Wood Science Certificate and Associate Course Examinations in 2005.

The dates for the above exams will be March 18th and September 16th

Please also note the following:

The first sitting of the new Certificate Course Core Module will be in March as above and the last sitting of the Certificate in its pre-revision form will be in September as above.

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