

# Lighting & Sound INTERNATIONAL

August 2000

The Entertainment Technology Monthly

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## Ice Palace

- The National Ice Centre, Nottingham

## Bologna Towers

- Greenaway takes multimedia to the European City of Culture

## Witches of Eastwick

- Mackintosh's latest West End Opening

## Alice's Wonderland

- Alice Cooper in Sheffield

## Royal Military Tattoo

- The Armed Forces' Millennium Celebrations

## Manchester Airport

- Audio for the new £68m Terminal 3

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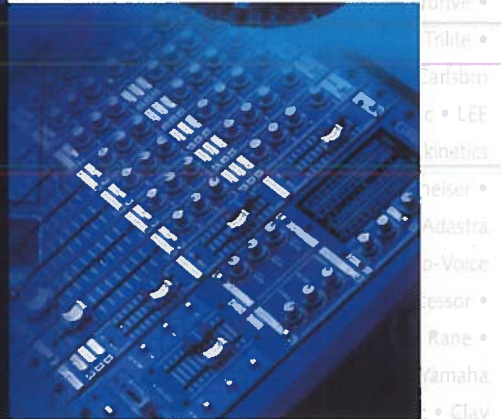
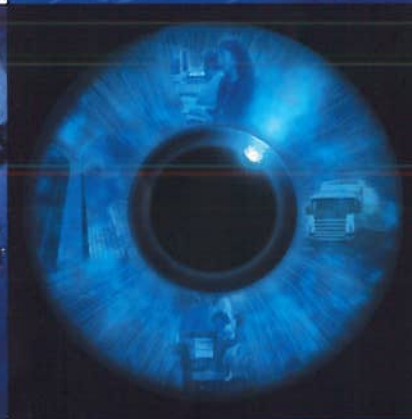
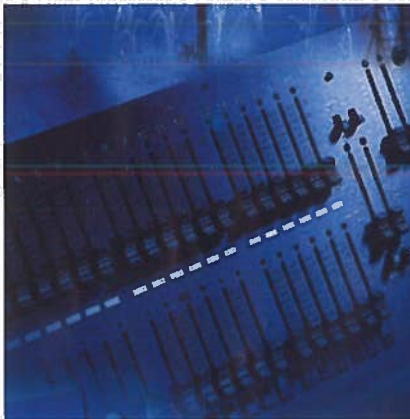


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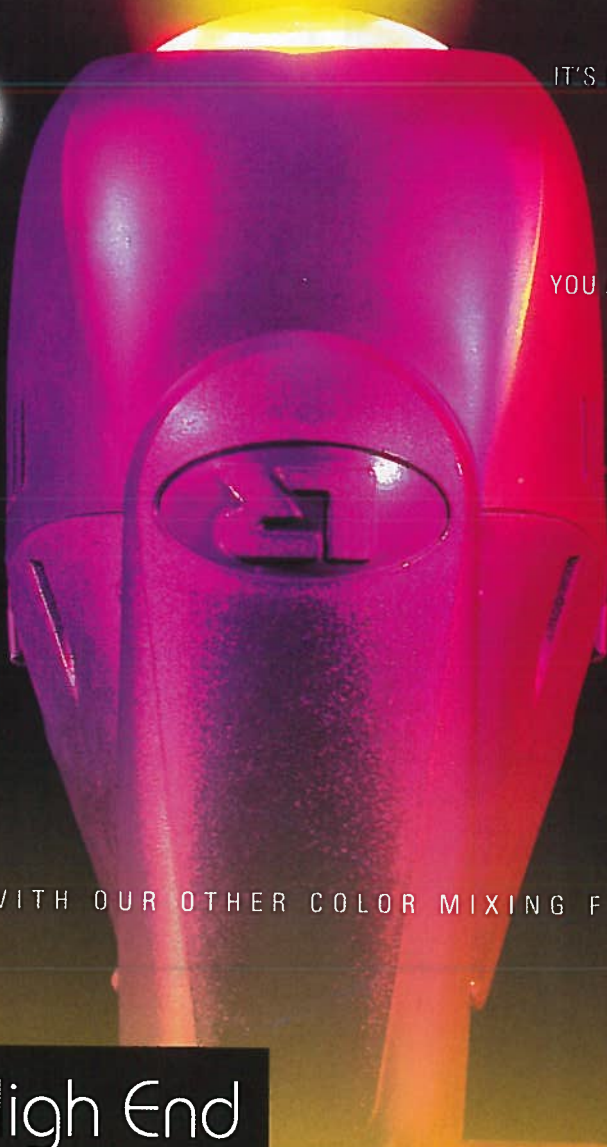
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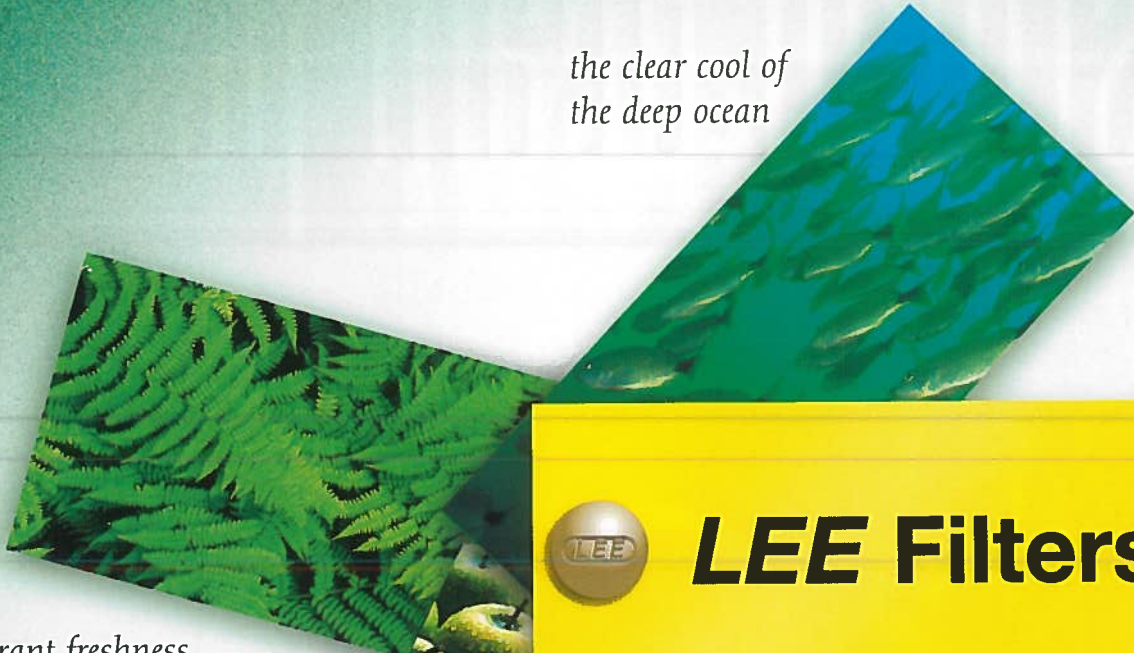
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# Lighting & Sound INTERNATIONAL

August 2000 Volume 15, Issue 8

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## CONTENTS

### NEWS

This month's cover shows Royal Military Tattoo 2000, London

International News Round Up ..... 6

### REGULARS

Asleep in the Stalls Ian Herbert ..... 50

Second Take John Watt ..... 64

No Comment Tony Gottelier ..... 76

In Profile Mike Mann meets with sound engineer Ray Furze ..... 90

### FEATURES

Ice Palace ..... 47-49

Steve Moles visits Nottingham's National Ice Centre

Bologna Towers ..... 52-56

Celebrations during Bologna's year as European City of Culture 2000 recently included a unique multimedia installation by director Peter Greenaway. Mike Clark reports from Italy.

Witches ..... 59-62

It's been a while since Cameron Mackintosh had a big new show in London. Four years, almost to the day, since the original Martin Guerre opened; six since Oliver! and more than 10 since Miss Saigon opened before setting off on a trail around the world. Rob Halliday reviews the latest from the Mackintosh stable

Alices's Wonderland ..... 67-69

Steve Moles finds out whether Alice Cooper can still hack it

Royal Military Tattoo 2000 ..... 70-74

Just when you thought it was all over, the flagship celebration of the Millennium for all three British Armed Services took place on Horseguards Parade in July - Ruth Rossington joins the massed ranks

Cleared for Takeoff ..... 79-81

Mike Mann checked in at Manchester Airport's new £68m Terminal 3 to find out how acoustics and electronics can be combined with positive results

PLASA NEWS ..... 36-37

WEB FEATURE ..... 43-45

DIRECTORY ..... 82-87

CLASSIFIED including full recruitment section ..... 88-89



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# International News Round-Up

## Cutting Edge Technology Breaks New Ground at PLASA 2000

The PLASA Show 2000 will feature manufacturers, suppliers and distributors of professional lighting, sound and AV equipment for the performing arts, night venues and theme bars, concerts and touring, the DJ market, architectural installation, corporate presentations, amusements and attractions, recording studios, cruise liners, TV and film, educational and religious establishments.



### Theatrical London

Book Now to Guarantee your Place

Theatrical London will also offer delegates the chance to go behind-the-scenes of some of London's most important West End shows and venues. Full details page 8 of Preview.

The Show Preview enclosed with this issue will tell you everything you need to know about PLASA 2000.

## Disney Plans Third Californian Park

Disney has revealed plans for a third theme park at its Disneyland site in Anaheim, California, to be completed by 2010.

The park, covering up to 78 acres, still requires permission from the local authorities, but Disney intends that the first phase of the project be up and running by 2003, with completion in 2010. Disney will open its new \$1.4bn 'California Adventure', also at the Anaheim site, next February. In addition to these plans and its existing parks in Florida, Tokyo and Paris, Disney also hopes to open a Hong Kong-based resort in 2005.



Whether you are a lighting technician or DJ, installer or architect, club owner or theatre manager, you can be sure that a visit to the PLASA Show 2000 will be valuable. Visitors can expect the world debut of some of the entertainment technology industry's most pioneering, innovative and advanced products.

A visit to the PLASA Show is also an opportunity to learn more about the industry you work in. There will be a series of hands-on training sessions bringing practical advice and help to junior employees and middle management. These will focus on health and safety issues, and will cover a raft of practical information. In addition, a programme of masterclasses has also been confirmed covering the Audio and AV display sectors, and the TiLE (Trends in Leisure and Entertainment) Zone.

## Vari-Lite Signals Intent to Sell Mainland Europe Operations

Vari-Lite has entered into a letter of intent to sell its operations in Belgium, The Netherlands, France and Sweden to an investment company which owns Focus Showequipment BV in Amsterdam.

The intention, according to Vari-Lite CEO Rusty Brutsché, is to allow Vari-Lite to concentrate on the development and sale of its automated lighting systems in the US, Asia and London. The investment company behind the purchase should be in a strong position to build on the reputation of Focus and EML (Brussels/Utrecht), both production companies being well established in the Benelux region. Together with the operations built by Vari-Lite in France and Sweden, the plan is to develop a branded international network of companies. The sale is subject to various conditions, but is scheduled to be completed in September.

# Art-Net the Ethernet Solution from Artistic Licence

Booth G24 PLASA  
Light & Sound 2000  
10-13 September

Art-Net is an Ethernet communication system developed by Artistic Licence specifically to address the data distribution need of large productions and venues.

In many instances, DMX512 cannot carry enough data, necessitating multiple cables and complicated patching systems.

Art-Net allows tens of thousands of lighting channels, console video data and remote triggering events to be transmitted over inexpensive Cat5 cable.

The Art-Net protocol is available as a public domain specification in order to allow multiple manufacturer support.

**DMX-Hub** converts four universes of DMX512 to and from Art-Net. Applications include point to point and multipoint data transfer, radio or leased line communication and console expansion. Combined with standard Radio Ethernet technology it is possible to transmit 2048 channels of lighting data up to 19Km.



**Art-Net View** is a software suite for Art-Net developers. It implements all API calls and emulates both send and receive functions.



**Grand-Master Flash V3** will be launched at PLASA 2000. Features include support for Art-Net output direct from the PC network card.



The **AL5000** series Ethernet Processor Range is now in development. The range will allow OEM's to support Art-Net with zero software development.



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## Dale & Whittaker Leave Celco

Top, Keith Dale and below Colin Whittaker

**Just months after celebrating the company's 21st Anniversary during the 1999 PLASA Light & Sound Show, Keith Dale and Colin Whittaker have left Celco Limited.**



strategic plan was in the best long-term interests of the company. We wish everyone at Celco continued success."

Whittaker, who joined Celco in 1988 following 10 successful years as sales director for Cerebrum Lighting, remarked: "It's regrettable that my involvement with Celco has come to an end, but it's been a privilege to have worked with such a great team over the years. We consider ourselves fortunate to have enjoyed such fantastic support from colleagues and dealers alike."



Lightstorm Trading's Rod Bartholomeusz had the following to say: "Although we are sorry to

In a move that will come as a surprise to many, the separation, say Dale and Whittaker, is the result of a further change in the ownership of the company - one that did not meet with the agreement of Dale and Whittaker, who had been trying to strike a joint venture with a major British manufacturer. The new shareholders of Celco are Amptown of Germany, Applied Electronics of USA and Sonoss of France with Lightstorm Trading maintaining an equal interest with the new investors.

The split comes just 18 months after Celco was sold by Helvar Limited to Lightstorm Trading and set up as an independent company with Dale as managing director and Whittaker as sales director. In the interim, Dale and Whittaker restructured the service side of the business, oversaw the move of the manufacturing lines from Helvar's Maidstone facility to a new Midlands-based operation and introduced new models in preparation for further expansion.

Commenting on his departure, Keith Dale told L&SI: "It's difficult to part with something that has been a major factor in my life for so long. However, at least I can leave knowing that our

part company with Keith Dale and Colin Whittaker, it was necessary for Celco to move on. The company has been restructured financially and the new shareholders are all very keen to ensure a bright future for Celco Ltd. It also goes without saying that we all wish Keith and Colin every success for the future and thank them for all their past contributions." He also hinted at the possibility of new products in the not-too-distant future.

## DHA and Rosco Redefine Exclusive Agreement

*In a move which aligns DHA's international marketing strategy with its UK business practice, DHA and Rosco have redefined their long-standing marketing agreement.*

Effective from September 10 - the opening day of PLASA 2000 - the new agreement will enable DHA to market direct its catalogue of 900 plus metal gobo designs and its range of moving effects products, in all countries except North and South America, Canada and Australia, where Rosco maintains its exclusivity. The decision to redefine the partnership, which gave Rosco exclusive worldwide (except UK) marketing rights for DHA gobo designs and moving effects, and DHA the right to market the Rosco images, recognises that design and international business practices have changed dramatically in the 16 years that the two companies have worked together.

The gobo design of DHA's business will also continue to develop and the design team are currently working on 30 new architectural designs which will be launched at PLASA, together with six new glass gobo designs.

## Power Gems & Quartermaster Merge

**Power Gems, the manufacturer of electronic ballasts for entertainment lighting, has merged with Quartermaster, specialist supplier of products to the entertainment lighting industry. The Power Gems London office will form the sales and marketing division of Power Gems Ltd, and will be headed by Patrick McGuane, who joins the board of directors.**

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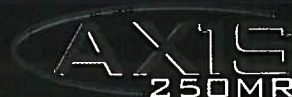
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## Sony/Leisuretec Team Up

*Sony Broadcast & Professional UK and Leisuretec Distribution Ltd have announced a strategic distribution agreement that sees the two companies identifying major growth in the sound reinforcement, audio visual and public address markets.*

The agreement covers the Sony pro audio range, including sound reinforcement products, effects units, wired microphones, Freedom wireless mics, DAT CD and Minidisc - all of which Leisuretec will now offer from its 14,000sq.ft stock sourcing facility in Leighton Buzzard. The two companies have also invested in joint staff development and part of the agreement sees Sony supporting this process through the provision of training for the Leisuretec staff.

Pictured right is Sony senior account manager David Snook (left) shaking hands on the deal with Leisuretec's Mike Henden while Leisuretec's Nick Spalding looks on.



## PSL Supplier to ExCel

*Exhibition and corporate event specialist, PSL, has signed a seven-year contract with ExCel, the new London International Exhibition Centre, to become the preferred on-site audio visual and presentation equipment supplier.*

PSL will acquire approximately 20,000sq.ft of office and warehouse space on-site for the storage of AV and presentation hire equipment. In addition, it has negotiated two additional storage areas - within the Northern and Southern breakout/seminar rooms - allowing them to be the only AV company to service these areas. The company estimates that it will hold around £1 million of equipment onsite which will be manned by fully-trained, dedicated staff.

## ADS Celebrates 10 Years

*Audio Design Services has celebrated its tenth anniversary by changing the company name to ADS Worldwide - reflecting its increasing involvement with global markets.*

As part of this strategy, ADS Worldwide has now embraced the education market with a range of products which includes the MiniLab - a system which offers access to language and general tuition for schools and other establishments.

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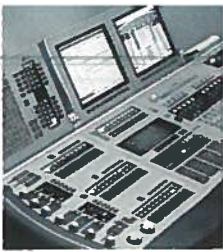
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
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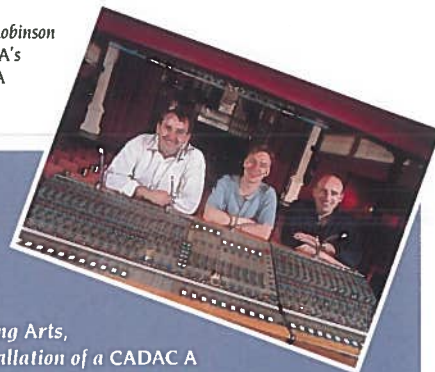
## AC Launches Starlite Mk 5 Zoom into Market

Following a successful stint at the top end of the market, Starlite Mk5 distributor Lane Lighting has passed the baton to High Wycombe-based AC Lighting to launch the product into the mainstream market.

At the same time, the latest generation of the fixture has been launched, featuring an 18-35 degree zoom module. To coincide with the launch, AC has also announced a substantial price reduction with the aim of making the product affordable to a much wider market.

During the past two years the Starlite Mk5 has been a feature of many of the major UK festivals and events, with appearances at Glastonbury, V98 and V99, Reading, Party in the Park and Homelands. In addition, the fixture was used in abundance at the opening of London's Millennium Dome. The first customer for the new zoom fixtures was lighting design specialist Metropolis Lighting, who have just installed six of the units into the brand new 'Now' TV studios in West London.

Nick Lidster (left) and Tony Robinson (right) of Autograph with LIPA's Jon Thornton and the Cadac A Type console donated by Autograph



## Autograph Donates Technology to LIPA

Autograph Sound Recording has announced its association with the Liverpool Institute of Performing Arts, commencing with the donation and permanent installation of a CADAC A Type mixing console for the Paul McCartney Auditorium, the college's largest live performance space.

The tie-in with LIPA also includes Autograph sharing its 27 years of live sound design and rental experience with the Sound Technology degree students, by undertaking a regular series of live theatrical sound workshops.

## City Theatrical Named in Top 100

New York-based City Theatrical, best known for its innovative lighting products, has been named in the second annual Inner City 100 listing by Inc. Magazine and the Initiative for a Competitive Inner City (ICIC). The list honours

fast-growing companies located in urban areas outside the central business districts of America's cities. City Theatrical was placed 43rd on the list, with a sales growth rate of 296% and a compound growth rate of 41%.

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# Do you want total control?

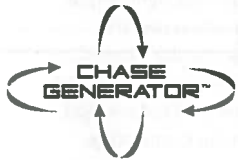
# Masterpiece™ 216

The London Hippodrome recently installed a new control system using the latest Masterpiece and Replay Unit technology, capable of providing total control of their vast 2000 channel lighting rig.



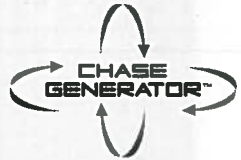
## Connectable

Masterpiece is packed with multiple inputs and outputs as standard to enable system integration. Three output formats are provided, these being +10V analogue (36 channels), Pulsar MultipleX (216 channels) and DMX (512 channels). Four control inputs are provided these being Pulsar MultipleX (RS-232), Musical Instrument Digital Interface (MIDI), Analogue +10V and Audio. This array of digital and analogue inputs and outputs makes it possible to connect the Masterpiece to almost whatever you have in mind.



## Upgradeable

Masterpiece is driven by powerful software, written in machine code for the ultimate in controller response. Software upgrades are free of charge enabling you to keep your system state-of-the-art at all times. In fact the latest Masterpiece 216 upgrade features an exciting development called "Chase Generator", an extremely quick and powerful way of creating complex chases from just a single Scenel It works by using mathematic functions to automatically calculate channel levels for pre-defined lighting effects.



## Expandable

Masterpiece is easily expandable and can be used in a modular way to provide large and complex control system solutions. The use of multiple Masterpieces and Replay Units along with Outstations enables the designer to specify logical integrated control. Use of the remote inputs additionally allows linking to MIDI keyboards and remote devices.

The Hippodrome's Technical Manager Derek Chalmers states: "The new system allows for fast total control of the lighting rig and rig movements. The flexibility of control allows us to offer an integrated production capability for multi-media shows, presentations and a whole host of other diverse events."

If you want total control, take a look at the new Masterpiece 216.



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Masterpiece is great to program and operate, just ask someone who uses one! The fully multi-tasking programming structure makes the creation of complex lighting Environments simplicity itself. 8 Shows each contain 216 Scenes, 54 Chases, 48 Environments and 6 Environment Chases. This structure together with the new Chase Generator provides enough capacity for even the most demanding project.

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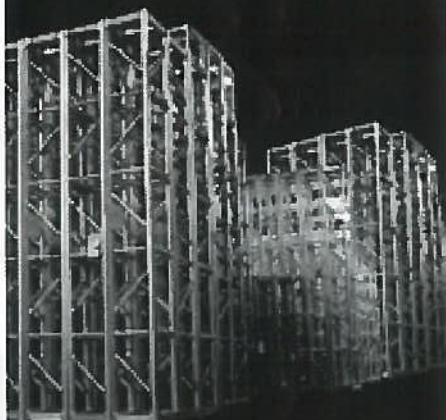


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## News Round-Up



*The hyper-testosterised world of eighties heavy metal, when size was everything - the size of lighting rigs that is - is the subject of an upcoming Warner Brothers movie, currently under the working title of Metal God.*

The movie harks back to the days when leaders of the genre like AC/DC and Judas Priest regularly attempted to out-metal each other with ludicrous trussing and PAR can statistics and when PAs were assessed in terms of how big, black and aggressive they looked. Set in the eighties, it tells of the lead singer of a tribute metal band who, by a chance encounter, seizes the opportunity to become the lead singer with his real life heroes - the band Steel Dragon.

LD Glenn Wade (pictured below) received a call at the end of 1999 from his old college buddy Mayne Berke, the film's production designer, inviting him to be the lighting designer for the movie's live concert scenes.

The two weeks of live concert filming took place at the 18,000 capacity LA Sports Arena in downtown LA with an audience of 500 extras. At the end of the period, with promoter Kevin Lyman, a free concert was staged to fill the auditorium with metal fans for the film's requisite large crowd shots. The core visual feature of Wade's design was three circular trusses - the central one 30ft in diameter, rigged overstage. Upstage was a big 'wall of death' for heavy silhouetting and backlighting. Side stage booms provided in-fill lighting and a FOH truss was used for the necessary front positions. Here Wade cheated slightly in the historical sense, adding some moving lights - 13 HES Studio Spot 575s and 12 Studio Color 575s.

The Metal God back wall contained over 500 ACLs. Each side 'ceiling' circle had over 120 Par cans and



## Metal God

up to 160 on the centre. Upstage on the deck was a row of ACLs with scrollers, 24 Dataflash AF1000 strobes and, naturally, humungous amounts of fog. Under the deck - half of which was grilled to allow up-lighting - the film lighting crew added various fixtures.

The spectacular stage set featured an imposing 25ft high curved metal central staircase flanked by two large cauldrons. Beneath each cauldron (i.e. understage) was a Syncrolite 7K Xenon moving head searchlight

with douser and scroller. To maximise light output onstage, they fabricated and attached two 5ft diameter mirrors to the offstage circular trusses (trimmed at 30ft above the cauldrons). The mirrors were in turn fixed to a gizmo that enabled pan and tilt movement to direct the light back onto stage.

Wade operated the show from an Avolites Diamond III. He admits that while it wasn't period, the preset fader banks, mastering section and physical layout still bear some resemblance to the original Avolites QM500 consoles. All lighting was provided by Entertainment Lighting services (ELS) from North Hollywood and ELS's Paul Dexter, himself a major LD from this era, worked alongside Wade as live lighting director.



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## MACs Power WWF

*Love it or loathe it, the WWF roadshow has taken the youth of the UK by storm and is currently attracting one of the largest TV sports audiences.*

Sky TV's one-off WWF Insurrection show at London's Earls Court was a sell-out, grossing an estimated £2million. In its native USA, live WWF shows all employ lighting designed and supplied by Bandit Lites, so for London it was natural for Bandit Lites' UK operation to step in, employing Martin Pro MAC moving heads for all elements of the performance. MAC 250, 300, 500 and 600 heads were hung on the massive trusses above the canvas, and on the stage where the contestants entered the arena. A total of 10 Mac 250s, six Mac 300s, 36 Mac 600s and seven Mac 500 units made up the lighting. A Flying Pig Wholehog II desk provided show control.



## JT Expand and Move

*James Thomas Engineering's manufacturing operation has expanded so rapidly in the last two years that the company has finally outgrown the site in Pershore. As a result, it's moving to a new high-tech 4,900sq.m premises in Worcester which will allow the company's hectic production schedules to be managed even faster and more efficiently. The new address is Navigation Complex, Navigation Road, Diglis Trading Estate, Worcester, WR5 3DE.*

## Rage Venture to Help Young

*Rage, a West Midlands-based pro theatre company, has been awarded a three-year grant from the Neighbourhood Support Fund (part of the Employment & Education initiative) to set up and run a new touring company - the Rage Ensemble.*

Over a 30-week period, professional artists will assist 12 young people in the creation and performance of three productions, which will then tour a variety of venues throughout the West Midlands. The Ensemble is made up of young people aged 16-19 who are unlikely to enter into further education or employment, and aims to provide them with the skills to assist them into further education or employment. Rage is looking for companies to support them in this aim by making a donation of ex-demonstration lighting and sound equipment or by providing equipment at cost price. ETC Europe and Strand Lighting have already committed their support.

[www.ragetheatre.org.uk](http://www.ragetheatre.org.uk)

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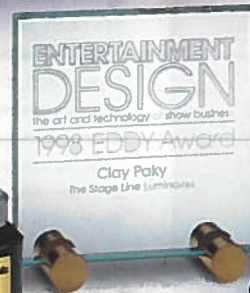


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**News  
Round-Up**



## PLASA Shanghai

*This year's PLASA Presents Light and Sound Shanghai, over 7-9 June, was the biggest in the show's three-year history. More than 100 exhibitors meant that the show had to be split over the two levels of the Intex exhibition centre for the first time. Overseas exhibitors were on the ground floor, whilst local companies occupied the upper level, where the environment was more informal, foggy and noisy.*

Many companies from the west, having had success in previous years, were this year sharing stand space with their local distributors. Indeed, a number of UK companies were not present at this year's show, having successfully set up distribution agreements with Chinese companies. Of course the market is far from fully developed yet, but it is moving fast. Roland Connor of Laser Creations International felt that the Chinese market had not yet distinguished between companies offering products and companies offering production services. Handling large-scale productions from the concept stage (including the Stone Forest park - see L&SI, November 1999), LCI was a production company among products, but they find that the Chinese are beginning to make this distinction.

Upstairs, copies of western products were on display on the stands of various home companies, demonstrating that respect for intellectual property (or rather the lack of it) remains an issue. Nonetheless, more overseas companies were exhibiting at the show for the first time, eager to break into a market serving over 20% of the world's population.



*Mr Chan of show organisers Intex welcomes exhibitors and visitors to PLASA Shanghai 2000*

*Visitors register for the show*

*PLASA standards officer Tim Cox with interpreter Emily Sun, PLASA treasurer Sammy de Havilland of Dare Professional Audio and Mike Maguire of the DTI*

*DHA's Julie Harper (right) doing business David Bissett-Powell of Martin Audio (left) meets with Chinese delegates*



Some felt that the show was quieter than in previous years, especially towards the end and this may owe something to the fact that the CALM show had taken place in Beijing just two weeks previously. If

so, attendance figures should rise again next year when PLASA Shanghai returns to a slot in April.

Regardless of other influences, there was still a healthy turn-out - over 5,000 in fact - mainly from the Shanghai area. That said, it is not the number of visitors but the quality that exhibitors were most

happy with. Many reported a number of contacts with potential Chinese distributors and some reported potential business from other countries as far away as Israel.







The show once again attracted a high level of support from trade bodies and government. Warren Townend, HM Consul, Shanghai, was present for the opening of the show and David Oswald, HM Consul, Commercial Section, Shanghai, visited the show on two days to meet many of the UK companies present and offer the assistance of the Consulate to those seeking to establish a presence in this emerging market.



of Outdoor Structures and Implementing Control Protocols in the Entertainment Industry.

As well as displaying its usual DMX512

equipment and LED luminaires, Artistic Licence, through its seminar, was focusing on technology sharing. Their DMX512 processor chip range - pre-programmed microcontrollers that perform standard tasks, such as converting protocols, driving stepper motors or relays enables manufacturers of moving lights, for example, to simplify their

designs with a pre-programmed chipset.

The DJ China competition was another success, attracting a large crowd. While the quality of the DJs varied, the volume of the mix was

second to none. Sound level control must have been one of the greatest challenges of all for the show organisers. With take-home prizes donated by Numark, Kam and DHA and the first prize of a trip to the PLASA Show in London, the enthusiasm of the Chinese was intense.

Moving back to its April slot in 2001, the show looks set to go from strength to strength.

The British Department of Trade and Industry, through PLASA, supported 20 UK exhibitors financially totalling £45,000 towards their costs in attending the show. Mike Maguire, entertainment technology sector sponsor from the DTI in London, was present to make sure that taxpayers' money is being well spent.



Government support was also available for those participating in the seminar programme. Once again, this enabled UK companies to speak to the locals about products, systems and applications. Leading industry figures such as Peter Hind of Total Fabrications and Wayne Howell of Artistic Licence spoke on topics as diverse as the Design and Use



*The 'international' floor at the exhibition*

*Jo Jo Lewis gets down to some serious mixing*

*Brenda Dunsire of ADB with the DTI's Mike Maguire*

## Soundcraft Going Live in Mexico

*Soundcraft's successful Going Live programme of sound engineering seminars has debuted in Mexico.*

Hosted by local distributors Hermes Music in Mexico City and Metropoli in Guadalajara, Dave Kay of Adlib Audio flew out from the UK to chair the panel of engineers who provided the tuition, accompanied by Ian Staddon of Soundcraft and engineer Geoff Lissaman. Nearly 200 people attended the events. The first USA Going Live course is due to take place in Nashville in November.

## Lighting Design Partnership International

André Tammes, founder of the Lighting Design Partnership and a number of well-known figures in the field, have joined together to launch Lighting Design Partnership International (LDPI). Tammes, continuing to work with colleagues Lawrie Nisbet and Kevin Sturrock, will now be joined by Alan Mitchell and Gavin Fraser, formerly director and principal designer respectively with Jonathan Spiers Associates. Douglas Hamilton of Edinburgh-based Architectural Lighting Design (now merged with LDPI) completes the senior LDPI team. In addition to its London and Edinburgh offices, LDPI will be based in Sydney Australia, under the direction of Tammes and Sturrock, with a design team of eight.

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## News Round-Up



# Neutrik Celebrates Quarter Century



*The Hollies' new line-up on stage for the first time*

**Memories of the Isle of Wight Pop Festivals were brought back in June when the UK division of Neutrik AG celebrated the 25th Anniversary of its parent company with an open-air 'mini-festival' held on the site of the legendary events.**

Following in the footsteps of Bob Dylan, The Who and Jimi Hendrix, over 300 staff, customers and friends of Neutrik and Re-an were treated to a three-stage festival rig, with entertainment provided by The Hollies, tribute band Fabba and a House band created specially for the night by Neutrik UK managing director Paul Smith, who took over lead vocal and guitar duties in addition to organising the whole affair. Sound for the Hollies and Fabba was provided by Wigwam, with local PA company, Strings, running sound on the third stage for Paul Smith's band. Lighting for all three stages was provided by Concert Lights who, along with Wigwam, are providing the support for the Hollies' UK tour which starts in September. A large video screen was provided by MSI Visual Displays.

Neutrik AG was started 25 years ago in May 1975. Housed in a small barn, founder Bernhard Weingartner decided that he could improve on the existing American design of the XLR connector and began manufacturing the legendary Neutrik 3FC connector. Currently the biggest supplier of XLR connectors in the world, Neutrik has a factory in Liechtenstein and associate companies in the UK, USA, Switzerland, Germany, Hong Kong, China and Japan. The UK operation was formed in 1986 following the take-over of Technical Projects, with its purpose to manufacture Test equipment and to broaden the product range. A year later, NUK also started to manufacture connectors and in 1998 took over the business of Re-an Products, enabling the company to provide a complete range of OEM products.

Andy Wood

## Mackie's New HDR24/96

*Mackie UK recently held a launch party for its new HDR24/96 Hard Disk Recorder, at Metropolis Studio A, the Powerhouse, London.*

The HDR24/96 is a 24-track 24-bit Hard Disk Recorder with full sample accurate waveform editing software built-in, requiring no external computer to operate. Greg Mackie was on hand to demonstrate the new product, underlining the importance Mackie places on its launch in Europe. Also present were Mackie heavyweights, Peter Watts (head of technical development) and International customer service gurus Brian Stan and Pat Lambert. Two HDR demo stations were running throughout the day, showcasing HDR alone, and also in conjunction with Mackie's Digital 8 Bus mixing console.



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## Pan in Sydney

**It was an interesting month for everyone brought together in Sydney to create Pan, a new show billed as the ultimate version of the Peter Pan story.**

Scheduled as technical rehearsal month leading up to a summer opening, it was also when a spectacular rift appeared between the show's producers, the bombastic Kerry and Elyse Jewel, and their German co-producers, Musical Entertainment AG. But by tech-time, a show as large as this one has enough momentum to be unstoppable, and so *Pan* proceeded relatively smoothly to its opening night, brought there by a truly international creative team led by director John Banas, and becoming in the process one of the most technically-ambitious stage shows ever to open in Australia.

From the UK came the Jim Henson Creature shop, with Ben Dickens responsible for the set design - an enormous creation that fills practically every inch of Sydney's enormous Capitol Theatre. Scenic construction was by the Adelaide Festival Centre, with automation by APC in Australia (controlling the clever moon cloths and tracking scenic legs) and Stage Technologies in London (running the Automated Guided Vehicle trucks used for the Jolly Roger and other scenic elements). Creatures (including a spectacular 26ft long crocodile) were by the Jim Henson Creature Shop while Foys from America provided a five-track performer flying system - one a motorised track over the audience.

Production management during the show's initial planning was by Dean Jewel, with the experienced hands of technical stage director Richard Martin then successfully juggling scenery, automation and crew to actually get the show onto the stage and



running effectively with the help of stage managers Dawn Martin, Sam Ould, Toby Painter, Lisa Webb and Catherine Wheaton-Lynch.

Lighting was by Jenny Kagan, one of the first designers involved with the show following a meeting with the Jewels while in Sydney for *Les Misérables* in 1997. Her rig is largely automated, featuring nine DHA Digital Light Curtains, 16 Martin PAL1200 framing spotlights, 16 MAC 500 spotlights, 32 MAC 600 washlights (including two of Martin's new super-wide-angle units, used to create moving sunrise effects on the show's vast cyclorama) and 12 of City Theatrical's AutoYokes, making their first appearance in Australia.

Conventional units included ETC Source Fours, Altman Shakespeares, Selecon Pacifics, Par cans, VSFx cloud projectors, a variety of scrollers, an array of MR16 battens, two of Le Maitre's stunning LSG low smoke machines - and the fibre-optic stars already built in to the roof of the Capitol's spectacular auditorium! This was all controlled from a Strand 550i console running five DMX streams through Strand's ShowNet Ethernet system; a 510i provided

*The show's lighting crew of Mel Lobendahn, Hugh Hamilton, Ken Roach, Sam Shannon, Brian Grant, Suzie Brooks, David Clare, Lynton Blessington, Jason Edwards and Jim Confos*

back-up. The rig was supplied by Chameleon Touring Systems in Sydney, the installation masterminded by production electrician Hugh Hamilton, his deputy, Ken Roach, the Capitol's head electrician, Jim Confos, and show electricians David Clare and Sam Shannon.

Mel Lobendahn, Brian Grant, Suzie Brooks and Jason Edwards ran the followspots - 'domes', in Australian parlance - these consisting of 10° Source Fours in City Theatrical followspot yokes front-of-house and Pani 1k beamlights onstage. Kagan's support team also included associate lighting designer Richard Pacholski and assistant LD Gavan Swift.

At the other end of the technological scale were the Tinkerbell effects devised by Kagan with electrician Lynton Blessington. Suffice to say that they made full use of the skills of creature director Michelin Sisti and his team of puppeteers - and that at one point the production seemed to own the entire stock of Maglite bulbs in Australia!

Sound design proved technologically challenging, in part because *Pan* couldn't quite decide what it wanted to be - play, musical, film - and used sound techniques from each of these. The problems were solved by a team from System Sound, led by designer John Scandrett and associate designer Kelvin Gedye. Effects and music presented the greatest of challenges; created and edited by Paul Hitchens using ProTools, these then needed to run in complex, overlapping sequences. Richmond Sound Design's powerful AudioBox system, under the control of Alix Campbell, provided the solution with its eight-track asynchronous playback from hard disk through a virtual mixer and matrix output.

Performer sounds were collected through Sennheiser radio microphones overseen by Jenny Morgan and Suzanne Jones, and taken to a Cadac F-type run by Paul Tilley, with the combined audio then fed out through BSS Soundweb processing and Yamaha amplification to complex vocal, music and surround-sound speaker systems featuring Meyer UPA-1C, UPA-2C, UPM-1, PSW, MSL4, Apogee SSM and EAW JF80s. And then there was the comms system - a six-loop, 30-station wired system linked to 24 radios, plus a separate full-duplex comms and in-ear monitoring system for the creature performers!

The result? A technological triumph, and an often beautiful-looking and spectacular-sounding show. Its future? That must wait for the outcome of the ongoing legal battles between the various producers...

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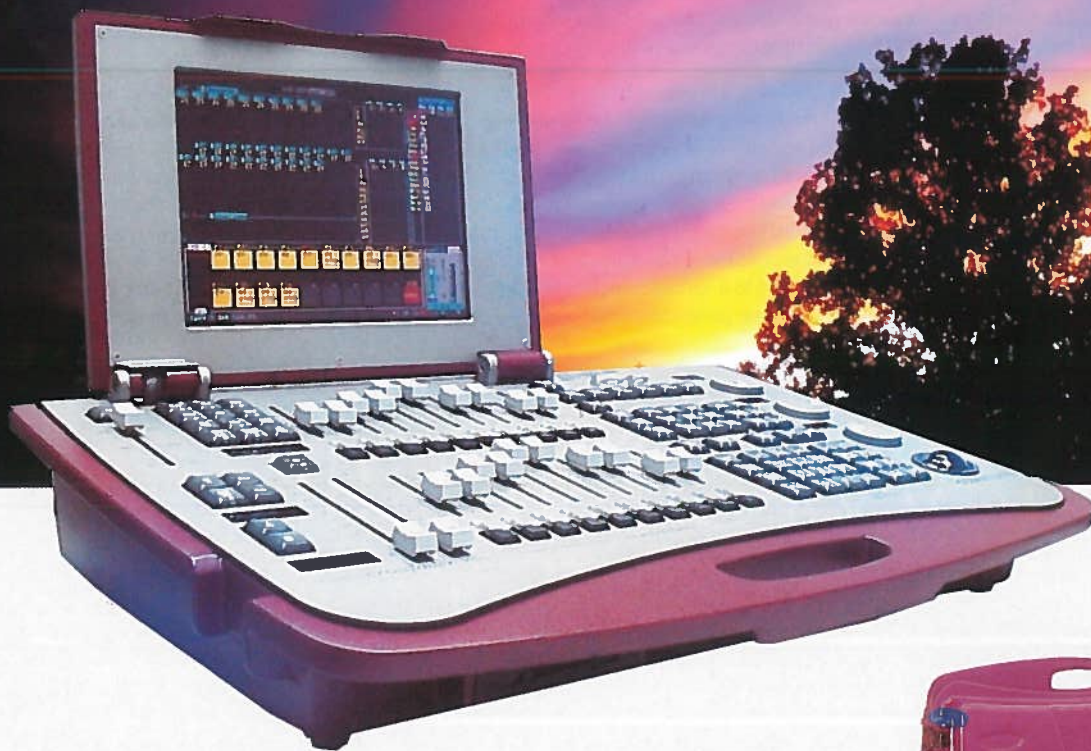
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## Valhalla



So it was that Blackpool Pleasure beach supremo Geoffrey Thompson chose to pass a few disparaging remarks about The Dome, and then sat back to watch a catastrophe unfold before him. The day had started well enough, if a little wet - after all this was the UK's west coast in mid-June - but little cracks appeared early. The assembled Press, having been escorted by Viking warriors in historically accurate costumes (no horns), to the entrance of Valhalla, then stood around waiting for things to begin. In truth, things ran just 15 minutes later than the schedule, and the speeches were fine, being brief and to the point. Then Geoff Capes invited us all to approach the entrance. Two entrances were opened and the first problem reared its head - we were both feeding into the same queuing system, but from different ends.

This was rectified after a few minutes, but it was long enough for a substantial number of people to have queued at the wrong door and to have got grumpy in the process, though most of us were still

in party mood. At first, things proceeded with alacrity, boat after boat entered the hallowed portals, dispatching the hapless riders to six minutes of the World's 'Latest & Greatest Dark Ride' . . . but then things stopped.

There was obviously a problem: from outside we could hear the PA announcements being made to the arrested vessels inside: 'Please remain seated, the ride is about to re-start.' This happened several times, and then things appeared to get underway again. Just as yours truly got seated, and the boat proceeded to the start point, everything ground to a halt once more. My fellow passengers and I sat patiently, 'probably just



another glitch' we told each other. "I heard they only ran it full stretch for one hour last Sunday," ventured another. Ho, ho, we all chuckled. Then it came. 'Please remain seated, someone will come to evacuate you from the ride.' We, and the passengers in the boat behind us, sat waiting to be escorted out, the noise of the water making the whispered word inaudible, but we could see everyone leaving. Then a vicar (don't ask me, maybe the Pleasure Beach is his Parish) came through the building and told us to leave. As we exited via the normal post-ride off ramp, we could see soaked riders being escorted from within Valhalla. Oh dear.

Now Mr Thompson, following his witticism against the Dome, did predict 10 million visitors to the ride, and teething troubles aside, I believe him. This ride looks the business. Even from the outside it's quite breathtaking. The fabulous Russian craftsmanship of the Loki Bar, two storeys of carved redwood in the style of the Scandinavian Stave Churches, looks amazing. At night it must look even better - there were hordes

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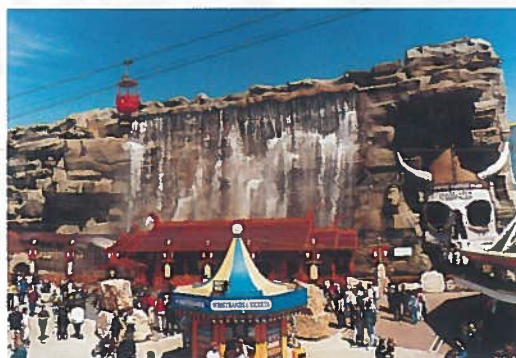
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of Studio Due City Colors dotted about, which must make quite an impression. Interior lighting is by Technovations, Graham Owen being the man in charge. "The main consideration with this ride is the environment," he said. "What with water under pressure, cascades and fire effects, the lighting had to conform to IP standards. It's not glamorous from that point of view, but then when we do these rides we're of the opinion that it's the overall effect the rider comes to experience. If they've noticed the lighting, then they weren't having a good enough time." Owen sourced most of the fittings, all 100% immersion devices, from Puighermanal in Spain via importers BCP in the UK.



Most of the fittings are what you might expect - all illumination rather than effect: Par 56 low voltage units and the like, powered from Anytronics dimmers, and controlled from Technovations proprietary POD (Programmable Output Device) controllers: "It's based on Psion 5s, but anything that can run ASCII text strings will work." The POD system has been around some years, the Mk 1 being used at Alton Towers for The Haunted House (we're now on version 6). "All in all, this has worked out to be a very realistic solution," said Owen. "The system has low energy use, long lamp life and low maintenance."

Sound is similarly low profile, a totally bomb-proof voice evacuation system based around the Bose 151 with Cerwin Vega cabinets and Bose 802s for effects. Steve Salisbury of Stardream AV, based in Blackpool, oversaw the project from beginning to end. "The most difficult thing for us was the not knowing. This was a totally unique ride, no-one knew what the noise levels would be like inside, or just how unfriendly the environment would be to the electronics." That said, Cerwin Vega provided a factory seal on their boxes, while the Bose products already had enough protection to cope. When necessary, Salisbury added extra ScotchGuard. The amplifiers are a mixture of Cloud and Matrix models, all thankfully racked up

outside the ride in a separate, and luxuriously air-conditioned building. "Everything is MIDI-controlled," continued Salisbury. "The actual effects signals being stored on chips or Flashcards for durability. The 802s deliver the high-level stuff, flame noises, wood splintering and the like, while we chose the Cerwin Vegas specifically for low-end power, to put a strong background rumble into the building."

Whatever Salisbury's reservations about local ambient noise, his boss John Barnett (recently awarded MBE in the June honours list) pronounced it: "a job well done. We changed very little, just incremental things here and there." Which poses the question - just how many companies are there in the UK who have the kind of experience to second-guess the ambient levels in a brand new wet ride? Second-guessing characterised this £15m development, a project that's taken two years to build. Salisbury informed us that just one week before opening the track height was reduced by one foot to reduce the soaking experienced by the riders. Now that's what you call taking it to the wire.

Steve Moles

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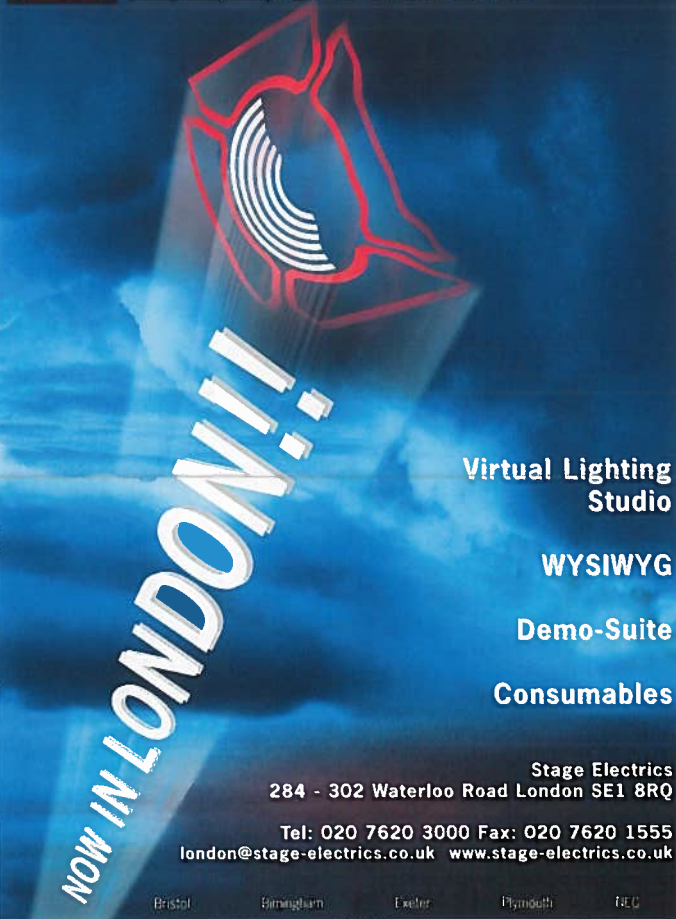
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Profile

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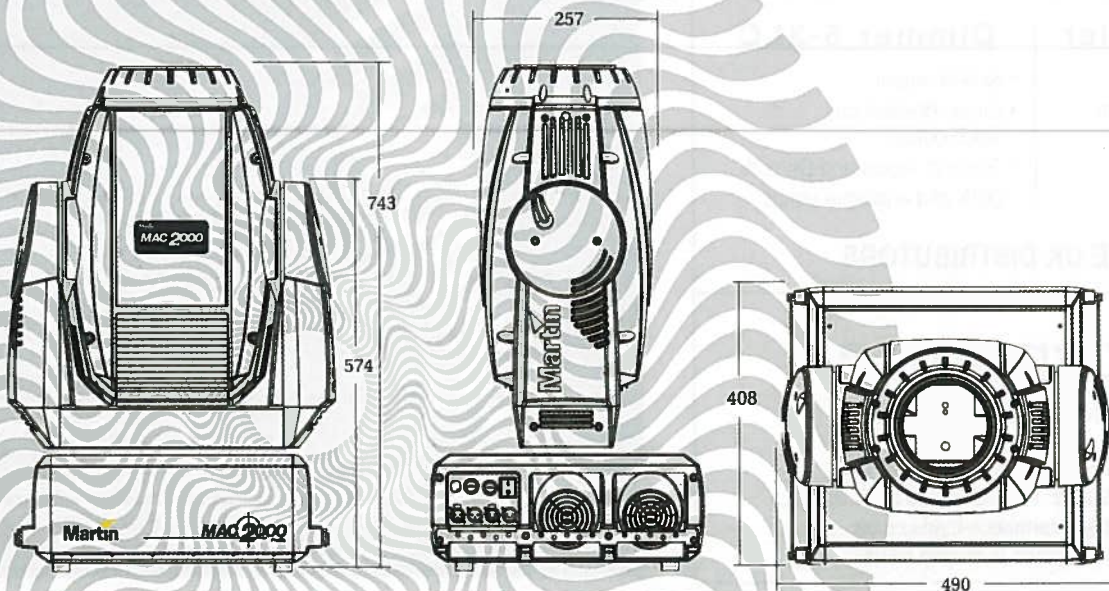
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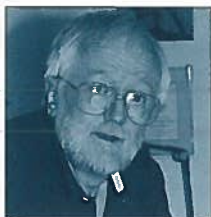




## Better by Design

"If money and time were no object, what would be at the top of your wish list?" This was the question we put to lighting designer and founder of Theatre Projects Consultants, Richard Pilbrow.

"I was recently lighting *On Rafters' Hill*, shortly to be seen at the Royal Court. It was a happy production, but vividly reminded me again how irrelevant numbers and digits are to lighting. I'm just not interested in: 'Group 14 plus Group 22 minus #15 through 20 at forty.' I want 'a little more sunset through the window'.



"I've felt for years that a new control paradigm for lighting is needed. In 1995 in my book 'Stage Lighting Design' I wrote: We must (and will soon) develop a totally intuitive interface between the vision in the head and that onstage. We must be free from the tyranny of numbers, must allow control as we wish of any number of lights in every dimension.

"Why pick channels with a calculator keyboard? I favour a visual representation of the stage layout, the option to touch with finger, mouse, voice or brainwave any channel or group thereof, then to have instant hands-on manipulation. Touch the tiny instrument and it, with its chosen 'mates', will track to the selected position. Touch a point in stage space, and the appropriate instruments will fade in, move or recolour.

"Now we're dealing also in the fourth dimension - time. A cue opens into a group, and a group's representation must be expandable into its component channels and instruments, then in turn into each attribute. Any or all must then be advanced or delayed, stretched or contracted in time-on-screen. Perhaps we can envisage a touch-sensitive flat video screen as our new Lightboard. Upon this surface of light we'll be able to paint our pictures. We'll want to see our light in 3D space, as well as in plan and section. We'll want to rotate our model and peep in behind the scenes.

"Lots of products already exist which are all signposts toward such integrated possibilities. But there's a long way to go and much progress yet to be made. So in 2010? If medical science keeps me going, will I be able to light Broadway on my flexible light-emitting polymer 'light-blanket' wrapped round my knees in the Hebrides? What a terrible thought! Let's hope that by then the light pen will have passed on to the next generation."

*Stage Lighting Design* is available through PLASA's Technical Book Service. Call +44 1323 642639.

## Lab Gruppen Acquired by TGI Group

**Swedish manufacturer Lab Gruppen, one of the world's leading developers of DSP and amplification technology, is to join the TGI Group of companies.**

Lab Gruppen has over 20 years of experience in manufacturing and distributing high-quality amplifiers and has been a pioneer of switch-mode power supplies and lightweight amplifiers. It has recently added DSP technology to its design and product base.

Martin Audio MD David Bissett-Powell, who will be chairman of Lab Gruppen, told L&S: "This is an exciting addition to the Group, providing us with a range of development opportunities. The fit and synergy is seen as being particularly advantageous, and while the TGI companies will continue to trade autonomously, Lab Gruppen's R&D capability will enhance the Group's move into digital electronics, providing us with sophisticated loudspeaker management systems and own-brand amplification."

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## MAD Blocks UK

### Sales of Plastic Copy

**MAD Lighting has gained an out-of-court legal settlement to stop UK distributor Terralec Ltd importing the Pearl River Tornado - a product which is practically a look-a-like of its own MAD Scan.**

The settlement was reached following MAD's decision to register the design for its MAD Scan fixture and, in particular, its plastic casing (reg. 2058915). As a result, Terralec has given an undertaking not to import, sell, and advertise infringing goods in the UK, nor can it infringe the design or assist others to do the same.

The company has also offered an assurance that it will deliver to MAD, infringing goods whether sold or not, any relevant literature and supply details of any other companies who have products which may infringe the settlement. A spokesman for MAD Lighting

told L&S: "We were the creators of the world's first plastic scanner. The UK block of this copy product and the recent restraint of its sales through a leading American distributor substantiates our commitment to the time and money spent producing innovative and unique products. The escalation of inferior copycat goods already flooding into other markets ultimately results in a negative situation for the buying public. We have a responsibility to ensure that end users acquire quality first generation products with solid after sales back-up."

Although the Tornado, which was supplied to Terralec by Dutch distributor Highlite International BV, was not made exactly according to Mad's registered design, it did look substantially the same and was therefore capable of infringing that registered.

## Dome to Be Theme Park

**The Dome Europe bid has won the race to take over the Millennium Dome in the new year.**

The company plans to turn the beleaguered venue into a high-tech leisure attraction - based on the theme of Europe. The bid was widely regarded as the front runner, and the company will assume control of the attraction when the current exhibition closes at the end of this year. The rival bid from the Legacy consortium aimed to turn the dome into a new technology park. The new attraction will be built by Dome Europe's partners in the bid, Hyper Entertainment. A key attraction of the new Dome will be a virtual reality version of the



Beatles' Yellow Submarine film, while the BBC has offered to provide other content. Dome Europe has also promised to keep some of the existing Millennium attractions and will consider continuing the daily live show. Incredibly, Dome Europe has said it hopes to open in time for school half-term holidays in February 2001 - leaving a very short space of time in which to turn around the Dome's fortunes.

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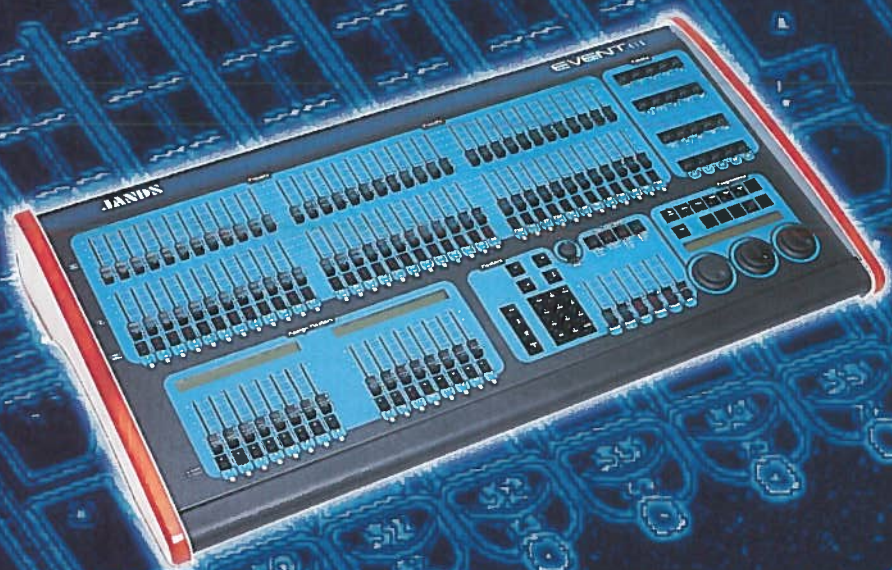
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## The Unique Flamelight: A Blaze of Glory

*The simplest ideas are often the best, and one of the latest innovators to prove this theory is The Unique Flamelight Company, a very young set-up with a sales office in London.*

Realistic-looking flame effects are always in demand, and of course, the safer they are, the better. What could be safer then, than some little MR16s, an electric fan and a piece of silk? This is the basic formula for the versatile and effective range of flamelight products which the company originated in 1997.

It was artist and designer Paul Harrison who first came up with the idea, creating the first flamelight pretty much as a one-off, with no intention of mass-producing the product. When it was seen by fellow artist Jacqueline Mitchell, she immediately saw the business potential and took on the task of building the business, while Harrison continued building the flamelights. Three years later, both have a great deal of building under their belts, and the company's client list now includes MTV, BBC, LWT, Ministry of Sound, Canterbury Cathedral, London Dungeons, Royal Opera House, New York



David Clare (Unique Flame Light Co Australia) with Jacqueline Mitchell on stand at Entech, promoting Flamelight (inset) to the Australian market



Metropolitan Opera, Disney Theatrical Productions, Edinburgh Festival, Voodoo Lounge, National Maritime Museum, Creamfields, the Cannes Film Festival, the Erotica Show and Celebrity Cruises. Most companies would be pleased to have amassed such credits after 10 years, let alone three.

The secret to their success, apart from an excellent idea followed up with plenty of hard work, is surely the almost endless versatility of the product: from architectural and interior design applications to

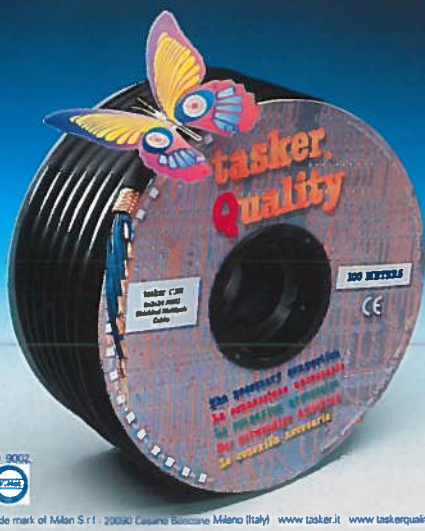
theme parks and corporate events, and from theatrical and live concert productions to fashion shows, nightclubs and bars - it seems that there is a space just crying out for a flamelight effect in every conceivable environment that the leisure and entertainment market has to offer.

2000 has so far been an extremely successful year for the company - the client list continues to grow, as does the worldwide dealer network that Mitchell spends so much of her time creating. Harrison, along with another designer, Chris Mills, continues to design all of the company's expanding range of products at its Brighton workshop, and a new production facility in Storrington feeds the growing demand.

While the ranks of off-the-shelf products, large and small, are selling like hot-cakes, the specialist customisation service is proving a major area of operation. The company has exhibited at its first trade exhibitions this year - the Lighting Show at the NEC in Birmingham, and Entech in Sydney, Australia - and has managed to pick up awards at both of them. The next exhibition outing is the PLASA Show in September, where they hope to complete the awards hat-trick.

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# Association NEWS

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## Research Will Provide VALUABLE INFORMATION on the Industry

PLASA is to embark on what must rank as one of its most ambitious projects to date - qualitative and quantitative Industry Research.

**PLASA**  
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LAUNCHPAD FOR INDUSTRY RESEARCH

For the first time in its history, PLASA will have access to valuable market information about the industry. This will allow it to progress its aim of raising the profile of the entertainment industry in the eyes of governments, investors, potential customers and new markets worldwide.

The Research, which has now been commissioned and will be launched at the PLASA Show, will create a definitive base-line against which to plot future trends and developments within the various sectors. These range from the amusements and attractions sector, through architectural and building services to touring, night venues, the Performing Arts and just about everything inbetween.

The Research should highlight trends within different sectors and should also provide data

on emerging sectors which will offer new business opportunities. The results will identify the size of each sector, the money being spent on entertainment technology and services within each, and likely future profitability.

Aside from this, the Research will also consider the customer groups within each sector, covering such areas as employee numbers, turnover and spending power. Information will also be compiled on the collective turnover, spending power, training and employment statistics of PLASA members themselves.

Through the Research, PLASA hopes to develop a greater understanding of the Industry and to establish a set of benchmarks relating to its size and growth. These findings will enable PLASA members to plan the future of their businesses more effectively and will also allow the Association to present convincing arguments about the strength and importance of the industry to other organisations, but in particular government-led or related bodies.

## PLASA Exhibitors Will Benefit from Refurbishment

Earls Court's Venue Improvement Programme is being stepped up in the year 2000 with around £11million being invested at the venue. Investment is being made in the Warwick Road and West Brompton visitor entrances. The upgrade of the West Brompton façade will increase signage and promotional opportunities and once inside the foyer, visitor flow to level 2 of Earls Court 1 will be improved by the replacement of the escalator. A new Business Centre, for exhibitors and visitors, is being introduced and will offer e-mail, ISDN and internet links, alongside a full range of office services.

The internal appearance of Earls Court 1 will be enhanced with the continued programme of wall and column painting and cladding while two of the hall's public toilets are also being refurbished. Other work inside the venue will see the refurbishment of goods lifts, staircases, organiser's offices and the upgrade of the PA system.

The public catering is also being transformed through the introduction of a new retail strategy which will see High Street retailers signing deals to occupy sites in the venue. Pret A Manger and Costa Coffee have already signed up.

Earls Court has also signed a deal with eFORCE to upgrade the communications services at the venue. This involves the installation of a state-of-the-art digital communications infrastructure that will make Earls Court one of the most advanced e-venues in the world.

News as it HAPPENS...  
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## New MEMBERS - The following companies have recently joined PLASA.

### FULL MEMBER

**AVW Controls Ltd.** Norfolk, UK - manufacturer initially of control systems but now moving into the area of stage machinery.

### INTERNATIONAL MEMBERS

**Apogee Sound International LLC**, USA - manufacturer of speakers, amplifiers and processors for audio.

**Chauvet**, USA - manufacturer and designer of lighting products, specialising in the club and mobile DJ sectors.



# More Photos from PLASA's AGM in June



► The PLASA AGM in progress - members voted to adopt a revised Code of Ethics

► Chairman Mick Hannaford addresses the members

► Treasurer Sammy de Havilland offers a financial perspective



► Andy Fox of Opus Audio with Stewart Duckworth of Chameleon

► Kevin Hopcroft of NJD with Ivor Green of Creative Technical Systems



► PLASA MD Matthew Griffiths talked about the future plans of the Association

► Consultant Phil Pratt from Sales Force informed members about the Association's proposed Industry Research



► Iain Price-Smith of Multiform, Andy Blackwell of Dial Sound & Light and Andy Graves of Pulsar

► Paul Topliss (left) and Ralph Young of Lee Filters flank Wyatt Enever of DHA Lighting



► PLASA accountant Shane McGreevy (centre) with Helena Urban and Neville Beckhurst of Honey Barrett

► John Hastie and Nikki Scott of Stage Technologies with White Light's Bryan Raven and Ed Pagett of Vari-Lite



**SEE YOU AT PLASA - STAND F1**





## People

One of the masterminds behind the birth of concert video support nearly a decade ago, **Malcolm Mellows** (right) has returned to the UK from California to become manager of the Concert Touring Division of Presentation Services Ltd (PSL). A familiar face among road crews from his 18-year career as a lighting designer, Mellows will head a dedicated team at PSL's Cricklewood HQ.



**Alfred Van Wyk**, whose extensive experience includes time spent at both TOA and more recently Federal Signal, has been appointed the area sales manager for Philips CSI communications division. He will be covering the UK, Northern Ireland and Irish Republic, and will have responsibility for communications, public address and congress sales.

beyerdynamic is expanding its sales staff with the appointment of **Simon Druce** (right) as sales manager responsible for MI product sales covering the north of England. Druce will be responsible for the full line of beyerdynamic's MI products, as well as dB Technologies' radio microphones, active speakers and IEM systems.



Following over two successful years with Propergander, **Anna Morgan** has left to form new public relations company, Media Ink. Launched in June, Media Ink operates out of offices in Wembley providing a comprehensive public relations service to the events industry. Earls Court & Olympia has announced that **Jonathan Goold** will be leaving Clarion Events, organisers of the PLASA Show, at the end of this year. Goold has spent 17 years with the company, more than nine as managing director.

**Dave Haydon** (right), BSS Audio's long-serving sales manager, has left the company to join Out Board

Electronics as commercial director. To ensure a smooth hand-over, he will continue his association with BSS, on a consultancy basis, for one year.

High End Systems' veteran sales representative **Sean Hoey** has been promoted to the position of sales manager for the US and



Canada. Hoey has worked for High End since 1991. **Stu Chalmers** has also joined High End as the new vice-president of operations. Starting in mid August, he will oversee product manufacturing. He was the first employee of the Kaizen Institute of America and as a consultant, has worked with a number of manufacturers.

Paradigm Audio Visual Ltd has expanded its ranks to include new sales manager, **Mick Perrone**. The rear projection technology specialist is expanding as the result of a successful business relationship with Danish rear projection manufacturers, DNP Denmark A/S. As part of its current restructuring programme, Trantec Systems has further strengthened its sales force with the appointment of **Allan Gallacher** as regional sales manager for the North of England, Scotland and Ireland. Gallacher brings considerable experience at the MI end of the market.

Celestion has underlined its commitment to OEM sales of guitar and PA chassis loudspeakers with the appointment of two new sales people. **Paul Richardson** (top right) is handling OEM export sales to continental Europe and the USA and brings substantial commercial expertise to the company. **Andy Farrow** (bottom right) has been recruited to handle OEM Sales in the UK. A former Celestion employee he has returned in a sales role.

City Theatrical has appointed **Tim Bourgeois** as lead engineer. Bourgeois has extensive experience as an LD, technical director and freelance electrician, and will be developing products for City Theatrical's expanding customer base. The company has also appointed LD **Brian Patrick Byrne** as a technical liaison for dealers and end-users. Byrne's experience includes work as a director and production manager.

Production Resource Group (PRG) has announced that **John M. Hovis** has joined the company as president and chief operating officer. He assumes responsibility for all aspects of the company's day-to-day operations, specifically overseeing all field operations as well as the corporate Information Technology, Human Resources and Finance departments. Hovis comes to PRG from RailAmerica. **John E. Cunningham Jr.** has also joined the company as chief financial officer of the Lighting and Audio Group. He comes to PRG with almost 20 years' experience in finance.

Audio-Technica has restructured its UK operation. On the processing side, **Joanne Harding** and

**Sophie Kramer** have joined the UK sales pool, along with **Donna Norman** as office trainee. **Chris Todd** moves into the new position of product specialist, and is on call to answer any microphone selection or technical enquiries. **Denise Turner** also changes position, joining the marketing and facilities department as marketing administrator. She has held a number of roles during her four years with A-T, including the setting up of the German office. **Alistair Powell** joins the company in an internal sales position to support the efforts of the field-based sales team.



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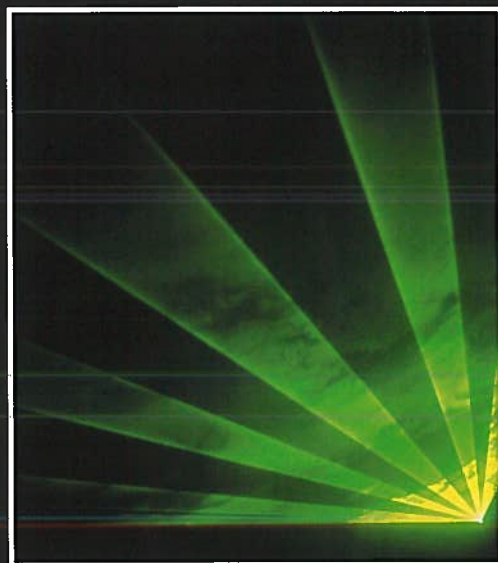
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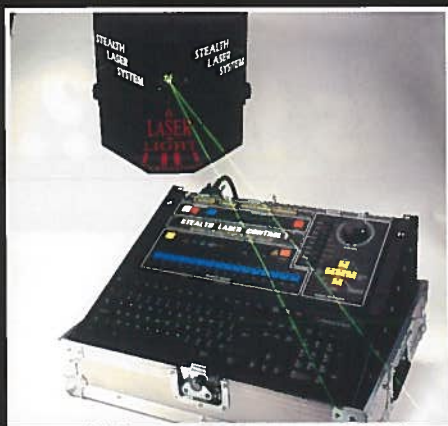
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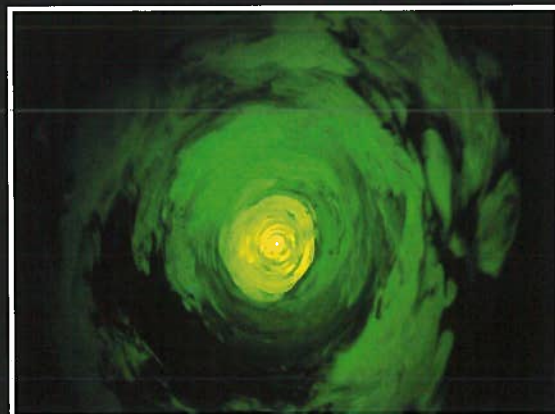
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## L&S Eye

*"Do not attempt to jump over it, or around it - keep walking as if nothing is there."*

The instruction delivered to Mike Batt and the Wombles if faced with 'equine evacuations' during the Queen Mother's 100th birthday celebrations on Horseguards Parade.

*"The estate staff built all the scenery, we looked after everything that was audio, and God did the lighting and all the other weather effects!"*

Tom Button of Dobson Sound, giving credit where credit is due for the performance of The Life of Christ at Wintershall Estate, Surrey.

*"Unless additional funding is made available - and directed into productions and work on the stage - we could well face a two-tiered system of quality of theatre provision between London and the regions."*

Excerpt from the letter recently sent by some of Britain's leading stage actors to Chancellor Gordon Brown.

## Jem Growth

**In June this year, Jon Petts and the team at Jem Smoke Machines invited clients and press to view their new state-of-the-art production facilities in Louth.**

The move follows a period of considerable growth for the company, the starting point for which can be traced to its take-over by Danish giant Martin Professional, just over four years ago. By exposing Jem's products to new markets, it was only a matter of time before it would outgrow its Spilsby base.

Following a 15-week £400,000 programme of refurbishment, the new facility has modern planning and production techniques, modelled on Martin's HQ in



Jem's Jon Petts (left) with Soeren Kjaer (Martin UK) and Torbin Johansen and Kristian Kolding from Martin Denmark.

Denmark. The expectation is that it will fuel further growth on smoke sales and there are also plans to introduce some elements of lighting manufacture to the UK. The automated production techniques, computerised site-wide information system and massive warehousing facility have already extended production capabilities dramatically. New products are also in the offing and a number of prototypes were on display, some of which will be seen for the first time at the PLASA Show in September.

## Lamba Wins Nady Distribution

Lamba has secured one of the most significant agencies in the history of the company with its appointment this month as the exclusive UK distributor for Nady products. California-based Nady Systems has a long tradition of wireless microphone innovation dating back to 1976, while Lamba boasts an even longer track record in both MI and pro audio - the two core markets that Nady's products address.

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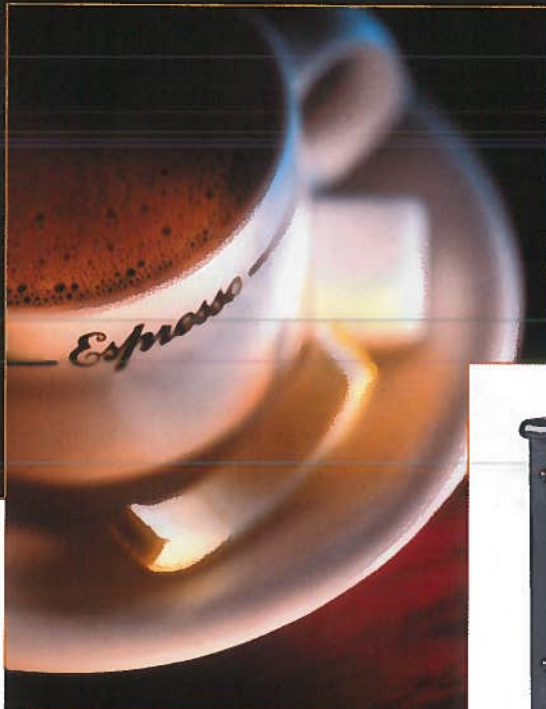
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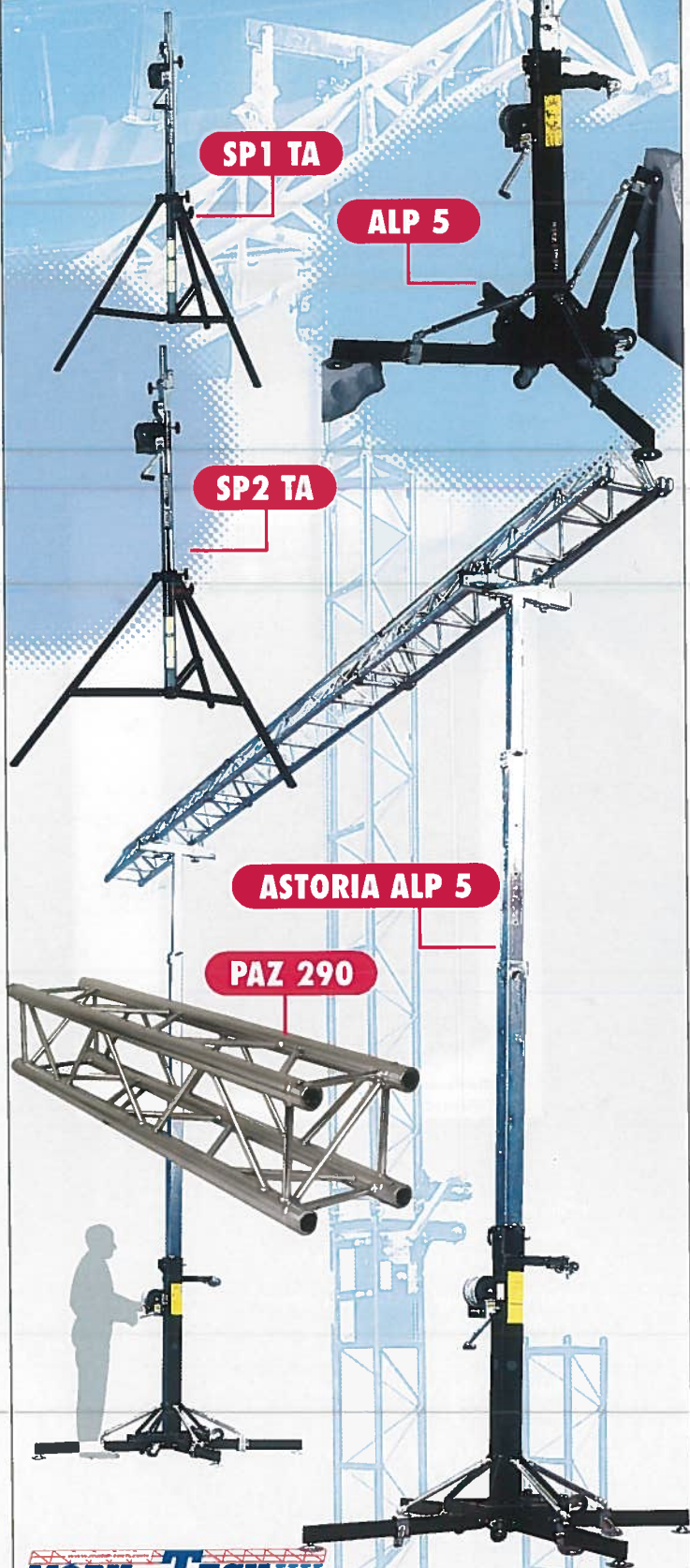
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## Life of Christ

*The Wintershall Estate, a 1500-acre private estate just outside Guildford in Surrey, recently opened its grounds to a cast of 250 actors who, for six days, performed an epic, six-and-a-half-hour version of **The Life of Christ** to an audience of 2,500.*



The entire production takes place in the open air and the audience become part of the production themselves, following the story around the set as it unfolds. The show itself starts with the Nativity in a field behind the main stage, after which the entire cast and audience move through to the main stage area. Act 3, the longest part of the play, at just under four hours, starts at the main stage and moves on to the Garden of Gethsemane for the arrest of Jesus, and then back to the main stage for the trial with Pontius Pilate. Then follows the dramatic Crucifixion scene in which the entire audience follow Christ as he carries his cross up the hill to the site of the Crucifixion.

There is relatively little lighting for the event and there is no actual 'staging' on site at all - the acting areas are left as nature intended, although there are full-size props where appropriate. The audio, however, is much more complex and has to address five different acting areas at the 60-acre open-air site. South London-based Dobson Sound was the company responsible for the technically-challenging job of providing all the audio requirements for the marathon performance.

This holistic approach with the emphasis on keeping the look of the production as natural and unencumbered as possible presented some interesting challenges for Tom Button and the Dobson team in terms of the PA system. "We had to be pretty imaginative with our rigging! All the flown speakers are in conveniently-positioned trees, whilst others are mounted on poles driven into the ground behind bushes, or completely hidden in the bushes themselves. The bulk of the system comprises d&b E9s, C6s and MAXs, with E3 delays and front-fills. Once we'd set the system up and got everything securely in place, it all worked beautifully, sounding clear and intelligible all over the site. The only hiccup we did experience was when the estate staff managed to drive over the multicore with a tractor lawnmower an hour before the first show, causing some frantic cable re-running from Galilee to Bethlehem!"

In a central control position sits an impressive line-up of kit. A 24-channel Yamaha PM3500 controls the 16 Trantec S5000 radio mics, four spot mics and Denon minidiscs for underscore processing and effects. System processing comes courtesy of BSS FCS 960s, Klark Teknik DN410 parametric EQs and TCS804 delays.

The size of the site means that mixing the show is not always straightforward. Matt Tompsett was responsible for operating the desk which overlooks the area fondly referred to as the 'main stage'. However, as soon as the performance moves into any one of the other four acting areas, he has to rely solely on what he can hear from his two B&W nearfield monitors. Tompsett is cued for the start of each scene by the stage manager, and from then on in has to follow the script.

Another challenge to be overcome was that presented by radio microphone reception over the 60-acre site. Button found the best solution was to move the radio rack to three different locations around the site, each serving local stages. This kept the antenna cables to a manageable length and the radios relatively clean.



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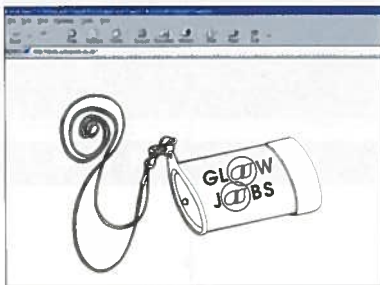
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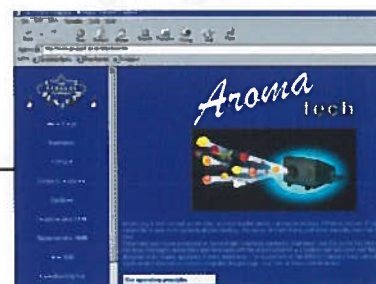
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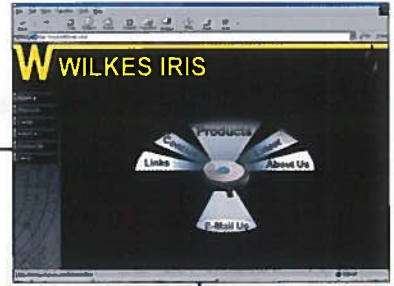
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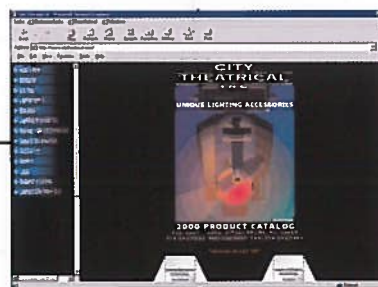
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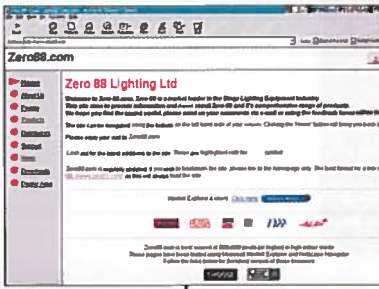
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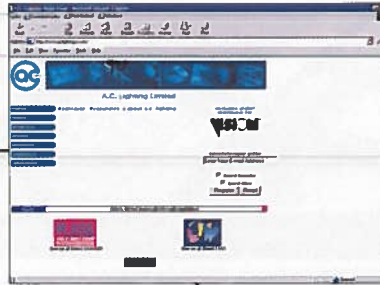
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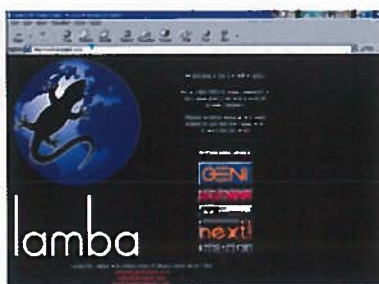
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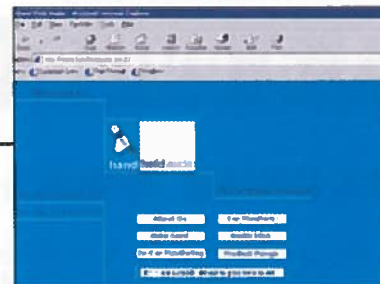
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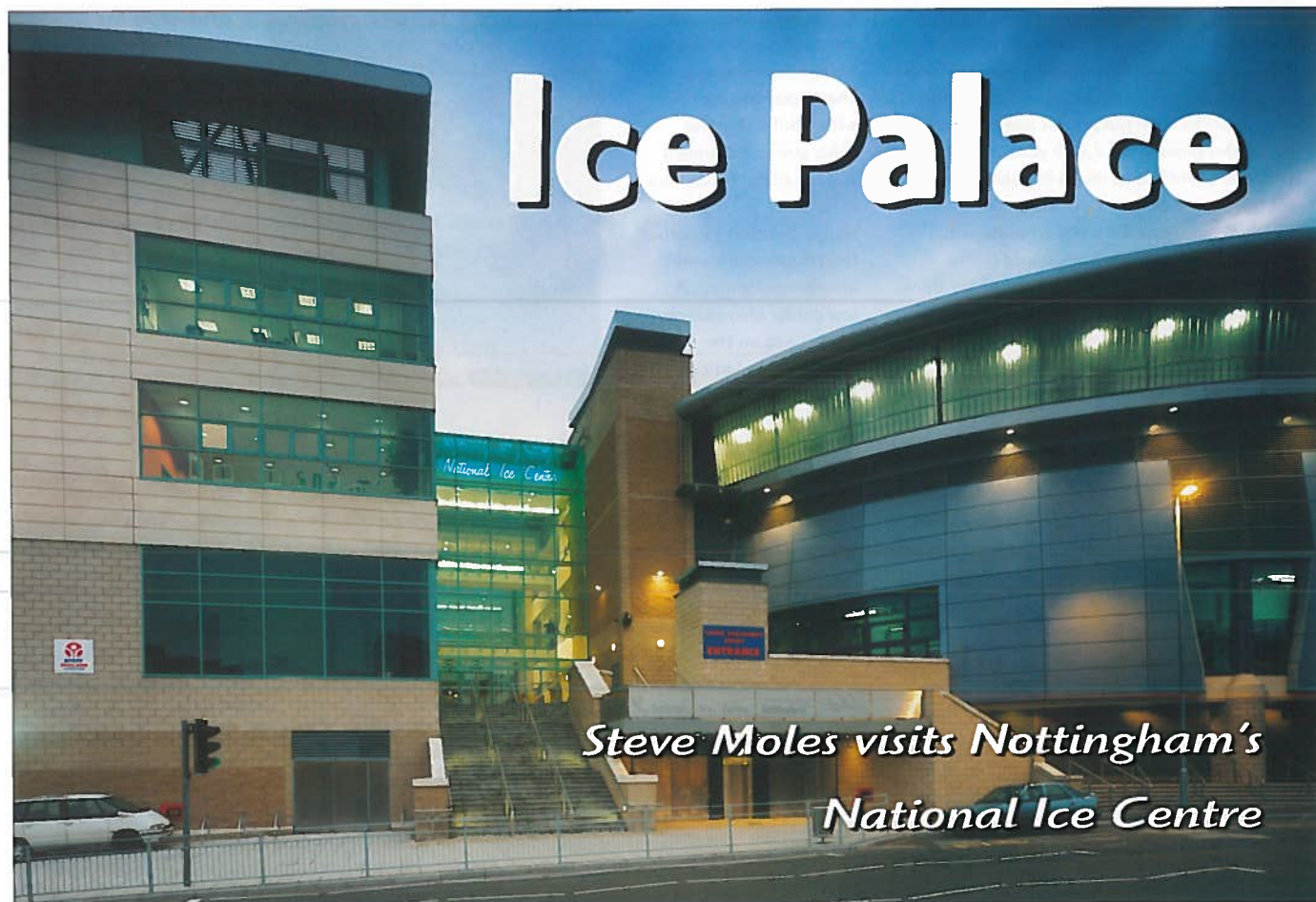


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# Ice Palace

Steve Moles visits Nottingham's  
National Ice Centre

**B**y car you approach Nottingham's National Ice Centre (NIC) down Lower Parliament Street. Round the corner at the bottom of the hill and suddenly there it is, a great curvaceous blue rump. In many ways it resembles the stern of an old galleon - those of you who travel the A4 into London each day and pass The Ark will know exactly what I mean.

Now I've been to all the big Ice Arenas in the UK: the old ones like Richmond and Whitley Bay are victims of their time, and hopefully will never attract Listed Building status. Of the modern ones, Sheffield's is a big shoe box, Newcastle's a giant Nissen hut, Docklands has proved the old epithet that location is everything, whilst the Manchester rink, for all its status as Britain's biggest, is almost invisible.

Nottingham City Trust spearheads the NIC development, a charitable body established specifically for this purpose by the City Council. They have, without question, dug deeper into the coffers and funded a building of which they can be truly proud. Attractive from the outside, the ethos of 'spend for quality' is continued within: when Phase 2 is completed in April 2001, only an inflated ticketing policy could prevent this from becoming a successful, fun attraction for the citizens of this ancient and noble city.

The phased nature of the building is no small achievement either, and demonstrates the clear



ARENA

vision of the City Council. Having quietly bought up all the land surrounding the old, downtown ice rink, they then conceived a plan to build a special centre. The new National rink sits proudly on this

land, while the old one has now been demolished and will soon be replaced by a shiny new one. You currently enter the NICN through a three-storey glass sided atrium (no trees) at the Western end. (Later this will change, a 'City Square' or Plaza will sit between phase 1 and 2). To the right of the atrium is the arena, to the left a café and fitness centre, and above it the administrative facilities. Directly ahead, on the far side, are two bricked-up portals, which will soon lead to the second rink.

In essence, the city intended this to become, as the name suggests, an ice rink centre that will attract international attention. The second rink is intended to accommodate local demand when International events take place in the main arena. With that in mind, and with the need for practice and rehearsal space at big figure skating events essential, they (the Council) have also acquired an old industrial building less than five minutes walk away in which another rink will be laid - providing three full-size Olympic ice rinks within a mile of each other. Before I get carried away with this promotion, I do see one problem, which became apparent when I visited in early June. Nottingham City centre is a nightmare for vehicles at the best of times - driving to the NIC and finding somewhere to park is Friday the 13th. With a licence for up to 10,000 for concerts, and seating for 7,500 for arena events,

you have to ask how all the punters will get there? Maybe the citizens of Nottingham will prove audience enough and come by bus. For those who work in the city, there's no doubting that the downtown location makes it oh-so-convenient for day-to-day usage.

Parking apart, I don't want to give the impression that the Council's spending has been overly lavish, but the fact is that from a purely subjective viewpoint, they seem to have got the NICN just right. The building is smart without being opulent. The fixtures and fittings look expensive without vulgarity - and they look durable. The décor and ambience are well balanced: it's not the Bridgewater Hall, but it's just as attractive, inside and out. It's obvious that money has been spent, but it's been spent wisely. This is a quality experience and I'm sure the benefit will be to all - visitors, venue managers, and not least to the Trust members themselves.

Funding for the £40m development breaks down into £4.9m from the City Council, £11.1m from the NICN's Charitable Trust, with major input from the Lottery Sports Fund of £22.5m, and just under £1m from English Partnerships (Government regeneration funds), all of which makes it quite complex financially. In essence, everything has to be directly related to sport: for example, were they to want intelligent lights installed, that spend would have to be justified as 'directly connected'. I would argue that what's crucial to the modern arena attendee is content, plus the peripheral experience. Look at any US arena and ask why they're so often full to brimming.



Admittedly, most sport is popular in the US for a variety of complex cultural reasons, but the Yanks also embrace sport as an advanced form of entertainment, not just sublimated combat. They seem to have grasped an essential truth, just as the Romans did 2,000 years ago when they put Christians to death in public. It wasn't for fun - it was because the spectacle of watching someone die is the ultimate visual experience. Why is the body count in the average Hollywood movie so high? If you think that's crass, ask yourself if you join the rubber-neckers at every crash you pass on the motorway? The truth of the Roman amphitheatre experience is that visual spectacle is more than watching one party defeat another; it's about how it's done and how well it's presented.

I'm not arguing that Ice Hockey teams should relinquish their armour and skate on razor-sharp blades, but I do think the definition of sporting use with regard to budget could perhaps be loosened a bit. Look at the inside of a modern

Lights, with automated shutters, speaks volumes for the money spent. They flood the ice floor with a brilliant white light: you could bring a vintage fifties TV camera in here and get a great image. But that's it, other than fluorescents and emergency lighting. A few colour changers on the ice and on the audience wouldn't go amiss... add a few mirrors and some gobos and you can brand the ice to your heart's content.

But that's enough drum-banging: where lighting might be limited, audio is not - mainly because it appears easier to link this technology to the sport. In a nutshell, the world's greatest ice dancers won't perform to a Dansette. Peter Mapp was the lucky man charged with defining all aspects of the sound installation; voice evacuation throughout the building, a paging system and a concert-standard PA system for the main arena. In some areas these things overlap, with speakers becoming dual-function, but that aside, Mapp states he's been allowed to install more than 90% of what he specified - he is thus a very happy man.

"I had my first meeting with the Council about six months ahead of breaking ground. That was the late summer of '98. I'd already gone through the tendering procedure, and I'd been up against five or six other consultants. The big challenge with these places," and Mapp modestly admitted he hadn't done that many of them, "is that you never know quite what you're going to be dealing with, especially with fittings and services within the building." A coded reference to the predictable, but at the time undefined, installation of air-conditioning ductwork and the like all over the place. As for him not doing many such buildings, how many have been built in the UK since 1950? And, as Mapp pointed out, the arena is effectively a cross between a football stadium and a theatre -



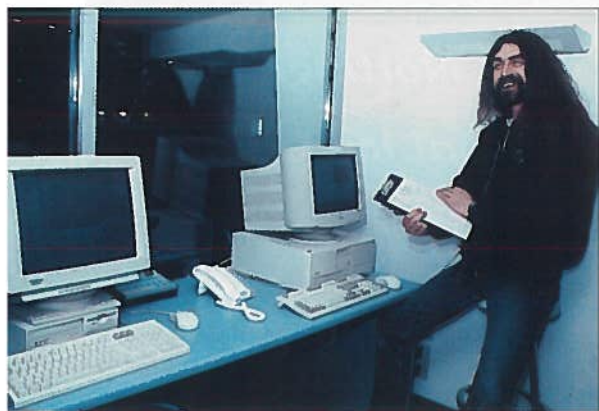
of which he has considerable experience in both and an enviable track record.

Mapp always assumes the worse, and uses that as the starting point for his design parameters. "In a large multi-use space like this, it is essential to control the acoustics, so the first thing I told them was that we had to get the reverberation time (RT) down to two seconds." When Mapp explained the benefits of reduced reverb, the

Council either understood, or took him at his word, and backed him. I suspect the latter: Mapp is quiet but persuasive - he doesn't bludgeon you with information, but he can propound a strong argument, and in layman's terms. Sound Research Labs was tasked with fulfilling Mapp's RT criteria, the 100% covering of the ceiling under-surface with perforated, corrugated tin, lined with mineral wool, being a big contributor. "Those kind of things are absolute," explained Mapp. "With a roof you either do the whole thing, or not all." The Council had good reason to make the acoustics a priority. "They had told me from the outset that they wanted this venue to attract international ice dancing competitions - the truly world-class events. But they also wanted it to be used for concerts, conferences and exhibitions." These aspirations are not unusual - I'm sure facility managers at every ice rink in the country will tell you the same story. It's all about getting the utilisation up - running an empty arena is expensive.

Mapp then specified upholstered seating to help reduce RT: "a bit of a luxury, but that gave them a double justification. Quality seating for international events, and sound absorbency into the bargain." To the casual visitor, the sum benefits of ceiling and seats are immediately obvious. The day I visited there were but four people in the arena; Mapp, an ice dancer, her coach and myself. Music was playing through the central loudspeaker cluster, yet the general ambience was quiet, certainly not boomy. That immediately makes a large room feel smaller, which is good for audience experience for it grants them intimacy with your latter-day Torvill & Deans. It's also critical if you're going to stage conferences and exhibitions, where you can expect much of the tribune seating to remain unoccupied. "At the time of specification there were no end-users involved, so I had to design a future-proof system."

Mapp is experienced enough to do that: he had at least specified for a couple of overseas arenas before, but nonetheless he did the research, taking the time to visit others venues such as Sheffield Arena, to garner opinions. Hayden Young is the principal electrical contractor, and it deferred the entire audio project to CTS, based nearby in



Top right, Mick Hucknall of Simply Red on stage at the Arena

Above, CTS project manager Andy Hague in one of the control rooms

shopping centre, and compare it to the inside of your local arena. Both get equally populated, and both want you to linger as long as possible to extract that disposable income. Currently the shopping centre does it better.

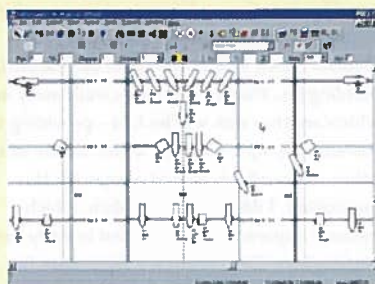
Moving lights might be absent, but lighting for the arena is not cheap: a huge battery of Murco



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Mansfield. CTS is well-known in the world of club and disco installation, and were thus totally conversant with the dual disciplines of sound reinforcement and voice evacuation systems. Even so, this was a big project for them: "This is a large voice alarm system," said Ivor Green of CTS. "It's principally TOA CS152 and Next Two speakers - 1,064 speakers throughout the building." And that's just the new arena: when the second rink is complete, there'll be even more.

Dealing with much of the voice alarm was a matter of detail and application and Mapp's involvement in writing parts of the National Specification himself, made that application somewhat easier. "With VA, you have to have the amps and fireproof cables and the only saving you can make is with the speakers on the end, but that's marginal." It's a full A/B system throughout, with a fair amount of inbuilt redundancy on coverage; all amps are Baldwin Boxall controlled through their BVR-20 microprocessor router which also 'talks' to the performance system - Peavey's Media Matrix. "The concourse system will take a concert signal and with a bit of EQ sound quite nice," which was Mapp's justification for sticking to the higher quality speakers.

In the main arena, Mapp has eschewed dual-purpose for two separate systems - Community PC264 horns (60° by 40°) with M2 driver for VA, with mainly dBb C7s for the performance system. "Double function wasn't a realistic option," he explained. "The decision on whether there'd be a central scoreboard was deferred until the last minute, making a design based on a central cluster system impractical, dictating a distributed system." The other justification being that the VA is subject to constant monitoring; by having an independent performance system, individual elements of that system could thus be changed or moved around. "I spec'd the dBb speakers for a couple of reasons; they fitted the coverage pattern I needed and they're an accepted speaker in the touring and theatre world. I wanted very tight pattern control so I could get away with one box rather than two. With these I'm getting coverage seat to seat of +/- 2dB across a range of 80Hz to 20kHz, everywhere in the arena."

Mapp has a comprehensive ring of C7s around a large circular gantry that hangs just outside the periphery of the ice pad; the PC264s also hang here. Currently there's a jury-rigged (in anticipation of the scoreboard) centre square of truss: this hosts a central cluster of C7s, C4s and C7 subs for playback onto the ice rink itself and to provide a cueing or reinforcement infill signal to the arena seating (the subs obviously cover the whole room). Other features include pairs of small Peavey two-way cabinets in the ceiling of every VIP box, and a ring of 'baked bean tins' (PAC 15 T Sound Projectors) under the boxes to infill the shadow they cast on the top two rows of the tribunes. Naturally, all are delayed to the main system, there being a total of 12 separate zones in the main arena - five at



the periphery, seven for the main PA. "We pre-set the system delays already so the house audio can be configured for in-the-round performance, or end-on stage, with any zone accessible as a discrete fill."

Add in 24 tie-lines each side of the lateral rink (more in the gantry), with another 48 (24 a side) at the stage end, and the whole system becomes extremely friendly for visiting touring systems. Who wouldn't use fills like the Peaveys or C7s when it's all so easy to access and someone's already done the maths on the delays? (Unless you like to put your stage PA three metres upstage of the front stage edge.)

"The room does get excited down the bottom end," warned Mapp. "There are three or four strong frequencies which we've pulled right out (around 90, 140, 170 and 240Hz), but otherwise it behaves perfectly - just a little slap-back from the large flat surface at the stage end. All the amplifiers and Matrix systems are confined to a 'hut' (plant room) on the roof, the live control being positioned at the opposite end of the stage at VIP box level. The house desk is an Allen & Heath GL3000, with a rack of twin-channel B55 graphics, three Opals, and a Yamaha effects unit - there, ironically, so that a bit of reverb can be put back in the room for screaming-shouty ice hockey games.

Andy Hague was project manager for CTS, an ex-BBC man, he has installed a comprehensive Neutrik patching system by the desk that means you can patch in, out and around just about anything you want. "I also made sure that no part of the house intercom system (from Canford Audio) is hard-wired, so visiting tours can patch in without fear of signal conflicts." Other nice touches include little 24v back-ups he built for the Allen & Heath and Baldwin Boxall control matrix, which is already backed by mains UPS. Hague must have Yorkshire blood in him.

With phase two on schedule for Spring 2001 and Torvill & Dean on the board of the Charitable Trust (they hail from Nottingham), the NICN appears to have all the right elements in place. Geographically, there's no doubting the East Midlands needed a multi-purpose venue, for residents of Nottinghamshire, Derbyshire and the flatlands to the East this will, I'm sure, prove a popular attraction.



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# Ian Herbert, Asleep in the Stalls...

**T**his column has had more than its fair share of swipes at Gerry Robinson, master caterer and Arts Council Chairman, so it's a real pleasure to offer him the heartiest and most heartfelt congratulations on what he's been up to recently.

down Great Peter Street next week. It's actually 15 million next year, then 60, then the full Gerry in three years' time. But wow, what a change.

Government to Council to Regional Arts Boards (RABs) and beyond.

"When it comes to the need for more funds, businessman Robinson has been able to spot the basic business bogey of the arts, and perhaps especially theatre: high fixed costs."

**WHEN HE LAUNCHED** the Boyden Report on theatres and the Council's rather dreamy response to it, the most interesting part of his own input was his request for an extra 25 million quid for the theatre. When he delivered his New Statesman lecture in June he asked for an extra hundred million for the arts all round, in which he included that twenty-five million for theatre again. The Independent, in a leader, thought he had a case but was as sceptical about his chances as I was.

#### ABRACADABRA -

suddenly Gordon Brown has found billions for national good causes, and there's that hundred million in the bag. Well done, Gerry. This is no time to nit-pick, but it is proper, I think, to observe that the hundred million isn't actually going to arrive in a single wheelbarrow trundling

**THEN THERE'S THE CHANGE** in Mr Robinson himself, for which the best evidence is the aforementioned New Statesman lecture. (You have to double-check here: it's Geoffrey Robinson, Peter Mandelson's mortgage-broker, who owns the New Stagers and presumably paid for the lecture; our Gerry is the other one, who runs Granada and who delivered it.) People have been talking for a while about Gerry 'going native': here's a hard-nosed businessman suddenly softening enough to say that the arts are underfunded. The lecture shows that this conversion isn't based on mere sentimentality. It is the result of serious study of what's going on in the arts world, both under his nose in the still bureaucratic corridors of the Arts Council and its regional clones, and further out in the theatres, concert halls and galleries themselves.

**THE LECTURE IS A SPLENDID MIX OF FACT AND ARGUMENT.** The Council asked MORI to poll people about how they viewed the arts, with very positive reactions as a result; they asked the Henley Centre to forecast what audiences might be like in 2010, and Henley came up with some surprising answers including a swing away from the dominance of youth, and a black community of three million beginning to form a large part of a multi-lingual London population. The rich will be too busy to spend much time on leisure, while the poor will have time on their hands.

**ROBINSON IS NOT AFRAID** to expose some of the shortcomings of the organisation he inherited, nor foolish enough to pretend that they have all been swept away. But: "I am passionate about carrying out a further assault on pointless form-filling and other red tape, and, above all, giving artists space to do what they are here to do - make art." Nor does he allow himself to get tangled up in questions of what art is or who it's for. He simply demonstrates, with some rich examples, how art of any kind can change and enrich lives.

**HE SHOWS WHAT** the Council has already done (and it's not as insignificant as I'd have thought) and gives juicy glimpses of what it might do with the right funding. "I would like to see us fund according to potential, not according to tradition. I would like to see three-, four- or five-year funding agreements with arts organisations as a matter of course." And he wants stringent quality control, not just between the Council and its clients, but also right down the line of command, from

**WHEN IT COMES TO THE NEED** for more funds, businessman Robinson has been able to spot the basic business bogey of the arts, and perhaps especially theatre: high fixed costs. "On the other hand, because of such high fixed costs, huge amounts of new activity can be generated with really modest increases in funding." He sees that inadequate cash leads to "ridiculously small casts, insanely short rehearsal periods, and the inevitable disappearance of risk and innovation and adventure." The right level of funding would give the opportunity "to give every child early access to high-quality experience of the arts; to restore innovation, adventure and risk to our producers; to create myriad new opportunities for the people of this country to enjoy the arts; to create a radical new dawn for theatre."

**SOUNDS PRETTY GOOD**, and now it's going to be possible. If you backstage lot can hang on for another year of two of stitching everything together with gaffer tape, there may be rich rewards to come, like casts of a dozen in regional theatres, watched by enthusiastic and discerning audiences, and more serious kit for you to work with.

**MEANWHILE, LET'S OFFER A FEW MORE** suggestions for Mr Robinson, now that he's got the hang of things. This new-found spirit of arts advocacy in the Council itself must spread down to the RABs - let's see them standing up for their theatres, not looking for the quickest way to close them. Let's see a trickle-down of Mr Robinson's recognition of the people who have to work in the sector, "with little slack, using considerable operational ingenuity (keep up the gaffertape, folks) in sometimes close to impossible circumstances, simply to survive, to maximise earnings, to adjust to changes in the market and, despite the odds, to produce the very best in the arts." And let's make darned sure that the next round of Lottery money is more carefully spent, and that the arts continue to get a really good share of it - maybe to endow some of the expensive new buildings that risk going dark because they cost so much to run.

**AND HERE'S A SUBVERSIVE IDEA:** theatre shouldn't have to give back as much to the Treasury in VAT as it gets in grant, so let's try some of what Lord Levy would call tax avoidance. You can't pay VAT on a ticket that has no price on it. Why not give away a percentage of seats - 17½ would seem appropriate - for every state-aided performance in every state-aided theatre? New audience arrives at a stroke, and Gordon Brown gets nothing for it. How about it, Gerry?

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# Bologna Towers

*Celebrations during Bologna's year as European City of Culture 2000 recently included a unique multimedia installation by director Peter Greenaway. Mike Clark reports from Italy*

**I**n Greenaway's own words: "I proposed a celebration of light, sound and history in Piazza Maggiore to welcome in the century and the millennium. Bologna is the city of Europe's first university and for over 800 years its teachers and students covered enough parchment and paper to fill its kilometres of arcades and its 100 towers many times."

In the 1995 film *The Pillow Book*, Greenaway wrote text on a human body with a story of a woman who demanded sex and text together, insisting her lovers write on her body. "In Bologna we had the opportunity of writing on the pleats and folds, creases and wide plains of brick, stone, glass and carving," explains the director "but without blemishing the four facades of the square, which represent the Commerce, Church, State and the Arts, as we wrote with light."

This was the basic idea behind Bologna Towers 2000, a technically-ambitious project resulting in the history of Bologna from the year 187 to the present day being narrated to a crowd which packed the square for eight nights, during each of which the 22-minute show was repeated three times - a combination of sound, light and video and still projections highlighting - among other things - Greenaway's extremely effective use of calligraphy as a communication medium.

A multi-level tower was built in the square to house the hardware and there I tracked down Le Grandi Immagini's Paolo Gualdi, responsible for the technical project and head of projection, in collaboration with Patrizio Bosco of BSC (Turin). "Peter wanted the writing projected on the buildings in a large format - the initial idea of projecting 120ft wide videos was practically impossible, so we opted for a video 'window' inside an E\T\C PIGI projection on each side of the square. Our computer-controlled PIGIs are four of the latest generation of 7000W units, two fitted with rotary heads. For the videos, we chose Digital Projection (UK) hardware and after considering using two 7000 units perfectly aligned one on top of the other, were offered the 8000gv, which had just come off the production line and has 7500 ANSI lumens and 450:1 on-to-off contrast. On the first night that we tried them out, even we were astonished with the results - they've incredible chromatic rendering,

fundamental for Peter, who wants colours to be exact. If necessary, with the PIGIs you can compensate for the rendering when printing the images to be projected, but when the videos arrive, you put them on and project them - you can't change anything.



"The projectors are set 'flat' - not 100% contrast and 100% saturation - we just turned them on and ran them. Their reds and blues are incredible and the white is white - so high-contrast you don't see the colour of the buildings they're projecting on. There was also a throw problem - we're 20m from Palazzo d'Accursio and 16m away from the other three - we couldn't have done that sort of job with older technology.

"On this project, we're working with BSC from Turin and software firm Video Soft, who designed and prepared the software for the immediate control of the videos via hard disks, ensuring absolute precision - you just press the button and the whole set-up runs in perfect sync." Greenaway continues: "The decision to utilise 23 fictive tales of Bologna's missing towers was mine - out of a lifelong enthusiasm for towers - their ambitions, the metaphor of trying to reach God, their aspiration to see over the horizon, their apogee in Babel, their hubris and machismo arrogance . . . and of course how to build them. Aided and abetted by Bolognese suggestions and 25 visits to Bologna over 30 months, the exact dates of the curriculum vitae for Bologna were my choice - often reflecting my personal interest in relevant historical facts - the aim was not just to represent Bologna, but Bologna and the World. I am fascinated about the secular power of Catholicism, the impression of personalities on historical events and cultural explosion and censorship. This history of Bologna and the world does not gloss over the negative events."

Greenaway's Dutch video/image editor and sound producer Elmer Leupen explains: "Calligrapher Brody Neuschwander has worked on many Greenaway projects and his work was recorded on mini-DV, using a camera mounted above a moving desktop. The huge amount of black and white and hand-coloured archive material was transferred from film to Beta SP. Bologna archives' stills, the





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scanned calligraphy and additional graphics were processed using Photoshop, in some cases using the stills as an alfa to combine the moving images.

"All video was edited on Avid MC1000 and dumped to Beta SP and DVCpro. During editing I made four-screen composites to check and discuss the overall result with Peter. After an initial period of programming the PIGIs at Le Grandi Immagini, we also used a composite of DVcamera recordings of the PIGI and the video projection together in a test set-up. This composite was very helpful to make the video fit the inevitable gaps between the PIGI images."

The final edit on tape was downloaded on to a hard disk video system located in the video control area of the tower, comprising five computers with Matrox Digi Suite, Digi Mix and Digi Motion cards and four Sony monitors. From here, four tracks of SMPTE time code were fed out to run the whole set-up in sync: PIGI projections, light desk and audio on Tascam DA88.

Elmer continues: "All stills and filmed images from the archives were researched by Ifat Neshet, those selected by Peter scanned and burned on to 26 CDs containing 253 images. I imported a low-resolution representation of every image to a database for quick browsing. With a print-out of the database content and some old-fashioned cut and paste on paper, the first set-up was made, including all the calligraphy, which I had previously scanned. I formatted, cropped, combined and coloured the images in Photoshop, based on four-line representations of the buildings. When Peter was happy with the end result, I burned a CD and sent it to Le Grandi Immagini."

Paolo Gualdi adds: "As our technical tower is off-centre, the images projected on to the Basilica of San Petronio has to be 'distorted' in pre-production in order to recover the right inclination when projected. Other images, on the other hand, were deliberately distorted to add more visual impact, particularly when using the rotary PIGIs. These are all fully loaded - in fact, the twin scrollers should carry 30 metres each, but we're using 37 on one and 42 on the other! Peter then came down to our warehouse for five days, where we reproduced the buildings on screens seven metres by seven.

"With this method, if Peter wanted to light a particular window, or the clock on the bell tower, he was able to try it out using a scaled-down reproduction of the square. To have this exact correspondence everything had to be precise down to the millimetre. We managed this by taking a photo from the position each PIGI would be in and simulating the projectors lens, then doing a series of designs on a mock paper 'slide' to get a grid which is laid on top of the photo. This gives us the building from the PIGI's point of view which we scaled as required ensuring that we positioned the images and film in the exact position.

"The calligrapher prepared tons of paper with all the writing and thanks to our in-house printing facilities, any changes that had to be made were ready for use the next



day. There are points in the show where yards and yards of film pass at an almost unsettling speed and you can't catch all the details at the first run. The majority of the PIGI projections and the video projections are based around the written and spoken word, so it's a constant, incredibly dynamic sequence of sensations. Move-in took three days, then the following five were spent working with Greenaway. Peter wanted the bell tower to look like a lighthouse, the plaques on Palazzo d'Accursio to be illuminated, the prongs of Neptune's trident on the fountain and many more details to be lit. He has an incredible eye - if he's unfamiliar with any particular technology, but you show him its possibilities, he manages to use it to get the result he wants."

The lighting for the event was designed by LD Marco Risoli of lighting contractor Illuminoservice, who worked with lighting programmer Davide Martire. This being an Italian event, the lighting spec is almost exclusively home-grown and features nearly 30 DeSisti Leonardo fresnels, 50 Spotlight 1kW lights, a pair of Sagitter Tracer followspots and 16 DeSisti Monet 1kW fresnels. However, there are a couple of international players in the team - 20 Martin Pro PAL 1200s, 14 Juliat profiles.

It fell to Martire to sit down with all the time codes that Peter gave him, outlining what he wanted in each particular point in the show. Martire confirms: "I was called in as it was a rather complicated event using time code, but it turned out that the most difficult part was when, for budget reasons, the lighting was drastically cut so Peter and myself had to come up with new choice of hardware. In spite of some effects being cut due to a limited number of fixtures, some very nice parts have been kept to complement the projections. We used the PAL 1200s because Peter required a rectangular colour projection on the buildings and it was the only fixture able to do that within our price bracket.

"As the lighting design had been completely revolutionised, he came down and said 'try this' and 'try that', but rehearsing with 20 PALs at night with the street lighting on isn't the easiest thing in the world - we couldn't start before 10.00 in the evening and it got too light to work at 5.30am. We had a few DMX problems at the outset, as we'd some runs of almost 600m from the desk - such as the lighthouse effect on the bell-tower, but things fitted into place and went perfectly after that. Fortunately, an Avolites Pearl 2000 desk was



The final word should go to Greenaway: "The enthusiasm of the crowds in the Piazza Maggiore was proof that the event was a great success. I enjoyed it - we've produced a language of slides, video and lighting that could be a great vocabulary for the future. I've plans to use such a vocabulary on other projects in Italy."



specified, as it enables the compilation of a time code sequence. Very few colours were used - red, blue and orange - so we finished up using gels more or less throughout."

As well as the commentary and effects, the soundtrack included La Marseillaise and music by Messiaen, Monteverdi, Mozart, Gorecki, Hus and more. Leupen explains: "I sampled, looped, deformed and combined these and for the sound editing and stereo mix used

Protools 5.0 on a G4 with a small DSP-card and an 888 I/O interface." The eight-track mix was done on a Protools system by Bologna's Studio Arki, the production team which followed the event from the outset, carrying out the feasibility study of the project and contacting all the companies involved. In their studio, Nicola Zonca and sound designer Alessandro Saviozzi used a speaker set-up simulating the four buildings and plug-ins like Smartpan Pro to spatialise the sound. The final mix was dumped on a Tascam DA88 and slaved to time code.

Sound engineer Maurizio Cottone of audio contractors Global Service of Taviullia, manned a Spirit 324 Live digital desk with eight outputs - two for each side of the square. The L/R channels on each façade were reproduced using two



The technical team of Paolo Gualdi, Margherita Morgantini, Fabio Olivieri, Davide Martire, Maria Grazia Pedrini (Le Grandi Immagini), Betty Marongiu, Roberto Costantino, Maurizio Cottone, Alessandro Saviozzi, Maurizio Coassolo, Roberto Mattia, Diego Schiavo

*Inset, the technical tower*



groups of three Crest-powered Electro-Voice Deltamax enclosures and Maurizio also got eight more audio tracks from the video as a back-up in the event of any hitches with the DA88. As a result of the difficulties in eliminating delay and reverb in the square, it was decided to focus the sound on the area round the tower.

The result of this hybrid media event was so fast-moving and dynamic that every spectator probably went away with his or her own impressions - apart from appreciating the precision work behind the scenes in the months leading up to the event, and the spot-on timing and positioning of each sound, light and image, the most striking moments from a personal point of view were the few apparently eternal seconds after the announcement of the terrorist bomb in

Bologna station, where nothing was heard in the square but a desolate recorded wind - even the kids playing round their parents were silenced. But there were also lighter moments, particularly in the stories regarding the towers, and apart from seeing the entire square 'papered' with sheet music when the foundation of the Philharmonic Academy was announced, another striking moment was when one of the rotary PIGIs slowly stood the hand-written name of the city on its 'B', projecting it up to the towering top of the Cathedral.

The final word should go to Greenaway: "The enthusiasm of the crowds in the Piazza Maggiore was proof that the event was a great success. I enjoyed it - we've produced a language of slides, video and lighting that could be a great vocabulary for the future. I've plans to use such a vocabulary on other projects in Italy."

Projection photos - Le Grandi Immagini  
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# Witches

*It's been a while since Cameron Mackintosh had a big new show in London. Four years, almost to the day, since the original Martin Guerre opened; six since Oliver! and more than 10 since Miss Saigon opened before setting off on a trail around the world. Rob Halliday reviews the latest from the Mackintosh stable*

It's not that Mackintosh and his company haven't been busy, with new tours and smaller scale shows. And, of course, a producer that still has three shows running in London is still hugely successful, by any standards.

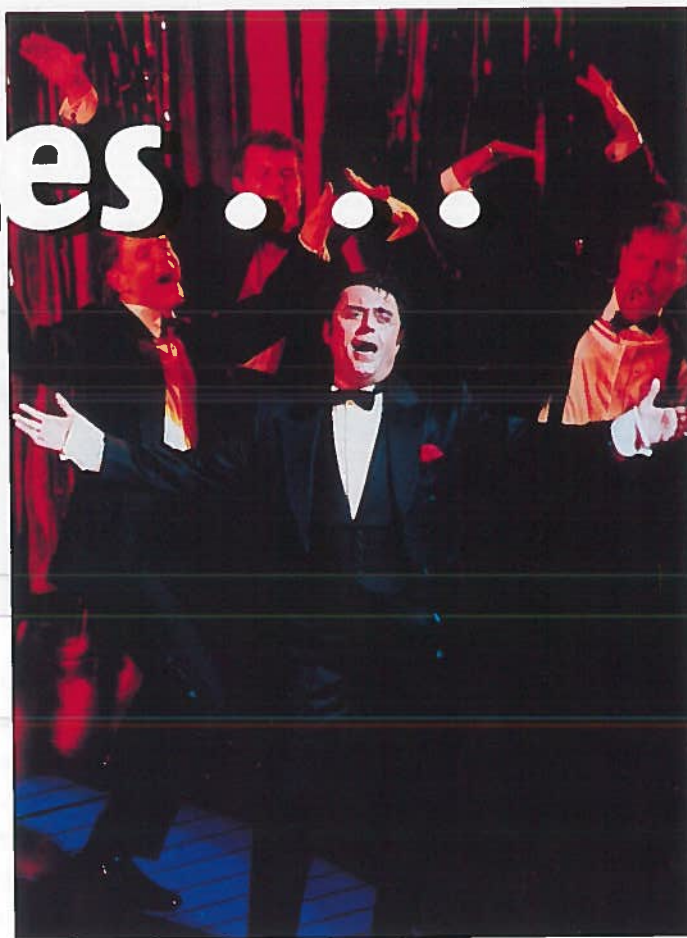
Nonetheless, with the long-running shows starting to close - Saigon ending its 10-year run in London last year, Cats in New York finally running out of lives this autumn after 18 years - the time had clearly come for something new.

Hence *The Witches of Eastwick*, slotting nicely into the theatre vacated by *Miss Saigon* (and co-incidentally, the one that gave the young Cameron Mackintosh his first job, as a stage hand), the Theatre Royal Drury Lane. The source material, a John Updike novel, is more familiar to many as the film starring Jack Nicholson, and it was that version that formed the musical by the relatively new writing team of lyricist John Dempsey and composer Dana Rowe. Three years ago, these two moved to New York and gave themselves six months to have a musical produced. That show was *The Fix*, which Mackintosh produced at the Donmar Warehouse in London and then in Washington DC; those involved with the show speak highly of it, but somehow it never made it to a bigger theatre or longer run. But it was a great calling card, leading to *Witches* and a further, still-secret project with Disney.

With the show written, Mackintosh put in place an experienced team to bring it to life. Director Eric Schaeffer has made quite a reputation for himself with his musical productions at his own Signature Theatre in Arlington. Legendary Broadway choreographer Bob Avian teamed up with Stephen Mear, an up-and-coming English choreographer who has hit the headlines with his *Singin' in the Rain* at Leeds and now at the National Theatre. Designer Bob Crowley, until recently most familiar for his work at the National Theatre and Royal Shakespeare Company, is quickly becoming the leading exponent of musical theatre design, winning this year's Tony award for his sets for Disney's *Aida* in New York. And lighting designer Howard Harrison and sound designer Andrew Bruce are Mackintosh regulars. With Cameron Mackintosh's technical manager Nic Harris overseeing the practicalities of getting the show on, and a great cast led by Ian McShane, Lucy Amaz, Maria Friedman and Joanna Riding, *The Witches of Eastwick* was set for a July 18th opening.

## DESIGN

*Witches* isn't the style of show that people necessarily expect from the Cameron Mackintosh stable: it is a 'musical comedy', a good, old-fashioned style of show with dialogue leading into songs leading into



dance numbers and a healthy dose of laughter thrown in for good measure. It is not big, it is not epic, nor is it naturalistic. Bob Crowley's design reflects all of this, while also attempting to contain much of the action downstage in what is one of London's largest stages. The stage is divided into a 'blue box' main playing area occupying roughly half of the stage depth, with a blue floor, blue legs and an upstage blue wall. Other elements are brought into this space as needed to define locations: the hydraulic hills of Eastwick pivot down from the wings, doors and fences track onto the stage from the wings. And for large pieces, the upstage wall can fly out to allow three large (two of them around the five tonne mark) trucks to run downstage into position.



THEATRE

Construction of the scenery was entrusted to Delstar, Kimpton Walker and Terry Murphy Scenery, with rigging by Unusual and installation led by Glyn Cook, production carpenters Micky Murray, Simon Holley, Charles Howell, Tim Lloyd and Alan Jones and resident technical stage manager Graeme Taylor. To bring the scenery to life, Nic Harris opted for an automated approach and so turned to Stage Technologies, who provided 11 BigTow winches driving skates in seven cross-stage tracks, plus up-and-down stage motors for the large trucks.

Nothing inherently complex, but any show presents new challenges: Stage Technologies' Mike Sharp notes in particular the refinement required on the upstage motors, which had to deal with running five-tonne trucks down a 1:12 rake (the same rake as used for *Saigon*) and then back up again. A complication here was Westminster Council's insistence that the trucks had to have secondary safety mechanisms, which Delstar accomplished by installing arrester cables. Stage Technologies also provided BigTows to serve as counterweight assist motors for some flown scenic pieces; all of these winches are controlled by an Acrobat console run by Alex Hitchcock or his deputies, Darren Williamson and Richard Kent.

Stage Technologies' Paul Hollingsbury also provided a number of custom-programmable logic control (PLC) systems to drive pneumatic effects in the diner and both pyrotechnic control and movement in the collapsing church sequence - this last sequence







linked through an Avenger show control box to the sound department so that pyros, collapse and sound effects run in perfect unison.

Stage Technologies were also responsible for the moment of theatrical magic at the end of act one, when the three Witches fly up from Darryl Van Horne's house . . . then out over the audience! Designed by Mike Barnett, the system is a variant of the one Stage Technologies developed for the central show in the Dome. If you're going to see the show and don't want to spoil the magic by knowing how it works, look away now! An overhead truss contains one Big Tow motor per witch. A front of house truss, neatly blended into auditorium's architecture, contains a further three lifting BigTows, each mounted on a track and capable of being driven across stage by a further three motors. Custom software allowed Hitchcock to drag out flight paths for the Witches on screen, run a simulator to check that the three flightpaths wouldn't interfere with each other, then run the cue sequence from a standard Acrobat controller - though in practice the show uses a separate Acrobat to control the flying sequence, this located in a front-of-house box to allow the operator to see the flight.

The flying sequence became a classic case of something that appeared to be a problem during technical rehearsals actually becoming a virtue in front of an audience. The wires from the FOH motors are fed up to the onstage truss and then loop down onto the stage, so that when they are dropped in (cunningly disguised within a collection of flambeaux lights that fly in at the same time) all of the wires descend vertically. The witches are then lifted and, at a certain height, the FOH wires are released and taken up to tension. There is, inevitably, a pause while this happens, about which everyone worried. In fact what seems to happen is that the audience are just starting to shrug and mutter 'so what' to each other . . . when the Witches head straight out towards them, one making a very low pass over the stalls as they go. The applause is spontaneous and genuine every night. As is the feeling of relief backstage as the effect passes without a hitch, though the back-up procedures are well thought-out and rehearsed.

## LIGHTING

Howard Harrison's design for *The Witches of Eastwick* is perhaps the very model of a modern lighting rig. It is largely automated, with 111 moving lights, but rather than just using lots of lights from one manufacturer, it features a huge range of different products, each chosen for a particular set of strengths. The result is that there are virtually no conventional lanterns overhead (there were some, they've all been cut) yet almost anything is achievable.

**"What does all of this technology create? Interestingly, a show that doesn't look like a 'moving light' show; Harrison and assistant, Oliver Fenwick, recall that one of the early briefs for the show mentioned that it had to feel like an old-fashioned musical comedy, of the kind Joe Davis might have designed in the sixties."**

The bulk of the rig is from Vari-Lite, with four overhead bars containing a mixture of VL6Bs and VL5s which provide all of the hard-edged and soft-edged washes in the show. The VL5s are fitted with the 1200W 110V bulbs to give extra punch, these running from Avolites dimmer racks. The zoom lens in the VL6s allows them to provide a huge range of gobo looks and specials and their ability to snap instantaneously from colour to colour is also a Harrison favourite. VL5s and VL6s are fitted with City Theatrical tophats to minimise the flare on Crowley's blue borders. The overhead rig also includes three lines of five DHA Digital Light Curtains, the upstage row pitching light

curtains, three VL7Bs (their shuttering allowing them to provide the backlight through the tracking doors and controlled light to other scenic elements), four DHA Digital Beamlights (giving tight, intense specials) and six Strand Pirouette PCs whose widely variable, bright beam makes them very versatile tools. A FOH truss contains a further six Pirouettes and four VL6Bs, and there is then a VL7B on the lower circle front that provides shapeable light into scenery, as well as a selection of moons. In the high slip positions above the upper circle boxes on either side are short bars containing six City Theatrical AutoYokes, while the pros booms contain three VL5Bs per side and there are three VL6Bs per side on ladders providing a low cross-light.

The automated lighting rig is completed by nine High End Technobeam moving mirror units, three on the lower circle front and three per side mounted to the side walls of the theatre between the boxes. In the original design conception these had one mission only: they are linked to a Wybron Autopilot system and therefore follow the Witches as they fly around the auditorium, since their flightpath takes them out of the line of the followspots. Though the Autopilot set-up was complex, particularly when the witches' flight went ever higher and some of the Autopilot receivers had to be moved up to the roof, the show's lighting manager Kevin Burgess eventually mastered the process and the system now works very well.

A collection of conventional equipment fills in the gaps left by the automated rig, these 'steam' lights mainly located on the side-lighting ladders, with front-of-house lanterns on the front of every circle and in the gallery slip positions. Profiles are all ETC Source Fours, many fitted with Rainbow colour scrollers, and there are also 1k, 2k and 5k fresnels, Par cans (again fitted with Rainbow scrollers), Cadenza EP effects projectors with VSFX cloud disks, and a variety of strobes including Bowns, Dataflash, Diversitronics, Source Four strobes and the spectacular Broncolour profile strobes bought many years ago for *Oliver!* Four followspots complete the rig: Robert Juliat Aramis 2.5ks, all located centrally at the back of the gallery - this is a musical comedy, after all!



The conventional lights were supplied by White Light, with the non-VL moving lights from The Moving Light Company and the Vari\* Lites from VLPS London; the installation team was led by production electrician Alistair Grant. Jeffries also carried out a comprehensive smoke-and-ducting installation in the roof above the auditorium, this using Smoke Factory Captain K, Data and Spaceball machines to fill the upper levels of the auditorium and the stage with smoke during the flying sequence.

Control for the rig is by several generations of Strand Lighting equipment. The conventional rig uses the theatre's own installation of STM and Permus dimmers, with these and the moving lights run from a Strand 500 control system. This system was specified because we wanted to be able to have two people programme the show, one on moving lights and one on conventionals, for speed. But we then wanted the system to be able to come down to one operator for show running: other shows have done this, but usually by keeping two separate desks and linking them together through another computer.

The solution adopted feels much cleaner. The whole show is stored and run on one Strand 510i rack-mount controller. A second 510i provides a tracking back-up. Connected to these are two consoles, one for the conventional programmer (a 530) and one for the moving light programmer (a 520i). The system was then partitioned so that the 530 only had control of the conventionals, while the 520i only had control of the moving lights. The appearance was of two desks - except that there was only one cuelist being created and edited, only one set of timings being altered, only one showfile to be saved and backed up and, if need be, each operator could run the other's cues.

In addition, one Ethernet cable took data to a network node on the lighting designer's production desk, providing him with a cuelist and a display of what every channel in the show was doing. And if the worst had happened, it wouldn't have mattered; all of the data was safely in the 510s.

For show-running during previews, partitioning was simply switched off and one person could run the show, ensuring that all of the bump cues bumped together - but with the second console still present the other programmer could fix positions or make other changes to the show. And post-opening, the system has been re-configured so that the 530 runs the show with a 510 as back-up. In all of these configurations, seven streams of DMX are extracted through two SN103 nodes and then distributed around the building using conventional DMX cable. The system has worked very well: early worries about speed have proved unfounded, and the set-up has never really been found wanting - though of course the inevitable pile of suggestions for improvements have gone back to Strand for their consideration!

Why is the 530 the desk that's staying? Because it has more submasters, all of which have been filled up as more and more things have fallen under the control of the desk. Many of these have been made by Howard Eaton Lighting Ltd (HELL): a stunning 7000-fibre starcloth that can fade between an animated version of the show's logo (which uses three custom indexing lightsources), a map of America complete with outline, cities and animated 'journey across America' line, a shooting star, and plain old twinkly stars; a giant red piano keyboard, four moons; magical spinning cellos, violins, washing lines and pyros in a number of scenes that use HELL's radio remote modules and a spectacular PLC-controlled pyro sequence that runs with the church collapse. There are also the smoke and haze machines and the two Le Maitre LSG low smoke machines used in lieu of dry ice, since they offer lower running costs and a smoke that doesn't upset the choreographers or dancers by making the floor slippery.

What does all of this technology create? Interestingly, a show that doesn't look like a 'moving light' show; Harrison and his assistant, Oliver Fenwick, recall that one of the early briefs for the show mentioned that it had to feel like an old-fashioned musical comedy, of the kind Joe Davis might have designed in the sixties. For the most part, that is the style the show follows, though the rockier numbers inevitably led the lighting in a rockier direction at certain times.

The followspots work hard throughout keeping the principals clearly visible, and even have the entr'acte to themselves: operators Carina



The production sound team led by sound designer Andrew Bruce (second from right)

Cox, Paul Roughton, Paul Walker and Nestor Nitschke were amusing themselves making tiny dots of light zoom across the front gauze, the producer liked it, and so act two now opens with a meteor shower . . .

## SOUND

Though the sound design for *Witches* is credited to Andrew Bruce, and it is clear that he has the final say on all sound-related matters, he is quick to acknowledge that it is a team effort between him, his associate sound designers Mark Menard and Simon Baker, production sound engineer Andy Brown and the sound engineering team of Sean Lawler, Graham Crimes, Jon Clarence and Keith Hutchinson.

"Increasingly, with such a complex system, I don't think that one person has the time to do everything and make best use of the system." Thus in *Witches*, Bruce roamed the theatre carrying a very nifty pen-operated Fujitsu PC tablet that allowed him to change the sound system's settings on-the-fly, Menard concentrated on programming the system and working with operator Borneo Brown to establish the mix, whilst Baker created the eclectic range of often-comedic sound effects the show demanded. In fact, one end of the spacious sound control area (in a reversal of conventional practice, the sound team were asked to make the control area as large as possible, to replace seating that couldn't be sold because of poor sightlines) is dedicated to sound effects equipment, with a DAR TheatrePlay digital 8-track playback system, two Akai S6000 samplers plus back-up duplicates of everything.

The rest of the sound system is a descendant of that used by Bruce on *Mamma Mia* last year - and also, as he admits, something of a prototype, since it uses the first samples of L-Acoustics' new dV-Dosc 'baby Dosc' loudspeakers. "They originally intended them as a small fill version of V-Dosc for use as part of a big V-Dosc system, but they also realised that they would work very well as a cut-down speaker for theatre use. They have worked out very well for us; they are so precise, they are very wide - approaching 120 degrees - and, as with V-Dosc, they couple so well; there are no spots in the auditorium where you walk from one seat to another and pass through a dead area."

The system uses 14 dV-DOSC units per side, hanging from custom rigging arms designed by Andy Brown, plus a central flown cluster of ARC loudspeakers supplying sound to the gallery; all are driven by Lab Gruppen amplification, though Bruce and Brown note that the show is actually using very little of the total amplifier capacity.

The show still features a healthy dose of Autograph's more familiar workhorses from the Meyer range, with four effect loudspeaker 'thunder clusters' spaced around the auditorium made up of UM Ultramonitors and 650s; the show also has surround speakers located around the sides and the rear of the auditorium, allowing sound effects, particularly the many dramatic thunderbursts, to be swirled around the audience under the control of Outboard's TiMax control system. Though the speaker systems are loosely described as 'vocal' and 'effects' systems, Bruce notes that in fact, because the TiMax output is re-injected into the mixing desk, any part of the system can be used for anything, with the thunder clusters put to good use for vocal surround effects.

Control for the system is from a 92-way Cadac J-type console, loaded with motorised faders for the radio microphones (allowing the desk to



preset vocal levels for numbers automatically) and three of Cadac's fully programmable modules for the three Witches, this allowing the creation of the relatively simple-sounding but very magical effect where the Witches' vocals float off into gentle reverb on one side of the stereo field as they move to the side of the stage.

Control for the desk is using Cadac's Windows-based software, which has been refined since its debut on *Mamma Mia* and was refined further during *Witches*. This software sends MIDI out to Matt McKenzie's MIDI control software, which then distributes it to the rest of the system; control also arrives from a footswitch in the pit which allows the musical director to trigger click-tracks, and from the Avenger show controller located at the automation desk. The sound then passes through XTA crossover, EQ and delay processing on its way to the amps and speakers; it is this system that Bruce controlled using his handheld tablet, replacing the more cumbersome laptop used during *Mamma Mia*. He and Mark Menard now consider this an invaluable tool.

Cast vocals are caught and sent to the desk through a 38-way Sennheiser 1046 system presided over by Simon Sayer, Rowena Edwards and Matt McCarthy, with the principals wearing two mics and transmitters. Sennheiser

transmitters are also used in reverse, to feed sound effects to set pieces that couldn't have cable run to them. And the show also makes use of Sennheiser in-ear monitoring for the three witches. Originally this was intended just to allow stage managers Camilla Clutterbuck and Simon Wood to talk to the witches in case of a problem during the flying sequence (though this also necessitated Brown splitting



*The lighting crew - LD Howard Harrison is pictured front centre, L&S scribe Rob Halliday to the right*

the witches' mic feeds so that they could talk back to the stage managers). However, during rehearsals it became clear that the show contained several numbers where the witches were required to sing close harmonies while

widely spaced across the stage and so it was decided to use the system to supply foldback as well, with the witches now receiving their own mixes that contain the band, their vocals, the others' vocals and some ambient sound.

The proof of the system's effectiveness is, as always, in the listening: you can hear every single word of the witty, snappy dialogue, yet that is never at the penalty of losing the energy from the clever, fun score. And the loudspeaker system and ability to tweak system settings on the fly mean that sound quality is consistent everywhere, and could be achieved very quickly. "Cameron was on our case from day one about vocal levels," Bruce recalls. "It wasn't until about day three that he said 'don't change it' which was about three weeks earlier than expected!"

So does four months of fit-up, including a month of technical rehearsals and three weeks of previews, plus a great deal of care and effort on everyone's part make a hit? By the time you read

this, we'll know. At the time of writing, we just know that the previews have been full and the preview audiences have been having a good time. Now the show has to pass the judgement of that most feared band, the London theatre critics. We open tomorrow night. Fingers crossed!



Production photos: Michael Le Poer Trench

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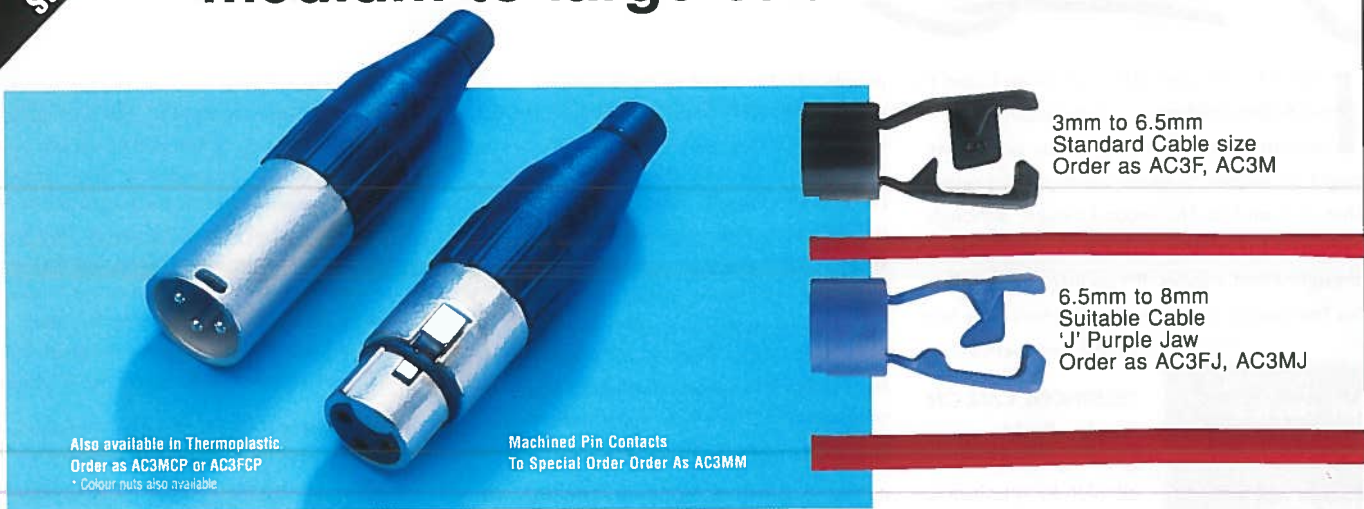
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# John Watt

## Second Take...

John Watt's view from beside the camera

I wish I'd paid more attention when I used to work with conjurors - maybe pulling something out of an apparently empty hat might be simpler. Summer seems to be pretty thin all round for the second eleven, although last week there were a couple of days when I thought I had a series. It's an interesting tale for freelancers and I wonder if others have had similar experiences?

"Well, this is a first for me, a corker of a remark to which I don't have an immediate answer. I hear myself explaining to this so-called production manager that if I'm to be responsible for the lighting of this extravaganza I had better point the lights."

**TELEPHONE CALL ON** Tuesday. Bright-sounding young lady asked if, by any chance, I could be available for a series (a well-established one) and apologised for the short notice as the production meeting was Thursday with the show starting 10 days' later. It would be really really good if I could do it, as I've subbed on the show a few times and worked for the company quite a bit and I come highly recommended. Mistake number one was not hanging up immediately, as this was clearly code for 'the current guy has pulled out because he's had enough'.

**I ASK FOR THE DATES,** which on first sight are difficult, and we agree a

daily rate, albeit a bit less than normal. I tell the lady I'll check out my diary and call back in the morning. Overnight I arrange to shift a family holiday and work on what I'm going to tell other

people who I'm about to inconvenience considerably. At 9.30am next morning the lady calls to see if I've made a decision and I say yes, I'll do the job. She says it's really really great that I can do all 13 blocks - bit of a surprise this, as she only mentioned four yesterday. She's taken aback that I'm not clairvoyant and can't understand my lack of enthusiasm for committing to thinly-scattered engagements in 2001. I was going to join the Grantham Clairvoyant Society but their last meeting was cancelled owing to unforeseen circumstances (Lewisham Hippodrome 1956.)

**HOWEVER, WE AGREE** to look at the dates previously discussed. Mistake number two was missing my second chance to hang up as this is no way to run a railway and can only end in tears before bedtime. I verify the daily rate and it's still OK, but she informs me I'm not needed for the set and light days! (hang and focus in the theatre). Well, this is a first for me, a corker of a remark to which I don't have an immediate answer - in fact I don't have an answer, period. I hear myself explaining to this so-called production manager that if I'm to be responsible for the lighting of this extravaganza I had better point the lights.

**SUBSEQUENT EVENTS INDICATE** that this latter remark was my undoing. Remember the production meeting is now tomorrow and I need to decide whether to stay in London for a ninth night, thus cementing a divorce after 40 years of happy marriage, or go home for some clean socks and reconciliation. She can't make that decision without going to a higher authority, thanks me for my patience and says she will get back to me. She doesn't, and as I'm busy doing another gig, Rosemary, my long-suffering wife and office, thinks she had better call her before the happy hour in Bedford Square. Oh yes, she was going to ring, but they've found someone else.

**THE PREVIOUS LIGHTING DIRECTOR,** a very experienced chap known for his relaxed style and good humour, has since told me why he'd had

enough. I won't bore you with the list, which will be familiar stuff to most of us, but one moment is too good to miss. At the end of the last series, the lady producer dropped in to vision control and said she would like to congratulate him for doing such a good job on the sound! God knows what she said to the sound bloke, but it's rumoured he took to strong drink and is now working at Tandys. I'll resist giving any clues about the well-known company involved, but would love to know if my experience is unique?

**HOW I WISH I HAD SEEN** the now infamous Keith Chegwin nude show on Channel 5. I didn't, so can hardly comment on it, though my Birmingham correspondent sent me an e-mail saying it was a rich seam which I should be quick to mine. It appears to be inexplicably missing from the schedules. He didn't admit to working on it, though I have my suspicions. He also gave me a pretty dramatic account of what fun he had had with five of those soft-light balloons on a windy night - if we had known in advance we could have organised a coach. I'll find a use for one yet, but until I do I'll assume that they are really for DOPs (the spell checker suggests 'dopes') who have to have absolutely everything on the lighting truck to keep up the con' and use up the lighting budget.

**SCREEN CREDITS WERE A GREAT** bone of contention in the days when we didn't get any. The Beeb always credited lighting directors in their short list, but on ITV they were said to get in the way of the commercials - a bit like the programmes these days. Eventually, the commercial companies saw sense and we were able to achieve fame or notoriety as a result; some jobs materialised, particularly from shows seen abroad. Now I detect a cavalier attitude to credits once again, not only to lighting, but even to the cast and director.

**WATCHING CORONATION STREET** last Friday (just as Mike is about to find out his son sleeping with his fiancée Linda), we suddenly cut to Carol Vorderman. I jump to the conclusion that the cat has rolled on to the zapper, but no, it's for real, because in the background are the Coronation Street captions inlaid into a small box, quite illegible. I'm trying to improve my speed-reading to see if Tom Bardsley is still lighting Stars in Their Eyes but no luck yet (it looks great, so I suppose he is). Most of the programmes on Challenge TV just chop the credits off altogether and insert Maidstone's best, inviting us to win a CD. At least the CD manufacturers credit the bands, singers and engineers involved. Maybe similar legislation to other canned goods could be applied, where the ingredients are listed in order of quantity involved. Accountants 70%, Actors 20%, Wardrobe 5%, Lighting, including artificial colouring, 1%.



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# Alice's Wonderland



## Steve Moles finds out whether Alice Cooper can still hack it

In 1972 I sneaked into the Sixth Form dorm' of a girls' boarding school in Buckinghamshire (propriety prevents me from naming the establishment - and the terror of a belated prosecution). Alice Cooper had just entered the charts with the instantly-forgettable ditty 'The Telephone is Ringing'. I can't say it was the excitement of the song, which inspired me to some nocturnal drainpipe climbing, but it certainly helped and I clearly remember singing the entire song to the head girl. When dawn broke I quietly slunk away. It had been an exciting night, and not one, I hasten to add, of sheer unbridled lust - there are other things a young man can find for entertainment when in the company of such plenteous bounty. Future wives of Prime Ministers and Ambassadors largely escaped with their reputations intact: 20 minutes later I was two miles away on a hilltop overlooking the beech forest, smoking a big fat doobie, and contemplating the night's events. I finally concluded that, like Alice Cooper, a lot of what passes for human entertainment is in fact just show. It has no real substance, but like a midnight visit to a girls' dorm', it's great fun at the time. Can Alice still fire my imagination and weave the twin vapours of Rock and Theatre into an apparition of the night? Thirty years on, I went to Sheffield City Hall to find out.

### Stage Set

To understand Alice's success as a performer is to recognise the essential difference between British and US teen culture, particularly their attitude to shock-horror; look at the respective movie genres: we, the Brits, never really got beyond Hammer, a suspenseful, but essentially deadpan, portrayal of the major baddies laced with some light titillation. In the US, the schlock has always been laid on with a trowel - hideous monsters, plenty of blood, plenty of cheap tricks. While Hammer took itself a bit seriously, in the US the audience received all the signals



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(tacky props and improbable human behaviour - never turning the lights on when you hear a noise in the night) to telegraph the essential truth; this is all just play-acting. Alice's show, as I'm sure you're aware, is pure panto with lots of overt 'bad guy' posturing, but you know that after the show he's going back to the dressing room for a nice cup of tea.

The props meanwhile, are the pits. Clifford Sharpling, head carpenter (an ex-student of El Paso University who went on to become house SM for the Campus' 13,000-seat arena) revealed that builders Ed Edmonds' Distortions (based in Greeley, Colorado) are by profession theme park specialists. As such, many of the pieces Sharpling has to deal with are impossibly over-engineered, heavy and not designed to fit through standard double-doors. This is a tough break for a young man on his first ever tour. "The set cart wheels are too far apart to fit the truck ramp," he revealed with some feeling. Ironically, in true tacky US horror-style, the elements that aren't steel are woefully flimsy. "The I-beam structure around the wrecked car is built from fibre-board stapled together. When the set arrived for the first gig of the tour in Sweden, I spent half my time putting it back together." It's been that way ever since; possibly to the benefit of a UK set builder who Sharpling was approaching to provide more roadworthy alternatives.

The set design is by Bob Phaup and his major action props, the 'Controller' and 'Rejuvenator' are straight out of a 50s B-movie - lots of riveted boilerplate and protruding glass pylon isolators. Careful use of mirrors and internal lighting allow for the illusion that Alice's live head is sat at times atop a skeleton, and at other times a cadaver of assembled bloody parts, à la Frankenstein's Monster. Visually, the gag would be totally plausible, were it not for the fact that the bones and body bits are so obviously fake - the telegraphed



signal I referred to earlier - so we experience great black humour and heavy music simultaneously. For the purists, Alice has also dug his vintage seventies guillotine out of the Cleveland Rock and Roll Hall of Fame and brought it along. "You can tell it's the original," said Sharpling, "the wood's getting kinda' soft, and the Hall of Fame are very keen to get it back as soon as possible." Despite which, it still works as well today as it did three decades ago.

Gags aside, the set is fashioned around a concept - Brutal Planet - the title of his latest album, a post-apocalyptic nightmare, with the scene mainly set by a suitably Terminator-style backdrop provided by UVFX. This is arguably the most curious investment of the show, requiring as it does fairly low light levels to allow the UV lighting to do its stuff. Gloomy is one thing, but a dim anti-hero?

#### Lighting

One of the more curious elements of this European tour is the presence of Neg Earth as the lighting contractor. LD Mick Thornton reports said that although Audio Tech in Germany traditionally service Alice's tours, Neg Earth's bid won this time round, which is all the more curious, considering the strength of the Pound to the Euro, and the fact that Neg Earth appear to be flat-out right now. This is Thornton's first tour with Alice, production flying him out to Phoenix and straight into a whole new way of concert lighting. "It's very much a choreographed show, and very theatrical, whereas my background is more with straight rock bands like Skunk Anansie," although he did admit to starting his career in 1983 with New Model Army. "When I arrived I found that theatrical ethos quite challenging," he says. Nonetheless, he quickly plundered the genre, designing a system hung from angled, broken trusses. "I wanted that Ridley Scott moodiness. I use the moving lights (16 Martin Pro MAC 500s) for looks rather than to illuminate the set, whilst the Pars wash the band and scenery. Having a set to light instead of just a band and backdrop has been very different." Unfortunately, Thornton lights set and band in the same colours, missing the chance to create a little more depth.

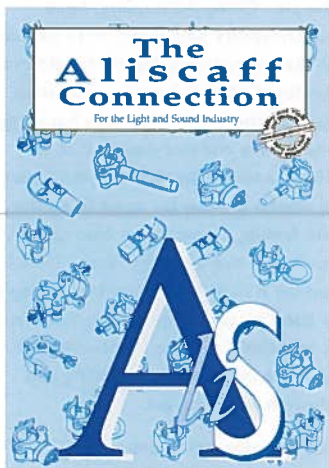
A confirmed Avo man, he operates from an Avolites Diamond II. "I like the desk for its general simplicity and programming, especially at festivals, where it's quick and easy to patch." For this show, he has 26 songs to light. "I built a page per song in rehearsals, since when Alice has changed the running order. Which brings me to one simple request to Avolites - would it be possible to re-assign page numbers, so I could step page to page, whatever the running order?" Over to you in NW10 . . .



Aside from the band and set blending together, Thornton works the system well, choosing some tasty split-colour combos from the MACs, avoiding the pitfall of restricting himself to constant heavy saturates. Who'd have thought a song with the lyrics 'I'm a vicious young man' could be lit in smoky pastels? The lighting stays consistently asymmetrical - lots of big looks and the attention firmly focused on our man Alice, even the guitar solos receiving perhaps just a 20% lift from a handy Leko. It'll be interesting to see how the DVD recording comes out when they get to Hammersmith.

#### Sound

Steev Toth (yes, it really is spelt this way) may be a name familiar to many, but in different shoes, having once been the manager of the enigmatic Nitzer Ebb. To mix the clothing metaphor, he now straddles the concert world wearing two hats, as tour manager and house engineer (did I mention that Thornton, a recent mate of Toth's, is also a double-hatter, LD and production manager?). Toth's touring credentials are impeccable, having also worked extensively with Erasure in their early days. It was he who presented me with one of the more curious lighting quotes of my brief career with Samuelsons, when he produced a MIDI-to-lighting control unit, "to bypass the lighting operator . . . Vince Clark [Mr Erasure] being very anti-sound-and-lighting-engineers in those days." Toth's apprenticeship with BBC Radio at Broadcasting House in the early eighties may not be consistent with most concert engineers I know, but it



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certainly gives him a different insight into live audio. "I always mix entirely by ear, leaving the system side in the hands of someone else. If I knew precisely what was going on inside it, it would take my mind up avenues I shouldn't be thinking about during the show." Not such a daft ethos under the circumstances.

There are plenty of FOH engineers in these pages who similarly leave the system to another person, but how many of them still distract themselves with what's 'under the bonnet' as it were? But that's horses for courses, though it does mean that unlike most live mixers, Toth genuinely appears to have no great affinity for any one system. "I do like the smaller box systems such as Turbo's Flashlight. I also recently used Nexo's Alpha system which is great flown." His main reason for PA brand indifference is the number of shows he does for Alice using house systems, "generally it's the major known systems, but I like going into a new room and having to deal with what I find. I've only ever once walked away from a desk and admitted I can do no more."

Here, Electrotech are the suppliers for the whole European tour, the system being the Audiolease A2 - perhaps not quite the small box Toth likes, but it's not lacking in the kind of full-range performance he later detailed as a want. "So long as it's set up right," he cautioned. "But my main criteria is the desk. I love the Yamaha PM4000 because of its layout." One of Toth's major preoccupations during the show is to re-EQ instruments, song to song, including Alice's vocals. "Not the balance, just the EQ, to give some movement



within the [audio] picture." With two guitarists in the same register, this does give some separation on occasion, though it's a moot point at semi-metal levels.

Surprisingly, given the style of presentation, effects on the audio side are minimal: "I have been given three rack-fulls from Behringer through an endorsement deal, but I'm still into my first rack at the moment." Not that he

hasn't researched what Behringer's largesse has granted him. "I'm already using the T1951, a valve compressor on Alice's vocal. I like the cold and warmth control on it. Alice, like all singers, has a few spikes in his voice which makes it easy to bring them in and out." He tries not to over-process, but is "looking forward to trying out the DSP 1000 (he's got seven of them). The software interface for editing parameters is the best."

Most instruments tend to provide their own processing, which Toth leaves 'as is'. "If something is a problem then I talk it through with the band." Interestingly, Toth only permits himself two songs per sound-check to discover any problems. "Long sound-checks can be destructive. If the room sounds bad when empty and unsettles the band, then playing any more only makes things worse." (I'm sure I can hear some distant engineers crying 'hear, hear' to that.) In the instance of this performance, it's even more true, with an entirely open monitor system on stage (run by Kevin McCarthy), loud band and open mic city with five out of six band

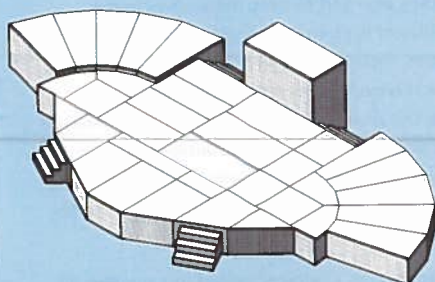
members providing vocals. The potential for lift-off in cold empty reflective rooms are manifold. The vocals are all through Shure Beta58s, except Alice who has a U2 radio with a standard 58 head. "I did try the B58 and B87, but they characterised the wrong part of his voice. I needed something to dull the presence. Curiously, on paper, a 58 shouldn't do that, but in this situation it does."

This show was day number five in a series where Alice has been steadily losing his voice. The hoarseness was audible on some songs and so noticeable in the older numbers - the ones recorded in youthful vigour that now stretch him harder - that Toth was having to crank for gain. But hey, Alice is now looking back at 50, and I'm sure Sinatra never worked this hard or



these kinds of hours when he was that age. Classics like '18 and I don't know what I want' or the more melancholy 'I'm collecting pieces of my family' as he hobbled round the stage gathering body parts, still resonated with the necessary bathos. He may not be 'a vicious young man' any longer (not that he ever was) but he still knows how to write and sing about it.

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RMT



*Just when you thought it was all over, the flagship celebration of the Millennium for all three British Armed Services took place on Horseguards Parade in July - Ruth Rossington joins the massed ranks*

**W**ith no Royal Tournament to keep them occupied this year, it was inevitable that the armed forces would throw a lot more firepower at the Royal Military Tattoo 2000 - their principal contribution to the Millennium celebrations. Though it would inevitably have echoes of the Royal Tournament, Major Michael Parker, the creative producer appointed by the Ministry of Defence, was determined that it should be unlike any other event ever held before, moving away from the traditional style of military tattoos, and giving the show a greater sense of 'theatre'.

He got his way. Depicting a thousand years of the Defence of the Realm, the 90-minute outdoor show, which ran for six nights in mid-July, took place in a 13,000-seat auditorium specially constructed on Horseguards Parade in London's Whitehall. In a highly theatrical presentation - which included parachutists descending into the arena, a flypast by the Red Arrows and the dramatic reconstruction of some of history's more compelling moments - 1800 military personnel, 600 musicians, 180 horses and a vast assortment of military hardware, traced the past to the present accompanied by some of the most advanced lighting, projection and sound production techniques devised.

The chances are it will never be repeated and it may not even be matched in terms of sheer scale - a notion which will surely elicit a collective sigh of relief from the production and technical teams involved, whose role in this began the day Major Parker and the MoD put the contract out to tender.

With an initial storyline and budget in mind, and the Horseguards Parade fixed on as a venue, Major Parker approached 20 production companies inviting them to take the idea and run with it. The company which



*The Caribiner lead team of Mark Wallace, Mike Kent and Lois Jacobs*

went furthest was Caribiner, a specialist in this type of event. Its team, led by Lois Jacobs, Mark Wallace and Mike Kent, worked with Parker on the creative content, giving a practical and technical framework to his ideas.

With no infrastructure to speak of at Horseguards Parade, not only did they have to devise a way of building a 220m long by 150m deep arena from scratch, they also had to bury themselves in the practicalities of licensing applications, health and safety issues, security clearance and how to get power and other services to the site, not to mention squeezing the technical equipment and crew through an access point no more than six metres wide - in other words the nightmare and challenge of creating something from nothing in one of the most security-sensitive areas of London.

To aid them in this, Caribiner pulled in a number of freelancers to swell the production team, including Adam Wildi as technical director and Simon Garrett as stage manager. They also turned to companies who were experienced in this style and scale of event - Edwin Shirley Staging for the trussing and rigging, Vari-Lite for the lighting, Delta Sound for the audio, Stage One Creative Services for the support, tracking and scenic elements, Screenco and Creative Technology for the video and projection and Pyrovision and Laser Grafix for the special effects.





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The ESS team, working with freelance project manager Simon Grant, built the massive superstructure from which the lighting and sound equipment was hung. Erected around three sides of the site, the system was based on their new Supertruss, similar in nature to that which the company installed for Skyscape at the Dome. Because of its extraordinary span - the arms were 80 metres each in length, the main run the best part of 140 metres - the company custom-designed the towers and base units to take the loads generated by its incredible size.

Simon Whittaker, Jim Tinsley and the team at Stage One, meanwhile, built the support structures for the main set, included an 800-guest hospitality suite, the Royal Box with cantilevered roof, all the speaker towers and the technical communications viewpoint. This work was complicated by the fact that beneath Horseguards Parade there runs an intricate network of tunnels linking various government and MoD buildings (Churchill's famous bunker is close by), so severe weight loading restrictions - just 2.5 tonnes per square metre - were imposed on the contractors. In response, Stage One designed a 300m long handrail to surround the arena which self-supported on rafts beneath the arena flooring. Because of the danger posed by bolting horses, this had to be able to withstand three kilonewtons of pressure.

The company was also responsible for the false wall in front of Horseguards House which forms the backdrop to the presentation - a 4m by 120m structure which appears to be solid, but in fact consists of 16 secret doors through which the horses and performers enter and leave the arena. The core structure was based on Stage One's Hangar Staging System with the revolving doors controlled using the Q Motion system.



## LIGHTING

The Tattoo boasted one of the largest lighting systems ever seen on a UK event. Vari-Lite Production Services London, under the guidance of production manager John McEvoy, supplied the 1,600 lighting fixtures, including no less than 284 automated luminaires - oustripping the lighting spec for Pink Floyd's last tour, which gives some hint of the visual scale of RMT 2000.

In the lighting designer's chair was Jon Pope, who, faced with a vast space to light, opted for a combination of arena wash lighting, architectural lighting of the surrounding buildings, special gobo effects and numerous other spot effects - all of which had to work in conjunction with Creative Technologies' PIGI projection and Screenco's tracking video screens. Pope also had to be mindful of the fact that the event was being recorded for later television by Meridian and the Force's broadcasting network.

The resultant equipment list is pretty military in its scope, beginning with a large array of conventional lighting, providing wide area wash

lighting on the performers, the historic buildings surrounding Horseguards' Parade and the audience. Some 1200 Par cans head the list, along with 48 2k fresnels for audience lighting, 24 ETC Source Fours and 24 Coda four-cells, with a Whole Hog II desk, operated by Paul Devine, running the conventionals.

Moving light programmer and operator Mike 'Oz' Owen worked with 74 VL7 spots, 78 VL5 Arc wash luminaires and 48 VL6B spots. Another 84 Coemar CF1200s and 11 Space Cannons (sub-hired from Essential Lighting) made up the rest of the automated system, all of which were controlled from a Vari\* Lite Virtuoso control console.

Four 3k Xenon Gladiators and four 2k Xenon Colour Arcs from VLPS's stock in London provided the show's long-range followspot firepower to home in on the heart of the action, with the system completed by 12 Avolites



*Above, the massive arena demanded a massive lighting spec. Inset, Jon McEvoy, project manager for Vari-Lite*

dimmer racks and a huge quantity of Socapex cabling (over 10 km of Socapex, and over 10km of specialised Vari-Lite cabling).

20 Studio Due City Colors were deployed on the buildings, along with 12 Clay Paky Golden Scans providing a very strong side/backlight from upstage positions close to the building, and two Lightning Stikes (sub-hired from Cirro Lite) providing dramatic effects.

VLPS also supplied all of the show's rigging equipment, including 255 metres of Tomcat stacking truss from the London stock, hung on 30 one-tonne Lodestar hoists, as well as supplying rigging for Delta Sound's PA with another 20 Lodestar hoists and MiniBeam truss.

Pope used the VL7s to light the arena from a truss approximately 15m up. Shaped like a horseshoe, this gave gobo projection over the whole arena, along with colour and moving effects as the script progressed. In conjunction with the VL7s on the arena, Pope and his team used VL6Bs to project identical or similar images onto the Parade building itself. The VL5 Arcs were also primarily lighting the building, sitting at its base and up-lighting in vertical strips, changing colour as required. At certain points during the evening, some of the VL5 Arcs moved

into a horizontal position to backlight the troop movements as they entered the arena through the louvre doors in the backdrop.

The Par cans he used to create a base wash in four colours - red, blue, green and white - on the arena itself. A large quantity of Coemar fresnels lifted the general wash area as required, depending on the movement of the military bands and historical figures in the centre. The Space Cannons primarily provided searchlight effects, including six mounted on top of the Horseguards' Parade roof. The remaining five were in much lower positions in each corner of the arena.

## AUDIO

Audio specialist Delta Sound was awarded the contract to add live and recorded sound to the visual firepower of the RMT - and it turned out to be one of the most complex and demanding

sound installations ever created for a live event. For the team from Delta - sound designer Paul Keating, project manager Jim Lambert and front-of-house engineer and associate designer Simon Honeywill, two main challenges arose. Firstly, to achieve a greater level of reinforcement for the various marching bands, especially as they countermarch; and, secondly, to find a way to keep a more disciplined time line to the show.

Initially, as far as enhancing the bands went, one early concept was that they should play to 'half-playback'. Keating and the team performed various trials on Whale Island at Portsmouth with the Royal Marine Band, but these did not provide enough accuracy. So they resorted to miking the marching bands to a far greater extent than anyone had previously experienced using 40 channels of Sennheiser 1046 with SK50s.

The team then worked with the Royal Marine Band during the various recording sessions giving the main conductor in-ear monitoring, providing him with pre-recordings and click tracks. The original recordings, all the arrangements for the show and the sound effects were stored on two of the new Tascam MX2424 Hard Disk Recorders. The conductor then followed the hard disk and kept the bands in time.

The biggest challenge for Keating was designing the system's arrival times across a large, outdoor space, coupled with the constant movement of the bands around such a space. The solution was to use BSS Soundweb technology. This allowed the team to build a number of 'image definitions' so that the whole system was time-aligned according to the position of the bands on the parade ground.

Keating's design for a multi-source system took on three major elements: a left-and-right V-dosc system (for the two choir stages which move on





tracks with Screenco's giant JumboTron video screens), a distributed d&b system (for the grandstands) and an EAW system (for special effects).

The two main V-dosc arrays, hung left and right, comprised 20 loudspeakers occupying two positions set against the Horseguards building, providing for the choir and large-scale effects which accompanied the images on the giant screens. A further 18 dV-dosc were used to give coverage to the side seating blocks, known as 'Downing' and 'Admiralty' after the locations they backed on to. A total of 50 cabinets, combining C4s and C7s from the d&b range of products, were installed on the cantilevered fingers over the main grandstand.

EAW KF850 and SB850 cabinets provided the main effects positions. These, augmented with

additional effects subwoofers, were located under the seating blocks. They were sited here in order to fulfil Parker's brief that the 90-minute show should have a sense of space.

Additional delay speakers were mounted within the Royal Box and other hospitality boxes. These were, once again, fed and individually delayed using the Soundweb network. Front-of-house sound control was handled by a pair of 48-input Midas Heritage 3000 consoles, with the majority of audio signals running via the BSS Soundweb network using Cat 5 cabling. Because many of the signal runs were over 300m long, the internal network was used to distribute the audio around the arena.

Delta also designed a large, site-wide communications trunk network, which provided 150 user trunks, as well as in-ear monitoring for

certain positions on the parade ground. These relayed verbal information and click tracks to the Drum Majors, giving the team the ability to communicate and to provide foldback. George Hogan of sister company Delta Communications designed the new trunking system which, among other benefits, allowed each user to make and receive telephone calls over the trunked network. This was a large outdoor event, which heavily engaged RF technology, with 40 radio mics and around 40 wireless intercom stations.

Two moving stages, each carrying a choir, were positioned in front of the video screens. They tracked along with the screens, using a special cable management system. Delta's audio design provided for signals to be routed from each of the stages, using a Yamaha 03D digital mixer to provide digital I/O, and thence into fibre-optic cable to avoid ground loop problems. A

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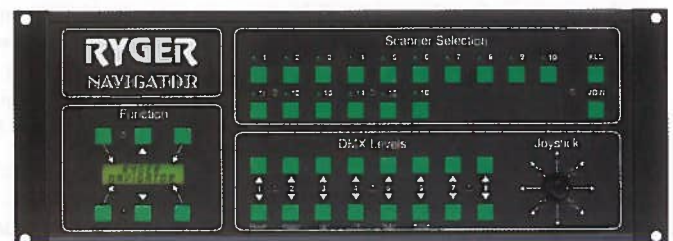
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proprietary digital fibre optical connectivity system was designed and built for the purpose.

The choir worked with traditional wedge monitoring, mixed from a Soundcraft SM24 console (located backstage), that provided them with elements of the hard disk material and the live performances.

The hard disk material was pre-mixed in the arena during rehearsals to enable the Delta team to pre-balance all the complexities a show of this magnitude requires. This was achieved by using a Yamaha O2R digital mixer and the SAW PRO hard disk software editing package, data from which is relayed via the main control area, on a 50m fibre-optic, to three Tascam MX2424 playback machines.

## VISUALS

One of the most spectacular sights of the Tattoo was the pair of huge Sony video screens - the largest ever assembled in Europe - supplied by Screenco. At various times throughout the production, these massive Sony JumboTron JTS35s (each screen measuring 11.76 metres wide by 8.75 metres high and weighing 16 tonnes) between them tracked up to 120 metres on motorised tracking, at times joining to form one giant 32-tonne widescreen.

Screenco's project manager Giles Conte and his team worked closely with Stage One in the design of the screen stacking system, employing a system of brackets and a scaffold structure behind the screens. Since the screens were tracking at the rate of 1.2 metres per second, this meant a convergence speed of 2.4 metres per second, the overall weight of each truck being 30 tonnes. To control this delicate trajectory, Stage One deployed its Q Motion software - a PC-based system which gives pinpoint positioning accuracy. Because of the cable lengths between the two trucks, the company opted to run it through a fibre optic network.

The hundreds of images which were used to illustrate the Defence of the Realm were



Associate designer Simon Honywill (left) with sound designer Paul Keating  
Below, the giant tracking JumboTron screens and inset, Giles Conte of Screenco

designed by Caribiner. Screenco's sister company, Creative Technology, led by Jon Hodgson and Darren Alexander, provided all of the video production,

including a pair of Magic DaVE image processors to shape and compress the pictures to fit the screens. Since the video source signal provided by Creative Technology had to run alongside the substantial mains power cables, Screenco also provided two fibre-optic cables to carry the video signal and thus eliminate any hum problems.

CT also provided the giant 92.5m scenic projection backdrop and all video sources. This featured the biggest single scenic projection ever

Creative Technology mixed in live camera pictures via a Grass Valley GVG110 mixer, output to two Magic DaVE digital video effects units, which were then re-sized to suit the picture format of the JumboTrons.

The video and scenic projection system was controlled by Dataton trax, following the master show timecode, though a small number of sequences were manually cued. Five Sony D30 Triax video cameras equipped with 70:1 super zoom lenses captured the live images for the giant screens.

## SPECIAL EFFECTS

In addition to the lighting, video and projection sequences, the production also featured a range of special effects. Using pyrotechnics in such a sensitive location naturally necessitated a great deal of pre-planning and the consent of a number of authorities, not least because the fall-out area was extremely small and in part encompassed Tony Blair's back garden!

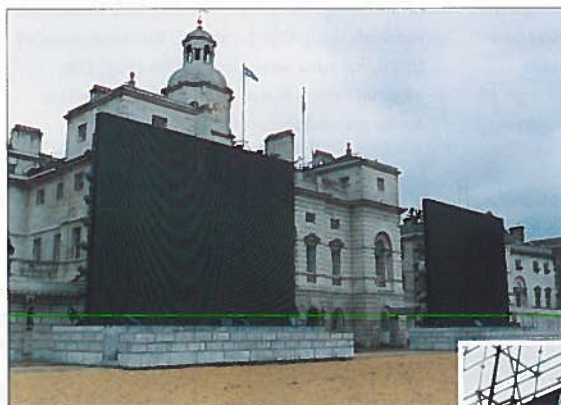
Surrey-based Pyrovision provided all the pyrotechnic and firework effects that punctuated the evening. Pyrovision director Wilf Scott and his team were given the task of recreating some of the effects for the Blitz sequence: to do this, they used black powder

bursts, gas flames and film smoke machines triggered from both the stadium floor and the roof of the Horseguards building, to create the elements of war. For scenes from the Gulf War, Pyrovision used directional napalm, extra large flashes and flame balls, concluding the show with a short

firework display fired from the roof of the Horseguards building.

Surprisingly for a performance of this kind, lasers were used fairly sparingly, only coming into their own towards the latter part of the evening. Laser Grafix were the company behind this sequence and Paul Green and Arran Hopkins, together with the team from LG, spec'd their new 15W large frame multi-coloured mixed gas argon/krypton ion lasers, to produce the myriad of spatial effects. These were complemented by mirror balls/remote mirrors and by two 50W nd:Yag 532nm diode pumped solid state lasers (DPSS) - equipment that is new to the UK and had its first use (with spectacular effect) at the British Airways London Eye Millennium event and the launch of Tate Modern.

All in all, a tour de force the like of which we may never see again, which would be a pity because it ranks as one of the most visually and technically stunning events the capital has witnessed.



seen in the capital, created by an array of 10 synchronised PIGI 7kW projectors with double scrollers and rotators supplied by Creative Technology. The company also provided a full video production and control system for Screenco's giant JumboTron screens, the brightness levels for which were attenuated in order that they complement rather than conflict with the projection behind.

Fed from a variety of video sources, including six Doremi hard drives, the overall programme material was 90 minutes long. In addition,



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*Tommy Gattelhor*

# No Comment...

**N**ear the beginning of July, Elena Donnellan (Armengod) finally succumbed to her terrible illness and slipped away to what we all hope will be a better place. On behalf of the industry, I send all sympathy to Tom and his young family.

"Coincidentally, some two days later, an ad hoc committee of people committed to setting up a fund to aid lighting designers finding themselves in such difficult circumstances, met at the Shaftesbury Theatre."

**COINCIDENTALLY**, some two days later, an ad hoc committee of people committed to setting up a fund to aid lighting designers finding themselves in such difficult circumstances, and for which Elena's plight had been the original inspiration, met at the Shaftesbury Theatre. Aside from myself, Rick Fisher, chairman of the Association of Lighting Designers (ALD), Matthew Griffiths, managing director of PLASA, James Brooks-Ward of Clarion Events, and lighting designers Chris Watts and Jason Larcombe, were present.

**A PLAN EVOLVED** to set up a fund under the auspices of Equity, that would bring with it the necessary

charitable status and shared cost administration, and to launch the programme at PLASA 2000.

**CLARION EVENTS**, the organisers, will provide full support. I entreat you all to look out for more details in this column and elsewhere, and to give generously when the time arrives. The PLASA website will carry a 'role of honour' for those companies and individuals who are willing to have their names published as donors.

**T**o corporate affairs: So, time continues to take its toll of the people that founded some of the best known names in the business, the latest being the departure of Keith Dale and Colin Whittaker from the re-formed Celco, 21 years after its genesis. Their departure certainly marks the end of a (some would say) Golden era, after the company's most enduring board name - the Celco Gold. After Gold, the succeeding brands seemed to lose their sense of direction, and the unfortunate choice of names for the products, Aviator and Navigator, only compounded that felony.

**STRANGELY**, after all this time, there is one continuing link, despite the aforementioned departures, and that is the Cerebrum Lighting connection. Many of the players, past and present, were members of the Cerebrum Lighting team that was responsible for Celco distribution at the beginning, including the present directors of one of the new shareholding businesses.

**THERE'S ALSO CORPORATE** news from America: always, it seems, well-timed from PRG, to set up yet another potential run-in with Jere Harris during the PLASA Show. Harris certainly won't appreciate me pointing out that, with the appointment of John M. Hovis, as president and chief operating officer of PRG, the 'suits' are well and truly ensconced in the boardroom.

**THOUGH IT IS STATED** that Hovis will report to chairman and chief executive officer, Jere Harris, someone more cynical than I might be tempted to question whether this move wasn't foisted on him by the corporation's bankers. This heady mix of job titles looks like a recipe for fudge, to still the ego of one whose pride is firmly on the line. From the point of view of those with a vested interest, the appointment of an individual who

can take a dispassionate view of matters, as opposed to the emotional investment inherent in a founder and creator of a business, has obvious advantages if only in the potential requirement for savage attrition to turn the business around. Once again, this is one of the outcomes I feared from the start, though it is probably the only way forward as things stand today.

**IT IS ALSO TOO TEMPTING** not to suggest that Hovis, like the earlier arrival of Joseph A. Turzi as senior vice-president for administration and human resources, has been appointed to get PRG back on 'track' - for both men arrived by choo-choo from RailAmerica. Let's hope Hovis can provide the high-speed rail link to prosperity to which PRG and its people so greatly aspire. But nobody should expect this process to be less than painful.

**C**ongratulations to Gary Fails of City Theatrical in New York, and one of nature's most modest and self-effacing characters, in achieving a top 100 inner city listing for the company's growth, courtesy of Inc. Magazine. A spectacular turnover increase of 296% in the year for the Bronx-based business was responsible for this success, a very useful piece of recognition to add to last year's raft of awards for product innovation. Clearly, City is a business that is outgrowing its socks.

**I PARTICULARLY ENJOYED** the news that a revival of the Rocky Horror Show on Broadway will recruit its cast, and hold auditions, on-line. And this may not just be a gimmick. For anyone who has enjoyed a performance of the show's movie, which has achieved cult status on the late night, art-house circuit, will know that there will be no shortage of aspiring Frank N Furters, Riff Raffs, or any of the other lead characters in that gothic frolic. For, in the heady atmosphere of a marijuana-induced haze, movie-goers can just about make out in the gloom that the front three or more rows of the stalls are occupied by look-a-likes, fully dressed for the part and mimicking every word of the script and the songs out loud as the film progresses. With bags of rice, and water pistols for additional atmospheric, this is the original interactive movie experience, and has never been bettered in my opinion. If the new Broadway show can recover one tenth of the atmosphere of the cinematic, it will be a smash hit all over again.

PLASA 2000 takes place at Earls Court 1 in London from September 10-13th. Information about the show appears in the PLASA Preview accompanying this issue of L&S.

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# Cleared For Takeoff

*Mike Mann checked in at Manchester Airport's new £68m Terminal 3 to find out how acoustics and electronics have been*

*combined with positive results*



**T**he ever-increasing popularity of air travel means that the architectural design of airports is often at odds with the need to relay information to passengers clearly.

Architects have moved away from the claustrophobic, low-ceilinged buildings of previous decades and now design spaces that allow the traveller to relax and feel more comfortable prior to take-off. This, and the huge number of passengers that have to be handled to keep even a regional airport profitable, means that check-ins, lounges and retail spaces have become larger and less obstructed; it also has the effect of increasing the distance between each person and the nearest source of audible information.

Arup Acoustics was appointed by Manchester Airport as part of the building design services of Ove Arup & Partners to provide an integrated public address and voice alarm system for its new terminal, which handles BA flights to the UK regions and international destinations. Headed by Paul Malpas, the design team included members from Cambridge, Winchester, Hong Kong and Los Angeles! Additionally, Arup was responsible for upgrading the Terminal 1 PAVA system as part of a refurbishment of the airport's existing facilities.

The architect for the new terminal was Nicholas Grimshaw & Partners and, as Arup Acoustics' Paul Malpas explained, a high degree of synergy was required between the two companies to provide an optimised environment for the distribution of

information. "Architects often want to hide loudspeakers while resisting all attempts to include acoustic absorption in their designs," he explained. "In this case, an integrated design was needed to optimise the overall solution, where doing more with one variable (e.g. the finishes) gives you scope to adapt the other (e.g. the speakers)."

Manchester's International Departures Lounge is a primary example of where this partnership was required; the circular shape of this part of the building closely resembles a 30m diameter bell, with a tall, glazed central ceiling. Malpas and his colleagues investigated two possible electroacoustic solutions; the first utilising loudspeakers suspended from the ceiling of the 10m high rotunda and the second employing column loudspeakers attached to supporting columns around the perimeter of the room.

Calculations showed that there would be little difference in the acoustic treatment required for either system, so the team was able to recommend the second alternative, as this was architecturally preferable. Manchester Airport's Geoff Densham was the client representative through the project, and now has responsibility for the operation of the system, among many others. He explained that commercial, as well as acoustic, considerations had to be taken into account: "The column speakers were originally mounted directly on the pillars, but when advertising boards were added, the speakers had to be bracketed. This reduced their efficiency

*Above, the acoustically-challenging environment of the BA Check-In Hall and, inset, Manchester Airport's Geoff Densham*







The Departure Lounge - the circular shape of this part of the building closely resembles a 30m diameter bell, with a tall, glazed central ceiling

Inset, the central equipment bays and right, the fire-rated cabling

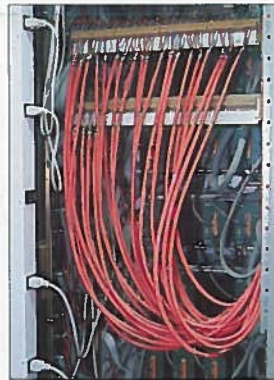
**“Managing the architectural acoustics, however, was only part of the project. Airports are incredibly complex structures and the requirements for passenger safety are stringent. While earlier alarm systems had been based on sounders, Manchester Airport required a voice-based alarm and evacuation system for the public areas of its new flagship.”**

and their ability to handle high levels, so the power to each was reduced and their number doubled.”

Similarly, the check-in hall, at a cavernous 50m x 23m x 12m, presented a potential problem in attaining an acceptable level of intelligibility in such a large space - again allowing for architectural requirements. Ceiling loudspeakers would be too far away, suspended enclosures were deemed unsightly, but would cabinets at head height provide the necessary level of articulation? Paul Malpas explained. “Again, two outline loudspeaker designs were assessed - overhead (ceiling) and lateral. The assessments were made in terms of the maximum tolerable RT to achieve the intelligibility criterion, which was set at 0.45s at 15dB S/N for this space. The analysis clearly showed that the lateral solution required significantly less acoustic control (2.0s RT) than an overhead solution (1.6s RT). In theory, the figure of 1.6s for the overhead solution was achievable, but it left little margin for any other acoustic effects, which are to be reasonably expected in uncommonly large spaces.” Arup again recommended a lateral system, based on four-driver column speakers mounted at 3.5m above the floor and angled down at 15°.

Managing the architectural acoustics, however, was only part of the project. Airports are incredibly complex structures and the requirements for passenger safety are stringent. While earlier alarm systems had been based on sounders, Manchester Airport required a voice-based alarm and evacuation system for the public areas of its new flagship. The chosen system was manufactured and supplied by Tannoy Audix Systems, with the electrical installation by ABB Steward. It encompasses no less than 658 loudspeakers in 41 zones, fed by 50 microphones and a further eight pre-recorded announcements.

While there is an obvious link between the use of a system for public address and voice alarm, there are also important differences - as highlighted by Paul



Malpas: “VA zoning will always relate directly to the evacuation plan, whereas PA zoning will be for operational purposes (i.e. paging areas). This means that the resulting loudspeaker zones will be based on the ‘lowest common denominator’ between the PA and VA requirements, and may need rationalisation to avoid over-complication.”

In order to keep the number of system zones to a minimum, it was decided to provide staff areas with a sounder-based alarm system. This, explained Malpas, is a viable option as airport staff are trained to a high standard of safety, and are less subject to confusion than passengers who are unfamiliar with the building.

Microphones are provided at each of the 23 gates (with six expansion ports for linking to the piers), plus a further 20 mics at information desks, security and management offices. Users in the other terminals can also gain access to the system, though in normal mode Terminal 3 operates independently. Mic preamps are located centrally, with variable gain and only minimal EQ to reduce unnecessary LF signals.

The zoned routing is achieved through four Audix V32e modular switchers, forming a 64 x 64 matrix. The PC-programmed matrix allows groups of outputs to be addressed by inputs, while providing multiple levels of override depending on the importance of the incoming message. Evacuation and standard security messages are pre-recorded and either triggered automatically or, in the case of the evacuation alarm, from a control output from the fire alarm system. Key messages and the Fireman’s Panel mic input are monitored - by passing a 20kHz tone through the input and output circuits, regardless of whether crosspoints are activated.

To cover the unlikely event of a failure at the matrix, Audix has provided a pair of V32 bypass units, which allow direct access from the Fireman’s Panel to all outputs. In addition, the entire system is backed up by a battery that (in accordance with BS5839) has

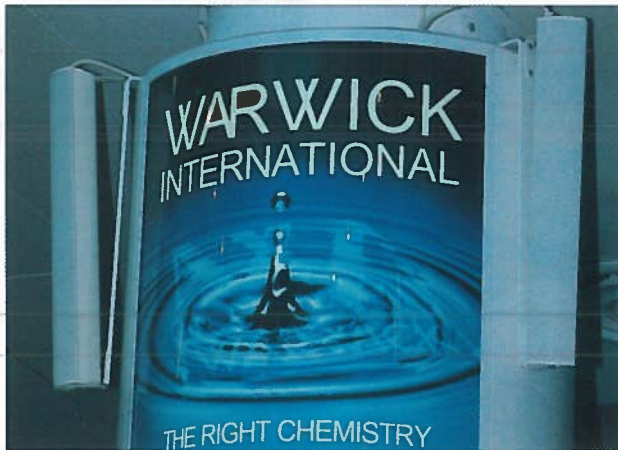


enough capacity to power the system for one hour under load or 24 hours quiescent - although as Densham pointed out, there is really no such thing as a quiescent period in this type of system. Fault logging is automatic, and is fed to the fire system controller from the PC running the V32e system.

Cabling from the four bays of 100V line amplifiers to the system loudspeakers is, of course, BS5839 rated, as are the speakers themselves. Three separate fault checks are carried out by the system; Line Fail, End of Line Fail and Earth Fault - these are achieved by using a 15V DC feed along the 100V lines. Paging microphones are not intended to be used to deal with emergency conditions (this is the role of the fire mic) and so are not monitored or fire rated. Most major consoles, however, have a fault indication.

Geoff Densham pointed out that exhaustive tests were carried out to determine optimum level settings in each zone: "Generally, we were aiming for a maximum level of 90dBA for VA messages in the ANS-controlled areas, with background levels of 75dBA or more. Elsewhere, 80-85dBA in busy areas suffices, much less in corridors, quiet lounges and so on," explained Densham. "In each case this had to be an absolute minimum of

5dB above ambient level." In fact, most areas were designed with a 15dB differential, with noisier zones reduced to 7-10dB above ambient. Densham added that one of the requirements that conflicted with this was the need to keep noise levels for staff to an absolute minimum. "We can't let repeated information and security messages interfere with what the staff may be



The column speakers bracketed on to the pillars

ambient level detection system was employed. "Originally, we tried a commercially-available ALD system," recalled Densham, "which was designed for sports stadia. Unfortunately, the way in which it detected level caused a gain spiral - messages would get louder and louder as they were being played!"

The solution used by the Audix system is a simple one; gain reduction of -10, -4 or 0dB is applied to certain outputs depending on the detector's information - but the settings are not changed during the message itself. "This works perfectly well in our environment," claimed Densham. "We don't have the rapid rise and fall in ambient noise that you might experience in other places - or levels change over hours or minutes rather than seconds."

doing," he said. "In the check-in hall, for example, speakers were placed as far away from check-in staff as possible."

In order to adjust the system's output to accommodate the varying numbers of passengers (and ambient noise) in the terminal, an Audix

The Terminal Three system has now been in use for over a year, and Geoff Densham professes himself pleased with the performance of the equipment and its integration into the airport's infrastructure. Which, for the countless thousands of reluctant fliers who pass through Manchester's gate, is a very reassuring message indeed.



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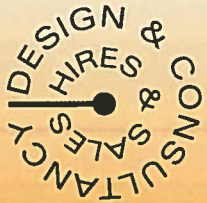
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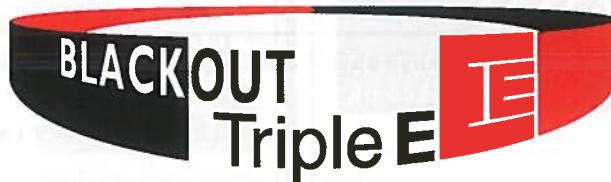
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# In Profile... L&S Talks to the Industry Trend-setters

“Our family was always arguing about whether our huge radiogram sounded better with the lid open or closed,” Ray Furze explains. “My mother liked the lid down so that the whole cabinet resonated, but my sisters, my brother and I all preferred it open so that we could hear the top end!”

started to design lighting equipment. Fortunately for the audio industry, a chance meeting with Paul Lily (later to become Chris Rea's manager) resulted in a move to London and the flourishing of his audio career. Lily's Panther Sound Hire company handled, amongst others, U2's first UK tour, as well as Elvis Costello and Squeeze, originally with Zoothorn self-powered speakers, but graduating to the ubiquitous Martin rig. While freelancing for Britannia Row, Furze helped with the Quad system used on Pink Floyd's memorable 'The Wall' performances at Earls Court and in Germany.



chance to experiment on such a grand scale, but it was great for building up confidence.” Despite having mixed for some of the UK's greatest musical names, Furze cites some less well-known bands as having had a great influence on him. “I loved working with the Pixies - although I had to be forced to do it,” he laughs. “I hated their stuff at first. Mixing the Sugar Cubes, too, was another high point for me. I suppose what keeps me going is the need to find solutions

One of the UK's most successful live sound engineers, Ray Furze charts his career path right back to his mother's dining room in Yorkshire. Mike Mann journeys with him

Having left school at 15 to work in his father's electrical shop, Furze built fuzzbox and wah-wah circuits for local musicians. Though a budding guitarist himself, he was moved to give up playing music at an early age: “I played rhythm guitar for a band and one night we played the roughest pub in Scarborough. Half way into the first number, the pub jukebox sprang into life. I asked the landlord who the hell had done it and he said: “It was me. Now get your gear and f\* \*k off!”

As with most audio electronics enthusiasts, Furze soon graduated to building mixers, expanding simple designs to accommodate better facilities. “I sat out front and mixed - which was rare in those days and especially at that modest level,” he recalled. While setting up at a working men's club in Newcastle, Furze was told by an unamused club manager, “There are too many hangers-on with this group. You're either on the stage or you're out!”

With only a six-channel mixer to master, Furze found himself with 'several free fingers', and

Much of Furze's work has been conducted from the stage, rather than FOH - though he describes himself as 'a bag of nerves' whenever his talents as a monitor engineer were required. “I was always a very fastidious monitor engineer,” he admits, “but it's always a compromise, because you can't be up there with the artist. I mixed front-of-house for Chris Rea and decided that this was where I wanted to stay. I like the artistic input that you can bring as a FOH engineer.”

Furze's search for a flown PA system for a Chris Rea show at Hammersmith Apollo (née Odeon) led him to the door of Wigwam Acoustics, with whom he formed a lasting association. “We were well impressed when we first met them,” he recalled. “The Wigwam crew had their Meyer system flown and tested before we even arrived!” Furze was largely responsible for bringing Wigwam on board the Chris Rea bandwagon - assisting the company's expansion into secular, rather than purely Christian music.

Chris Hill of Wigwam was in turn responsible for widening Furze's mixing experience: “Chris pushed me into mixing an orchestra on the evangelist Billy Graham's stadium events - as well as a 2,000-piece choir, an organ and the band itself! It was a rapid learning curve, but at least we were not the main event. It's rare to get the

to problems - there's so much good music out there of all types.”

Furze is typically practical about the role of a touring engineer, and explains that not much has changed over a career spanning 30 years. “Anyone getting into this should know that you need to be a bit of a gypsy and have enough technical knowledge, but you should never be afraid to get your hands dirty. No PA company in the world is going to let you just walk in and mix.”

Equipment choice is often a big issue with engineers - especially those with a reputation to maintain. Furze often specifies dBb equipment, but adds that the Meyer MSL-3 system of the 1980s and the L-Acoustics V-Dosc speaker systems have made a major impact on his world. He does, however, remain sceptical about the claims of obvious differences between equipment: “I sometimes wonder if, now that most speaker systems are so good, it's really just us engineers making each box sound the way we think it should.”

On the subject of 'best personal career moment', Furze is unequivocal. “The first gig my parents came to see - a Chris Rea show.” Which, from the man who has mixed Carreras and the Spice Girls and who has just been voted 'Engineer of the Year' by his peers, is rather touching. ■

Lighting & Sound

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AC Lighting	14/17/33/54/81	Effects Co	40	Lightfactor	16/24/49/74/76	PLASA Show	35	Triflite	31
Adam Hall	63	ET-Now	38	Lightprocessor	51	Pulsar	15	Vari-Lite	5/12-13/75/OB
Aliscaff	68	ETC	10/18	Lightstorm	78	Ra'alloy	50	White Light	51
Alistage	69	Flame Light Co	32	LX Designs	48	RB Lighting	34	Wilkes	51
Ampetronic	65	Flashlight	56	Mad Lighting	9	RCF Italy	66	Classified	88-89
Artistic Licence	6	Formula Sound	30	Martin Professional	28/29	RCF UK	77		
Avolites	26	Fuzion	41	Mobil-Tech	42	Ryger	73	Insert : PLASA Show Preview	
Baldwin Boxall	46	Hand Held Audio	69	MTFX	68	Screenco	73		
Canford	34	Harkness Hall	64	Multilite	20	Sennheiser	22		
Chainmaster	53	High End	3/7	Navigator	8	Stage Electrics	27		
City Theatrical	32	Laser Light	39	Northern Light	58	Stage Technologies	21		
Clay Paky	19	Le Mark	62	Par Opti	56	Strand Lighting	57		
Compulite	25	Lee Filters	4	PCM	58	TMB	31		
Colourhouse	68	Leisuretec	IFC/IBC	Performance L&S	27/34	Tomcat	16		
Edwin Shirley Staging	70	Light Engineering	63	Philips	23	Total Fabrication	11/65		



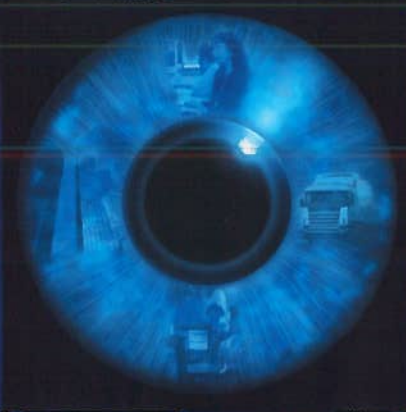
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