WOOD focus

ISSUE NO. 3 AUTUMN 2000

The magazine of the Institute of Wood Science

ARE YOU HOOKED ON WOOD? JOIN US NOW!

The Institute is the professional body in wood science and technology in the United Kingdom and is recognised world wide.

The Institute provides:

Information on:
- Timber
- Timber and wood based products
- Timber processing
- Developments in the industry

Education and training materials on:
- Timber technology and product knowledge
- Timber trade practice and timber grading
- The timber resource and environmental issues
- Health and safety in the industry

Professional qualifications in Wood Science and Technology
- An examination structure leading to professionally recognised lettered membership grades
- Admission to membership for graduates with recognised degrees
- Special qualification for experience and standing in commerce and management within the timber and allied industries and professions

Employment opportunities by reason of:
- Confidence borne of knowledge of the product
- Contacts made through the membership
- A required qualification for many appointments within the industry, related research organisations and academic institutions
- Success in the Institute's examinations providing evidence of an ability to assimilate and apply timber knowledge in commercial and technical fields

Social and professional contacts and personal gain
- Meeting with and learning from like minded people at the Institute's Annual Conference
- Attending and taking part in local and regional meetings and educational visits
- Networking with other members on specific issues and interests

Publications and the web
- A scientific refereed Journal that is published twice yearly and circulated to members and subscribers throughout the world
- A twice yearly magazine, Wood Focus, that provides general technical and timber industry information and which serves as a communication link with Institute Members
- Opportunities to contribute articles in both publications
- A fully developed web site with pages specific to the Institutes activities and hyperlinks to numerous timber related sites

If you are involved in wood in any way, this is the Institute for you!

For those not already in membership, or whose membership may have lapsed, contact our office now and ask for full membership details.

Dr Richard Murphy, the retiring President, handing over to Mr Geoff Bagnall (left)

Meet the New President – Geoff Bagnall CMIWSc

After five years in the world of finance and banking Geoff switched careers and entered the timber industry, some twenty-four years ago, He started as a sales estimator with Southerns-Evans Ltd in Widnes. While studying for the IWSc certificate examination he was volunteered to do a timber preservation correspondence course. This kindled an interest in wood protection and soon after successfully completing both examinations he joined Hickson Timber Products Ltd as a technical sales representative.

Over the next fifteen years he gained consderable experience with a wide customer base consisting of architects and specifiers, timber and fencing merchants, double glazing and joinery manufacturers, etc. Geoff progressed and held a number of managerial positions including fire retardant product manager.

He then moved to Timber Treatments to establish a new fire retardant treatment centre in Leeds. Five years on, Geoff is a Director of Timber Treatments Group Ltd who have expanded into preservative treatment as well as selling timber and sheet materials via it's merchanting company Europly.

His involvement with the Institute of Wood Science goes back twenty years when he joined the Liverpool and District Branch. He was elected Branch Chairman in 1985 and again in 1996 and has been an active member of council since the mid eighties.

Geoff has always taken a keen interest in the promotional activities of the Institute and, in particular the IWSc conference. He was responsible for revamping the conference style and format at York in 1993 and with the highly successful introduction of sponsorship. Speaking to Wood Focus he said. "Training and education are the lifeblood of the Institute but marketing IWSc services and courses is equally important. Likewise a successful conference remains our flagship event."

WOOD 2001

It is announced that next year's conference will be at the Marriott Hotel, Liverpool City Centre on Friday 28th September.

For **WOOD 2001** the conference themes will be **Innovation Design** and **Manufacture**.

The reason for changing to September is because of the plethora of bank holidays that occur in the spring which, we suspect, make people less ready to commit themselves to the conference. By September bank holidays and summer holidays are over.

Liverpool is an exciting and easily accessible city with plenty to see and do. By holding **WOOD 2001** on a Friday we aim to give everyone (particularly delegates) time to explore the city and it's many attractions.

As ever, the younger element of the Timber Trade will be encouraged to attend and a suitable range of residential and day only options will be available for delegates and partners.

The topics covered at **WOOD 2001** will be of paramount value to all those engaged in the wood chain, especially utilisation.

Details on speakers, papers and the organisations who, through their much appreciated sponsorship, will be supporting the event, will be made available within a few months. The information will be set out on the Institute's Conference web page and the brochure and booking form will be mailed to all individual and corporate members in the New Year. **In the meantime please mark the date of this important annual event in your 2001 diary.**

Woodexperts.com

Jim Coulson AIWSc FFB

The Institute of Wood Science is fortunate in having amongst its ranks a small, but significant, number of highly skilled specialist consultants who deal with timber problems in the timber, construction and furniture industries.

TRADA (featured in the last issue of Wood Focus) and the Timber Division of BRE are both active in specialist consultancy. *But so too is Technology For Timber, who can be found on the Website* www.woodexperts.com.

Technology For Timber (TFT) was established in 1991. Its founder and Principal is Jim Coulson who is also a Vice President of the Institute. TFT is based in Ripon, Yorkshire, but its operations, now in the tenth year extend throughout the UK and into Europe and North America.

The Work of TFT

TFT's activities divide into two main types: technical consultancy and training courses. Clients come mainly from the timber trade and its customers - the users of wood - as well as from the regulatory and legal fields; that is, Trading Standards Officers, Solicitors and Loss Adjusters.

The majority of training is done for the timber trade, and consists of short courses on product knowledge, certification courses in strength grading and management skills within a timber trading context. Such training has proved invaluable to TFT's clients, who appreciate the extra depth of knowledge and understanding of their own particular trade which can thus enhance the relevance and understanding of these basic "people" skills.

Technical consultancy is often - but not exclusively - carried out for the construction industry and its professionals, such as architects and structural engineers. The correct specification of wood-based products; good workmanship; adherence to relevant standards; in-situ grading of existing timbers - all these and more form part of the repertoire each month for a TFT wood consultant.

But these days, there is an increasing amount of litigation and Expert Witness work which comes to TFT from solicitors and Trading Standards Departments. Such work covers similar areas to that from the building professionals; but, generally speaking, matters will have become much more serious and parties are unlikely to agree on a solution - hence the need for an independent report to help sort things out!

More recently, the role of the Expert Witness has changed, thanks to the reforms brought in by Lord Woolf; so that the consultant often finds himself preparing a single report for the Court, rather than writing something aimed at helping just one side or the other in a dispute.

Variety is the Spice of a Wood Scientist's Life!

Technical consultancy in timber and wood products can be amazingly varied, and requires both good scientific knowledge and wide experience of the uses of wood.

For example, a TFT consultant may find himself in a timber yard, on a new housing estate, up a ladder on top of a Cathedral roof or crawling beneath a floor in a listed building! Therefore, the skills needed may be in any of the following: timber identification, woodworm and dry rot recognition, building terminology, joinery and construction component manufacturing processes, as well as an understanding of timber engineering and strength grading.

The extent of TFT's workload in recent years can be summed up nicely in a phrase used in its early advertising: "From Windows to Windmills'.

So whatever the needs of the wood-using marketplace, the answers can be found at: www.woodexperts.com

Jim Coulson of TFT, centre right, explaining the principles of visual strength grading

Contents - main articles

A new appointment at Head Office

To replace Freda Robinson, who retired earlier in the year, (Mrs) Christine Bradshaw has been appointed as Membership Secretary and Office Administrator.

Christine joins us from the now closed TTTA. With her experience from TTTA days she is well versed in timber trade training and education. She is also extremely well versed in the use of the computer, a skill that is very necessary for the management of the membership database.

FIRE DOORS AND THE B.W.F. CERTIFIRE SCHEME

Stuart Faulkner CMIWSc

(Stuart Faulkner is Group Training Manager at David Cover and Son Ltd, Chichester. He is a member of the Institute's Education Committee and is currently submitting his AIWSc thesis).

David Cover & Son Ltd, a leading independent timber importer and builders merchant with 10 depots in the South of England, has recently added fire door processing to its already extensive repertoire of manufacturing and processing services for the construction industry.

It is unfortunately a proven fact, reported on a number of occasions by both Fire Officers and the Fire Brigade, that badly made, processed or fitted fire doors are a common cause of the spread of fire in a building.

As members of the British Woodworking Federation (B.W.F.) Covers have been kept up to date with the changes to the Approved Document B of the Building Regulations, published on January 20th 2000 and which came into force on July 1st The regulations state that ALL FIRE DOORS should be THIRD PARTY CERTIFICATED.

This recommendation prompted Covers to become registered (and approved) members of the B.W.F. Certifire Scheme.

Under this scheme manufacturers, specifiers, processors, distributors and installers, are provided with a fully traceable product and, when appropriate, service by means of a permanent tamper-proof label.

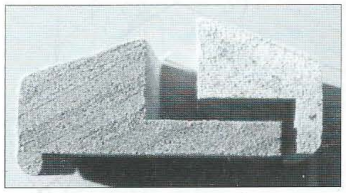
Thereby fire doors purchased from Certifire Scheme manufacturers carry the Manufacturers label and any fire doors that are further processed by Covers, to fit glass openings, for example, carry an additional approved label for the "certified glazed aperture".

At every stage the labelling of the doors is numerically recorded in order that certification and traceability are comprehensive and complete.

To meet both the B.W.F. Scheme requirements and the growing customer demand for fully certified doors,Covers have developed a purpose built workshop at their Chichester head quarters. The equipment, woodworking machinery and the skill training for the staff meet the requirements of not only the Certifire Scheme but 1S09002 Quality Assurance approval as well.

Part of the fire door workshop

Fire door design and technology have moved on since the days of asbestos lippings for glass openings and the company uses ingenious and refined, precision-fit hardwood lippings that not only adequately meet the fire performance required but also enhance the appearance of the door.



The finished product has all the advantages of timber's natural predictability in a fire combined with modern design, manufacturing and technology.

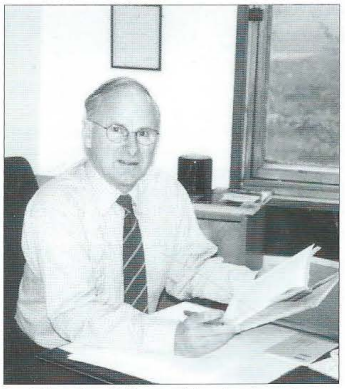
In the words of a satisfied architect "it is safe, certified, traceable and it looks good too!"

Retirements and Appointments

At the Annual General Meeting on September 26th, held at the Timber Trade Federation Offices, the retiring Director, Mr Maurice Holloway FIWSc., was warmly thanked for his dedicated work for the Institute over the last thirteen years.

As a token of the Institute's appreciation for the dedicated and friendly service that Maurice has given to the Institute he was presented with a handsome pair of silver plated wine coasters.

A welcome was also given to the incoming Director, formally the editor of the Journal for six years, Mr David Woodbridge FIWSc.



David has, in addition to editing the Journal, been responsible for the launch of the Institute's magazine, *Wood Focus*. He has been acting as deputy Director for several months and this should help to make the way clear for a smooth transfer of duties.

David has been a member of the Institute since the I 960s and in more recent times has been one of the tutors for both the Certificate and the Associate Courses. The prizewinning student in last year's Certificate Examination, Alan Fox, was one of David's distance learning students!

If, as a keen cricketer and golfer, Maurice's catch phrase was –"keep your eye on the ball", David's, as a keen amateur cellist, is "keep your eye on the conductor and listen to the other players". Transfer this to the everyday and one might say "keep a watchful eye on the world about you and the people in it".

Touring an Automated Sawmill in Northwestern USA

A report of a visit by the International Wood Collectors Society (IWCS) and reproduced from the World of Wood Volume 53 Number 1 January 2000 by kind permission of the Author and Editor, Alan Brooks

The details of the automated systems are especially impressive, as too is the supply of wireless communications for those touring the mill, a facility that all who have struggled to hear the guide on such tours will fully appreciate.

In 1974 the Green Mountain Sawmill was completed near Toutle, Washington. It is among Weyerhaeuser's most modern milling operations in the northwestern USA and among company facilities worldwide, producing dimension lumber, chipboards, sawdust and boiler fuel.

The mill saws second- and third-growth conifers — western hemlock *(Tsuga heterophylla)* when we were there, but it also processes Douglas-fir *(Pseudotsuga menziesii)* and noble fir *(Abies procera)* —logs ranging in size from 5 to 26 inches in diameter and up to 60 feet in length.

The result is lumber measuring two to four inches thick, 12 inches wide and 8 to 24 feet long. The mill's annual lumber production is about 200 million board feet, enough to build about 20,000 homes.

Besides lumber, Green Mountain produces 149,000 "bone-dry" tons of chips and sawdust yearly (sufficient to make 30 million reams of paper), and an ample supply of bark and other boiler fuel to heat about 10,000 homes annually.

Before venturing into the sawmilling facility, sawmill leadman and tour guide equipped the group with hard hats, safety glasses, ear plugs and wireless communication devices that allowed each visitor to hear the guide speak above the milling noises without the need to crowd together on the narrow mesh platforms and stairs.

Logs were forklifted onto metal log stackers that enter the mill through a "merchandiser" deck. The heart of this unit consists of 16 saws, measuring 60 inches in diameter and spaced four feet apart.

After logs are "merched," they are sent to the log-systems where they run through debarkers, then are separated by size. Scanners measure the length and diameter of each log, and the data is sent to a computer that calculates their volume.

The sawmill looked like a "poster child" for automated technology. Computers control the cutting patterns and lengths.

After the hemlock logs were sawn to length, their thin russet-brown bark was removed and the logs rumbled through the sorter by diameter size before being sent into one of two directions — larger logs to the "quad" saw and smaller diameter logs to the "Chip-N-Saw" machine that squares them into sawable "cants."

The quad saw uses four computer-controlled band saws to cut each log into a centre cant and two side cants. A horizontal "resaw" converts side cants into side boards for edging, then an "optimizing edger" scans each side board before cutting it into the desired dimension. A bank of circular saws cuts the centre cants into other lumber.

The Chip-N-Saw machine employs computerized cutting technology to convert smaller diameter (4 to 10 inches) logs into lumber, chips and sawdust. Boards generated by both the quad saw and Chip-N-Saw machine are computer-trimmed to ensure the maximum amount of lumber produced from each log.

The continuous belt feeders are controlled at each step by employees in sound-protected booths who rarely lift a finger because most operations are mechanically controlled.

This is another way of describing these employees as paid to watch television (i.e., computer monitors). But, they cannot relax because they must ensure that each log is delivered to the saws in an orderly manner.

As each log rolls along the metal conveyer belt toward the saws, it is photo-measured for circumference along every inch of its length. Another computer monitor instantaneously displays these measurements on the screen as a series of concentric circles. A cutting pattern is calculated automatically for each log and the cut lumber pattern displayed.

The saw-blade sharpening operation also is computer-controlled to perform sharpening and reshaping operations automatically. To reduce damage to the blades, all logs are computer-scanned for nails and spikes, and the metal-embedded logs redirected for X-ray inspection and removal, before they rumble toward the saws.

Leaving the saws, the edged and trimmed wood of all sizes travel on rollers to the computerized drop-bin sorters consisting of 48 bins that separate the lumber according to length. The sorted bin loads are stickered and stacked for shipment.

All lumber, still in a rough, unfinished state, travels by railroad to a facility in Longview, Washington, where the wood is dried, planed to its final dimension and smooth finish, packaged and transported to customers in Asia and North America.

Despite the sawmill's busy operation, we could see little sawdust or scrap wood lying about. One reason may be that hemlock logs are not too splintery; another reason is that the facility mills everything from the wood, even sawdust. Nothing goes to waste in this modern facility!

Lastly, the IWCS members learned that the average elapsed time from when a log enters the mill to when it is cut, sorted and stacked as lumber is only 3.5 minutes.

Believe me, you could not run through the sawmill (safely) that fast!

Bird's-eye view of Green Mountain Sawmill near Toutle, Washington. Photo by Gary Darby

THE CONFERENCE AND STUDY TOUR 2000

The Conference and Study Tour 2000 was held on the 28-29th April and was based at the Goodwood Park Hotel near Chichester. With seven presenting speakers, **TRADA**, the main sponsor and associate sponsors, the event was attended by 75 delegates.

The tradition of recent conferences was maintained in that the Friday was given over to a Study Tour. This year the theme, in keeping with one of the Conference themes, was the production and processing of timber. Delegates visited a series of Douglas fir stands, ranging from 3 to 72 years old, owned by the **Cowdray Estates** and were given an informative account of the forestry practices of the Cowdray Estates by Head Forester Donald MacDonald.

Donald MacDonald, Head Forester at the Cowdray Estates measuring the girth of a mature 72 year old Douglas fir

After this, the group was welcomed at the sawmill of **W.L. West & Son Ltd.** near Petworth, where the Chairman, David West and Simon Smith, Sales Director, provided a detailed tour of the site. In the afternoon the focus of the tour switched to timber conservation and restoration in the form of a guided tour of the **Weald and Downland Open Air Museum** at Singleton.

Some members of the Study Tour at the Sawmill of W.L. West & Son Ltd listening to Sales Director, Simon Smith, AIWSc (9th from left)

Since the introduction of the Study Tours a few years ago, they have proved to be a very popular and professional element of the Conference. This year was no exception, with the 45 attendees greatly appreciating the expert and enthusiastic presentation and visits. We would like to acknowledge our thanks to the Cowdray Estate, W L West and the Open Air Museum.

The Director, Maurice Holloway and his wife Devika at the Open Air Museum

On the Conference day, the papers presented were:

Forest Certification — William Walker — TRADA Technology Limited

Life Cycle Assessment of Forest Products — a good story to tell— Bill Hillier, Department of Biology, Imperial College, London

*** R & D Support for the Wood Industries by the EC — examples and outputs —Dr. Roif-Dieter Peek, Federal Research Centre of Forestry and Forest Products, Hamburg Germany**

*** Out of Sight, Out of Mind — Andrew Abbott AIWSc, TRADA Technology Limited**

TIMBERWeb and the Developing Marketplace — Keith Richmond MIWSc, KDM International PLC

New Millennium — New Thinking — Jeremy Bristoe CMIWSc, Timbmet Group Ltd

Adding Value to UK Timber — bright prospects — Keith Maun, Centre for Timber Technology and Construction, BRE, Garston

(The papers asterisked are printed in the IWSc Journal, summer issue).

If, this year, actual wood science was not given specific attention, matters of very considerable concern to the wood industries and the ongoing promotion and utilization of timber, most certainly were. Reviewing the state-of-the-art on environmental issues surrounding forest products was an important theme of this year's Conference. Forest Certification and Life Cycle Assessment are having an increasingly profound effect on the environmentally acceptable use of wood and with it the issues and legislation relating to waste disposal.

The paper by Jeremy Bristoe showed the way in which advancing technologies in wood flooring production could be used in positive marketing strategies, where technology becomes not just product improvement but also the basis for a whole range of professional and functional supporting services. Another report on value adding was presented in the BRE paper, which was concerned with the way in which British grown timber might be upgraded for higher value markets. Research and development support for the European wood industries by the EC was reviewed by Professor Roif Peek, with an excellent range of examples taken mainly from work on durability and wood preservation.

The After Dinner Speech being presented by TRADA Chairman Mr Neil Donaldson

At the Conference Dinner the IWSc was particularly pleased to welcome **Neil Donaldson, Managing Director of James Donaldson and Sons Ltd. and Chairman of TRADA.**
The IWSc and its members wish to acknowledge the substantial support given by the Main Sponsor, TRADA. This Included the printing and binding of the Conference papers and the loan of the electronic presentation facilities.

Other sponsors who enabled, in particular the study tour, to be offered at no extra costs to delegates were:

American Softwoods, American Hardwood Export Council, Hickson Timber Products, Howarth Timber, Marlow and Co. Ltd., Nordic Timber Council, Protim Solignum Osmose, Ronseal Trade, Timbmet Ltd. and Travis Perkins PLC

Timber and Wood Products Journal sponsored the drinks at the President's reception and **Technology For Timber** supported the Conference lunch.

David Woodbridge FIWSc June 2000

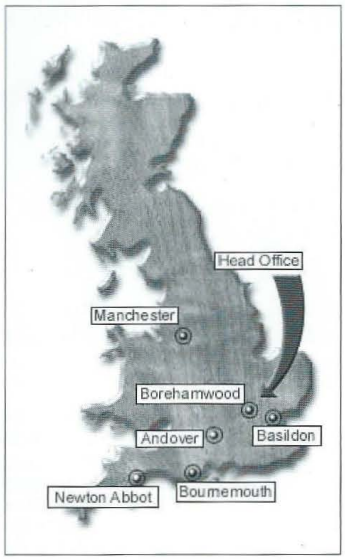
COMPANY PROFILE – S Silverman and Son (Importers) Ltd

The Silverman family business will shortly enter its fiftieth year of trading. Szoel Silverman, in modest premises in the East End of London, founded the company in 1951. But from those modest beginnings the company has now expanded to five substantial depots able to cover the South of England, which combined with a distribution depot in Manchester and their fleet of lorries, are delivering goods throughout the country. The present Chairman is Alf Silverman and his son, Mark, is the Managing Director.

Mr A and Mr M Silverman

The Silverman business may be very different now, but the old enthusiasm that drove the earlier years of the business forward have not diminished. Indeed, if the recent developments and expansion in the business are anything to go by, the enthusiasm for expansion and success throughout the company is clearly growing.

From the depots the company sells in excess of seven hundred product lines. Notwithstanding the company is still committed to the sale of wood based panel products. Such specialisation in today's trading in the UK is quite rare and with recent mergers and takeovers Silverman is becoming increasingly unique in the panel products fields. As a company it has firmly maintained its family business image and has remained with the product lines in which the staff can exercise a quite remarkable level of product knowledge and professional expertise. That is however certainly not to say that other market opportunities are ignored. Far from it, only in the last twelve months a number of new product lines have been introduced.



Silverman Depots

It is a well-known fact that wood and wood based products benefit from careful handling, storage and transportation. The layout and impressively large floor areas of the company's warehouses demonstrate Silverman's commitment to quality. Second to none in this respect are the recently opened new premises at Pipps Hill, Basildon, to which the company moved its previous Basildon operations last year.

Basildon depot

To sustain a business on a product range that incorporates just about every permutation of veneered, particle and fibreboard product is a challenge in itself. To have staff knowledgeable across the range, whether their tasks are buying, selling or warehousing and sorting orders, is an achievement that many people in the industry must admire. A particular feature that has become very apparent to the author, who, as a visitor to the company, has got to know many of the staff when presenting product knowledge workshops, is the willingness to share knowledge. And this goes for the Directors just as much as all other levels of staff. This openness and supportive culture must stem from the top and is a positive reflection on the family business image mentioned earlier.

In the 1960s when the author was working at a timber merchant in South London he can recall the help that he got from the Silverman staff when a non standard enquiry had to be dealt with. More recently he has come across others who buy from the company and always the comments seem to be that, for the specialist knowledge, they have not been let down!

A walk through a Silverman warehouse is like a mini world tour with products that are sourced from all corners of the globe. The sourcing of the products is of a major concern to the company. Mark Silverman and Jim Chambers, Purchasing Director, are very concerned with maintaining the often delicate balance between what is economically viable and a "good buy" with the environmental issues that often conflict with the use of timber and wood products. As a major UK importer of wood based materials the Company's responsibility to ensure that the products are sourced from sustained and managed forests is fully recognised and practiced.

The sourcing of product lines has also to meet the standards of quality and performance expected. To provide customers with this level of consistency across the range requires daily contact with suppliers and visits to the countries of origin to ensure continued product supplies and to negotiate on price in order to maintain the company's competitive edge in the market.

The Silverman web site is a lesson in itself. Not only does it give information on the Company, but also it lists the product range in great detail. Interestingly, there are some very helpful and informative technical details, explanations of technical terms and guidance on the use of the products. All readers would do well to visit the site and if they happen to be studying the IWSc Certificate Courses it is more than probable that they will find both helpful and relevant information - and free of charge! **www.silverman.co.uk**

Within the panel products industry today there are an increasing number of plywoods, particle boards, fibreboards, door blanks, counter and worktops, that are made to very demanding specifications and which have, in use, to be able to

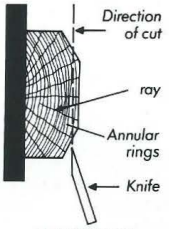
Veneer Cutting
Decorative Veneers are cut from logs to produce the best visual qualities of the grain, colour and figure. Two logs of the same species but with their Veneers cut differently, will have entirely different visual characteristics. There are several ways in which to produce this effect, which are illustrated.

Crown Cut
Crown Cut Veneer is produced by slicing through the log giving a result which emphasises the Crown and a cleaner and more decorative Veneer.

Quarter Cut
This is produced by cutting at right angles to the growth rings producing a straight grained, in the main, bland effect.

Rotary Cut
The Veneer is produced from a cutting action whereby the cutting knife is fixed and the log is rotated. This produces a continuous sheet of Veneer, with sometimes very wild characteristics.

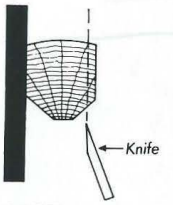
Burrs (or burls)
Burrs owe its figure to a growth found on the outside of the trunk. The grain is of a highly irregular pattern, and has the appearance of small knots grouped together. The appearance when quarter matched gives the best characteristics in the burr.



FLAT SLICING
Crown Cut

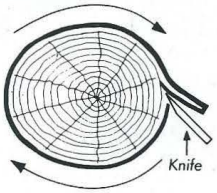
Veneer Matching
When matching the veneer the specifier has various options open as to the way the veneer can be matched and joined, so as to enhance the characteristics of the grain and create different visual grain patterns.

Book Matched (Crown & Quartered)
Alternate leaves are turned over to produce a mirror image effect. This can, however, with certain veneer species, create a light, dark, shading effect.



QUARTER SLICING

Slid Off
This method involves jointing successive leaves from the same log without turning them over.



ROTARY

Extract from the Silverman catalogue page detailing the cutting of decorative veneers.

stand up to often very severe and hazardous conditions. It is when advising on such products that the technical and professional expertise of the staff really comes to the fore.

The whole image one gets of the Company points to three things. Firstly, a strong leadership, and Mark Silverman must take a lot of the credit for that. Secondly, a clear sense of purpose, not just to make that extra sale but also to provide a service to the customer that is dependable. And thirdly, a training policy that enables staff to match up to the high standards expected of them.

The Company prides itself on the quality of the products supplied and the service that it gives to its customers. The staff are central to this success and it is true to say that much of this success is as a result of carefully planned and delivered training programmes. It is a mark of Silverman's commitment to training that in 1999 it received, with the help and guidance of Neil Kirby of ABG Business Solutions, the Investor in People Award.

The Institute of Wood Science is especially pleased to record that earlier this year S. Silverman and Son (Importers) Ltd. became Corporate Members of the Institute.

David Woodbridge FIWSc

TIMBER DECKING

Dr Paul Newman

Timber decking is the current vogue and has much to commend it — attractive appearance, ease of installation and the credentials of a sustainable material. However, it needs to be properly specified and installed.

Timber walkways and decks are now in great demand but there is nothing new in the principle. Plenty of historical examples - from medieval walkways in the Fens to nineteenth century railway platforms, piers and jetties - bear testimony to the longevity of the concept and the material. As well as providing outdoor living space in domestic gardens, timber decks are increasingly specified for open public areas. They are relatively quick and easy to build, require little groundwork and can be built out over sloping land. Wood blends well with existing landscapes and decked areas in waterside developments give a maritime or riverside character.

The Timber Decking Association demonstration deck at TRADA, Hughenden Valley, High Wycombe

In specifying a deck, the first matter to consider is functionality. What is the expected level of pedestrian and other traffic? What is the degree of exposure? What particular activities — dining, spectating, sunbathing, for example — must the deck accommodate? All these will impact on the design, detail and specification including choice of timber species, preservative treatment and finishing. Good practice will not only ensure the deck is suitable for its purpose but also that it will achieve the desired life with the minimum of maintenance.

Appearance

One of the first decisions is which way the boards should run relative to the shape of the area. Looking along the length of the boards, visually extends the length. Conversely, running the boards across the line of sight tends to widen the space. If the space is long and relatively narrow, there are practical advantages in running the boards across the short dimension as it is usually possible to use single lengths, avoiding butt jointing.

If the boards are to be left unfinished or only finished with a clear moisture resistant coating, the initial colour will bleach out to grey, whether hardwood or softwood is used. It is, therefore, relatively unimportant to choose a wood on the basis of its natural colour. Pigmented systems will protect against ultra violet light which causes the loss of colour. These can either simulate the original wood or be a totally different hue. If exposed to heavy use and abrasion, a tough, durable stain can be used. This will require maintenance, however, and if this is considered too costly, unfinished wood should be considered.

To ensure that long-term appearance is not spoilt by staining and that fixings do not corrode, stainless steel is recommended throughout and is essential for all exposed screws and nails. Hot dipped galvanised steel can be used for concealed fixings — bolts, clips, plates, brackets and hangers — but there is a risk that the coating will be damaged during construction and even very limited corrosion can cause staining.

Durability

Because decks are fully exposed to wetting and drying cycles, it is of primary importance to choose a wood that is rated 'moderately durable' or 'durable' from which the sapwood is excluded or to use a wood that has been pressure treated with preservative to enhance its durability.

A low moisture content is critical as fungal attack will not occur below a 22 per cent moisture content in the wood. If this is exceeded for a short period, following heavy rain for example, there is still minimal risk because wood will naturally equilibrate to a low moisture content once dry weather resumes. Where risk does occur is if the rainfall becomes standing water trapped against the wood for any length of time, particularly the end-grain. It is important, therefore, to prevent water traps and to ensure surface water drains away quickly. Also, avoid exposing end-grain to direct wetting or close contact with wetted surfaces of either porous materials (such as masonry) or non-porous material where the water can lie. This can be achieved by either damp proof membranes between the wetted surface and the wood or by providing a sufficient air gap for natural ventilation.

These principles also apply to any substructure and ancillary components such as handrails, steps, balusters, seats etc. It is particularly important to cap any vertical posts by carrying a handrail over or capping with a flashing.

Durable or pressure treated wood posts can be embedded directly into concrete foundations or they can be supported on metal brackets or specialised foundation blocks above ground level. If embedded in the foundation, it is essential that the correct species is chosen or if treated with preservative that it is to a specification appropriate for the service life.

For softwoods in situations where there is a high risk of regular wetting, such as pool-sides or under heavy foliage, there are advantages in reducing moisture uptake by clear penetrating seals which increase the water repellency but allow the timber to 'breathe'. Regular inspection and retreatment will be needed to maintain effectiveness. Varnishes should not be used.

Strength

Strength, not a major concern with domestic decks, becomes very significant in public areas where the deck may have to take much higher loads such as cycles, golf buggies or wheelchairs. It may also be necessary to allow for the weight of cleaning and maintenance vehicles. The design of these decks should be checked by a specialist engineer. Particular care should be taken with handrails and balustrades.

Hardwood boards might be preferable in these circumstances because of their greater strength and higher density. For all decks, it is generally best to limit the spacing of the supports to a maximum of 600mm rather than to increase the board thickness to achieve larger spans. For hardwood in particular, which is generally more expensive than softwood, increasing the board thickness can add disproportionately to the cost compared to adding extra joists, normally

preservative treated softwood, at closer spacing.

Stability

All wood will have some tendency to develop surface splits or to distort, depending on how it is cut from the log and variations in moisture content. Closer joists, while limiting the span of the boards, will also reduce the spacing between the fixings and contribute to restraining board movement.

When deck boards are used 'undried' (to save the cost of kiln or air drying), it is essential to fix frequently along the length of the board and also to allow for any shrinkage across the board width as it dries. This is typical of temperate hardwoods, such as European oak, but wood from large tropical logs can also shrink. To reduce the effects of shrinkage, it is advisable to use relatively narrow boards — no wider than 150mm and preferably 100mm or less.

Resistance to wear and impact

As a general rule, timbers of lower density will be subject to greater wear than those of higher density. In practice, however, for most domestic and public decks good quality softwoods have a high resistance to wear. Applications where dense hardwoods do have advantages include areas where studded or spiked shoes are worn or where high impact loads (such as maintenance vehicles) are anticipated. Because such impact would quickly damage any surface coating, it is preferable to leave the hardwood unfinished.

Slipperiness

It is a common perception that timber decks are slippery and potentially hazardous when wet. Whilst there is certainly a potential for this, the risks are often over-stated and the problem can be minimised, with careful detailing, choice of appropriate materials and routine care and maintenance. The main areas of risk are ramps, steps and landings.

The primary and most common cause of slipperiness on timber decks is standing water. Practical measures to ensure that this does not happen include ensuring that decks are installed level without any low points or, if appropriate, with a positive drainage fall from side to side. This need only be slight and would probably not be detectable to the user but it is important that falls run away from any buildings.

Sawn, textured or grooved boards are widely available and will improve initial grip compared to planed boards but the comfort of the deck finish must be considered. The main purpose of the grooves is to provide drainage channels for surface water so the frequency, depth and width is important and care should be taken that they cannot become blocked with debris. Aligning the boards, whether plain or grooved, across the primary direction of travel will also improve grip on both flat and sloping surfaces.

When laying decking it is important to allow an adequate drainage gap between each board rather than butting them together. A gap of 6mm (10mm maximum) is recommended to avoid problems with narrow shoe heels, bicycle or pram wheels, roller blades etc.

A secondary cause of potential slipperiness is algae, mould and slime which can occur if timber is water-logged or remains damp for extended periods. Areas in constant shade or under tree or plant cover are particularly susceptible — and the problem is accentuated in the autumn. The best answer is to design out the problem at the beginning by positioning the deck to avoid such conditions.

The final cause of slipperiness is a seasonal problem of surface frost and ice. In this respect, timber is no different from any walkway material and provided that surface water is not allowed to stand and form ice sheets, the problem should be minimal.

Preventing other problems

Applying a finish which reduces the moisture permeability of the wood also helps prevent the boards becoming deeply stained by bird droppings, fouling from pets or other liquids. Again for public decks where there is greater risk of spillage, either accidentally or through vandalism, it may be preferable to choose a denser wood as this is more easily cleaned by detergents or chemicals. However, wood generally is more resistant to chemicals and pollution than other building materials.

TRADA Technology provides advice on deck design, a checking service for stability and will write installation instructions.

The Timber Decking Association (TDA) best practice demonstration deck at the TRADA premises illustrates a range of features that might be included in a timber deck.

A 76-page Timber Decking Manual, produced by TRADA Technology, is available covering all aspects of planning, design, specification, construction and maintenance. Available, price £40, from TRADA Technology: 01494 563091.

Dr Newman is head of Timber Technology at TRADA.

Letter to the Editor

Dear Sir,

Robinia

I was interested in your piece in 'Wood Focus' about robinia fence posts and the paper in the winter issue of the Journal. It is only a few years ago that I became aware that robinia was anything other than a decorative tree.

One of my colleagues on the editing committee of CEN/TC 112 is Dr Ekart Schwab of the Bundesforschungsanstalt für Forst- und Holzwirtschaft in Hamburg. He has made a study of this species and some two years ago visited Hungary and Rumania, to advise officials there on expanding their use of this timber.

Robinia grown for shading the road in Italy

He told me that during the reign from 1740 to 1780, of the Empress Maria Theresa a court emissary visited what is now the USA and was interested in the large stands of robinia growing in *the* southeast. He was struck by the high strength of the timber and the fact that the climate and swampy soils resembled those of the Danube marshes in southwest Hungary. (One wonders if present day diplomats are as knowledgeable and would have made the connection). This is probably the beginning of large scale introduction and harvesting of the tree in east Europe and the source of the timber the study of which gave rise to the paper by Gy. Wittmann *et al* published in the Institute's Journal Volume 15 No 2. (Robinia as a construction material and xylophone bars).

I thought this snippet might interest your readers

With kind regards,

Eddie van der Straeten, FIWSc

TRAINING

List of tuition centers for the Institute's courses

BCT
Glenn Sharples (Tel: 01524 832052)

Buckinghamshire Chilterns University College
Dr Kavin Maher (Tel: 01494 522141)

Enterprise Ireland
Dr Jos Evertsen FIWSc
(Tel: 00353 1 808 2635)

Isle of Wight College
Martin Wall AIWSc (Tel: 01983 526631)

Liverpool Community College
Greg Prescott (Tel 0151 252 4885)

East Antrim Institute
Tom McFadden (Tel: 028 90855000)

TRADA Technology Ltd
Susan Farrow AIWSc
(Tel: 01709 720215)

Technology for Timber
Jim Coulson AIWSc
(Tel: 01765 601010)

Warwickshire College (Moreton Morrell Centre)
Tom Shaw FIWSc & Erle Smith FIWSc
(Tel: 01926 318235)

The full list of candidates who have passed the Institute's exams for the year will be shown in the next issue of Wood Focus

IWSc examinations 2001

March 23rd
September 21st

A Wood Science and technology study group at Covers of Chichester examine the properties and characteristics of wood based panel products

The Timber Trades Journal Trophy

Alan Fox, the 1998/1999 Certificate Course Winner, receiving the Timber Trades Journal trophy from the editor of the TTJ, Audrey Dixon, with IWSc President, Dr Richard Murphy, announcing the event to the Conference Dinner, Chichester, April 2000

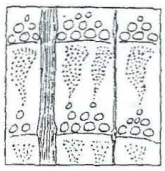
Timber Technology - Model answers to examination questions

Two model answers are taken from the publication Wood and were originally printed in 1948. They were written by Harold T. Eyres FIWSc and author of ***Introducing Wood*** *which, back in those early post war years, was one of the first books to attempt to bridge the gap between the Commercial and the Scientific approach to timber. The course for which the model answers related was the Timber Development Association Timber Technology Final Examination - the forerunner of the IWSc Certificate Course and examination. The text of the model answers has been very slightly adjusted to suit modern terminology. It should be noted that some of the descriptions and the procedures are not necessarily in accord with today's textbooks and practices.*

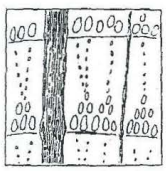
1. – With the aid of large clear diagrams, explain how you would differentiate with certainty between four timbers of the family Fagaceae

The student would be expected to sketch simple diagrams to bring out the essential diagnostic features.

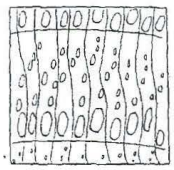
(a) Most students would think immediately of oak, chestnut and beech, but would be at pains to find a fourth member of the family. This could either be provided by describing two distinct commercial oaks such as American red and American white or, if the student was familiar with them, one of the sub-family of Nothofagus, such as roble (*N.obliqua*),



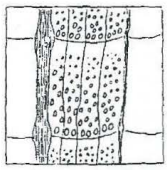
White oak



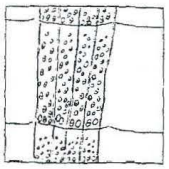
Red oak



Sweet chestnut



European beech



Southland (Southern) beech

Tasmanian myrtle (*N. Cunninghamii*) or Southland beech (*N. Menziesii*).

Transverse sections would serve to differentiate between them. American white oak would show both strong and weak rays with grouped earlywood vessels in ring-porous formation; the latewood vessels very small in V-shaped patches. Red oak can be distinguished by the larger size of the latewood vessels which are fewer in number and arranged in radial chains.

If heartwood is being examined the presence of tyloses would also help to distinguish white from red oak. Chestnut is also ring-porous but shows more oval vessels. Rays are weak only. They are abundant and undulating. Latewood vessels in oblique arrangement.

A transverse section of beech would show diffuse porous structure with noded rays of strong and weak type. If the fourth timber selected was Southland beech it would be distinguishable from European beech by the thinner rays and the greater number of paired vessels.

2. –What would you suspect if you found small mounds of wood dust forming near the edges of hardwood boards stacked for seasoning? What measures would you adopt to check the damage?

If the boards still retained their bark the dust might be produced by one of the bark beetles (like the German bark beetle, *Ips typographus*) in which case it would be proper to strip the bark and burn it. On the other hand, it might be from the bore dust of the much more dangerous powderpost beetle *(Lyctus sp.)* or even the furniture beetle (*Anobium punctatum.*), although the latter prefers seasoned wood. The method of checking the pest will depend on the severity of the attack. The complete check is to sterilize the wood in a kiln. The powderpost beetle and the early stages of furniture beetle attack can be got rid of by cutting away affected sapwood and burning it. If all sapwood is not removed the remainder must be watched, for as the eggs may have been laid in it and will hatch into grubs.[1] The application of insecticides may be resorted to but this is expensive if applied to considerable surface areas. Long-term precaution will include keeping the yard free from bark and waste wood which provides attractive breeding places for the beetles.

[1] Notwithstanding this comment, it has to be remembered that Lyctus attack is associated with sapwood.

A Visit to the Chinese Institute of Forestry

Carolyn Woodbridge

A once in a lifetime opportunity to visit China enabled me to make contact with Professor Ning Guan, a Fellow of the Institute since 1998. Correspondence between my husband, David Woodbridge and Professor Guan had resulted in an invitation to visit the two divisions of the **Chinese Academy of Forestry** during my stay in Beijing. The two divisions are:

1) **Division of Forest Genetics and Tree Breeding**

2) **Division of Wood Properties**, of which Professor Guan was the former chief.

The campus, where both bodies are located, is about twenty miles from the centre of Beijing near The Summer Palace. As well as the academic buildings there is housing for the staff and students, and a restaurant as well as other facilities. Professor Guan met me at the Grand View Garden Hotel, and after initial courtesies and exchange of gifts, we were driven to the campus. Professor Guan had arranged for me to meet two colleagues, one from each division.

Professor Guan standing by the wood X-ray densitometer

Professor Su is Deputy Director of the **Division of Forest Genetics and Tree Breeding** whose particular area of work is that of tree breeding and genetics with a special emphasis on the species of poplar, because of their importance to the environment and economy. She outlined the principle areas of current work using poplar as a model tree to develop a strategy for research with other species. These are:

1) Gene resource collection and utilisation (sourced from seventeen different countries).
2) Selection of improved genotypes of, in particular, the northeast China species *Populus ussuriensis* 'Kom', as it is used for wood pulp.
3) Genetic mapping: A molecular method is used in the construction of a gene map; this is an important step towards developing an improved strain with enhanced growth rates and disease resistance.
4) Detection of quantitative trait loci (Qtls) for growth, phenology and wood density of poplar using molecular markers.
5) Salt resistance: Tissue cultures and cell engineering are used to try and identify the genetic links for resistance to soil salt.
6) Genetic engineering project concerning the lignin content of the wood:
7) Disease Resistance: Two molecular markers have been identified which are linked to leaf disease in poplar.

Professor Su has worked on these projects for fifteen years to date. She has two PhD students, and another M.Sc. student starting this autumn to help with the work. Personally, as a non-botanist and non-timber technologist, the session with Professor Su was very demanding! Nonetheless I was able to appreciate the multi-faceted approach of their research work. Afterwards Professor Su showed me round their laboratory, which is the key lab of biotechnology subordinate to the State Bureau of Forestry.

I was then introduced to Professor Jiang, Chief of the **Division of Wood Properties**, and one of three professors of Wood Science and Technology. There are twenty staff, fourteen research scientists and six technicians. Of the staff members six already have PhDs, and four are working to gain theirs, and there is one Masters Degree student.

Professor Jiang in a section of the library of wood samples

The Division is currently engaged in sixteen research projects of which the major ones are:

1) Properties of wood from forest plantations focusing on tree improvement, wood processing and utilization
2) Cambium activities and the dynamic change of the microtubule and microfilament structure in relation to the growth formation of the xylem (wood).
3) Principles of non-polarization and the interface between wood and plastic
4) Mechanism of the conduction of electricity in wood
5) Relationship between the ultrastructure of wood and its permeability
6) Mechanism of slip flow related to the permeability of wood
7) Wood modification in paintability and durability with chitosan
8) Environmentally friendly wood based panels with fragrance
9) Ultra structure of bamboo in relation to its mechanical properties
10) Surface hardening of Chinese fir wood from plantations
11) Tree enhancement and wood utilization in the improvement and stabilisation of the hills and land along the middle and lower reaches of the Yangtze River

The staff is divided into three groups focussing on a) wood structure, b) wood chemistry, and c) the physical and mechanical properties of timber. Of the sixteen current research projects six have been commissioned by Central Government.

Dr Jiang showed me round the department. It has a very large catalogued collection of wood samples for use in species identification (see illustration) and several important pieces of scientific equipment for the research of wood anatomy. These include including an image analysis system from Cambridge and a Swedish ultra-microtome.

There are currently major concerns in China about the shortage of forests, deforestation, and the protection of the existing natural forest areas. Important indigenous species are (softwood) Chinese fir (*Cunninghamia lanceolata*), larches and pines and (hardwood) poplar, paulownia and the introduced eucalypts

Professor Guan then showed me around other areas of the Division. He has technically retired, but maintains very active links, and is continuing some of his own work. He showed me the Wood X-ray Densitometer, which had been built early in 1990s from a design that he and another colleague had copied from an instrument in New Zealand. This equipment (see illustration) allows for the research on the intraring density variation patterns of wood as well as interring variations. The Institute has published papers in the Journal written by Professor Guan on his work in this specialist field (see Volume 14 issue No 2 and issue No.4).

Finally my visit was rounded off by a meal in the Campus restaurant with Professor Guan and Professor Jiang. We had a most generous and wonderful meal (almost a banquet!) in a room adjoining the main restaurant. Professor Jiang had spent a year at Imperial College, London, under Professor John Levy FIWSc and Dr David Dickinson FIWSc. Both she and Professor Guan speak excellent English. We all enjoyed a very sociable meal together before Professor Guan returned me to the city. The genuine warmth of their reception, and generous hospitality added an extra dimension to my Chinese Odyssey. I was extremely impressed with the range and scope of their research projects and very much hope that they will be able to visit Britain and that we will have an opportunity to repay their hospitality.

TYPES OF MEMBERSHIP

Candidates are elected to the appropriate grade of membership by the Council of the Institute.

Student Member: Student members are those engaged on Institute courses or on courses which have been approved by the Institute.

Ordinary Member: This category is open to any applicant and requires no formal qualifications for entry. All members receive the Journal and Wood Focus and are entitled to attend meetings and conferences of the Institute.

Member: Open to members in the Timber and Allied Industries with ten years or more experience with at least three in a senior position. They may use the letters MIWSc.

Certificated and Associate Members: These are members who have passed the Institute's examinations. Certificated members may use the letters CMIWSc. Associate members may use the letters AIWSc.

Associateship may also be granted to an applicant who has either obtained equivalent qualifications from another source or, in exceptional cases, can provide proof of relevant technical expertise.

Fellow: Fellowship may be awarded to members with Associate or equivalent qualification who have made an outstanding contribution to the advancement of wood science or technology, or have rendered distinguished service to the Institute. Fellows may use the letters FIWSc.

Subscriptions (from 1st April 2001)

The annual subscriptions, which includes receipt of the Journal, the Wood Focus and V.A.T. are as follows:

Fellows	£63
Associates	£56
Certificated Members	£38
Members	£56
Ordinary Members	£35
Retired Members (with Journal)	£26
Retired Members (without Journal)	£15
Students	£15

The payment of annual subscriptions by direct debit is both encouraged and recommended.

The President, Vice President, Officers and Past Presidents at the Conference 2000 from left to right- Dr John Brazier FIWSc, Dr Richard Murphy FIWSc (President), Maurice Holloway AIWSc (Director), Dr Martin Ansell FIWSc, David Woodbridge FIWSc (Deputy Director), Jim Coulson AIWSc (Junior Vice President), Keith Purcell FIWSc, Geoff Bagnell CMIWSc (Senior Vice President), Peter Latham MIWSc (Honorary Treasurer)

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East Midlands - Tom Shaw FIWSc (01789 840605)
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