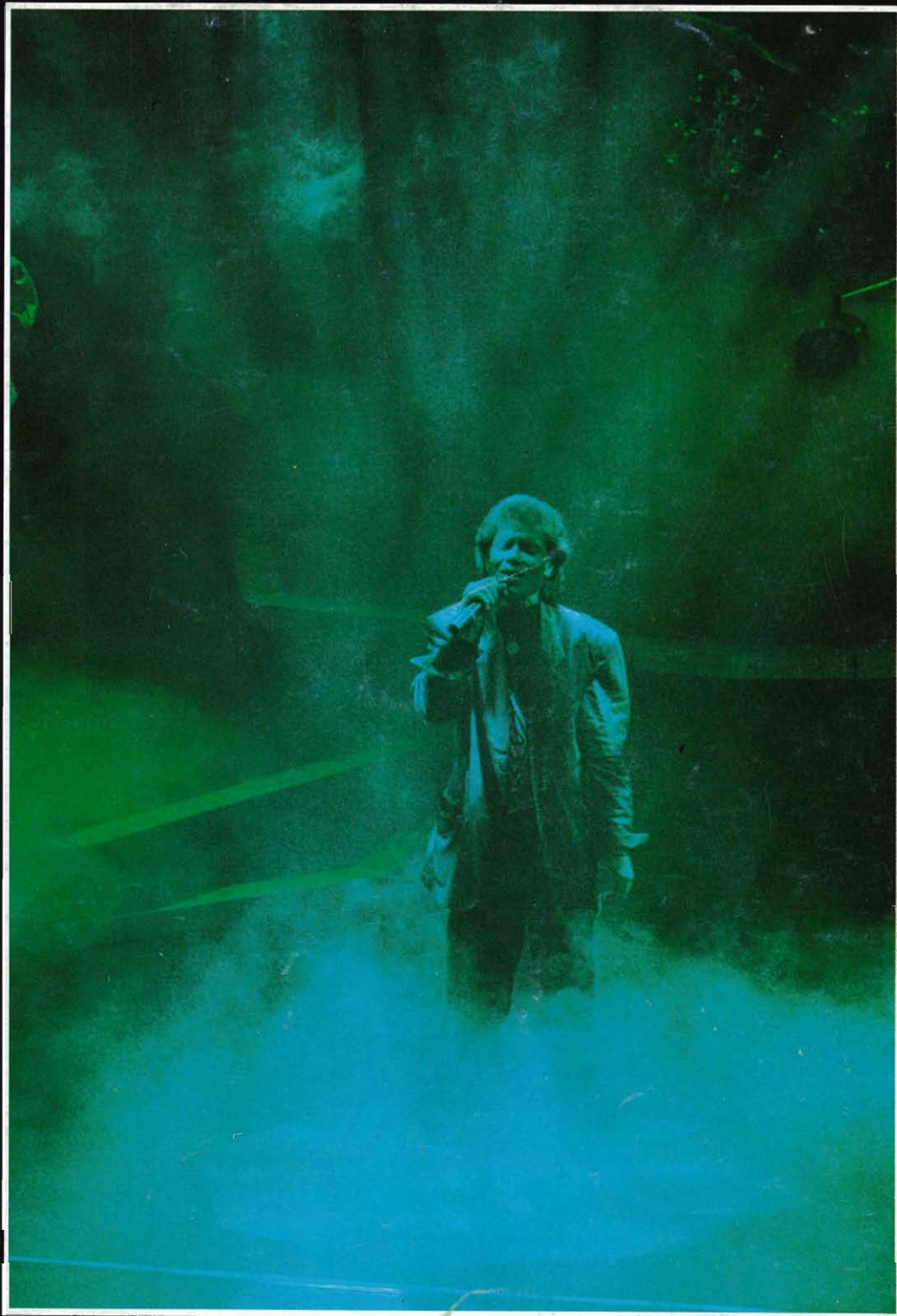


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The full range of Heavy Fog effects created a tremendous atmosphere for Cliff Richard's 30th Anniversary Tour (full story page 5).

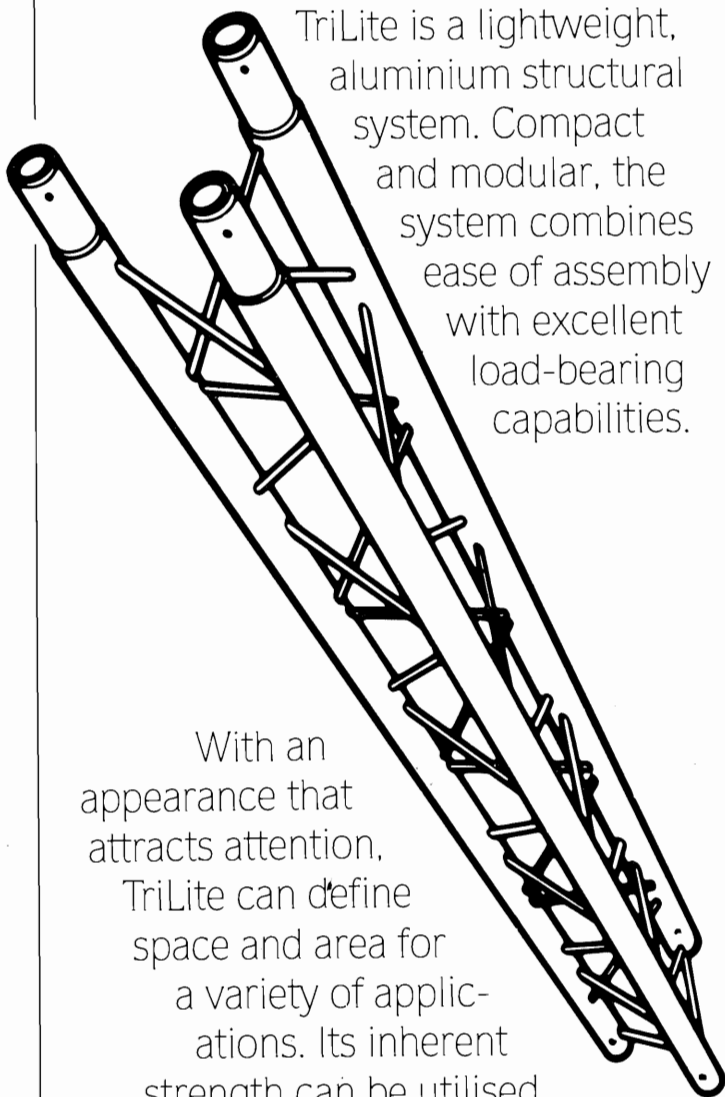
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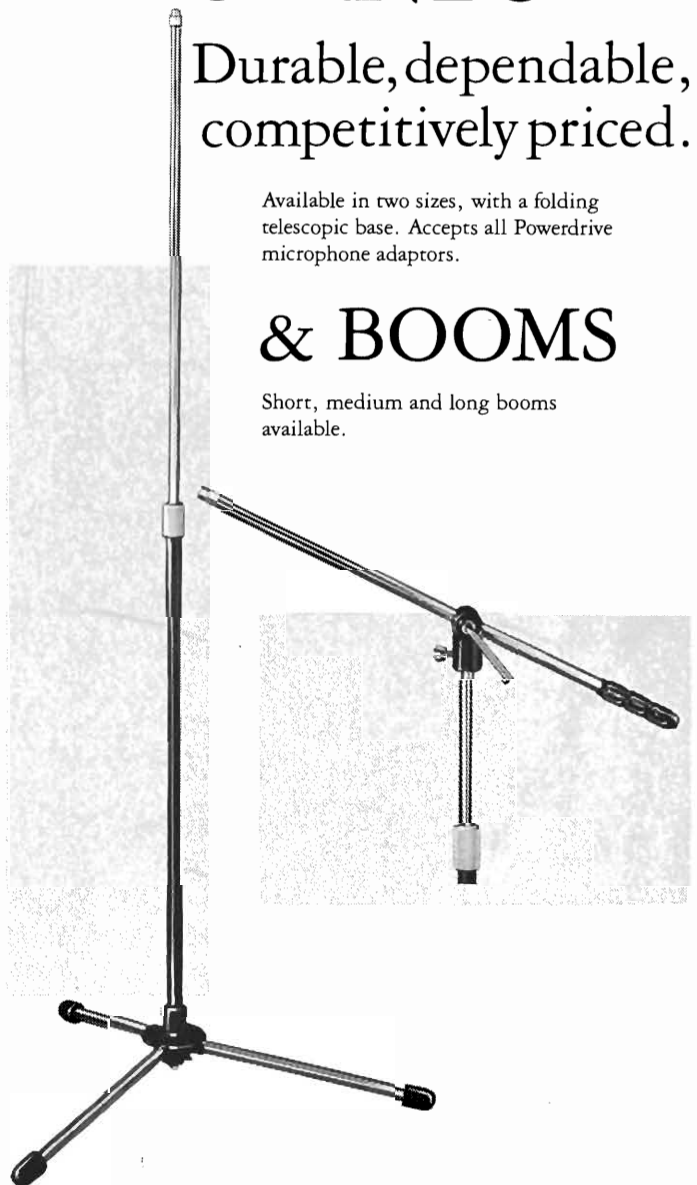
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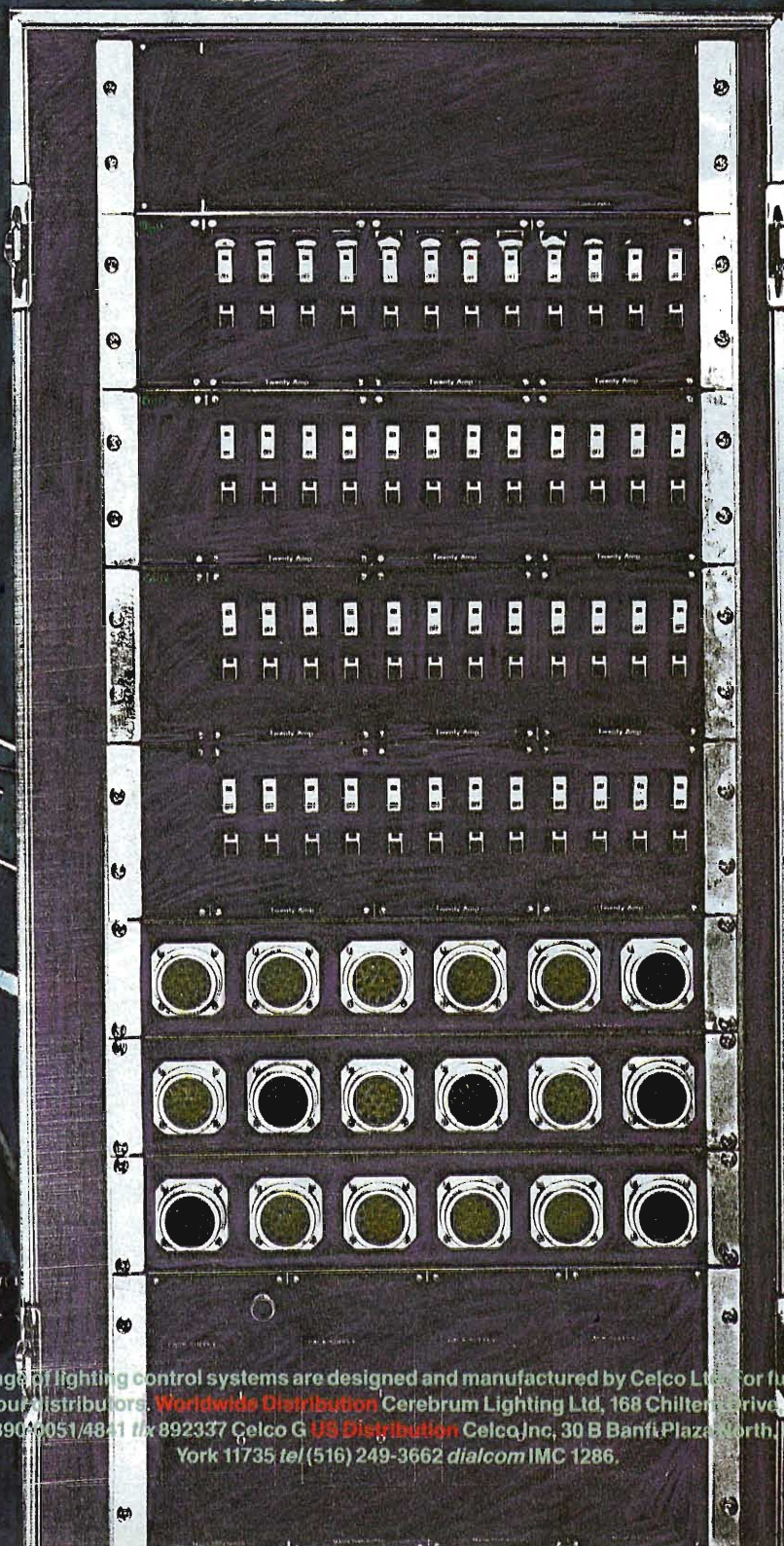
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LIGHTING+*Sound* International

NOVEMBER 1988

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Heavy Fog 'On Tour' with Cliff Richard

Cliff Richard and his production manager John Seymour learned of Heavy Fog quite some time ago and with the current anniversary tour in mind asked JEM Smoke Machine Co. Ltd. if a unit could be available in time for the tour. "Of course, the answer was 'Yes,'" said Nigel Morris, managing director of JEM.

After a resounding success at Light & Sound 88 at Olympia 2 in London in early September, Heavy Fog was whisked down to Pinewood Studios for the rehearsals of the tour, as it had to be set up in the studio

story continued on page 7

LIGHTING+*Sound* International

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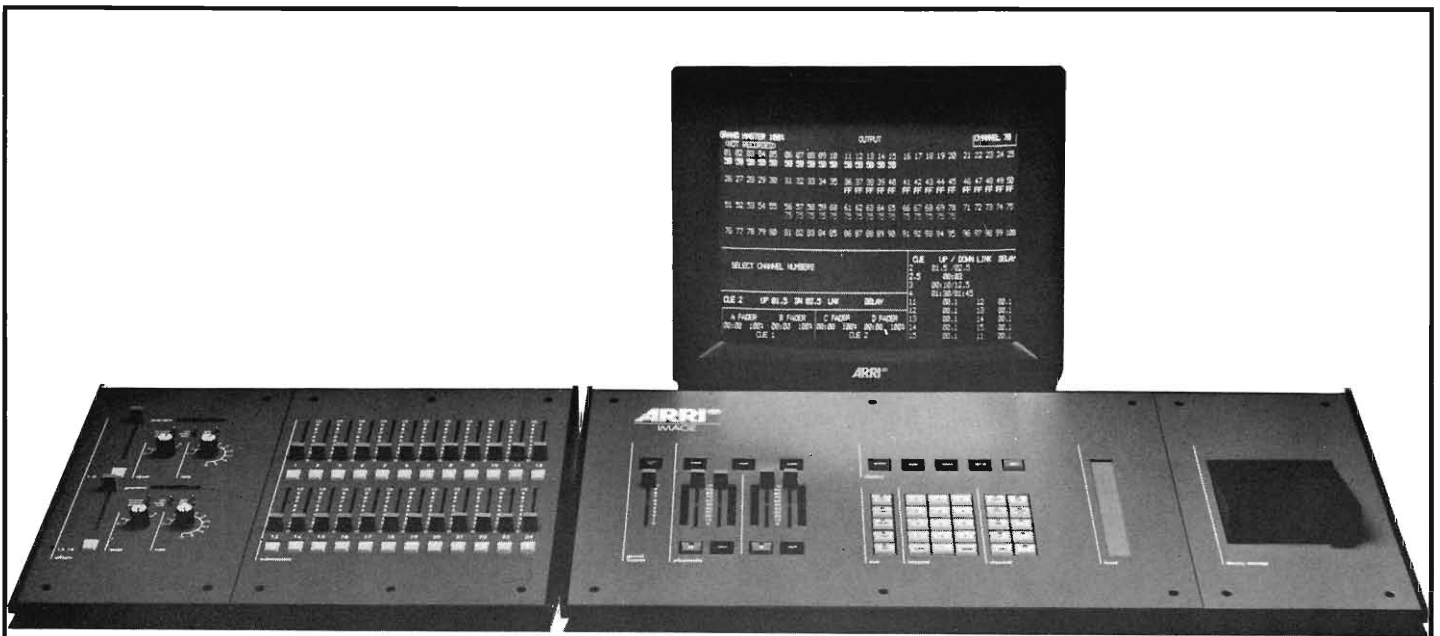
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Lee Group gets Financial Re-Structure

Westward Communications plc has announced that it has signed definitive agreements under which Lee Panavision International Inc., a company formed by Warburg, Pincus Capital Company, L.P. for the purpose of the acquisition, will acquire all of Westward's operating subsidiaries in the Lee Group other than those relating to the UK lighting rental businesses, over which Lee Panavision International will retain an option at a fixed price.

Lee Panavision International will be capitalised with US\$60 million of equity and will assume all the outstanding debt attributable to Westward and its subsidiaries (approximately US\$340 million) on terms which are currently being renegotiated with Westward's senior leaders.

The acquisition is expected to close by the 30th November 1988, subject to various conditions, including the restructuring of Westward's outstanding bank debt on terms satisfactory to Lee Panavision International and the obtaining of all necessary regulatory consents in the US and UK, said the announcement.

During 1988, the Lee Group has experienced financial difficulties which have resulted in revised arrangements with its senior lenders. Lee Panavision International has already provided Westward with US\$5 million in order to meet short-term capital needs, and will make its full financial resources available to the group companies on final completion of the transaction, we understand.

William C. Scott has been appointed president and chief executive officer of Lee Panavision Inter-

national, Inc. and he will also serve as chief executive officer of Westward until the closing of the acquisition. Lee Panavision International will manage the Lee lighting companies until the exercise or termination of the option to purchase these businesses.

William Scott was for more than 10 years the president of Western Pacific Industries, Inc., a successful New York Stock Exchange listed company, with manufacturing businesses in the United States, Europe and the UK.

In an official statement commenting on these developments, he said: "Lee Panavision International is pleased to be able to provide the financial and managerial assistance needed to restore the strength of the Lee businesses and to continue to build on Lee's reputation for excellence of service and product, which it has always enjoyed. We are dedicated to putting Lee's financial difficulties behind us and to focusing on the Group's business activities."

The Lee Group's principal businesses are Panavision, Inc., the well-known California-based supplier of cameras and lenses to the motion picture and television industries, and Lee Colortran, the international manufacturer and marketer of lighting equipment for film, TV, theatre and studio applications, including computerised dimming and control systems. The Group also owns and operates studios in the UK at Shepperton, Wembley and Manchester. Lee Lighting owns the world's largest rental inventory of lighting equipment used by the entertainment industry.

Management Buy-Out of Theatre Projects

Richard Pilbrow, chairman and David Staples, managing director, have announced the management buyout of Theatre Projects Consultants (TPC), the international theatre design and consultancy company with offices in London, New York, Toronto and Los Angeles.

Founder of Theatre Projects, Richard Pilbrow, has built the company over the last 31 years into one of the most substantial and authoritative sources for theatrical consulting and architecture world-wide having worked in 27 countries on well over 400 projects and studies.

Pilbrow told L+S: "We see this move as the final stage in rationalising Theatre Projects activities.

Major changes have been made over the years, following a period of over-expansion in the 80's, including the sale of our lighting, sound and video division to the Samuelson Group PLC who now operate them under the name of Theatre Projects Services Ltd. After analysing the situation we felt that we had to do something radical in order to gear up for the future and to develop further our position in the world-wide marketplace of creative ideas."

David Staples, mastermind of the takeover, spoke to L+S about the company's plan for monetary re-investment: "The money is being used in three ways: to buy the company, to purchase new design studios and to add to our core activity of design, technical and management consultancy for the performing arts and the growth areas of architectural lighting, leisure and tourism and corporate presentation facilities."



Nigel Morris.

Heavy Fog 'On Tour'

continued from page 5

with all the other effects. "Heavy Fog was, once set up, shown at its best as Cliff rehearsed his songs," continued Nigel Morris. "It was a great success and Cliff, John Seymour and their team were very impressed to say the least."

To achieve the exact effect required, great lengths of ducting were designed by Nigel Morris and his general manager David Barker to fit under the stage. It gave a superb symmetrical effect, but setting it up took many hours. "As this was the first tour for Heavy Fog and of great importance to both Cliff and us, it was very important to get it just right," said Nigel Morris. "In actual fact working on this tour has been a great learning ground for us. It is one thing developing a machine in a factory environment and another when it is actually in the field working. Heavy Fog on the day was perfect. We made it cascade fog like a waterfall, ripple like the tide, woosh like clouds and dramatic like a volcano. You name it and Heavy

AETTI Starts Work

The Arts and Entertainment Technical Training Initiative (AETTI) is about to embark on its first major project since it received official recognition at a meeting at the Arts Council earlier this year. Its first task will be the development of a mapping exercise of the occupations for which it will be responsible, and for which it will receive financial assistance from the Training Commission and the Arts Council. The initiative's representatives will soon be visiting a wide range of venues, manufacturers and rental houses around the country as part of a survey which aims to provide the AETTI with the basic information required to allow it to undertake systematic analysis of the occupational areas.

The information acquired will then facilitate the derivation of the elements of competence which will form the basis of occupational standards. A further aim of the exercise is to identify other training organisations whose work will influence the arts and entertainments industries and to develop cross-sector co-operation. For Alan Stevenson and Graham Walne, official recognition offers real hope that falling standards can at last be reversed.

(The AETTI is currently discussing training with PLASA).

Moving Chairs

After six years as chairman of the Professional Lighting and Sound Association, Peter Brooks announced that he would be standing down at the end of 1988. This news was almost immediately followed by the announcement that he has been elected chairman of the European Federation of Entertainment Technology (EFET).

Founded in November 1986 in Dusseldorf, EFET is the influential federation of European lighting and sound trade associations. Members of EFET include Italy, Germany, Holland, Spain and the United Kingdom, and efforts are currently underway to incorporate France into the federation.

Peter Brooks has championed PLASA's closer contact with other industry associations world-wide, and welcomes greater interchange of ideas on an international level - particularly with the advent of the single European market in 1992. With this in mind, one of his first tasks will be to ascertain product safety standards applicable in member countries with a view to establishing a set of common standards throughout EFET, and high on his agenda is the introduction of a formal constitution by which the Federation will be controlled.

Fog supplied it instantly and continuously."

But the best was yet to come. Nigel Morris was invited to see the end result himself as a member of the audience at London's Hammersmith Odeon. "At 7.35 p.m. the curtain went up and Cliff was there - and so was Heavy Fog, right on cue. It was superb. The smoke filled the stage and showed off the lights perfectly and Cliff was marvellous. The whole effect and the show itself was breathtaking," said Nigel Morris. "It has proved very economical to use and is far less messy than dry ice. There is just no going back. I believe Heavy Fog is unique and here to stay, and I firmly believe it to be the most advanced Smoke Machine in the World today."

And it doesn't end there for JEM who told L+S that enquiries are coming in fast and furious for Heavy Fog from rock bands, theatres, ice rinks, film companies, T.V. companies, theme parks etc. all over the world. "They just can't wait to get their hands on them. Unfortunately they have to wait until the middle of December/January when the first production run of 200 will be coming fast off the line," said Nigel Morris.

Big Power Trade Shows

The first international trade fair for musical instruments, electronic sound and equipment and studio technology - **Musica 89** - will be held in Moscow from July 18-25 next year at the Olympic Stadium.

Product categories will include all branches of musical equipment, and of interest to our industry will be sections for mixers, loudspeakers, video, disco stage and studio equipment, including lighting and special effects. The show will be organised by Glahé International KG of Cologne, West Germany, in conjunction with the Expocentre of the USSR Chamber of Commerce and Industry in Moscow. The British office of Glahé International can be contacted on (0787) 228086.

**FOR DETAILS OF TRADE SHOWS
SEE 'SHOW PAGE' 51**

On January 16, 1989, Michael O'Harro, founder and president of Champions Sports Inc. will open the two day **Nightclub, Bar and Restaurant Expo** with a keynote address on 'Preparing for success in 1989'. Alongside O'Harro, other prominent figures from the industry will talk on the creation of successful marketing plans. The Expo will be held at the Georgia International Convention Center in Atlanta, and further information concerning the January 16-17 Expo can be obtained by contacting Nightclub, Bar and Restaurant Expo, 305 W. Jackson Avenue, Oxford, MS 38655, 800/247-3881.

The **United States Institute for Theatre Technology (USITT)**, holds its annual conference and stage Expo in April next year at Calgary Convention Center in Canada. The exhibition is designed to showcase many new products from the manufacturers and distributors who service the performing arts industry.

Although the April 12-15 show is already 75 per cent sold out, USITT is actively looking for new companies to present new products and services to their membership. For further



British Council Theatre Lighting Course

The British Council's first international course in theatre lighting was held in London during October with Francis Reid as director of studies. The 20 participants from Australia, Bahrain, Canada, Cyprus, Denmark, Egypt, Iceland, Italy, Norway, South Africa, Spain and Sweden were involved in an intensive fortnight of lectures, discussions and theatre visits.

Lectures were given by many of Britain's leading experts in stage lighting. Backstage visits were made to the National and to several West End theatres, plus Basildon, Derngate and Stratford; and the course members also took the opportunity to view lighting manufacturers Strand and CCT Theatre lighting. In the picture above, course members visit CCT, with director Phil Rose the centre of attraction.

information, contact RJA Exposition Management, 486 Fullerton Court, San Jose, CA95111, (408) 225-6736.

Lighting Dimensions' second show, following on

from its first exhibition in Dallas this month, will take place in Palm Springs during October next year. Dates and details will be announced in our December issue.

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NJD Expansion

Having moved to their present site only four years ago, demand for its products has forced NJD Electronics to double their factory space. They have effected the expansion by the installation of a mezzanine floor, which has allowed room for four more offices and 3,000 sq.ft of storage space. A £40,000 spend means they now have 8,000 sq.ft. at their disposal.

Commenting on their recent programme of growth, Kevin Hopcraft told L+SI: "It's down to becoming an accepted name in the industry. One of our biggest boasts has been our move to the 'middle market' equipment, and as new lines have been added, existing lines have also continued to sell well."

Staff at NJD now totals 40, and in addition to the extra space, a new computer system has also been purchased and a new telephone system installed, giving extra lines to cope with demand.

The Consortium

Consortium is an amalgamated production facilities group who offer specialist resources and skills to the music, entertainment and leisure industries. Their diverse portfolio covers everything from stage set design and construction, through expert legal accounting and insurance advice to the provision of chauffeur-driven vehicles and production transportation.



Consortium: Doug Hopkins (above), David Hall (right), Andrew Sheehan (bottom right) and Peter Clarke.



The 'consortium' consists of Supermick Lights - the international lighting design and hire company, Concert Sound PA and audio hire, Advision Ltd, and Andrew and Sheehan Associates, who specialise in production management. Respective personalities are Peter Clarke, David Hall, Doug Hopkins and Andrew Sheehan.

PEOPLE

Peter Blaxton, chairman of Strand Lighting has announced the appointment of **Tom Sullivan** as president of Strand Lighting Inc. "Tom has 22 years business management experience. He started his career in the financial field and then moved in to general management," Peter Blaxton told L+SI. "I am confident that his management and manufacturing expertise will enhance Strand's service to its customers and its reputation in the market-place."

Tom Sullivan replaces **John Griffiths** who took on the mantle of acting president during the period of management transition.

The responsibility for Multiform's new product development programme is now in the hands of **Michael Galloway**, formerly chief designer of Light Processor.

Concert Light Systems Ltd., of Bolton, have strengthened their sales division with the addition of **Jeff Demain**, who will be dealing with the servicing of James Thomas and Tomcat Engineering dealerships. He brings with him three years experience as chief electrician at Leeds Grand Theatre and knowledge of a wide range of touring productions. The company has also welcomed **Mike Sheppard** who, prior to his appointment as operations manager, spent three years as resident stage manager at Blackpool Opera House.

Leading design and communications company Imagination has announced a significant reorganisation of its management structure. Having added two new divisions - Imagination Entertainment and Imagination International - the company is now able to diversify its range of projects.

A permanent office has already been established in New York which will service all business arising out of North America and beyond, whilst Imagination Holdings will control and link all three divisions. The restructuring also involves several new appointments to the management team. **Brian Shepherd**, formerly client services director, succeeds **Gary Withers** as managing director, and **Richard Zucker**, previously creative services manager has taken a position on the board and will assume the dual role of operations director and account director.

Gary Withers will remain as creative director but will take on the additional task of chairman, relieving co-founder **Len Heath**, who remains chairman of the parent company Imagination Holdings. Commenting on the announcement, Gary Withers told L+SI: "The changes are designed both to provide some exciting opportunities at home and abroad for our staff and to improve the depth and efficiency of our service to clients."

Martin Hazlewood, formerly chief electrician with the Wolsey Theatre at Ipswich, has joined the staff at Donmar in Covent Garden as a technical advisor.

BUSINESS

● **Harman UK** have just completed delivery of a large JBL PA system to ZPR (United Entertainment Enterprises) based in Poland. Rated at 20k, the system effectively removes the need for the buyer to visit a number of manufacturers for the various composite items and the difficulties of interfacing the assembled components, yet it has the added advantage of having the capability of splitting into smaller self-contained units.

Harman UK's contract consisted of eight 4923T, two 4922 units and 26 4602B monitors. The 4900 series, comprising of 4-way modular concert series cabinets, comes complete with bass, cabinets, crossovers, amps and all wiring.

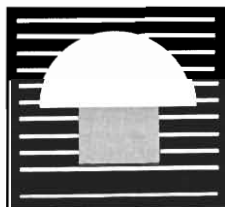
● **Leisureplan**, Graham Walne's consultancy wing, has formed a consortium with **Alan Stevenson Associates**, to create **Leisureplan Stevenson Associates**. The two principals have worked in tandem before with the successful development of the AETTI, and the new company is already undertaking a range of projects which cover the complete field of management services, venue planning, equipment design and training, typical of which is a feasibility study for a number of period leisure and shopping developments and the design of a digital sound desk for theatre applications.

● Kevin Swain, sales director of **Farrahs**, recently announced the selection of **NSR** as dealers for the Anchor range of products imported exclusively by Farrahs. Kevin Swain spoke to L+SI about the appointment: "NSR is a well-established company whose history in sound production goes back many years and it is an excellent endorsement of the Anchor product range to have NSR as dealers."

He further announced that **Raper and Wayman**, **London Microphone Centre** and **Midland Theatre Services**, a Rank Strand dealer, have been appointed as the first three dealers for Farrahs' Metro Comms range.

● **Raper and Wayman** have also secured further clients for their Ramsa range of products. Consultant company RTS video have taken delivery of a Soundcraft 200B-VE audio-follow-video mixing console to be installed in a new editing suite based around the Sony BVE-900 editor.

● Lancashire-based sound specialists **Wigwam Acoustics** have recently completed three major sound installations in the UK. The contracting division has supplied a new sound system to St. Paul's Church in London, installed the Electrovoice MTL sound system in Manchester's Hacienda nightclub and upgraded the loudspeaker system, amplifiers and monitor console for the Circus Tavern in Purfleet. The company is also presently involved in the provision of audio systems for several ongoing tours by major British artists.



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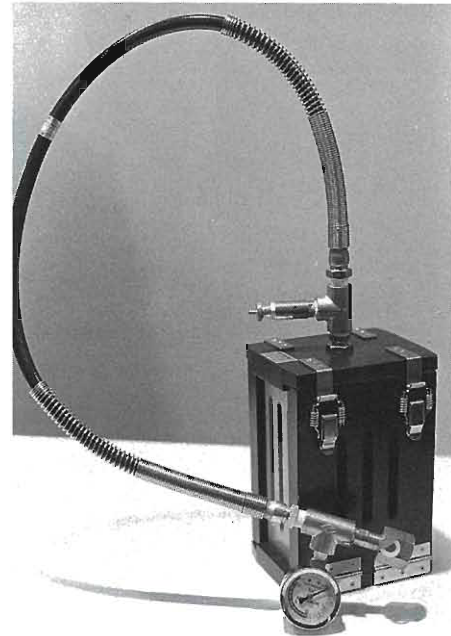
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DIY Dry Ice

A breakthrough that will obviate the problems associated with obtaining ready supplies of dry ice has been announced by Roger Ashcroft, sole owner of A & B Theatre Services. He has just launched Mini Dry Box, a portable dry ice making machine, on to the entertainment market.

The unit converts liquid carbon dioxide direct from cylinders into solid blocks of dry ice 0.8kg in weight, and the method is simplicity in itself. You connect up to a liquid CO₂ syphon cylinder and within 60 seconds a manageable dry ice cube is at your disposal.



A dry ice breakthrough: the Mini Dry Box.

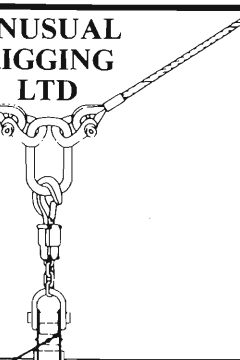
The machine makes solid CO₂ from liquid CO₂ by Adiabatic expansion (the Joule-Thompson effect). The liquid CO₂ which is at a pressure higher than 60KG/CM², is forced into the box where the pressure is equal to atmospheric pressure. The liquid CO₂ then vaporises and expands.

When the gas has been allowed to expand at atmospheric pressure, the box becomes cold; the gas is released through an external orifice and throttle valve. As a result, the liquid CO₂ in the box is very cold, and changes directly into snow. The solid dry ice is accumulated in the box and is compressed into a block.

Another unique feature is the unit's ability to make even smaller blocks of dry ice by using a special insert piece.

Mini Dry Box is portable, lightweight, simple to operate, and available for sale or hire ex-stock. Full details from A & B Theatre Services on (0302) 64808.

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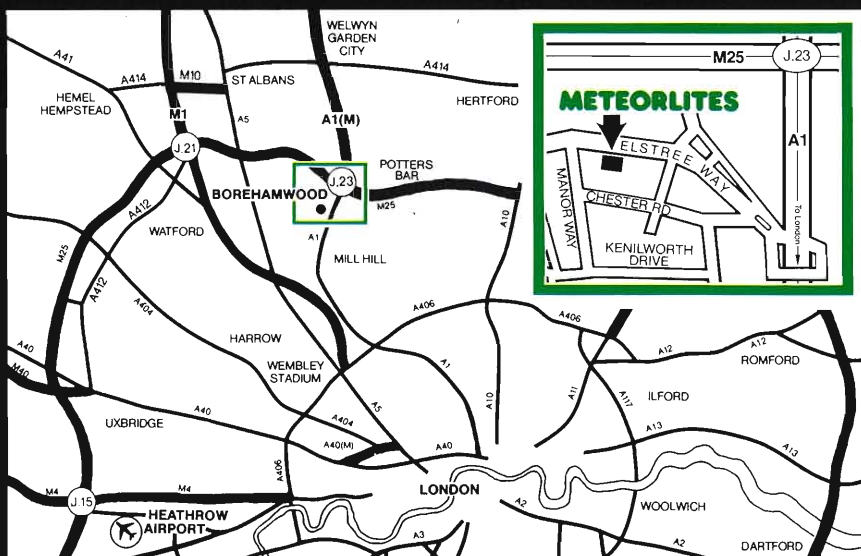


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AVITECH AG, CH-6020 Emmenbrücke, Switzerland.

Two important Pro Audio product ranges are now available in the UK through the **Sound Department Ltd.** Industrial Research Products, known for their 'Voice-Matic' mixing system and 'Transversal' equalisers have appointed the Sound Department to be responsible for the promotion of 'System 41', a unit based on a comprehensive range of signal processing modules which produces a greater dimension of clarity and sound quality.

The second company to add to their extensive product range in this country are Community Light and Sound, who are aiming to expand their market with the introduction, amongst others, of the RS range of cabinets and the CS range of two and three-way systems and sub-woofer units. But perhaps the most significant product to reach this country via the Sound Department is Community Light and Sound's M4, a 4 inch throat mid-range compression loudspeaker, characterised by high output and low distortion.

● **Marquee Audio** have recently installed a complete 8kW PA system in the Assembly Rooms in Derby, the brief being to provide a system capable of adapting to a variety of uses. With a similar brief in mind, Kriss Warehouse in London have taken delivery of a PA playback system from the JBL control series. Other projects by Marquee Audio include a disco system for Essex University, including a Martin BX/CX speaker system, and a comprehensive PA installation at the Pied Bull in Islington.

● The Surrey based discotheque supplies company, **Rough Diamond**, has, after 10 years of operation, expanded its business further with the opening of a new disco retail outlet in Guildford. The company, run by local radio presenter Simon Cummings, has doubled the size of its offices, workshop and showroom in order to facilitate its increasing diversification into broader areas of the disco industry.

Rough Diamond adopt a policy of displaying all the equipment it has available in full working operation, to enable easy demonstration of products. In addition, Rough Diamond's major sup-



Rough Diamond's new Guildford base.

pliers have reserved sections of the showroom to complete the scope of the operation.

● The **Koss** product line currently covers a wide range of applications in the audio market and to complement the existing range, they have introduced to the UK a new range of headphones, obtainable only through distributors **HW International**.

● **Fane Acoustics'** B series and **Acoustic Sound Systems'** glass fibre horns and flares, previously distributed by both A.S.S. and Adam Hall, will now be distributed exclusively by Fane. The comprehensive range now comprises 20 different horns and flares.

● The 1988 **Digital Information Exchange**, held from November 22-24, once again takes place in the private members suite at London Zoo. The new programme has been designed to relate to professionals working in the audio, video and broadcast industries and is intended as a fresh perspective on new and emerging digital technology.

The three day exchange will offer the delegates the opportunity to discuss the current application of hardware options at what is now becoming a key event in the pro-audio calendar. The pro-

gramme continues to receive sponsorship from Sony Broadcast and pro-audio supplier HHB Hire and Sales. Ticket availability can be checked with Frances Sharp on 01-381 4624.

● **D.E.W. Controls** have been given a major contract to supply a complete dimming system for Studio 1, the largest at BBC's Television Centre. Believed to be one of the biggest installations of its kind in the world, the system has a total capacity of nearly six megawatts, comprised of over 1150 LAW type dimmers, and will regulate all production and house lighting in the studio.

"The entire system is designed to meet the very stringent broadcast standards demanded by the BBC," D.E.W.'s Peter Moore told L+S. Although scheduled for mid '88, the installation has been delayed due to problems with asbestos within the BBC studios, we understand. When finally installed, it will be the third major system supplied by the company to the television centre and represents for D.E.W. Controls the latest in a long line of projects completed in London and regional studios.

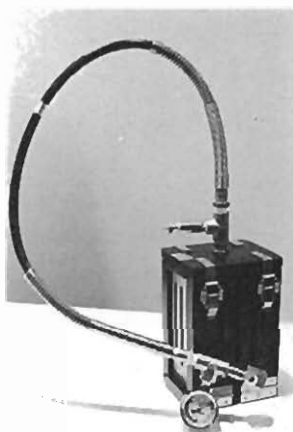
● **South West Lighting** have taken over the sole distribution of the Synchro-beat Counter Plus, and are looking for dealers in most areas.

● **Soundtec Marketing** have announced the appointment of **Audilec Distribution** as their exclusive UK sales agents for the professional sound reinforcement industry and discotheque installation market. With immediate effect, Audilec assume responsibility for sales of ADC and dbx consumer products which include graphic equalisers, CD players, expander/compressors, noise reduction systems, signal processors and power amplifiers to name but a few! Audilec will aim to widen Soundtec Marketing's dealer network, whilst providing support to the latter's existing clientele.

● It has been announced that **Vector Marketing** will be responsible for the sole distribution of Meteor Lighting products. The Meteor range includes Probeam high output projectors, Shooting Star and Can-Can centre-pieces, Variflow Neon

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drivers and controllers, a variety of sound animated multi-channel controllers and effects and a range of Mista smoke machines. Alongside these is the revolutionary System X scene management and equipment interfacing concept, which allows the lighting controller to directly 'talk' to any effect, totally eliminating not only vast amounts of complicated wiring, but also the need for conventional power packs, say Vector.

● **Opus Amplification** has enlarged its workshop and assembly area, and the extension of the premises has allowed the company to reorganise facilities to include a new hire department, reception area and despatch and warehouse facility. The growth has led to an increase in production of the new Sound Control range of speakers and resulted in a doubling in size of the retail showroom.

● **Imagination Ltd.** has been appointed by British Steel plc and the Department of Trade and Industry to handle the arrangements for an extensive programme of share-offer presentations in the UK, Continental Europe, USA and Canada. This is the first time that just one presentation company has been selected to run an entire privatisation flotation programme simultaneously across all international markets, say Imagination.

Associate director and project manager Paul Mackay told L+S: "By designing the sets and visual support, and overseeing all the technical aspects and the incredibly demanding logistical schedule, we can ensure total consistency and continuity of the message being given and the image being portrayed - which is key to our business philosophy."

● **Powerhouse Hire** and **Rainbow Discotheques** will be opening a new branch in South London at 166 Sydenham Road, SE26. The new shop will be open for business by mid-November and will be run by Robin Smith, formerly head of sales at the North London showroom.

● Established to produce innovative programming for broadcast television, commercials and the corporate and educational video market, **Component Television Productions** has now cemented its position as one of the foremost names in television production. Based in Newman Passage, W1, it offers an edit and hire facility within the heart of the production industry.

Along with its sister companies, Component Editing and Component Video Hire, Component Television Productions was created as a combined facility tailored to the needs of the production industry.

89

Light & Sound Show

Olympia 2

10-13 September 1989

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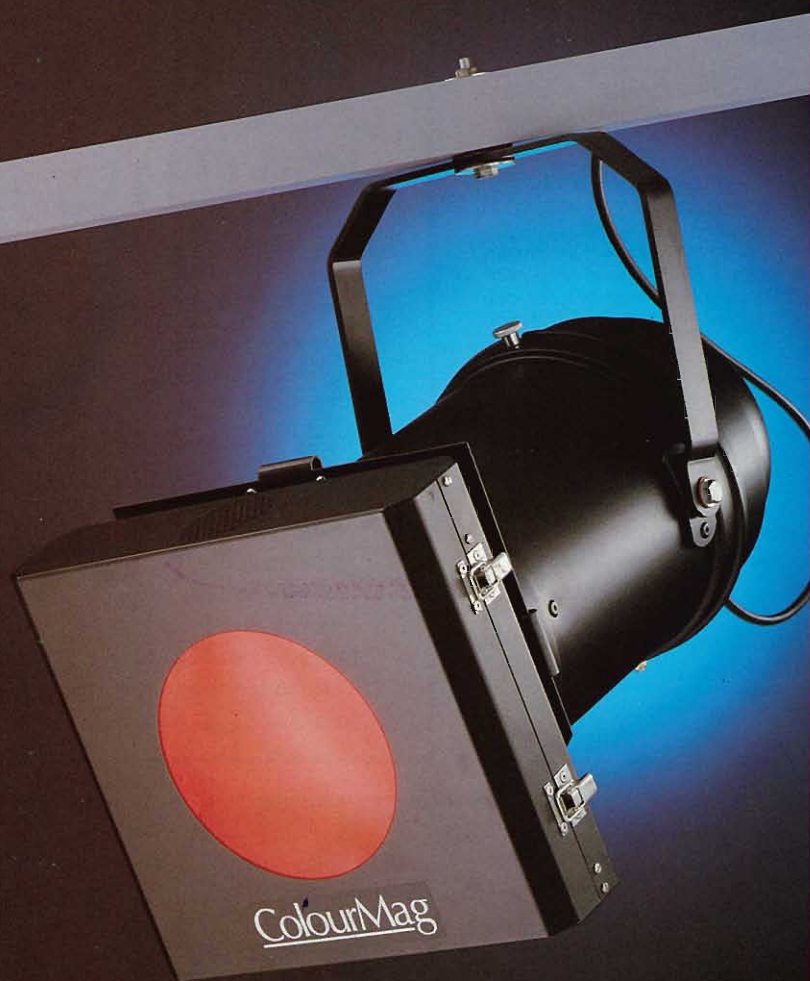
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Light & Sound Design



Destination Docklands Jarre finally arrives . . .

After prolonged negotiations with Newham Council over safety measures and numerous offers of alternative venues, Jean Michel Jarre's two-night spectacular 'Destination Docklands' finally took place in the Royal Victoria Dock over the week-end of 8th-9th October.

**Julian Williams braved the weather to talk lighting and lasers.
Ben Duncan charts the details of the sound system.**

It took perseverance, patience and 110 per cent effort from everyone concerned to put this show on. Certainly 'the show must go on' approach drew every resource from all those involved. And bearing this in mind, one has to question why so much pressure, albeit well-intentioned, was brought to bear to bring such an extravaganza together. For all those involved, it was high pressure all the way.

On Saturday October 8, following on from Paris, Peking, Houston and Lyon, Jarre finally appeared on stage in London for only his fifth ever live concert date. At 8 p.m. the count-down commenced and the rooftops of the enormous grain storage buildings on the skyline behind twinkled with strobes. After the introductory music, Jarre, dressed in a turquoise long-coat with black accessories, and glowing in shades of blue, turned from the centre of the floating stage

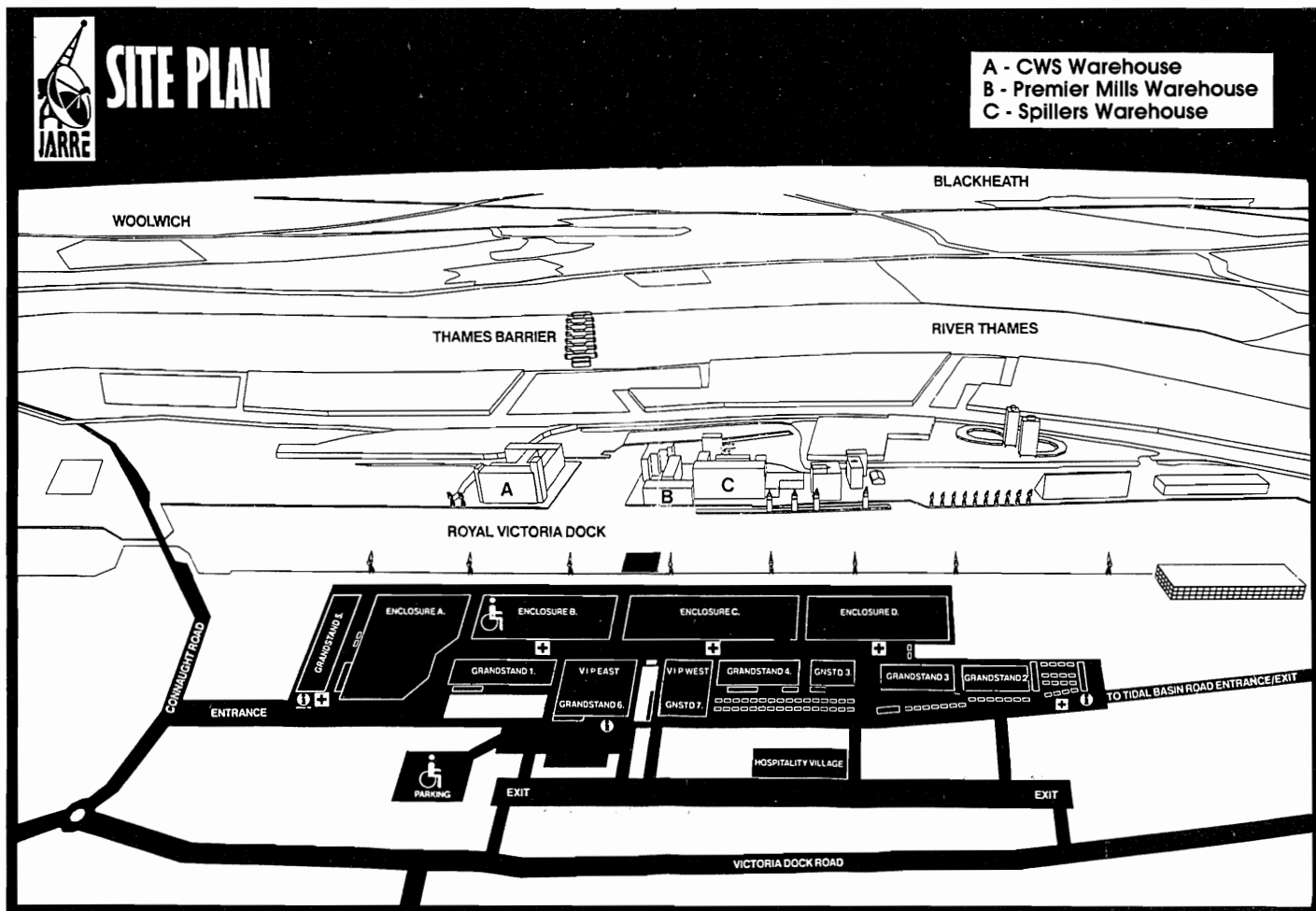
to greet the faithful 100,000 strong audience. "Thank you for your support, nothing can stop us now!" he forecast.

As the crowd cheered the sky was ablaze with glittering rockets bursting in various colours amidst golden starbursts above the entire length of the Royal Victoria Dock. Beneath was an envelope of 17 World War Two searchlights piercing through the low lying clouds, and, mounted on the rooftops of the warehouse buildings, a number of 4 x beam 10kW skytracker units were sweeping the sky. Jarre's £5m son et lumiere spectacular was under way.

Jarre considered Docklands to be the ideal venue from which to illustrate the periods of social change that have taken place in Britain over the past two hundred years, and the story began with animated colour slides projected 100 feet across the dock on to two huge specially white-washed

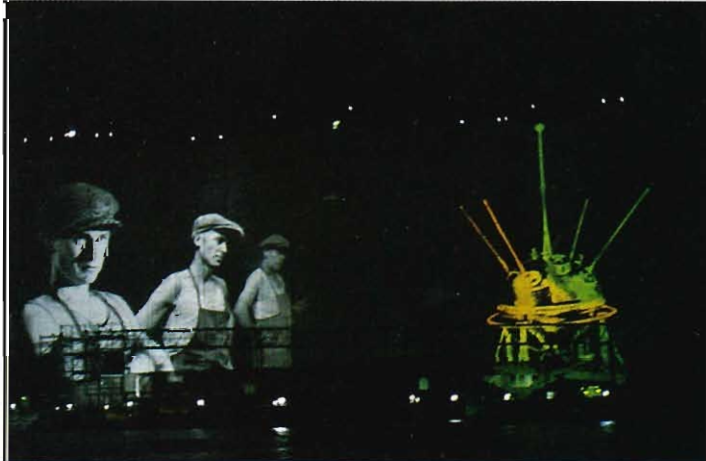
buildings on the far side of the water. Jarre played his Revolutions music on a midi moog keyboard whilst conducting 40 musicians, including a string section of more than 50 playing on various levels, meanwhile issuing instructions through a megaphone. Along the upper rostrum, a choir of 100 from the Newham Academy of Music complemented the orchestra.

On the day prior to the production, French artistic director Franck Dangelme kindly broke from a plotting session with Andy Holmes, managing director of Laserpoint, to explain especially for L+SI some of the ideas behind this most adventurous and largest of Jarre's shows. Talking about the musical aspect, he said: "The score, which has taken a year to complete, is specially written with notes for effects with visual music to see as well as hear." And he pointed out that each of the musicians is on a headset link receiv-





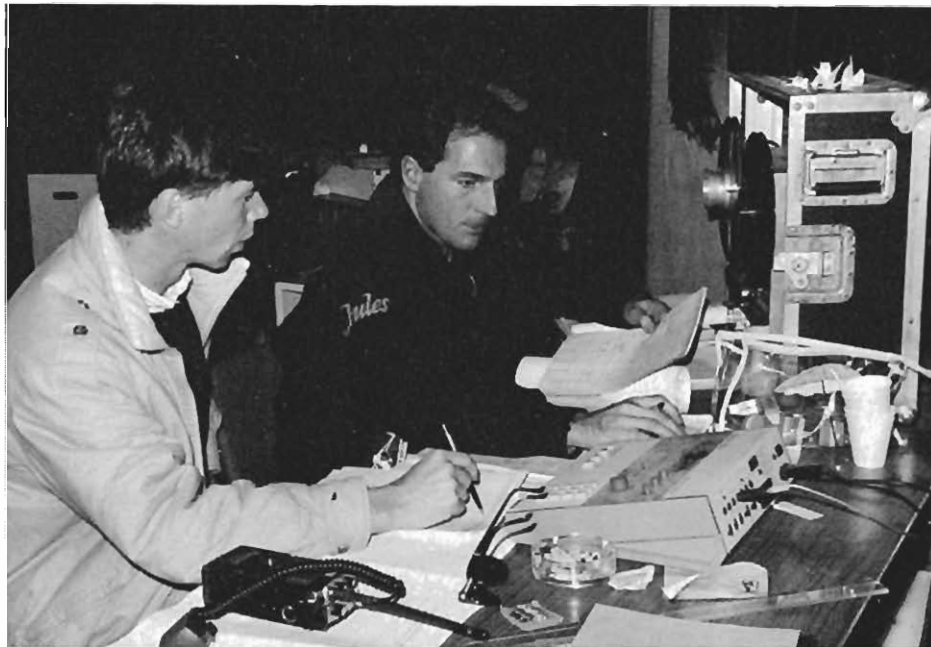
Jean Michel Jarre in Docklands - photographs pages 18 and 19 by John Christian Jaques.







John Hallam of Lee Electric pictured on stage with an lanaro HMI with L&SD colour changer.



Andy Holmes (left) of Laserpoint with artistic director Franck Dangelme.

ing computer information on taped cues.

The story, which spans the run-up to the Industrial Revolution and beyond, is pictorially displayed with slide and and superimposed animation, and projected on to the warehouses standing astride the docks. The projection was from two banks of specially designed Pani Gold BP6 effects projectors, placed along the dock on either side of the stage.

Franck Dangelme believes this was the first time a firework display had been time-coded to synchronise with music in a performance, and it was under the direction of Daniel Azencot. He explained that each of the lighting, fireworks, projection and laser sections were programmed in to the main control computer separately.

Sitting opposite in the production meeting Andy Holmes of Laserpoint went on to explain how they were able to programme the lasers: "The running order is written like a story-book in time code and to the second. The book illustrates what happens at that part, and a separate list shows the effects that are going to be produced and synchronised with the time code and the details of the story. There are extra notes of what the visuals will actually look like

alongside," he explained.

Although the show was run by one main computer every position was covered so that individuals could take over manually if necessary. There were three laser computer operators, one in the control booth, one on the stage, and one controlling all the lasers on the buildings on the opposite bank of the river.

A number of lighting companies were involved due to the size of French Lighting designer Jaques Rouveyrollis' lighting rig, the lighting equipment being drawn from various parts of the 'globe'. SPL in France had the task of co-ordinating the lighting equipment and re-scheduling supplies when the show dates were changed. Most of the equipment in the schedule was already booked for other shows, and this posed considerable logistical problems.

I spoke to the principal suppliers, and started by talking, in between demanding interruptions from the production personnel, with veteran rigger John Hallam of Lee Electrics, whose experience includes the three royal weddings, and here heading his 19 member crew. I was told he puts this as his biggest production in 25 years in the business. He told me that Lee Electrics,

famous for many TV outside broadcasts and probably the largest rigging and rental company of its type in the world, had supplied more than £1m worth of equipment.

He said: "We have provided all the power on the stage used for the performance lighting, which is all provided by local generation creating a total of 1 megawatt of power. We are using three 500Kva 3-phase generators and two 100Kva single phase generators for the sound system. Each system gives us double cover and change over facilities."

Their own lighting rig consisted of 70 x HMI instrument heads, in various combinations of 2.5kW and 4kW Lee Colortran units, 6kW Arri and 5.75kW lanario units, together providing a total stage lighting cover of 200kW. Also distributed around the rest of the site was another 200kW of lighting for the Molefey and CID floods in front of the buildings. Searchlights were 250 amp carbon arc, each mounted on to the back of a low loader, with its own generator in a Land Rover alongside, and positioned strategically around the Docklands roads in the area. Lee provided all the generators for the searchlights.

Lee also provided all power cabling on the site. "Every bit of cable, including 200 amp 3-phase supplies, was walked up to the top of the buildings opposite," explained John Hallam. "They had to run 120 lengths of sound cables across the dock."

New equipment for this type of show brought in by Lee were the HMI lanario instruments, with a new LSD Colour Changer, with Lee trying out a special new type of colour filter design. John Hallam pointed out that it took his team 12 days to rig their part and that safety was paramount, with each lamp circuit and laser equipment terminating through their 'Healee' Earth Leakage Breaker system. As he had to sign a declaration to that effect, John proudly commented on the safety of all connections.

The stage lighting on the barge was all locally rigged as it had to be prepared to 'set sail' across the river. In the event, this only actually happened on the Sunday night performance due to the safety restrictions imposed by the local district council. At the performance on the Sunday evening, the wind dropped sufficiently on the Beaufort Scale and the barge was allowed to be winched across the dock and went out to about 30 feet.

Lee supplied their own dimmer racks which were connected directly into the French computer control interface. Everything was rigged and then de-rigged before the original date, as John explained: "We were originally going to have a week off in between the rigging of the cabling and then two weeks rigging, allowing time to put right anything that may have gone wrong, and leaving a week in hand after the safety tests."

Light & Sound Design director Steve Dawkes explained that they provided the follow spots and colour changers for the lanarios and Lee instruments on the stage, and the CID floodlighting on the warehouses. This equipment was controlled from five areas - one from the stage and from the four control points in the warehouses. There were a total of 74 Colour Changers (50 of them being on the stage). The follow spots were mounted in two groups of six on each side of the stage and the Strong Carbon Arc Supertroupers.

Steve explained that LSD also did the last Jarre show three years ago in Lyon but, com-

menting on this one, he said that floating the stage across a dock was more adventurous than it was last time, playing on a river bank.

He went on to say: "This was not the right environment to put computerised equipment on to colour changers, in the pouring rain, outdoors and with no cover. Computers and water don't mix!

"Our six man crew had been working round the clock for five days, right up to the performance each night," said Steve. "Every time it rained we had to take all our instruments away for them to be dried before fitting them back on again. This had to happen every time the lighting was either checked, or for a rehearsal. It was a constant nightmare. It was very ambitious to do a show like this out of doors in the middle of October. Had they been able to have done it in the summer, they may have got away with it. Rain could be almost guaranteed at this time, whereas in Houston there probably wouldn't have been any."

I next spoke to Geoff Benson, production manager of Meteorlites, who provided equipment and also the back-up as UK agents for the services companies, SPL in France, and Showlites in the US. He said they were working with SPL and production management on the lights and for the event they supplied the remaining equipment.

Meteorlites supplied 208 x 28volt 250 watt Aircraft Parcan instruments around the skirt of the stage, and 20 single Pars on the stage, lighting for the French follow spot operators, and 10 x 4-cell ground rows. All this was controlled from a Celco Gold 72 way desk with Avo dimmer racks (24 x 5kW, 48 x 2kW) being looked after by one of the French lighting designers. There were 50 x Thomas Molefey floodlights, some of which came from Showlites in the US who supplied all the Molefey colour changers and also the scrolling colour changers for the floods on the top and bottom of the dockside cranes on the audience side of the dock.

Geoff went on to say that he was happy with Meteorlites involvement and achievement on the show, even though it was extremely hard work and the conditions were awful. Despite that, all his six member crew, headed by Robb Mackenzie, said afterwards that it was worth all the effort and that they would do it all over again!

The remaining equipment came from SPL in France being bulkhead lights, 46 Svoboda units uplighting from underneath the stage, and a dozen strobes under the stage. The mini strobes along the top of the warehouse buildings, and 18 Cabochons red bulkhead lights were mounted on the sides of the stage, complemented by a number of 4 x beam 10kW Skytracker units mounted on the warehouse buildings.

Laserpoint are celebrating their 10th anniversary in the business, and I talked with the head of their crew, Ram Malocca who described to me, from under the stage, their main feature of the show, the Laser Harp. "It consists of three x 20 watt Argon lasers mounted in an optical configuration where each laser produces 14 beams. Each beam has a photocell coupled with a PCB to drive the cell. When Jarre puts his hand in one of the Harp beams the specular reflection off his gloved hand is picked up by a photocell which then sends a current to a computer which has assigned that beam with a particular note. The computer tells the 'midi interface' which then tells the synthesizer which particular note to play," he explained.

Some Statistics

Fireworks cost £250,000.

Stage weight 700 tons; dimensions 20 x 40 metres; mounted on 12 barges.

Total crew on site 2500 including 260

French crew, 200 production crew and 500 pre-production crew.

Talk-back system: 150 stations.

Control cables: 2.5km.

Power cables: 30,000m.

3000 slides 18cm and 25cm square format.

Total watts energy: 5.3 million.

"The lasers, which are mounted underneath Jarre's stage area, point the 14 beams up through the stage where he then plays the laser strings. The beams then continue upwards to a bar of front surface mirrors which then angle the beams and send them over the audience, spread over an arc of 140 degrees," he explained.

"The use of collimators keeps the beams parallel. Each beam has a power of 3.75 watts, visible from about a mile on a clear night! Instead of a 1.5 or 2mm beam it becomes a 10mm beam, increasing the beam's diameter so that it will diverge slower over a greater distance."

The remaining eight lasers in the show were situated at various points. Up-stage left and right were two high power 20 watt Argon (blue/green) and 5 watt Crypton (red) colour mix systems, producing a white light pointing 20 degrees above the stage, and allowing a colour mix of seven colours.

"This created 'swirling imagery' above the audience - the 'flat scans' and 'roving cones' of laser light creating a 'mood' on the stage and above the audience. The idea was to create a mood in an architectural sense with specific parts used in a particular track of the music. We were not supposed to be 'button bashing' here, in the disco sense!" said Ram Malocca.

On the other side of the river one laser was positioned on the top of the CWS building,

Jean Michel Jarre Shows:

1979 Concert, Paris. 1m spectators.

1981 Concert, Peking and Shanghai. 150,000 spectators.

1986 Concert, Houston. 1.5m spectators. (dedicated to Challenger crew)

1987 Concert, Lyon. 600,000 spectators.

1988 Concert, London. 200,000 spectators.

and on top of the Premier Mills building there was one on each corner. On the top of the Spillers building there was another. These were all 20 watt large frame Argon lasers 360 degree horizontal, 220 degree vertical, pan and tilt. "Their effect is to project into the water of the dock itself while also being used to project above the audience into the sky," said Ram.

The sound of the wind on my notorious 'note pad' tape machine, reminded me of just how appalling the conditions were for such a show when I tried listening to my interviews. Lighting instruments blown over in the wind included a 400 kilo Supertrouper - luckily not into the river! The result of cold wind on hot fresnels smashed and blew out £800 worth of HMI bubbles! Dimmer racks were blown by interplugging mains through the multiplex signal lines amongst the jumble of cables on the dockside . . .

The audience had to suffer as well. On the Sunday night people were actually leaving as the cold and the rain became too much for them to bear. Some of them were saying that they were disappointed by the experience and stated that it was not what it was made out to be.

But then there was a huge amount of equipment that we never actually got to see in operation. This even included a 5ft Mirror Ball underneath each of the eight dockside cranes!



A view across the dock to the Spillers warehouse.



A general view of the site, Royal Victoria Dock, London.



A close-up of the floating stage, Jean Michel Jarre conducting.

About a quarter of the lighting and laser effects also didn't make it on one night or the other, due to a combination of short rigging time, which led to time running out on them, and to the extension of the performance date into winter weather conditions.

Could all this have been avoided if Jean Michel Jarre had been able to make it sooner? One has to wonder to what extent all the problems were attributable to the difficulties in obtaining the licence. In the first place did Newham Council realise, when they accepted Jarre's original application, that they were going to be unable to control

the licence application needed for this type of show? Given that four other countries and many other British cities jumped when Jarre came along, should we have allowed this inhospitable situation to have developed in the first place? Or was it **his** bad planning?

All the expertise and ingredients were there for a much better show. Undoubtedly it was an unprecedented success given that they actually made it work despite all the odds. But it desperately needed that missing 25% on the top.

It was a tribute to all our technicians and engineers that they followed it through to

the performance with such spirit and determination. As Lee's John Hallam put it, talking admiringly of producer Francis Drayfus and Jean Michel Jarre: "They had a lot of bottle to bring this one over here and it's been a challenge! . . ."

Look out Moscow?!

Footnote:

In pursuit of the lighting layout plan and equipment schedule I was told that there was only a simple freehand drawing in existence on the site. Another comment was that "it has all come out of our heads, despite the constant changing of positions."



A dockside canopy for the fleet of Ludwig Pani BP6 Gold projectors.



Suspended - the 5-foot mirror ball that didn't make the show.



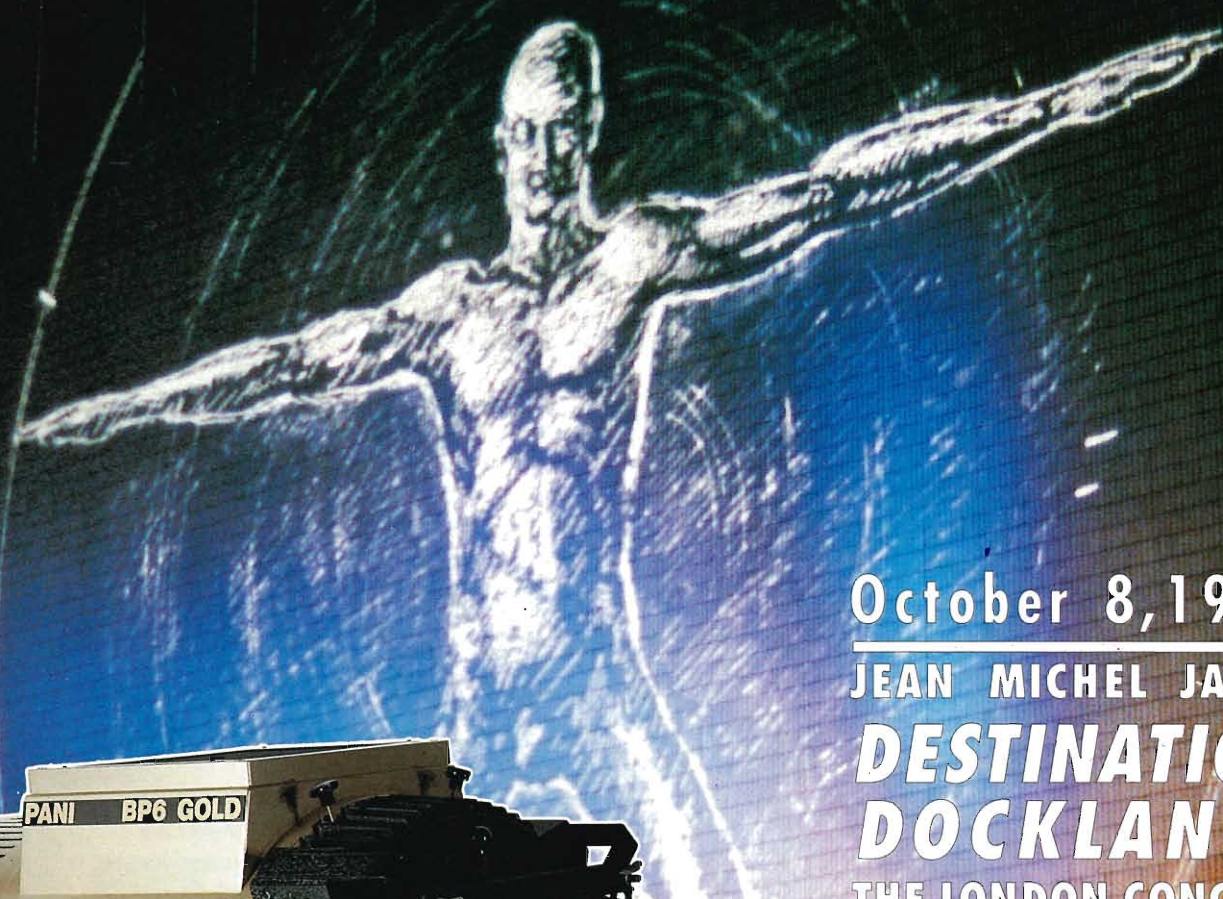
A general view of the site. Between cranes 1 and 2 is the canopy covering the BP6 Gold's and between cranes 2 and 3 the floating stage can just be seen.



A closer view of the floating stage: the Meteorlites' aircraft Par cans can be seen lining the edge of the stage barge.

GOLDEN GLORY

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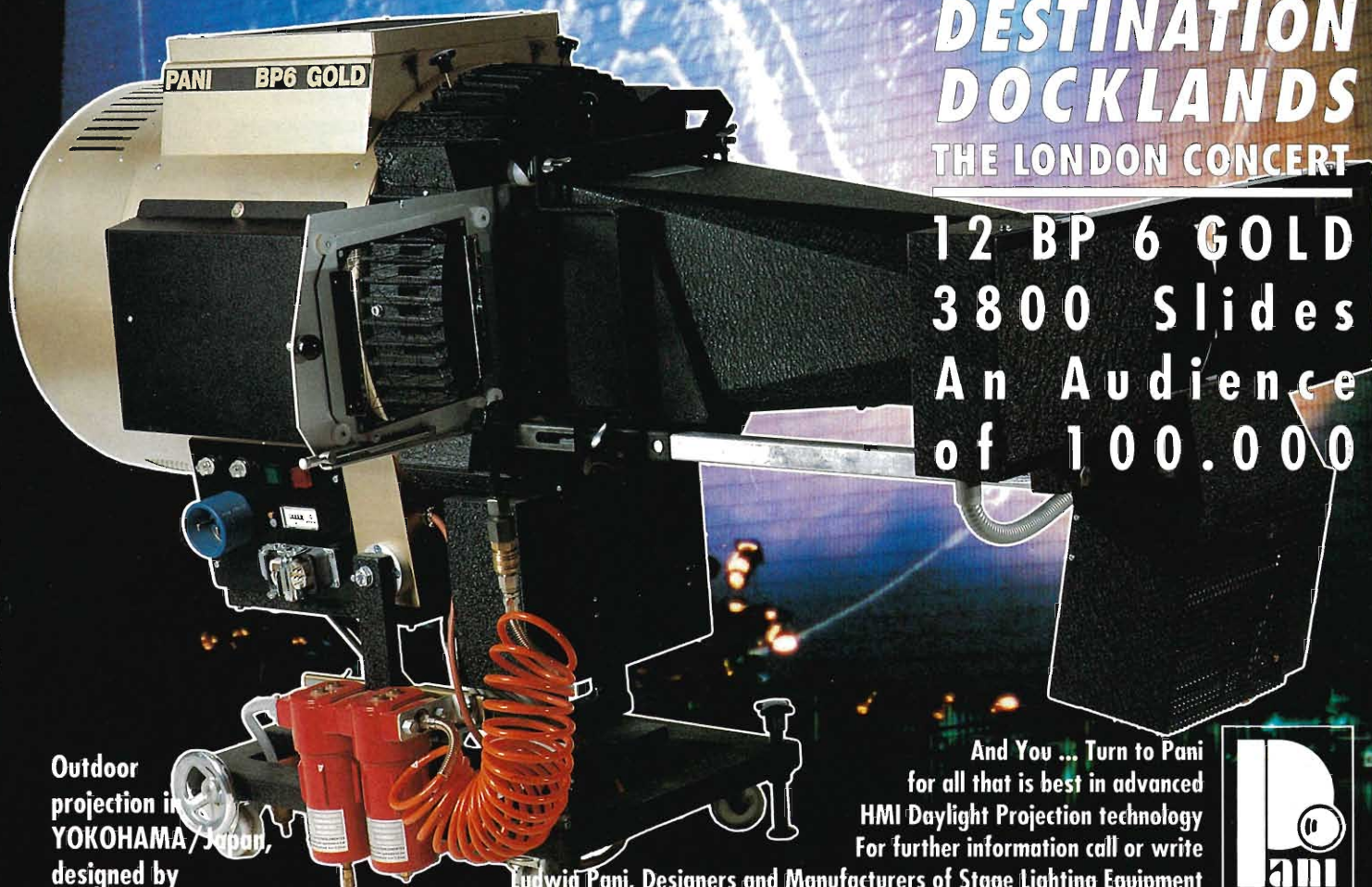
October 8, 1988

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DESTINATION DOCKLANDS

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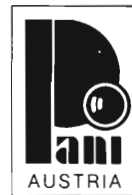
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Ben Duncan charts the details of Jean Michel Jarre's Sound System

Jean Michel Jarre's organisation, headed by Eric Alvergnat, in charge of sound, put out tenders for the proposed concert earlier in the year. While most of the services for the show were selected directly, the sound was chosen by tendering local PA companies. Although originating in the USA, the **Clair Bros** have a London branch and were a first choice, owing to their involvement with Jean Michel Jarre's previous spectacular in Houston, Texas. The three remaining companies shortlisted were **Malcolm Hill, Shuttle-sound** (representing EV's MT4 system) and **Autograph Sales** (representing the Meyer system). Eric Alvergnat, who conceived, designed and organised the sound specification for the show assessed the four companies' proposals, then made his selection.

Ultimately, the Meyer PA was chosen, co-ordinated by **Autograph Sales** (abbreviated to **ASL** from now on) in conjunction with **Sound Hire**. Autograph's MD David Solari commented: "Dates changing all the time made it difficult. Nothing went to schedule. The eventual get-in was 29th September, yet we had to wait until the 2nd of October to start work, while they built the stage and completed the PA scaffolding. The practical problems were enormous; the place was literally a building site. For example, while EQ'ing the system, our measuring mics' cables were run over by bulldozers on numerous occasions!"

Six Barges

A sturdy floating stage was constructed by welding together six barges, secured from a marine graveyard in Hull. Jean Michel's band included Hank Marvin 'guesting' on lead guitar, Guy Delacroix on bass, Yun Mateke on trumpet, four assistant keyboardists, a drummer and a percussionist, together with a brass section, and two choirs, one Afro, the other from the Newham Academy of music.

Stage monitoring revolved around two Yamaha PM-3000 consoles, feeding 6 Meyer UM-1 and 5 Meyer UPA-1 monitor cabinets. For those unfamiliar with Meyer components, these contain a 12" driver + horn with 60° conical dispersion; and a 12" driver + a horn with 80° x 60° (h x V) dispersion, respectively. Also on stage was a 32/8/2 Midas sub-mixer for strings, choir, brass and percussion.

Front of House

As sponsors, **Solid State Logic** (SSL) provided a 48 channel 'G' series console together with 'Total Recall' facilities, and the associated computer. In the days of setting-up preceding the show, these were wisely housed in a Portakabin adjacent to the mix position (figure 2). Only when the show was imminent was the SSL console moved into the mixing cabin, which was relatively exposed to the elements - and had been soaked several times in the preceding days!

On the SSL 'G' series, every channel included integral compressor/limiter/expander and a noise gate. One of SSL's service engineers, Chris Barron set up and looked after the console. Additional FX included a Lexicon PC.480L digital reverb and a Roland SDE.3000 delay. The four 'quad' outputs derived off the console were split out to seven PA towers as follows:

- Left rear to crane 1
- Left front to cranes 2+3

- Right front to cranes 4+5
- Right rear to cranes 6+7 (see figure 2)

The multicore linking the stage with the F.O.H. position was 500 metres long, 250 of it suspended over water on floats. The 60 pairs included 21 sends to the stage, divided as follows:

- 10 FX channels, off Studer machines 1+2
- 7 cue lines off Studer machines 3+4
- 2 comms and stage talkback
- 1 SMPTE timecode
- 1 Click track

A 44-way splitter rack buffered and isolated the sends at each end; each rack contained eleven off BSS MSR-604 4 channel mic/line splitter units (as pictured, L+SI, Sept '88).

Looking out towards the seven PA towers, three independent 240v power circuits were directly involved and the furthest of these was 600 metres from the SSL console. Few if any consoles would happily drive so many long cables shunted across their outputs. Accordingly, ASL/Sound Hire sent the SSL's quad outputs via seven purpose-built line-drive booster amplifiers, supplied by Wigwam Acoustics.

F.W.O. **Bauch** also sponsored the event, by providing eight Studer A280 24 track multitrack machines. Looking at the table in figure 5, machines 1+2 provided pre-recorded sound FX for the whole concert. Machines 3+4 provided cues not only on stage, but also over the whole site, to ensure the synchronisation of diverse lighting and laser FX. A further two machines (5+6) recorded 22 tracks direct off stage. Finally, machines 7+8 recorded ambient sound off the crowd, via the Fleetwood mobile. All six were fitted with Dolby SR, the highly regarded analogue noise-reduction system. Martin Bastin from Bauch installed and operated all the machines throughout, and was also involved in setting up the synchronisation for all the equipment. In charge of this was Paul Jarvis, a freelance engineer who designed the block diagram of the wiring between the SSL and the tape machines, the nerve centre of the sound system, together with the SMPTE code and other synchronisation needed to co-ordinate the show.

In view of Jean Michel Jarre's obvious love of 'high' technology, why did he choose 'low tech' analogue? Well, that's what replaced the Otari 32 track digital machine he used for his **Rendezvous** album. The Studer with Dolby SR is, quoting from a recent interview in **Music Technology** "... so musical. It is much warmer, which is particularly important for synthesizers ... With the Studer, the sound dynamics are better, the noise ratio is better - everything is better." Accordingly JMJ arranged directly with Studer for their UK agents, Bauch, to loan him eight machines for the duration of the concert.

Outfront Sound

The audience area began at the quayside, along which it extended for nearly 1km. The standing area up-front was about 40m/120' deep, followed by a concourse about 20m/66' wide which was kept clear for concessions and in the event of an emergency requiring a swift exit. Beyond this, a series of six grandstands, of varying shapes, ranged in height from 5 to 7m (15-25'). One of these formed the Royal Box, part of it being taken up by the mix position, itself situated over 130m/400' from the front of the floating stage. The back rows on the stands were typically 130m/400' from the PA speakers, and were 'on axis'.

Jean Michel Jarre dearly wanted the source of the music to be inobtrusive. Accordingly,

the PA was mounted on scaffolding inside a convenient series of seven derelict dock cranes on the quayside's edge. These were moved so they were equally spaced at intervals of 110m/350'. Considering the back lighting from the stage and the lightshow opposite, the cranes then appeared in jet black silhouette to the audience, effectively hiding the PA components. With the audience's standing area coming within 3m/10' of the PA, the distance between each PA tower didn't seem ideal at first sight, in that it demanded near impossible dispersion to attain even coverage.

Figure 3 shows the layout of the PA towers. On the top deck, 7½m off the ground, were 12 MSL-3 cabinets, arranged six in a row in two tiers to provide long-throw coverage. The decking was slanted about 3°, to place the cabinets on-axis half-way up the grandstands. Each mid deck carried a smaller **downfill** array.

The long-throw and **downfill** systems were jointly arrayed for a combination of smooth coverage of the appropriate audience areas, with rapid attenuation at the edges for minimum multipathing between the towers. ASL's Jim Cousins said: "The beauty of the Meyer MSL3s is that the array performance is easy to calculate and predict."

Once set up on site, the systems were measured using a Burel & Kjaer ½" measuring mic together with a Hewlett Packard 3582A dual channel FFT (Fast Fourier Transform) analyser. Equalising was done separately for each cluster using Meyer CP10 ('Complementary Phase') parametric equalisers. Jim Cousins reports "With the system high off the ground, we had near free-field conditions right down through the lower vocal range. Little EQ was required - some mid-range lobe adjustment and a very slight lift above 10kHz to compensate for distance losses." The EQ ensured that the sound was consistent across the whole listening area.

Each tower's subwoofer array comprised Meyer 650-R2's in a 15' radius arc, on the ground. The arc provided a degree of directionality so the subwoofers complemented the phase and coverage angles of the long-throw and downfill clusters above. Overall, each tower gave a flat response from 100Hz to 8kHz, with an intentional (and purely acoustic) LF lift of circa +8dB at 30Hz, and HF losses with distance depending on temperature, humidity (Question: Does horizontal rain constitute humidity?), and wind. From time to time, Jim Cousins was forced to abandon system measurements when the wind made repeated attempts to blow him off his feet, and the rain began to hurt ...

As a safety measure, to improve the audience's access to the exit, the last grandstand stage right was swung around 90°. For this reason, the nearest tower was fitted with extra components, namely two added MSL-3s per deck, to broaden the horizontal coverage to the portion of the grandstand in the nearfield.

Altogether, the system comprised 114 x MSL3's, 62 x 650-R2 sub-woofers and a nominal 20 stereo amplifiers (40 channels) per tower, i.e. 280 channels in all. **Sound Hire** brought in extra outfront speakers and amplifier racks from **Autograph Sound** and **Autograph Sales**, from **Wigwam Acoustics**, **Cane Green**, **Concert Audio Design** and **Soundplant**. After exhausting UK stocks of Meyer rental equipment, the balance of the loudspeakers came from **Radio Europa**, in Holland.

STAGE PLAN JEAN-MICHEL JARRE DESTINATION DOCKLANDS 88

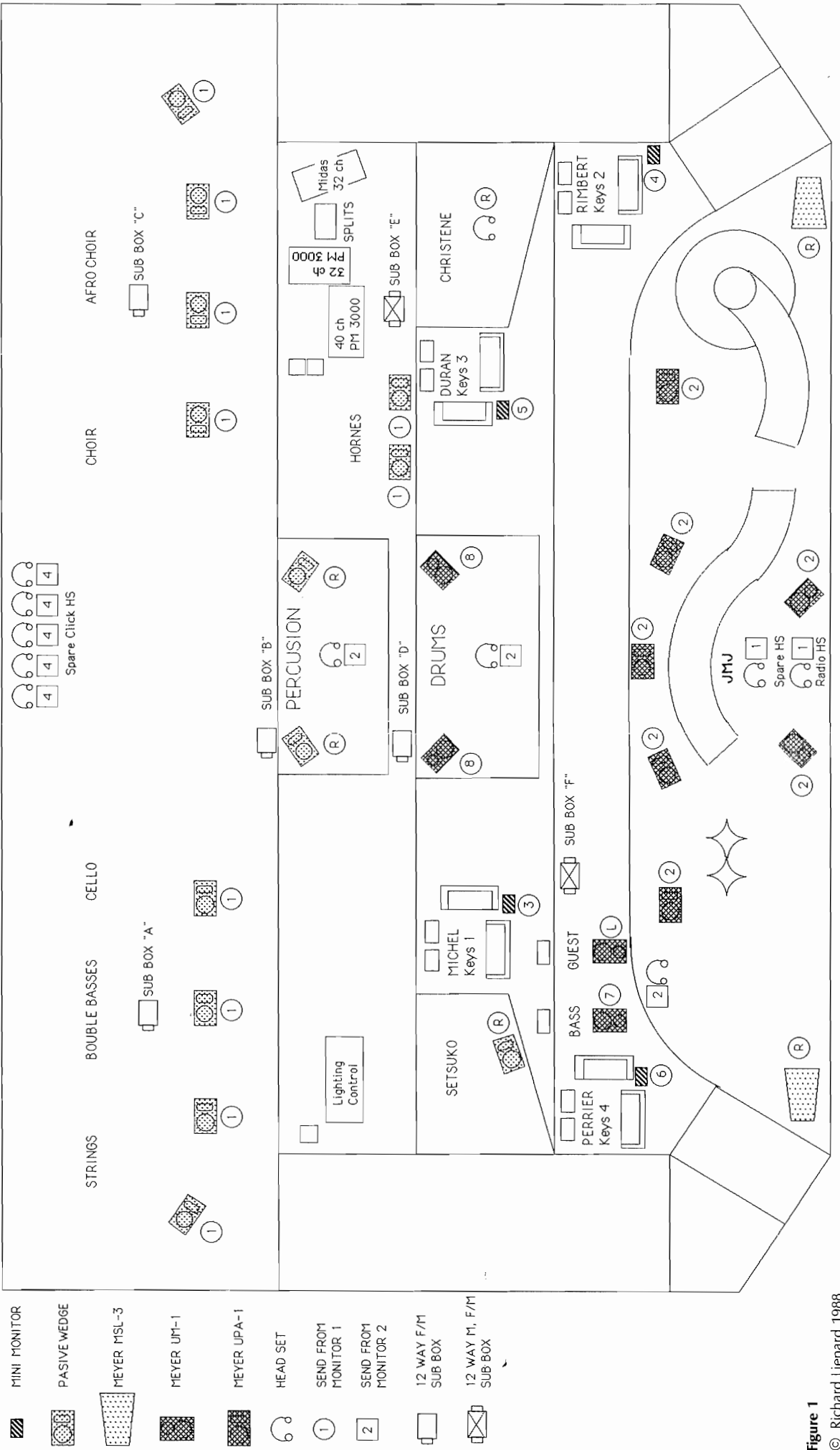


Figure 1
© Richard Lienard 1988

Despite hiring in from diverse sources, there were no significant technical problems. David Solari attributes this to the fact that all Meyer racks sold in Europe are packaged (at Autograph's insistence) to the same standard, viz. polarity, sensitivity and connector types and pin-outs. Similarly, the Meyer cabinets all had the same drivers, though some MSL-3's were brand new and some were five years old.

Technical logistics

Overall, the concert required some 5.2MW of AC power. The site wasn't equipped with power cables on this scale, and the LEB weren't keen to provide them, at least within an acceptable time and at an acceptable cost. Instead, the whole show ran off generators. 42 of them! The main PA was fed off two 60kVA generators, one at each end of the quay, giving a maximum cable span of 500m. The floating stage was equipped with 2x240kVA gennies, one being a spare with

manual changeover. A further 36kVA genny powered the F.O.H. mix position and Portakabin, this time with automatic changeover.

The sound system's earthing raised concern on four counts. First, the stage (not to mention 200+ musicians and crew, and £2M+ worth of equipment) was floating on water. Next, the stage equipment and power was largely open to the elements. On top of this, the sound team reasoned that having been concreted for many years, maybe over a century, the soil underneath the site would be an unknown factor. Finally, in view of the distances involved, any currents in the (power) earth wires would produce big voltage drops.

The solution adopted involved individually grounding the three sound system generators, with spikes driven into (what appeared to be) 'good soil'. The three generators were then hard-wired to a central, star ground point at the quayside for

safety backup, with a 30mm cable. The floating stage's ground was likewise hard-wired to the star point. Further, the safety earthing of all mains powered equipment was religiously checked, to be doubly sure.

The audio's grounding was worked out in advance, and in some detail by David Solari, Richard Lienard and Jim Cousins. Hum loops were avoided by making as much use of balanced interfacing as possible, and by paying attention to the point where cable shields were tied to ground. For example, all the floating sources (mics and other transducers) were continuously shielded back to their respective inputs, while individual shields between grounded, balanced sections of the overall system were lifted at the sending end, and connected at individual inputs for maximum common-mode (i.e. noise + hum) rejection. The result? Jim Cousins reported: "Absolutely no hum pickup was audible 1 metre from the sub woofers or the cluster section."

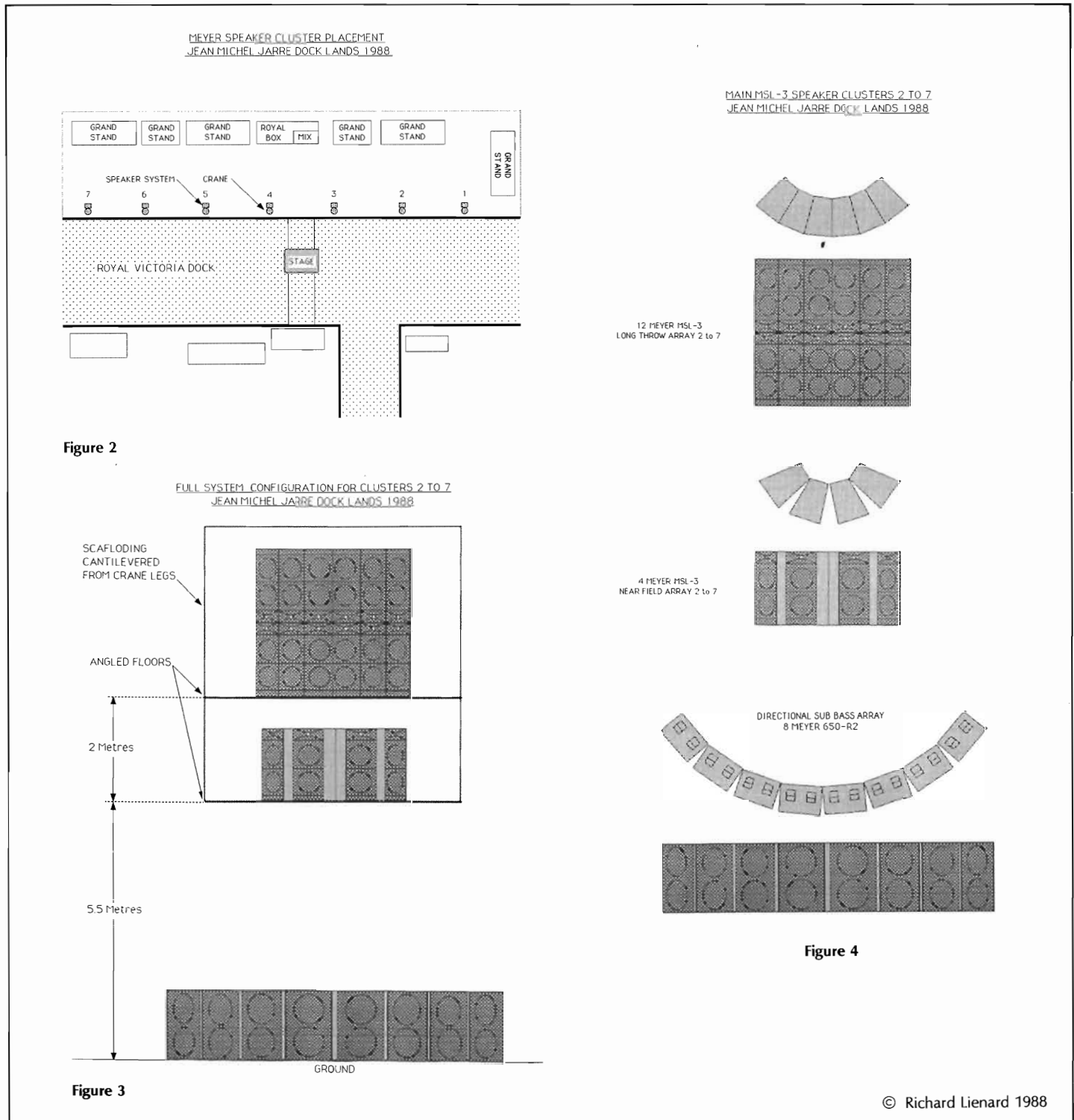


Figure 2

Figure 3

Figure 4

It seems that Jean Michel Jarre's team underestimated the English weather. The climate in France in October is for the most part, far milder. With the equipment being substantially unprotected from rain and wind, the sound crew had to be prepared for the worst. The most demanding part of the waterproofing programme was protecting the mics (some of them costing over £500), without significantly degrading their frequency response. ASL ran some tests with a spectrum analyser to evaluate suitable watertight membranes, ones which would best preserve the frequency response.

First they tried an old broadcasters' trick, slipping a condom over the mic's head. The results weren't good enough for music transmission; the response was attenuated so severely above 5kHz, it sounded like an AM radio! Eventually they settled for thin cling film, which lost 3dB at 12kHz. Likewise, the stage monitor speakers were covered with cling film at the front. The remainder of the stage equipment, namely racks, cables and junctions were rain-proofed with £50 worth of taped-up bin liners, heavy polythene sheeting and continuous lengths of polythene tubing.

The Rendezvous

In the event, the concert underwent terrible climatic conditions on the second night, with 30 to 50 mph winds and driving rain. Musicians and the monitor engineer stood in their overcoats, soaking but nonetheless, performing in the rain.

At the grandstands, the SPL was 115dB on average, with peaks of 120 to 125dB, just enough to cause the system limiters to flash on very briefly. Up front, almost under the PA towers, the SPL was +8dB up all round.

The last word goes to the eloquent Frenchman who designed the show's sound, Eric Alvergnat: "Everything that was asked for was supplied, and everything that was supplied worked perfectly under the worst conditions - thanks to the dedication and hard work of **all** the crew."

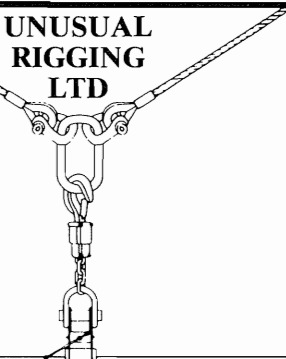
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* Independent and simultaneous mutual back-up, each pair of machines running in parallel with staggered tape changers.

Figure 5

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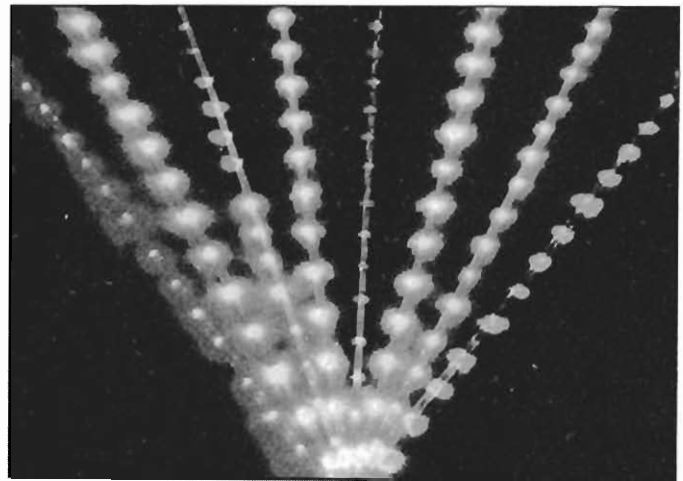
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The Three Lamp Trick

Tony Gottelier travelled to the North West to check out Color Pro in action in a real club situation and discovered a number of other disco innovations in play.

Following Graham Walne's report on Color Pro in L+SI August edition and various showroom demo's, I was looking forward to seeing this device in a 'live' situation which, always the acid test, I knew would yield up more clues as to its practical value.

The opportunity presented itself with an invitation from Wayne Winstanley of Hi-Tec Electrical to visit the site of his latest installation, which, coincidentally, is located in Hi-Tec's home town of Liverpool. My appetite was further whetted by the fact that this Lizard Lighting inspired scheme was to be the biggest installation of Clay Paky Golden Scans in the U.K. and boasted the high speed Oska Turbo interactive control system.

However, before we get into any of that I should report on the site itself and its location which is a story in its own write (sic.).

Located in the Netherton district of Liverpool and a stone's throw from Aintree race course, Fallows, after the family team who own and run it, is located slap in the middle of an industrial estate. Not only that, but the club itself is the front half of a 45,000 square feet factory!

John Fallows explains: "Geographically it's a perfect location well away from the City cen-

tre which has become a no-go area at night in recent years, and in a high density, well-heeled area of population. Furthermore, this type of building makes good economic sense and is immensely practical. It provides a huge car park, lots of interior space and no environmental problems with noise or close neighbours, so getting the necessary consent was easy. Our only problem was how to give a utility building the appropriate pazzaz to make it attractive."

To solve these problems, John turned to Graham Field of Bulldog Design who certainly delivered the goods in terms of pragmatic solutions. Firstly with the exterior, where the problem to be overcome was at its greatest, Graham has borrowed heavily on the Las Vegas experience and pastiched a low, white neo-Palladian frontispiece to the entire width. The whole is outlined in neon at night. This works well, in that you are inclined to focus only on the bits he wants you to see, that is the rather grand drive-in entrance canopy which has resulted, and ignore the grey pre-fabricated roof beyond. This is an approach often seen in the U.S. but rarely here and yielding, in my view, a whole new meaning to the use and value of archi-speak

'out-of-town-sheds' for discotheque purposes. Valet parking would have been a final touch in the same 77, Sunset Strip tradition, while also putting the door muscle to better use.

Inside, Field's layout is a total concession to the Scouse love affair with the demon drink and fast service, but his solution is unique in my experience. Four identical large pentagonal island bars are arranged around a central dance floor, providing considerable overall counter service and ready access to a bar wherever you may be within the club. (There is also a V.I.P./cocktail bar within the club and a pub-type lounge bar with daytime access at the front).

The four main bars are arranged in such a way that, to provide maximum visibility to the dance floor, the floor is raised at the back of each bar to create lounge areas. In this way a sort of theatre-in-the-round has resulted with the dance area performing the role of the stage. The only quarrel I had with this concept was that, although the standing areas at either side of the bars are protected, the anticipated spill-over onto the stairways to the dance floor might cause traffic problems. Whether this will prove a serious problem remains to be seen, but personally I hope it works, as it was refreshing to see interior design which is honest enough to emphasise the essential role played by alcohol in such an environment.

If bars are often banished to the periphery, then there has always been a tendency among architects and interior designers to hide loudspeakers. Although it is now understood that this is generally counter-productive in terms of sound quality, and it is at last being recognised just how important that is to the public, Level Acoustics found some clever solutions which seemed to satisfy both these opposing requirements.

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Hardware House



The lighting rig at Falls: "Given a real injection of adrenalin by the addition of a barrage of Golden Scans and Color Pro."



Golden Scans (right) and Color Pro (left) in action. "The duo perform to great effect."



Golden Scans and Color pro join forces at Fallows - lighting design by Graham Barron of Lizard Lighting.

Four Electrovoice base bins were mounted within four low podiums around the dance floor in front of each bar, with the idea that they could be used, Palladium style, by the more exuberant dancer. And, turning convention on its head, the four high-flown boxes have been promoted from the dance floor corners to a central cluster in the rig and focused onto the floor. While this is aesthetically pleasing the wedgeshaped TOA SF30 speakers also generated a high impact sound with a great deal of sizzle and presence. Yet, while I had anticipated a loss of containment, I had no difficulty in carrying on reasonable conversations in the adjacent bars.

So to the lights and what would otherwise be considered a relatively standard lighting rig, dictated by restricted headroom over the dance area, is given a real injection of adrenalin by the addition of a barrage of Golden Scans, Clay Paky's robotic projector, and one of the first U.K. installations of Lightwave Research's Color Pro.

The lighting system, designed for Hi-Tec by lighting lizard Graham Barron (are you sure

that's not wizard, Ed.), shows considerable vision in the pioneering sense by staking so much of the available budget on cutting-edge technology. Well, he who dares wins, and there is no doubt that what would have been a good average lightshow has been given a dimension well beyond the ordinary by the use of these two devices.

Much has already been said about the Golden Scan, especially after its successful double-act debut with the Oska Turbo at this year's Plasa Exhibition. However, the same duo perform to great effect at Fallows providing a range of effects from subtle colour sweeps to spectacular attacking flashes of brilliance. The 575 watt HMI lamp certainly delivers the goods and with auto-iris shutter and double coated dichroic filters these are what, for me at least and for the time being, elevate it ahead of the common herd of robotic clones. However, driven lighting is a fast moving market and one in which one has to review one's options constantly.

So what about Color Pro? Well, I have to say that I was impressed. It can certainly generate a range of attractive sparkling col-

ours through the combinations of a complex arrangement of three on-board dimmers, three 100 watt MR16 lamps and three dichroic filters. The dimmers are used, through an intelligent electronic palette, to proportionally mix the light levels and colours to generate a range of hues and tints. Effectively it is the reverse of the alternative technique of a single light source and a mix of three graduated colour wheels as pioneered by Vari-Lite and others.

While Color Pro is an unmotorised static device it does have the ability to sequence and crossfade colours either within, or from luminaire to luminaire. So what was the practical experience in a discotheque?

Well first, the twelve units in place at Fallows were intelligently sited at the dance area perimeter and focused to angle to the floor on the opposite side in order to maximise the available 15 deg. beam angle. Certainly the primary colours and secondary mixes were excellent, and up to the standard expected of dichroics, but I found the paler tints a little disappointing and somewhat muddy.



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expensive colour changer and not aggressive enough in its performance for discotheques. Similarly, I cannot see the existing system being acceptable for theatre or rock use due to its lack of power and precision. So there must be a danger of falling between these markets.

As an advocate of more colour and subtlety in dancing environments, I really hope this doesn't happen and that this truly innovative attempt to provide us with a worthwhile new lighting tool goes fully recognised. Ultimately, if that is the case, we can look forward to an improved second generation product which will, no doubt, solve all these teething problems. In any event, a great advance on the proliferating gell scrollers which so far seem to offer even less in terms of accuracy and control and to have no relevance at all in the discotheque.

In the meantime the good citizens of Liverpool have certainly been given something out of the ordinary at Fallows. I wish it every success.

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Equipment Specification

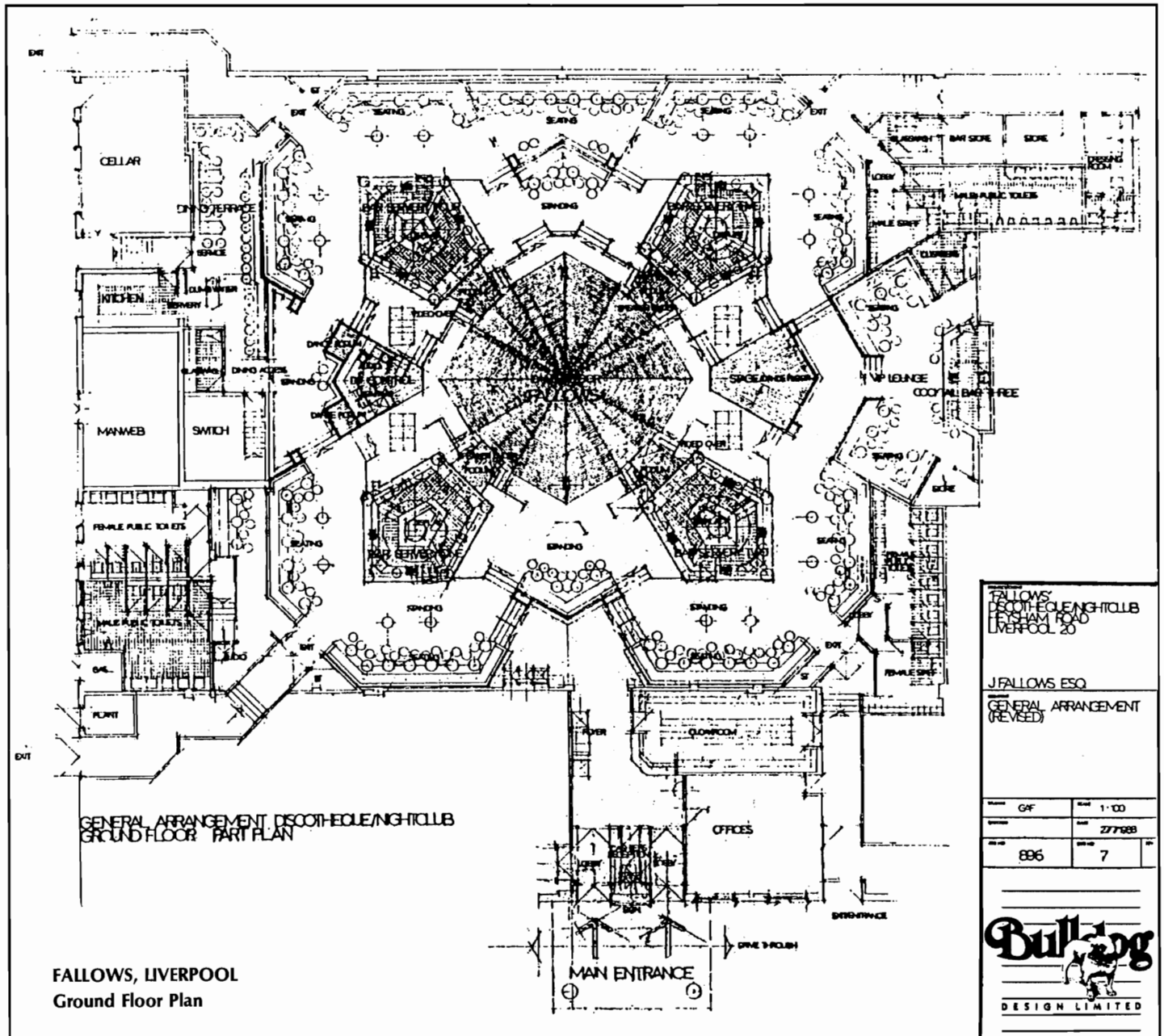
Lights:

- Oska Turbo and DMX512 Interfaces
- Pulsar switching and dimming packs
- 16 x Arclines and controller
- 48 x Focos 150
- 48 x Par 36 pinspots
- 12 x Color Pros and controller
- 96 x F70 pinspots
- 32 x Floods, profiles and fresnels
- 16 x Golden Scans
- 8 x Strobes
- 16 x Scanners
- 16 x Beam Cats and control
- Neon chevrons and straights

Sound:

- 2 x Technics SL1210 turntables
- 2 x Stanton 680el cartridges
- 1 x Formula sound PM80 mixer
- 1 x NAD 6155 cassette machine
- 1 x Electrovoice PL95a microphone
- 1 x Sampson SM58 radio microphone
- 2 x Altec Lansing 1712a compressor limiters
- 1 x Altec Lansing 1631a crossover
- 1 x Micro Audio programmable 1.2 eq pod
- 1 x Rane ME 30 graphic equaliser
- 1 x Greystone Industries inflexor
- 1 x Set EMO remote mains switching equipment
- 4 x TOA SF30 speakers
- 4 x Electrovoice TL4025 bass speakers
- 2 x Amcron MT1200 amplifiers
- 1 x Rane MA6 amplifiers
- 12 x TOA RS21m background speakers
- 1 x ADD 2 digital delay unit
- 2 x TOA RS21m D.J. monitors

Now this may be to do with the colour temperature of the lamp in current use, but it did lead me to wonder, in practice, whether this device might be seen as just an



PHOTOKINA 88

L+SI reports from Cologne

Photokina can only be described as a test of one's stamina. This was particularly so for lighting and sound which was sited in the very last hall. And it was a miracle that any visitors penetrated this far, because to do so they had to negotiate sets of scantily-clad models (male and female) dancing in front of Kodak or Polaroid cameras or being caught on Fuji film. Having endured this test of will power they then had to traverse the deathly boring halls of film processing machines and so few survivors reached the lighting and sound manufacturers.

In fact, attendance was up on two years ago, but considerably down from 1984. "You can actually get room at a table without queuing," said one astounded survivor.

What was there? The most significant development for lighting manufacturers and designers is Philips' new MSR single-ended lamp.

Philips MSR lamps are high pressure discharge lamps with short arc length and single ended. The lamps can restrike when hot, which is an enormous time and money advantage in TV and film production because the lamps can be turned off when not in use where as before they had to be allowed to cool down before they could be re-ignited. In addition the lamps may be dimmed by 60% of their full output without any change in colour temperature. Before, a dimming shutter had to be used which was inefficient and expensive on power. They give off a continuous colour temperature spectrum of 5600K which unlike other existing discharge sources does not change colour with age.

A further benefit of the new mix of gas filling is that they will work with lower ignition voltages than usual, so simple ballasts and ignitors can be used. Although these single ended lamps have only just been launched some manufacturers have already taken advantage of the axial arc to redesign their

luminaires so that they can be smaller and more efficient.

Coemar launched their 'Jupiter' effects system for TV studios and concert performances. Jupiter is fitted with the new Philips 1200W MSR source and produces an intense moving beam of light with: 12 gobos, 12 discharge colours, high quality zoom optics, douser, high speed digital data link and a range of computer controls.

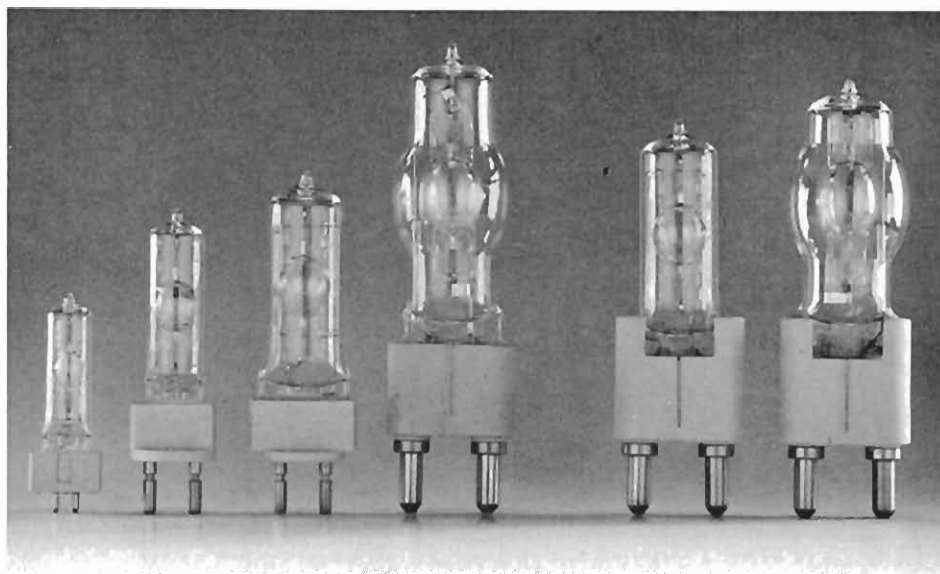
Coemar also showed two new followspots using Philips MSR lamps which will be available mid '89. Testa 700W and 1200W versions are compact, high output, long throw followspots, combined with zoom optics, iris, rotatable stripping shutters and a colour magazine.

Also from Italy, DeSisti have already incorporated the new MSR lamps into their 1200W and 2500W Rembrandt fresnel

spots. Other new products from the company included cyc lights and stands.

Teatro continued the development of its range of professional stage spotlights and floodlights. On show were fresnels, PCs and profile spotlights, floodlights and followspots. The 1989 range includes many new features and up-grades. Acuto and Tratto PC and fresnels now have fast, 5-turn focusing from spot to flood, and both will be open-fronted for the attachment of colour changers, and will incorporate a mechanism to allow simple one-handed colour frame exchange. Also introduced is an economy version of Diluvio without automatic switch and glass. Finally, Teatro have also developed a range of telescopic tripod stands and extensions in matt black aluminium with a non-reflective surface.

LTM demonstrated their new motorised



The new range of MSR gas-discharge lamps with high light output and excellent colour rendering for disco, studio and theatre lighting.

MSR from Philips

The medium Source Rare-Earth (MSR) range currently includes lamps of 400-2500 watts, with single-ended construction suitable for any burning position. Luminous efficacy is from 75 to 96 lumens/watt over the range, and the lamps produce a continuous spectrum with a colour temperature of 5600°K which, unlike existing discharge sources, decreases only slightly through the lamp-life.

These unique performance qualities are the result of the sophisticated chemical formulation of the lamp gas fill, which comprises inert gases, mercury and rare-earth additives including dysprosium, holmium and thulium.

Television and film

Primarily designed for television and film work are the 2500 watt hot restrike and 1200 watt hot restrike lamps. A 575 watt hot restrike is in development for introduction later this year. Because of their unique mixture of filling gases, MSR lamps may be dimmed by 60% of their full output without any change in colour temperature. To the film maker this is more than one

whole stop so the lamps are thus perfect for balancing fill light against daylight.

Furthermore MSR/HR lamps are directly compatible with HMI control gear and so may be run from existing equipment.

Disco

Designed for the disco equipment manufacturer are the 400, 700 and 1200 watt lamps, without the hot restrike facility, although the 1200 watt HR or 2500 watt HR types could be used if required.

Their continuous spectrum means that when used with coloured or dichroic filters excellent saturation will be achieved, highly important for disco effects. And with 1200 watts available the new equipment can achieve far greater brightness than previously attainable.

A further benefit of the new mix of gas filling is that lower ignition voltage in comparison with HMI lamps are now possible, meaning that less sophisticated and expensive ballasts and ignitors may be used by the equipment manufacturers.

Although the lamps have only just been launched, they have already been designed into ranges of disco equipment and studio lanterns available from two manufacturers.



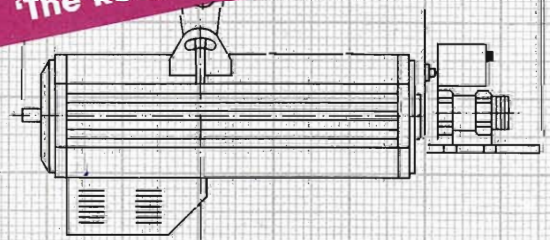
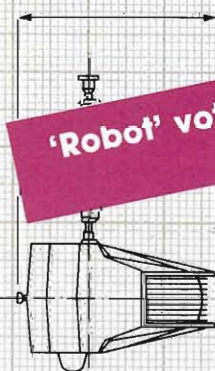
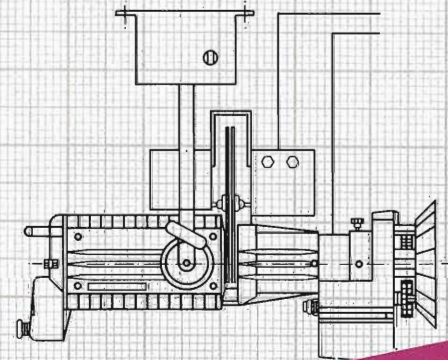
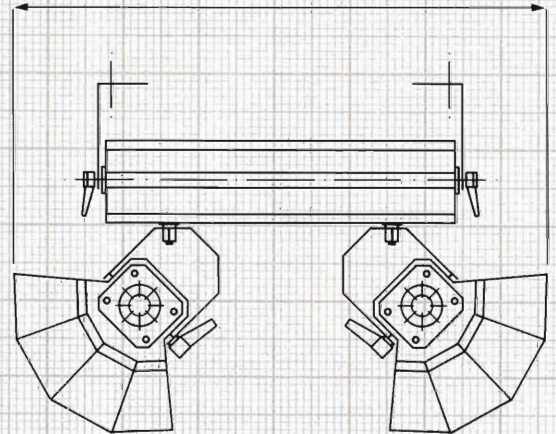
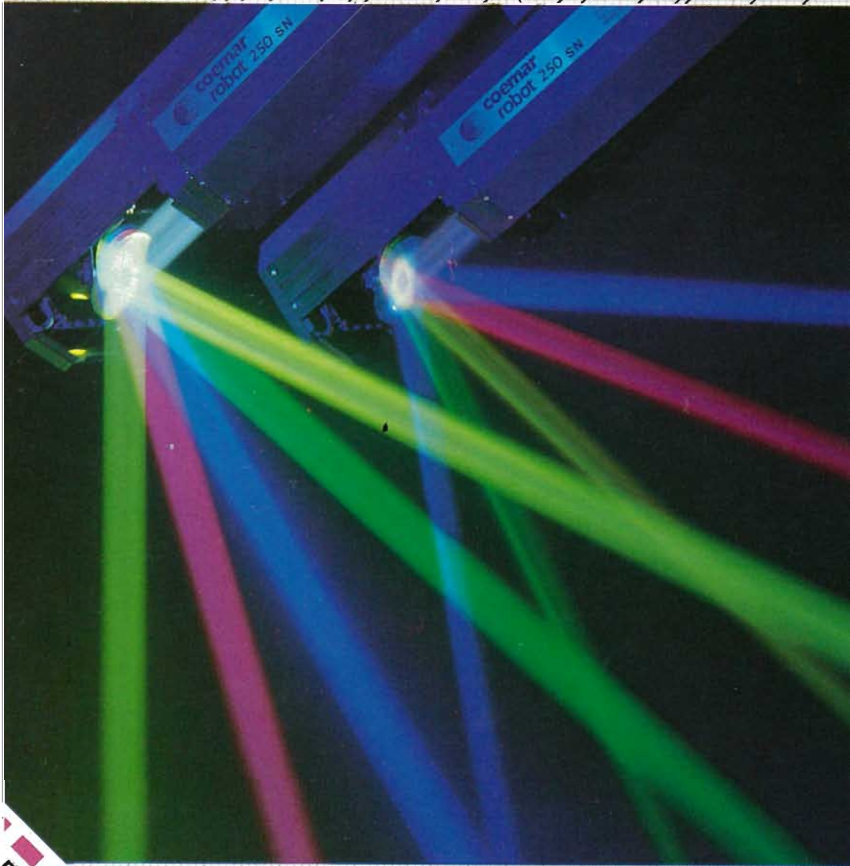
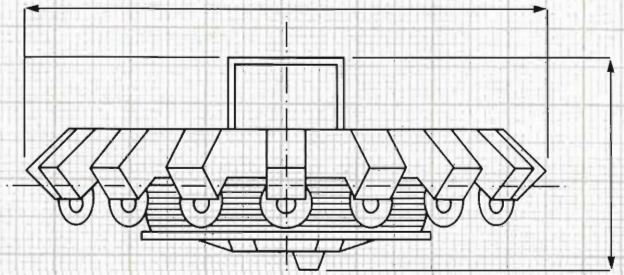
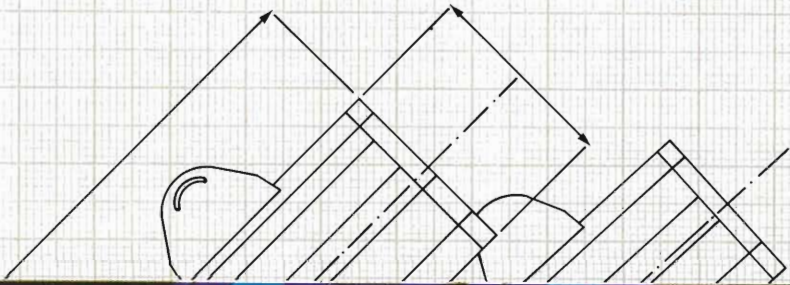
Joe Tavil of The Great American Market and Gordon Pearlman (right) with their new Access lighting control system.



coemar



tomorrow's concepts - today's reality



**'Robot' voted Lighting Effect of the Year 1988
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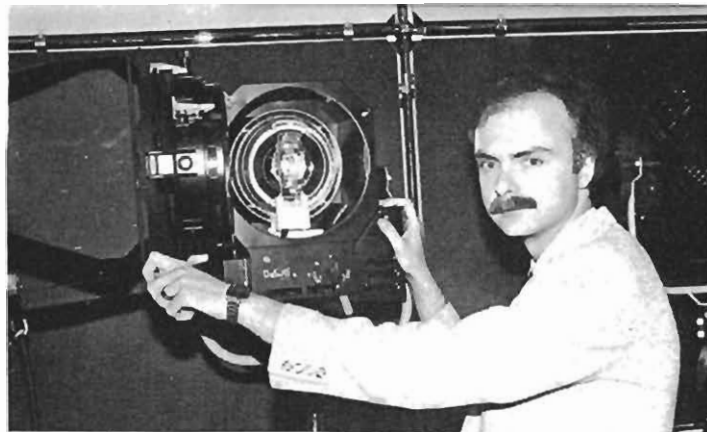
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Detailed explanations from Keith Dale (left) on the Celco stand.



Mike Wood of WB Lighting shows Philips' new MSR lamp installed in a DeSisti 2500W Rembrandt fresnel.

dimming shutter. It controls the light level without losing colour temperature, there are no bulky power racks and a smooth even light spread is maintained throughout all phases of dimming. There are three different shutter control options available: manually, through the dimmer control desk, or by remote control.

Arri showed their new range of 2500 to 1000 watt portable dimmers. They have local control faders and a dimmer test facility. A useful feature is the interlocking feet which allow the packs to be stacked six high. (It was interesting that the Arri dimmer room actually used Strand dimmers to light their stand - a highly attractive Tri-Lite structure).

Also new from Arri were a range of totally flicker-free ballasts at 575W, 1200W and 2500W, and a set of ultra-compact ballasts specially designed for the Daylight range of HMI spotlights covering 575W, 1200W and 2500W. New lighting telescopes are available for either 50kg or 75kg maximum loads, and the Softlight range is a brand new design concept in 2.5kW and 5kW versions. Either is available in manual and pole-operated versions.

There were also many new developments on Arri lighting control products. The Imagine 500 has all the facilities of the Imagine 250, now available in large system format, and able to handle 500 control channels. Both systems can now be supplied in modular format. The new Arri IR infra-red remote control system can be used to control Image, Imagine and Connexion systems

from new or as a plug-in retrofit. It has a range of up to 40 metres. Another development is the Arri Designer Graphic Tablet.

FGV Helios used Photokina to show its range of film lights with integral ballasts. No longer will one have to drag unwieldy ballasts along with the luminaires, because these lightweight ballasts are incorporated into the head. The ballasts are electronic which enables the light to operate at a discharge frequency much higher than any other HMI light previously available, giving a flicker free light. The 575W and 1200W open faced and fresnel lights are ready now; the 2500W and upwards will be available later.

Lee launched their new 16kW luminaire and their new chief executive, Bill Scott, on to an unsuspecting market. On a two-tier stand, a wide range of products was shown including the latest Prestige 3000 memory lighting control system.

Strand used Photokina to launch no less than 13 new products. They included Gemini 2, now with 240 channels and integral disc drive, their precision automated lighting system - PALS, and Action 48 which provides 48 manual faders, 99 memories, nine programmable effects, timed cross fades and channel flash buttons.

The 1000W Beamlite uses an integral transformer unlike other beamlights on the market and has no less than 1130000 peak candelas, proving very successful with TV lighting designers.

Strand has continued their programme of development for the QuartzColor range of

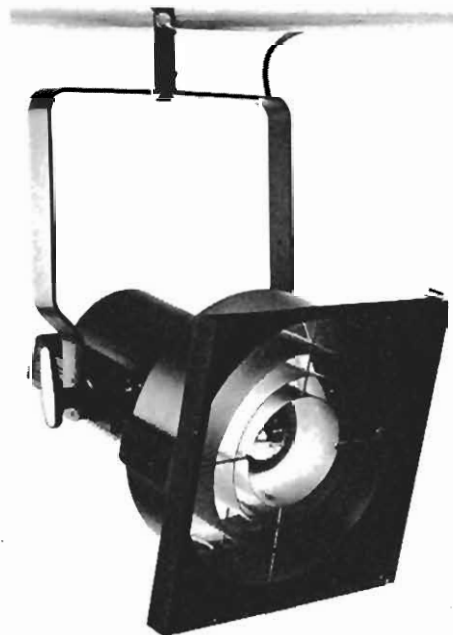
products. The entire range has undergone modifications to improve safety, handling and the quality of the optics. In addition,



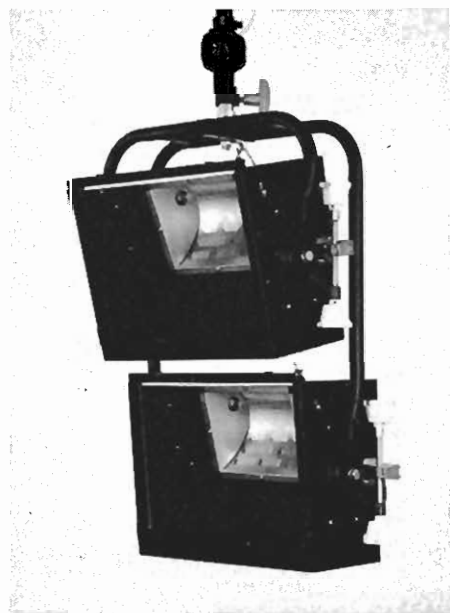
Nick Shapley, Arri's UK sales manager, demonstrates a new pole-operated softlight.



New products launched by Lee Colortran at Photokina included the new 16kW super daylight fresnel (above) and the re-designed Baby location and studio tungsten luminaires.



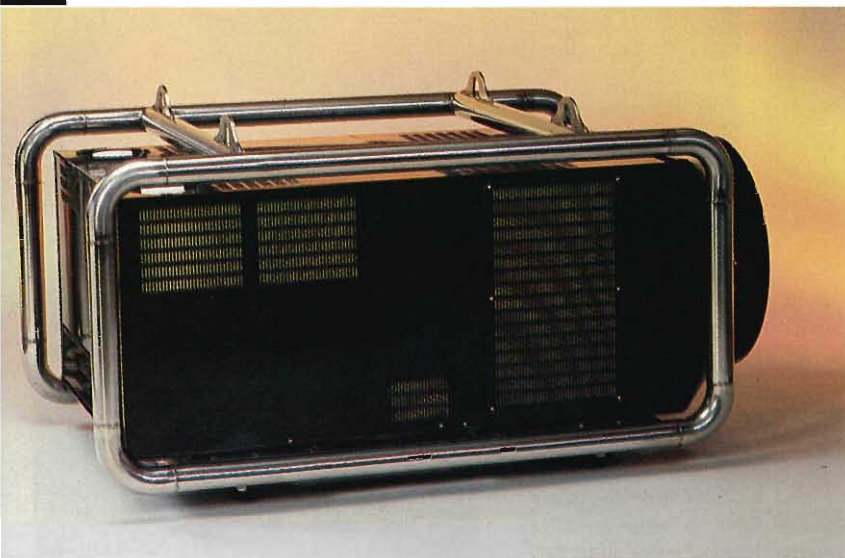
Strand's new low voltage Beamlite 1000.



The new Strand Quartzcolor Iris cyc light. Two versions are available - the split yoke Iris 2 vertical and Iris 4 vertical.

THE MOST ADVANCED SPECIAL EFFECTS

HEAVY



For many years people wishing to create an effect of low lying fog clinging to the floor are only too familiar with the problems of doing so. Invariably it entails a long journey to the chemical company for supply of dry ice, carrying special storage containers and by the time you have returned 25% of the dry ice has evaporated; also by the time you are ready to use it, you probably just have enough for the show and that is after you have spent an hour or so boiling 100 gallons of water!

JEM are pleased to announce the demise of dry ice CO₂ — dry ice is a thing of the past, just a bad memory. From October 1988 JEM will be in full production of HEAVY FOG, the most advanced special effects smoke/fog machine in the world.

HEAVY FOG has taken three years and over 20,000 hours of development and has revolutionised smoke/fog effects throughout the leisure industry. HEAVY FOG is not just a machine that simulates a dry ice (look-a-like) effect, it is vastly superior in every way, and is capable of producing a vast range of special effects.

JEM's Research and Development Department has developed a very specialised low temperature freezing plant capable of temperatures below -30° combined with a high power industrial fog generator. HEAVY FOG has an enormous output and is able to throw a layer of fog to cover a floor 4,000 square feet (371.60 square metres), 1 inch (2.54 cm) off the floor to 6 feet (1.83 metre) high in the air, and at the touch of a button can produce normal smoke effects.

JEM have also developed three special water-based Fog Fluids.

- A1 Quick dispersing
- B2 Medium dispersing
- C3 Long lasting

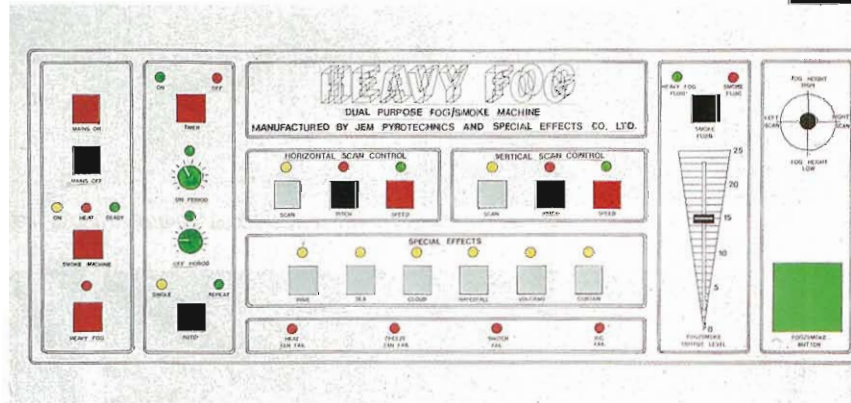
HEAVY FOG fluid is completely dry and will not leave any residue. HEAVY FOG can also produce fog and smoke continuously without stopping to recharge. To enable HEAVY FOG to produce both effects simply fill one fluid tank with standard ZR FOG LIQUID and the other with HEAVY FOG FLUID. HEAVY FOG costs less than half the cost of dry ice CO₂ to run.

Do not be fooled by poor imitations; HEAVY FOG machines are manufactured by JEM PYROTECHNICS & SPECIAL EFFECTS CO. LTD. HEAVY FOG is a Trade Mark of JEM PYROTECHNICS & SPECIAL EFFECT CO. LTD.

**JEM SMOKE MACHINE Co Ltd, Vale Road Industrial Estate, Boston Road, Spilsby,
Lincolnshire PE23 5HE Tel: (0790) 54050 Fax: (0790) 54051 Telex: 37207 JEMSMC G**

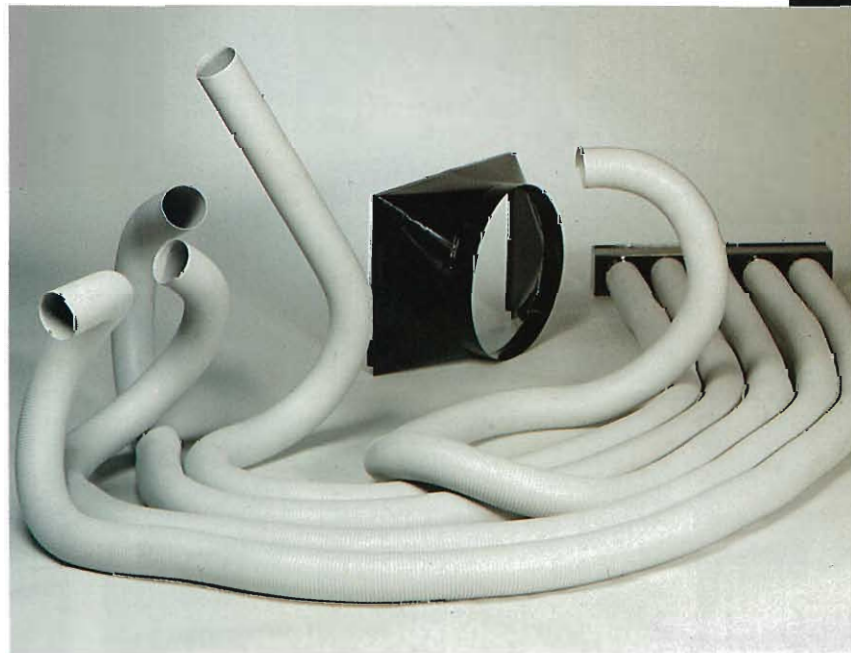
SMOKE MACHINE IN THE WORLD

FOG™



The controller has a comprehensive range of controls which include variable smoke/fog output, joy stick control, horizontal and vertical scans for the creation of special fog effects, and six pre-set special effects; Wave, Sea, Cloud, Waterfall, Volcano, Curtain. To vary the height of fog simply adjust the fog/smoke output level control and move the joy stick forward or back ward depending on the desired height of fog. All effects can be achieved manually or automatically.

As an optional extra a 5-way ducting system is available and comes complete with 5 x 100mm x 5 metre lengths and front ducting adaptor. Also pictured, rear duct adaptor to which 400 mm ducting can be fitted.



ILLUSTRATED RIGHT: 5 WAY DUCTING SYSTEM
Comes complete 5 X 100mm X 5 metre lengths and front duct adaptor.
Also illustrated rear duct adaptor to which 400mm ducting can be fitted.
Both duct systems are optional extras.



The big one - Galaxy 3 from Strand Lighting. Control of motorised luminaires is fully integrated into the operational structure.

their 1200W HMI/CID parlight was shown for the first time. This compact and rugged luminaire is ideal for applications requiring a daylight source with maximum lumens per watt.

The piece de resistance was Galaxy 3. The original Galaxy lighting control system is the unquestioned international leader in the field, with now well over 300 installations in the most demanding production studios and theatres in the world. Galaxy 3 controls up to 1536 dimmers on 999 channels with full proportional electronic patch, and double the number of preset masters formerly available.

For the first time, control of motorised luminaires is fully integrated into the operational structure of the lighting control system. The information can be recorded and played back independently or automatically, in conjunction with other lighting cues. Galaxy 3 proved so successful that on the last day of the show the company received three orders, Strand told L+S.

Laserpoint showed their latest developments in videowall technology. The PixelLite videowall system developed over



Disney World lighting director John Haupt (left) with William Groener, Strand Lighting's US vice-president sales and marketing.



Cerebrum Lighting's Rod Bartholomeusz (right) with newly-appointed sales engineer Gut Sargent on the Amptown stand.



ADB - busy all across Europe.



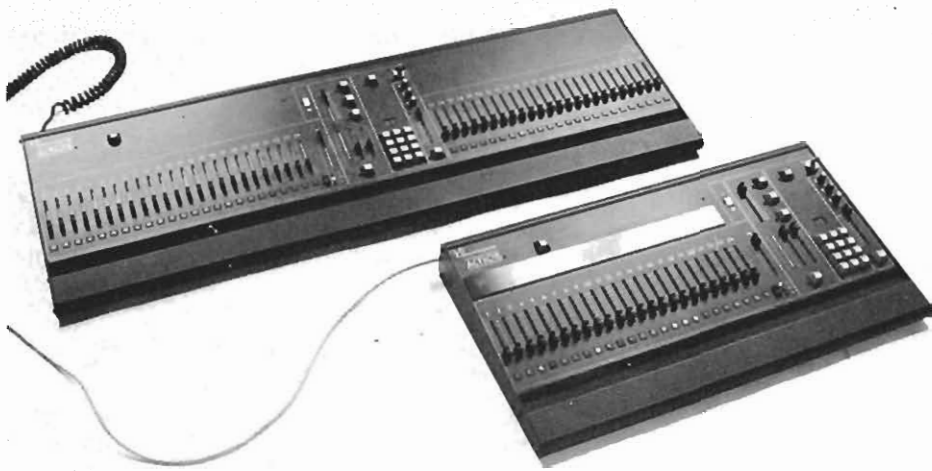
Strand's Peter Willis (right) demos Galaxy 3.



Laserpoint - flying the flag for British videowall systems.



Electrosonic's display of videowalls was a crowd-puller.



Action 24 and the new Action 48 from Strand Lighting.

the past 12 months has now reached a high level of sophistication and boasts a number of unique effects. Using a wall of monitors as two sides of the exhibition stand, Laserpoint devised an interesting and informative demonstration of videowall capabilities.

On the other side of the gangway, **Electrosonic** were emphasising the fact that Britain has a lead in the video and audio visual field with a massive show of strength, both with product and its application to numerous branches of the entertainment industry.

Announced in the spring, and officially launched at the PLASA Show and Photokina, **The Great American Market** had their highly acclaimed 'Access' lighting control system. It has 48 control channels, soft patch with up to 256 dimmers and a cue memory capacity of 232 full size cues or 464 with removable library storage (see Equipment News this issue). Designer Gordon Pearlman was on hand with GAM's Joe Tawil to offer demonstrations. 30 Access units are currently being manufactured every week, but they

can't keep up with demand, L+SI were told.

Often associated in L+SI readers' minds with major discotheque centre-piece effects, **Malham** were showing items from their wide range of photographic and studio lighting plus a new range of low voltage decor light fittings.

ADB from Belgium are continuing to record successful installations across Europe. They reported to L+SI that an order had just been received for the installation of 250 motorised spotlights for television studios in Bratislava, Czechoslovakia, complete with infra-red remote control. ADB's major lighting control system, the S28 Mk II, continues on its successful path with recent orders including 5 for BRT Television in Brussels and dual units for Theatre Regio in Turin and teatro Comunale dell Opera in Genoa.

New on stand from ADB was their range of spotlights and a motorised hoist system for remote control of any type of lighting unit.

CA/JO



Strand Lighting - a major staging operation.



Strand's Impact - first seen at the PLASA Show in September.



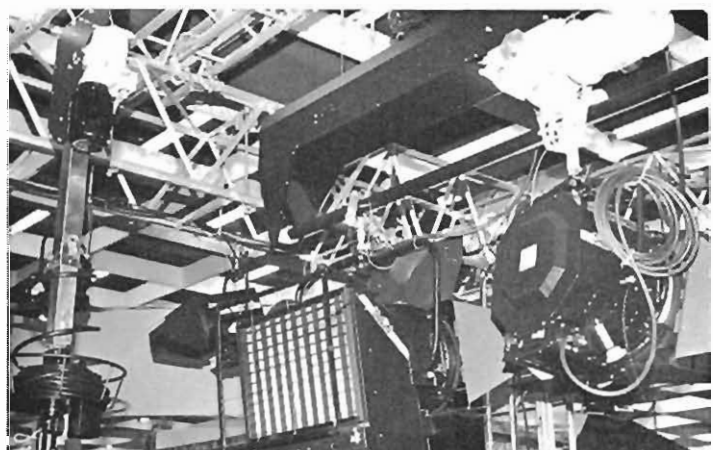
Bruno Dedoro (right) details the latest from Coemar.



Joint force - Coemar and Teatro.



Lee - a two-tier stand full of product.



A proliferation of product from DeSisti.

Disney World's Nightly IllumiNations

The most dazzling high-tech spectacle ever produced by Disney is described by Disney World lighting director John Haupt.



A view of the Italy, American Adventure and Japan pavilions complete with finale fireworks.



The Lagoon with centre barge showing xenon ray lights and laser fibre optic scan on sphere.

IllumiNations, the most recent and most dazzling lighting spectacle ever produced by Walt Disney World, opened earlier this year at the EPCOT Centre in Florida. The show takes place every evening around the World Showcase Lagoon and transforms the World Showcase Pavilions into a new visual and sensory experience.

The event blends a lush orchestral score with high intensity xenon ray lights, building wash lighting, animated images created with small incandescent lamps, lasers, fountains, fireworks, rim lighting and projected images on pavilions to create a new visual experience for the park guests. Presentation is built around international travel, and uses classical themes to evoke locale and period, and specific and abstract images help to create the illusion of a journey around the world.

IllumiNations actually began nine months prior to opening from a concept developed by John Haupt, Disney World lighting director, who also functioned as producer for the spectacular. "The concept was to provide the guest with a 'Kiss Goodnight'; for the majority of visitors in the park it is their last experience prior to leaving and we want them to exit with a pleasant experience fresh in their minds," John Haupt told L+SI.

The new project was developed from several elements. Lasers located on three of the pavilions - Canada, American Adventure and Mexico - provide 28 Argon lasers for beam work and scanning effects in the sky above the lagoon. New laser images and patterns were digitized by Brian Samuels under the direction of Adam Bezark and Don Dorsey.

Fountain barges contain computer controlled water jets, lighting and fireworks and a central laser barge contains one 28 watt Argon laser and two 10 watt Krypton lasers for full colour capability on water screens and a fibre optic sphere. John Albert, WDW resident designer for all Disney fireworks shows, re-designed 75% of the existing product to meet the show concept for IllumiNations.

"Since almost all fireworks product is still hand manufactured, John must order all our product a year in advance," explained John Haupt. "Colour, lift time, burn time and size are all developed to our specifications and supplied from worldwide sources. Decisions regarding product selection were critical to meet delivery times and opening schedules. John found some spectacular new shells for the show and had some existing product re-designed for more intense colours."

The symphonic score for the show is one of the highlights. New segments were written by Bob Krogstad and existing music, arranged by Don Dorsey, was digitally recorded by members of the Toronto and Los Angeles Symphony Orchestras under the musical Direction of Steve Skorika. "The



The China Pavilion with wash lights and LTM fresnels.



Roof screen on the China Pavilion partly raised.

music has the richness and emotional quality which we felt would be necessary to fill the 1.2 mile viewing area," said John Haupt. "An upgraded audio system, with new speakers and the addition of sub-woofers, bring this unique outdoor audio system a new dimension in sound."

The major task was the addition of the effect lighting on each of the pavilions. Every pavilion received a basic package which consisted of the following elements:

Rim Lighting

This consisted of small 2 3/4 watt incandescent light strings installed on all the architectural features of the pavilions. The light strings were custom manufactured with larger gauge wire so each string could be extended to 40' in length. The plastic which encased the wire was injected with a grey colour during manufacture so that if paint were to chip off the normally shiny surface would not reflect light and spoil the effect. A transformer was required for every 40' of the material and hiding these proved to be a major effort. Over five miles of the material was necessary to accomplish the effect desired.

Wash Lighting

Each pavilion was to be coloured with blue light and another complementary colour. This was accomplished with a variety of commercial and theatrical lighting fixtures. HMI fresnels were used for long broad throws of lighting and each unit was fitted with a mechanical shutter. All were colour

balanced and are dimmable.

Strobe Lighting

Two styles of strobes are used: programmable and random. The random units operate on a random flash system familiar to the industry and programmable which required a separate firing circuit. This allows for pulse of strobes for specific accents in the musical score and to create massed effects. 35% of the strobes were also coloured to add sparkle and visual interest.

Light Screens

Screens are hidden from view on the pavilion rooftops, rising up to provide support for animated light images above the rooftops, helping to create a false sense of scale around the lagoon. In the dark it is difficult to judge scale, and dragons on 'China', maple leaves on 'Canada', and wind-mills on 'France' take on a larger than life appearance.

Projections

The most spectacular effects involve large scale projections on the pavilion surfaces, transforming the Germany pavilion into a gigantic gingerbread house and Canada into a birch forest. Ken Dresser, art director for the project, created the images which were painted by Sherwood Meyers. Jim Mulder, from WDI Special Effects, developed a camera which used the actual projection lens from the projector to photograph each pavilion from the location that the final image would be pro-

jected. The photos were then blown up with a raster grid and the designs were sketched directly on to the photos. These were then transferred to art board and painted as final art. The paintings were then shot back down to the final slide size and mounted and placed in projectors in the exact locations from which the photos were originally shot. Using this technique, all the images mated perfectly with the architectural lines of the pavilions and blended each image to create the spectacular look desired.

"In all there are 13 scenic projectors used for the visual effects on the pavilions, six lasers, 11 zenon ray lights, 12 roof screens, 108 fountains, 783 fireworks, 550 theatrical-style lights, 680 strobe lights, five miles of rim lighting and over 50,000 lamps for the animated screen effects plus the musical score to create this sound and light show," said John Haupt. "The really amazing thing is that during the daylight hours you cannot see one element visible on any of the pavilions. And it makes the magic of surprise richer because we don't give anything away prior to the show."

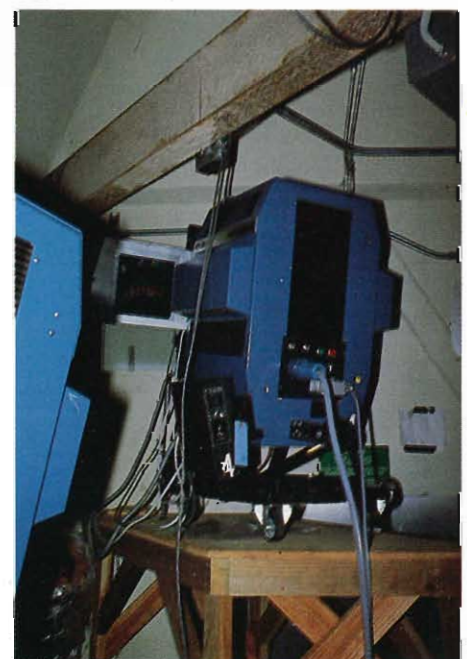
"This spectacular is for the child in everyone. The rousing finale combines all the elements of sight, sound, colour and spectacle. Even the show doesn't end; selected lighting and effects remain on to offer guests a totally new night-time visual adventure at EPCOT Centre."



LTM 4kW HMI fresnels, Mexico Cantina.



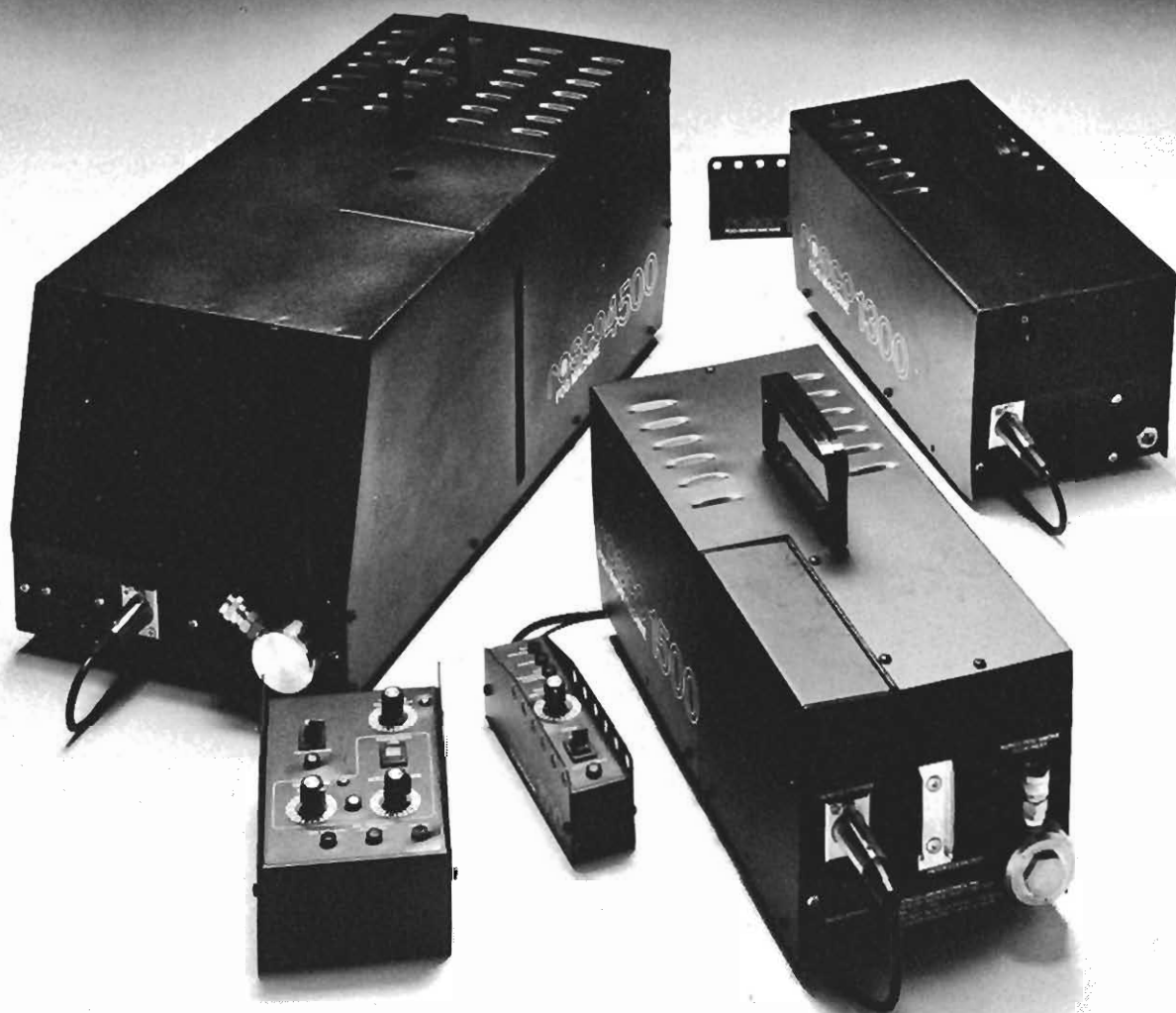
Paní enclosure and wash lights, Germany Pavilion.

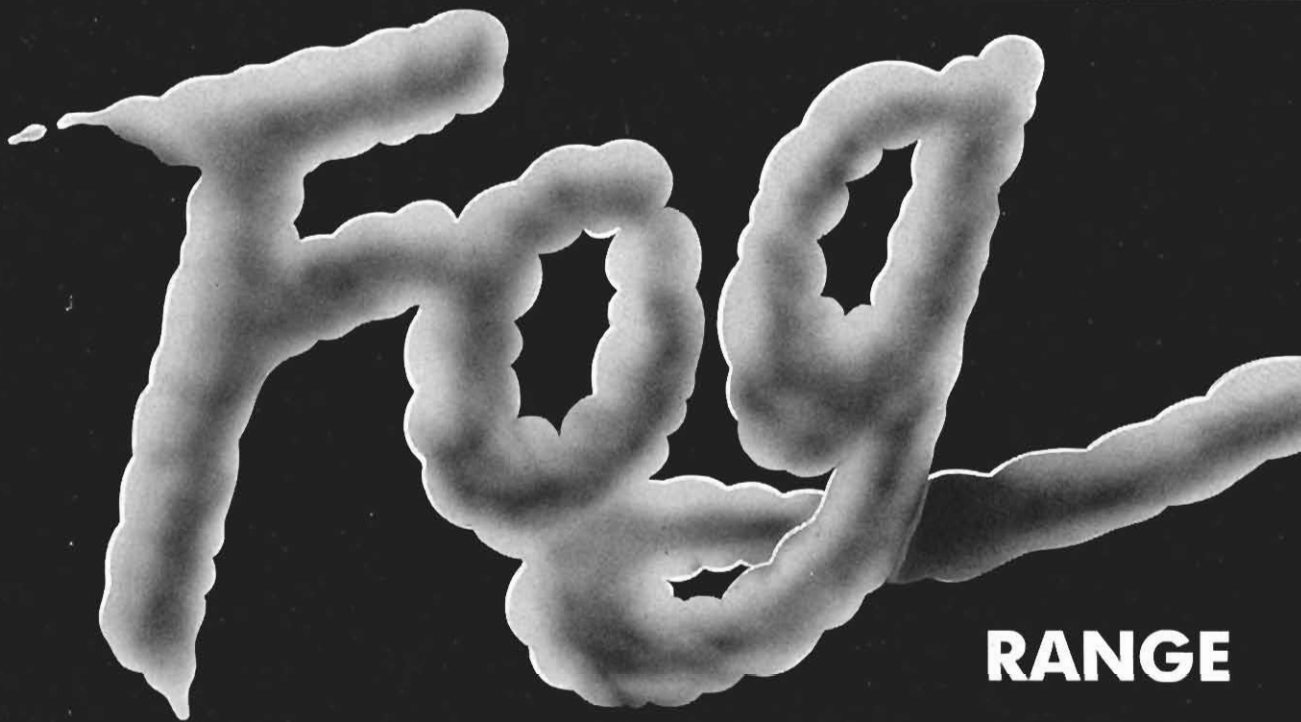


Paní projector in position, Germany Pavilion.

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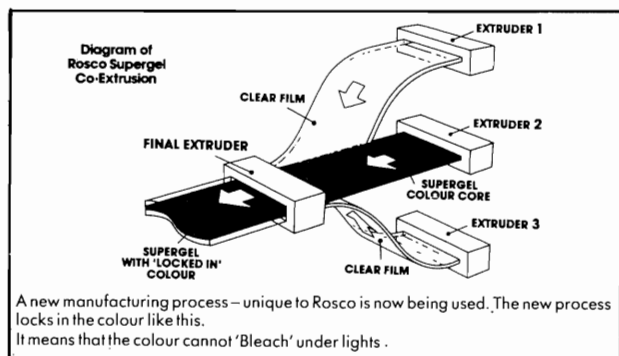
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IMITATIONS

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PLASA NEWS

Seminars Next?

Hard on the heels of the success of the 1988 PLASA Light and Sound Show comes the announcement that the Association is considering the introduction of seminars into the programme for the 1989 event to be held from September 10-13 at Olympia 2. A special sub-committee has been set up for the purpose of exploring ideas and subjects for discussion and debate.

Around the World

The well-used PLASA and L+SI display material has recently travelled to Entertainment 88 at Harrogate where John Offord manned the exhibit at a rather disappointingly quiet trade show. The general secretary was then off to Discotec at Dusseldorf as we went to press, where a PLASA group has DTI support. Immediately upon his return, he will set off again, this time to Dallas, in the company of John Offord, and between them they will publicise the Association and this magazine. Next show on the list will be the Frankfurt Music Fair where the usual PLASA sponsored group will again be supported by the DTI.

Annual Dinner

Due to the success of the inaugural event on the Sunday evening of the PLASA show, the committee has decided to book the Royal Garden Hotel, Kensington for the same Sunday in 1989 (September 10).

Voting Power

Elections are now in progress for two vacant seats on the PLASA executive, and any member may

stand who has the necessary proposer and seconder. Standing down under the three year rule are Tony Kingsley and Tony Akers, who are both eligible for re-election.

New PLASA Members

The following four companies were approved for PLASA membership at the October meeting of the executive committee:

ALLEN AND HEATH
69 Ship Street, Brighton BN1 1AE.
Tel:(0273) 24928. Fax:(0273) 821767.
Telex: 878235 MBIAHB G
Chief executive: John Ball.

Allen and Heath are long-established manufacturers of sound mixing consoles. The company are currently introducing a series of new models aimed at the studio and live performance areas. These systems offer the latest technology and are supported in the field by a network of dealers and service agents.

HI-PROFILE CONCEPTS LTD.
Old Forest House, Love Street, Chester CH1 1QY.
Tel:(0244) 43448. Fax:(0244) 315244.
Directors: John Ellis, Alan Taddei.

Specialists in recruitment training, consultancy work and installation, the company has been in operation for two years and offers a national service.

OHM INDUSTRIES LTD.
Unit 3B, Wellington Close, Parkgate Industrial Estate, Knutsford, Cheshire WA16 8XL.
Tel:(0565) 54641. Fax:(0565) 55641.
Directors: Jo Olenki, George Olenki.
The company manufactures its own brand-name loudspeakers and supplies to the audio industry.

TOA ELECTRONICS LTD.
The Hutton Industrial Estate, Tallon Road, Hutton, Essex CM13 1TG.
Tel:(0277) 233882. Fax:(0277) 233566.
Directors: M.Oka, H.Greenaway.
Importers of TOA equipment from Japan including sound and communications equipment, specialising in professional audio equipment, PA, CCTV and conference systems.

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Par Opti Projects Ltd.
Unit 9 The Bell Ind. Est.
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Chiswick Park
London W4 5EP
Tel: 01-995 5179

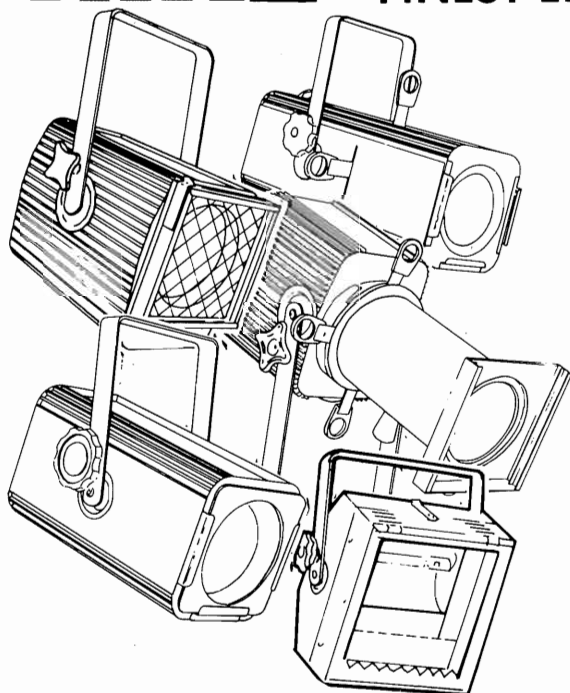


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Fax: 01-994 1102

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Thomas

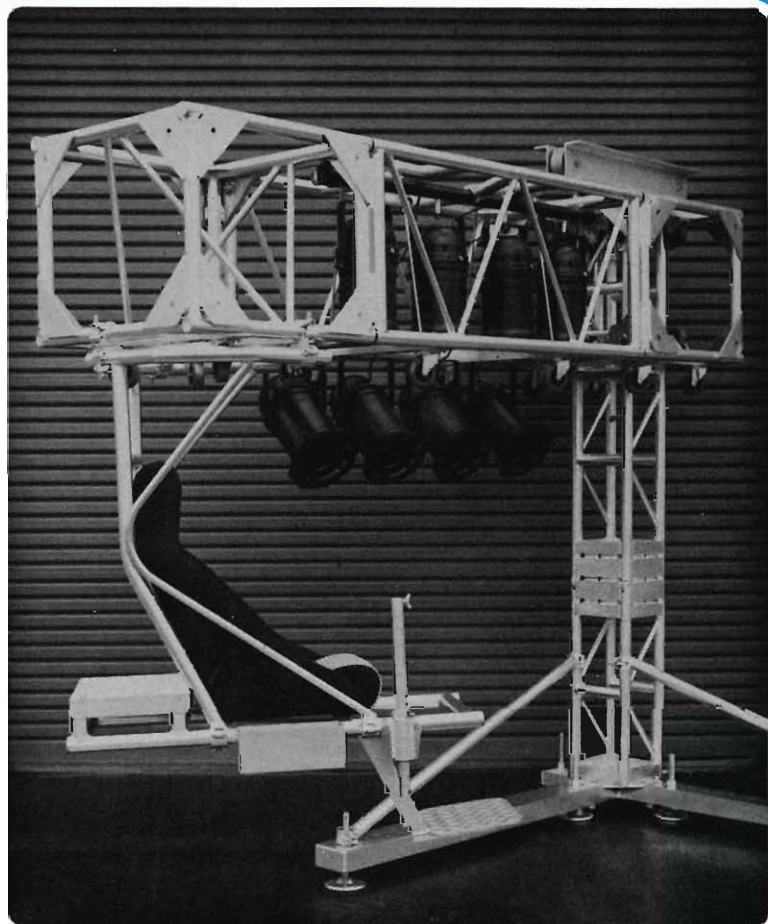
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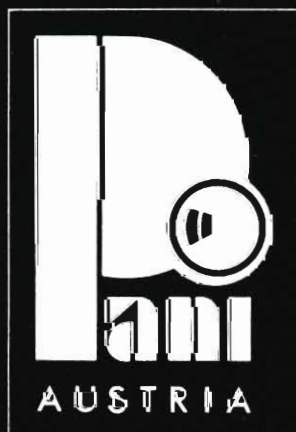
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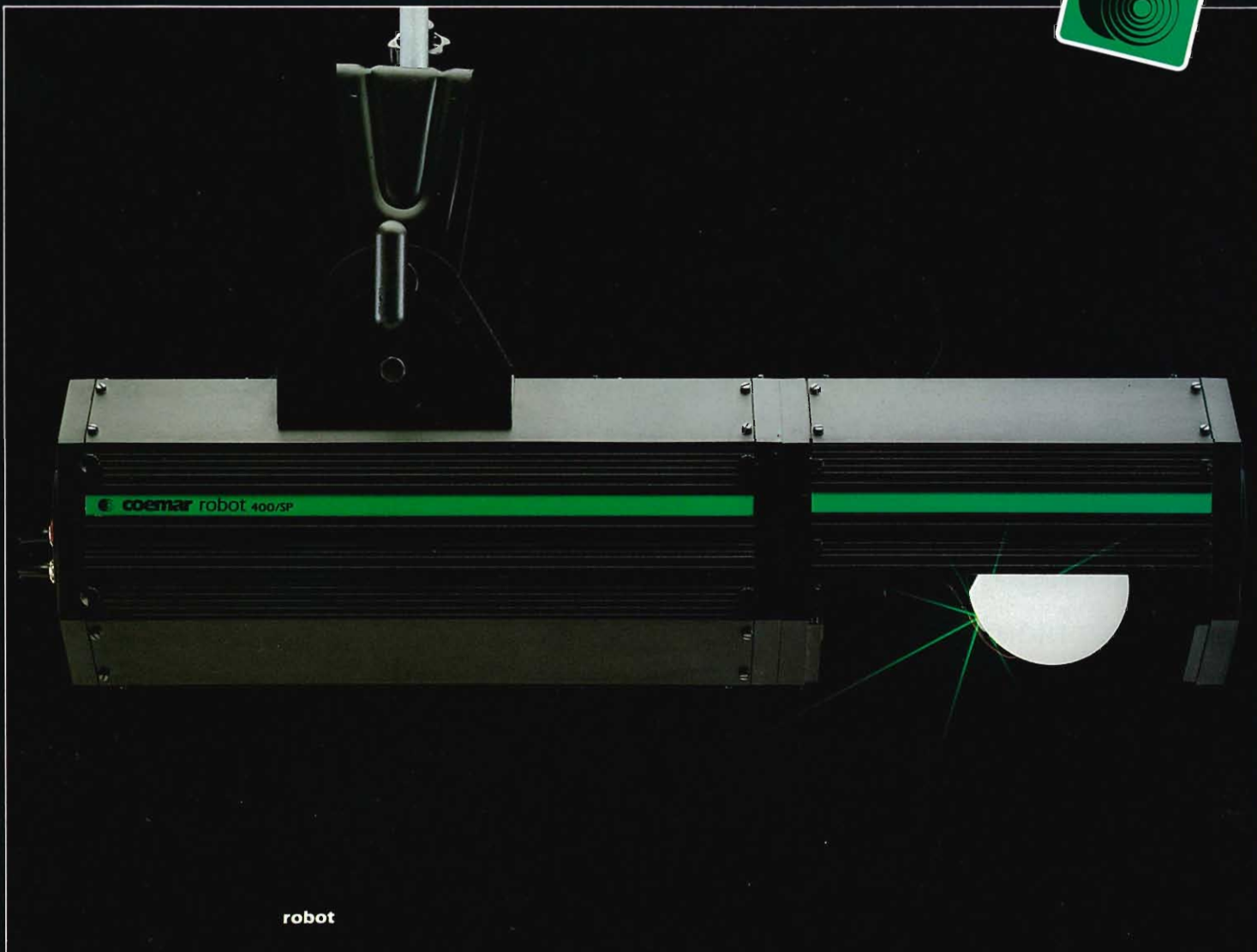
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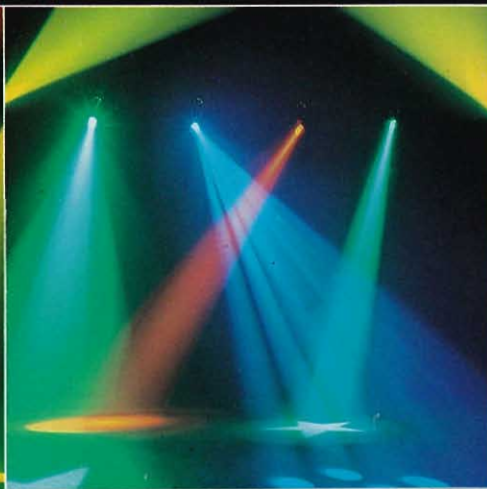
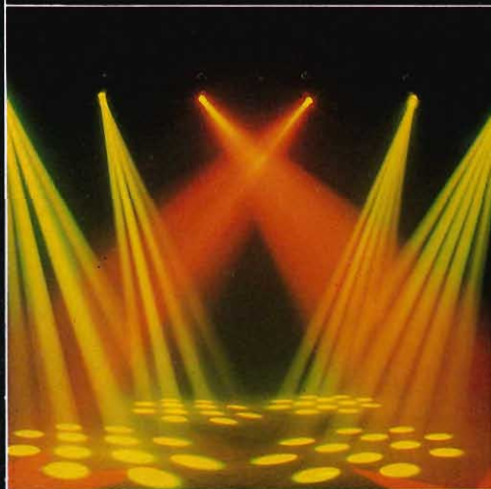


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SHOW PAGE

Discotec/Hogatec

November 7-11, 1988.

Dusseldorf Messe, West Germany.

Enquiries: Miss Renata Born or Mr Peter Brodie,
Dusseldorf Trade Fair, Charles House,
108-110 Finchley Road, London NW3.
Telephone: 01-794 0166.

Lighting Dimensions International 88

November 18-21, 1988.

InfoMart, **Dallas**.

Enquiries: Patricia Mackay or Jackie Tien,
Lighting Dimensions, 135 Fifth Avenue, New York,
NY 10010, USA.
Telephone: (212) 677 5997.

AV & Broadcast China '88

December 2-7, 1988.

Beijing, **China**.

Organised by Business & Industrial Trade Fairs Ltd.
4/F China Underwriters Centre, 88 Gloucester Rd.,
Wanchai, Hong Kong.
Telephone: 5-756333.

Nightclub & Bar Expo

January 15-17, 1989.

Atlanta, GA.

Contact: Angela Benvenuti, Night Club & Bar,
305 W Jackson Ave., Oxford, MS 38655.
Telephone: (601) 236-5510.

Frankfurt Music Fair

January 28 - February 1, 1989.

Frankfurt Fair Centre, **Frankfurt**, West Germany.

UK Representatives: Collins and Endres,
18 Golden Square, London W1R 3AG.
Telephone: 01-734 0543.

Sound Eighty-Nine

February 21-22, 1989.

Heathrow Penta Hotel, **London**.

Enquiries: SCIF, 4b High Street, Burnham,
Slough SL1 7JH.
Telephone: (06286) 67633.

SIEL '89

April 9-12, 1989.

Porte de Versailles, **Paris**, France.

Organised by Bernard Becker Promotion,
161 Boulevard Lefebvre, 75015 Paris.
Telephone: (1) 45.33.74.50

Pub, Club and Leisure Show

April 11-13, 1989.

Olympia 2, **London**.

Angex Ltd., Europa House, St. Matthew Street,
London SW1P 2JT.
Telephone: 01-222 9341.

SIB/MAGIS

April 10-13, 1989.

Rimini, Italy.

Ente Autonomo Fiera Di Rimini,
PO Box 300, 47037 Rimini, Italy.
Telephone: 0541/782000.

UK enquiries: PLASA general secretary,
Tony Andrew, 7 Highlight House, St. Leonards Road,
Eastbourne, East Sussex BN21 3UH.
Telephone: (0323) 410335.

USITT Conference & Stage Expo

April 12-15, 1989.

Calgary, Canada.

National Office: 330 West 42 Street, Suite 1702,
New York, NY 10036.
Telephone: (212) 563 5551.

Expo Musica, Madrid

April 19-22, 1989.

Madrid, Spain.

Organised by IFEMA (Institution Ferial de Madrid),
Avda de Portugal, s/n Casa de Campo,
28011 Madrid 1101.
Telephone: 470 10 14.

Audio Visual 89

May 8-11, 1989.

Wembley Conference Centre, **London**.

Organised by emap Maclaren Exhibitions Ltd.,
840 Brighton Road, Purley, Surrey CR2 2BH.
Telephone: 01-660 8008.
Contact: David Copeman.

Showlight 89

May 15-17, 1989.

Hilversum Studios, **Amsterdam**, Holland.

Organised by The National Illumination Committee GB
in association with Netherlands Broadcasting Svs.,
NOB, PR Department, Postbus 10, 1200 JB Hilversum,
Netherlands.

Contact: Maureen van Woudenberg.

Telephone: 035-775115.

ABTT Trade Show

May 18-20, 1989.

Riverside Studios, Hammersmith, **London**.

Enquiries: ABTT, 4 Great Pulteney Street, London
W1R 3DF.
Telephone: 01-434 3901.

NOTT 89

May 28 - June 2

Copenhagen, Denmark.

Union of Theatre Technicians in Denmark

Telephone: (1) 245808.

APRS Show

June 7-9, 1989.

Olympia 2, **London**.

Enquiries: APRS, 163a High Street, Rickmansworth,
Herts WD3 1AY.
Telephone: (0923) 772907.

PLASA Light & Sound Show '89

September 10-13, 1989.

Olympia 2, **London**.

Exhibition Organiser: David Street,

Telephone: 01-994 6477.

General Enquiries: PLASA general secretary,
Tony Andrew, 7 Highlight House, St. Leonards Rd.,
Eastbourne, East Sussex BN21 3UH.
Telephone: (0323) 410335.

LBW (Int. Leisure Business Week)

October 24-26, 1989.

National Exhibition Centre, **Birmingham**.

Independent Exhibitions, Waltrix House,
Oak Road, Leatherhead, Surrey KT22 7PG.
Telephone: (0372) 372842.

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Thomas on the Road

Thomas lighting and trussing products are world-renowned. John Offord went to Worcestershire to check the story behind the name.

One of the few internationally-known names synonymous with the entertainment lighting industry, 'Thomas', in most people's minds, means concert touring products and in particular Parcans and trussing. And the success of James Thomas Engineering of Pershore in Worcestershire has come about mainly as a result of its adeptness in servicing the demands of this flamboyant part of the entertainment scene.

Products have been asked for, produced, and later on adapted, improved and altered as the user has demanded. Nowadays, such is the company's reputation that customers will simply instruct them to come up with the solution to a particular problem and leave James Thomas Engineering to find the answer.

The company commenced operations in 1976, and you would think by now it would have a complete range of its catalogued products all boxed up on shelves awaiting delivery. Like me, you would have been wrong in that assumption. Almost 15 years later, the vast majority of its output is to special order and to the trade.

"What you actually see is a situation whereby we just cannot manage to hold stock. It surprises us as well! Orders just come in the door and go out almost as quickly as they arrived," explained Graham Thomas, managing director and chairman.

Obviously large stocks of raw materials and parts are held, but apart from that, all I could see of any Thomas trussing was what was actually being manufactured at the time or awaiting a lorry due to pick up a large consignment for the Netherlands.

"It's how we've made our money," said Graham Thomas, "and it's been like that ever since we started. The rock and roll industry dictates that they must have things yesterday, so we just have to do things 'overnight'. That's how we operate. If we didn't do it this way we'd go out of business."

The normal team involved with the manufacture of the various Thomas truss and support systems numbers 10. "But what you have to bear in mind is that we've got at least half of our staff who can do other jobs, so although you may see 10 welders out there, we've got the ability to pull across others from elsewhere in the factory. Also, over the



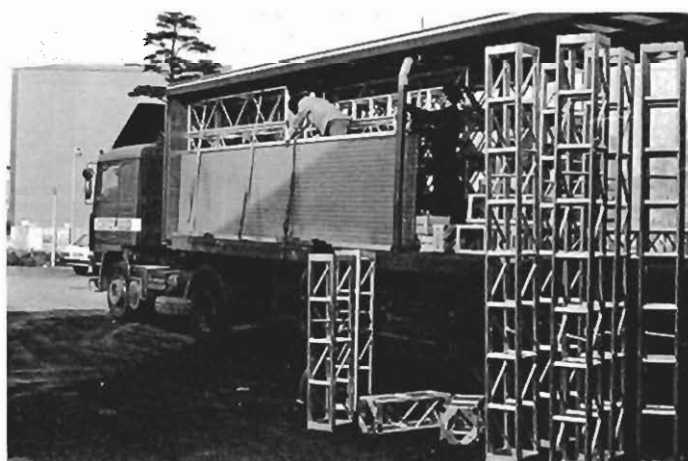
Graham Thomas, managing director and chairman of James Thomas Engineering Limited.



Sales manager Mervyn Thomas with the prototype 'Mark 1' Par can.



Par can assembly - 1600 were produced in the week I visited the factory in October.



Off to Belgium: a shipment of trussing including pre-rigged truss.

years we have bought many purpose-built machines so we can produce goods quickly. We have become very proficient at achieving a very fast turn-round."

Going back to the start of the business it was the indefatigable Parcan that launched James Thomas Engineering into the entertainment scene. A 'time-served toolmaker', Graham Thomas began the operation with partner John Walters having spent his previous years in engineering production and management.

Like many a good start-up story, this one also had its beginnings in a garage, and it didn't even start with entertainment products. Their first bits of home-made engineering were for the poultry trade, but luckily I'm not qualified to go into details.

The history of the Parcan will someday be written up by a research student who can grasp the nettle of inter-twining companies and personalities who were involved in the trials, tribulations and excitements of the early rock scene. Suffice to say Thomas were in at the beginning, and their 'Mark I' Parcan, as they now describe it, also got them 'on the road' and into the entertainment lighting industry.

"We got it to the type of fashion that the industry wanted," said Graham Thomas. "We took it to people in the industry like Zenith Lighting and they gave us their comments. It went on from there. 'Could we put this on? Could we put that on?' and so on. Hence we had our 'Mark I' Parcan. It has gone through various stages and we are now in fact on our Mark IV.

"Our first encounter was with Entec, and we made a load of lights for them. That's how we started, and it was quite easy for us



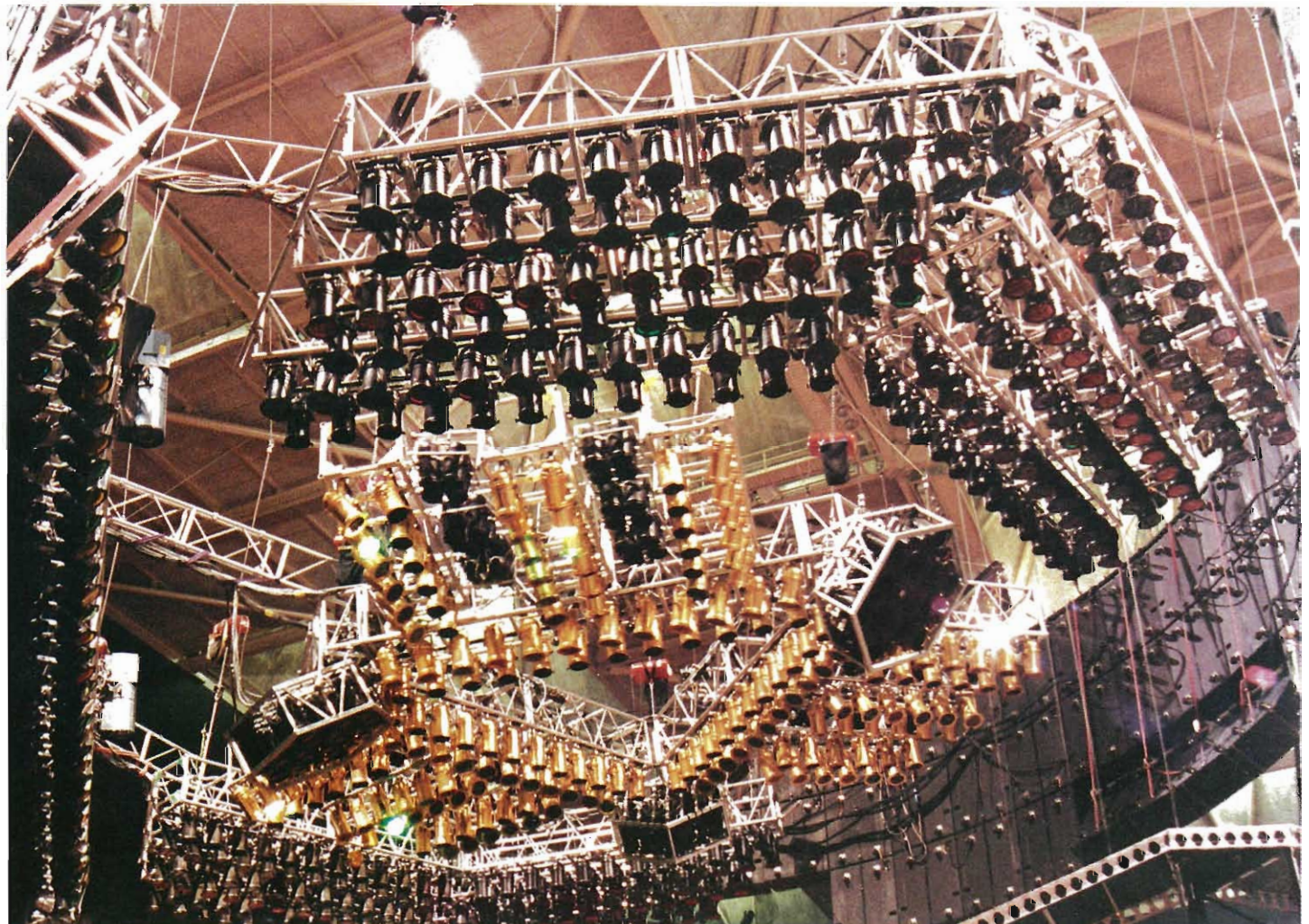
Fleetwood Mac, Wembley 1988. The Thomas pre-rigged truss was designed in the form of animated butterfly wings. Ground support towers can be seen at back of stage. Par cans are also Thomas.

to pick up things from there. We were then asked by Bev Bingham of VID to go and see someone who wanted a stage built. That led to us making stages and then someone asked us if we could make a Par 56 and then a Par 36, and so on.

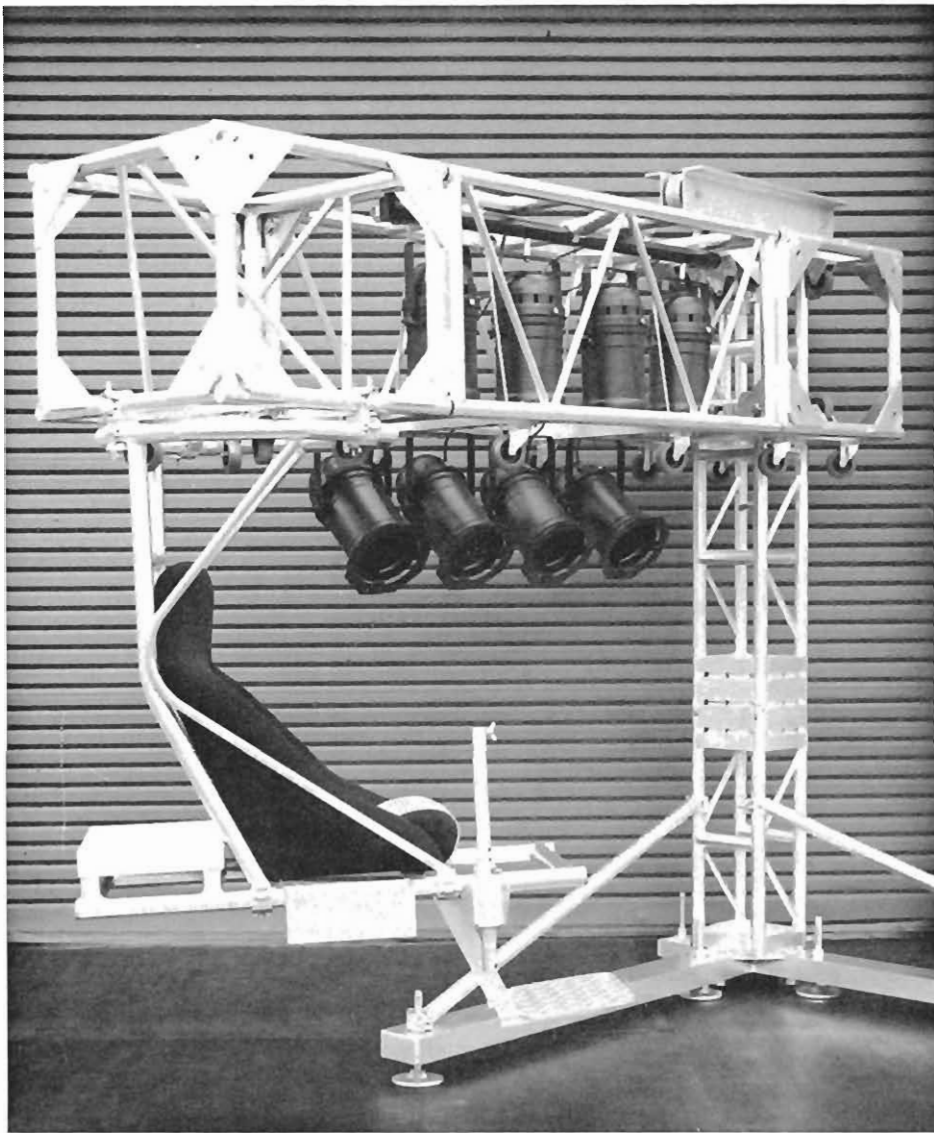
"Trussing came in some years later. Entec approached us with a piece of truss and said 'can we make some because we can't buy it?' " From that first 20½" x 20½" stalwart 'A' type aluminium truss, Thomas went on to

add 18" x 12" and 12" square and triangular truss and support systems to the range and at the recent PLASA Show at Olympia they added their latest system - Tiny Truss - a first venture into the display and exhibition field.

With annual turnover now running at well over £4m, the Thomas design philosophy remains the same, reckons Graham Thomas. "The customer actually dictated how we came to make things: how we put spring clips on, how we put catches on, and so on.



AC/DC 1983. The first-ever use of Thomas pre-rigged truss - it was designed specifically for this tour. All Par cans are Thomas including the gold anodised units. Photographs on this page courtesy Meteorlites Productions Ltd.



Thomas on show: a ground support tower with outrigger legs supports a section of pre-rigged truss complete with Par cans and an under-hung follow spot chair.

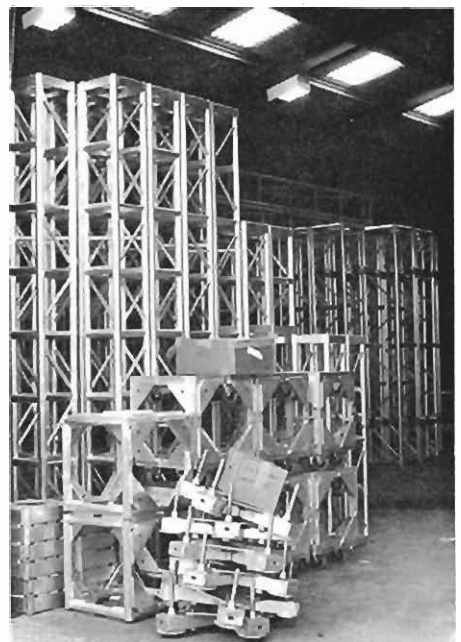
We have to make exactly what they want - that's the important thing. We like to think the customer has been a part of the design process, and our products have to be user-friendly. There's no other way of doing it."

Over 50,000 Par 64's came out of the newly expanded Thomas factory at Pershore last year. "Don't ask me where they go," said Graham Thomas. "There must be a big hole somewhere . . ."

In fact, all Thomas product goes to the trade rather than direct to the end-user so the remark is not as daft as it sounds! Three dealers handle UK sales - Cerebrum Lighting, A.C. Lighting and Action Lighting - and they

are also responsible for a large share of the export sales which Graham Thomas estimates to account for between 80 and 85 per cent of turnover. In the States, Thomas Inc. is based at Knoxville in Tennessee and Celco Inc. in New York also handles American business. In Australia Concert Light Systems is now main distributor, and a dealer network covers all major European countries and numerous other countries across the world.

The factory that produces the now very expansive range of lighting and trussing products covers over 27,000 sq.ft. and has three main areas: trussing manufacture, a fabrica-



Awaiting the afternoon lorry to Belgium - an order from dealers AC Lighting.



'The Rat' programming on the production line.

tion plant for all non-Par lighting products, and a lighting department for Par cans. In addition, there are toolmaking and engineering areas and a small research and development area hidden away in 'the garage' where technical director John Hickinbotham (o.k.a. John the Jig) can get on with new ideas without being interrupted by the telephone. "He comes up with all the best ways of doing things," explained Graham Thomas.

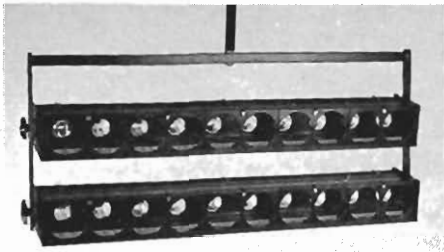
Sales manager is Mervyn Thomas, who is putting some beef into the operation's marketing and presentation side, and he reminded me that although trussing, support systems and the Par range account for about



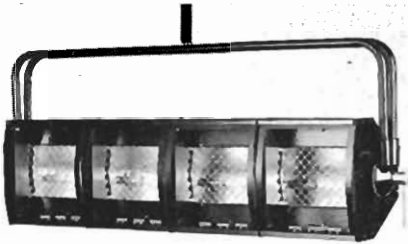
Works manager Bob Claude (left) checks over some aluminium welding.



Mervyn Thomas with pressed sheet for 10-way Light Batters.



The Thomas 2 x 10-way Par 16 Light Batten.



A 4 cell 1k cyc unit (above) and single unit (below).



The famous Par 64: short-nose (top left), standard (top right) and Floor Lite (bottom).

80 per cent of annual turnover, there is a sizeable remaining chunk of products that range from downlighters, pinspots and raylights through to theatre lanterns, cyc lights and battens by way of multicores and hook clamps.

One of the latest diversities has been an increasing demand for TV monitor and speaker frames. "We are very much into hanging bracketry," continued Graham Thomas. "If you take a look at the Motor Show at the NEC, for instance, the place is absolutely cluttered with television screens."

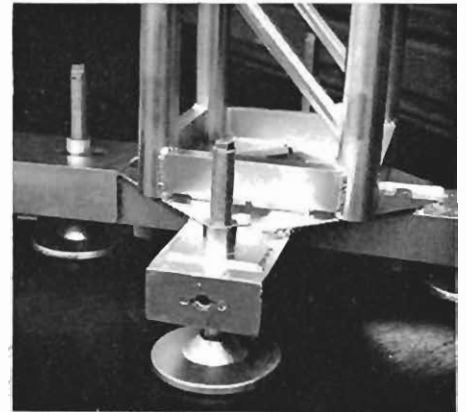
The excitement for Graham Thomas is that things change from one day to the next. "Everything is different. Most customers just

pose us with a particular problem and leave it to us to sort out. It's a nice feeling when it all happens right. We've had over 10 years of tradition and experience, but continuing change keeps the adrenalin flowing."

At the end of the interview I had to ask how the name 'James' Thomas came about. 'If you started the business, why isn't it called Graham Thomas Engineering?' I asked.

Evidently 'Graham' is what his mother called him, but his father got more than a little drunk on the way to register his name and couldn't remember the instructions from home. He had his brother with him at the time, and his name was James . . .

So, when Graham Thomas set up the company . . .



Close-up of ground support tower base.



Director John Hickinbotham progresses the latest product in his R & D area.



Director/founder John Walters showed L+SI a new connection at USITT in Los Angeles in March.



More programming: John Hickinbotham sets up for an operator.

FOCUS

ON

SIRIUS

A RUNAWAY SUCCESS

THE MEMORY STACK

This is the heart of the Sirius. Up to 99 cues may be recorded into the stack, together with nine programmable level chases.



TWO PRESETS

'Hands on - Lights on'. To aid confidence we have combined manual operation with memory. All cues are plotted on Preset 'B' and transferred to memory with a single button press.



AUTOFADE

Any cue in the Memory Stack may be given a dipless programmed rise and fade time for crossfading with the next cue.



PROGRAMMABLE CHASER

Up to nine different level chases may be plotted and either run 'live' from the chaser panel or be inserted between cues in the Memory Stack and given a special cue number. Two different sound chases and crossfade are included in the panel.



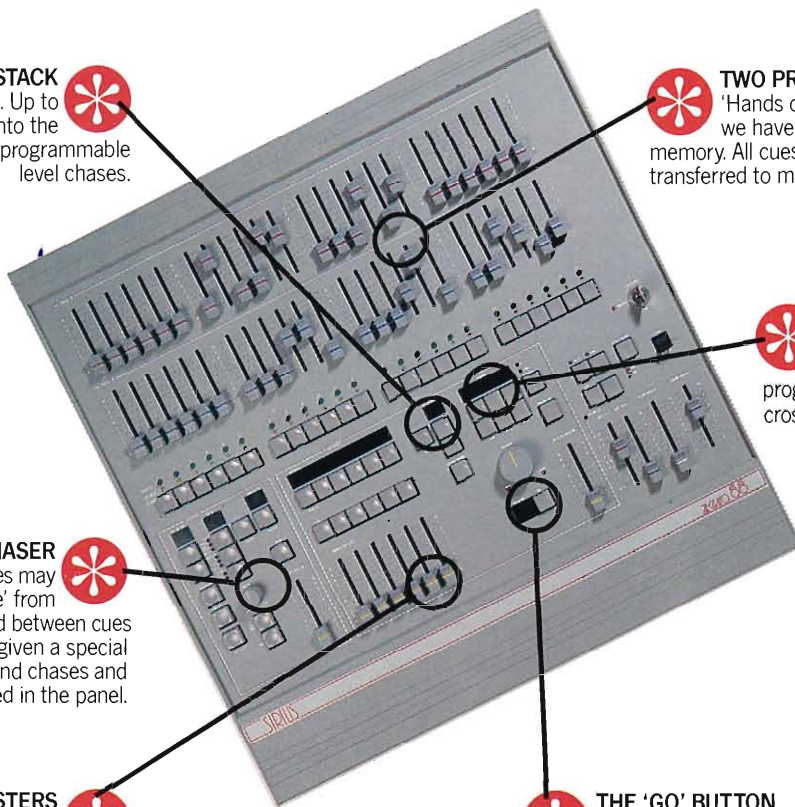
MANUAL MASTERS

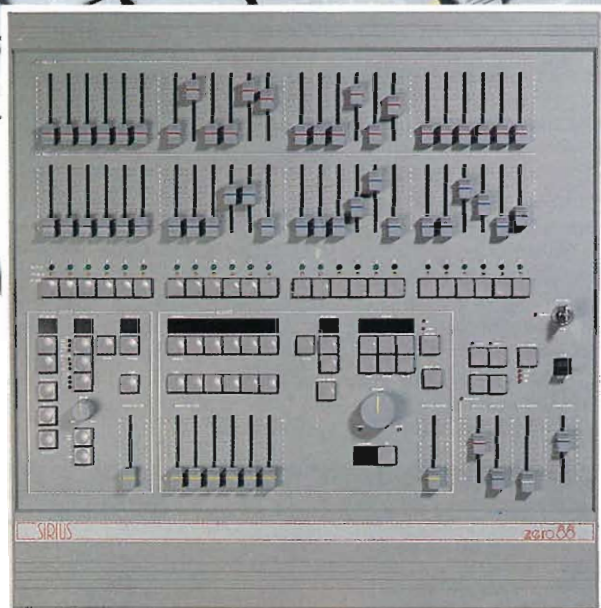
For a more flexible approach to lighting, any cue or chase from the Memory Stack may be assigned quickly to any one of the manual faders, enabling multiple cues, and chases of differing speeds, to be run simultaneously.



THE 'GO' BUTTON

Each press of the 'Go' button will sequence pre-recorded cues from the memory stack. Cues and chases may also be replayed out of sequence using the '+' and '-' buttons. Sirius also incorporates as standard a 'click track' facility for remote control of the 'Go' button.





SIRIUS

- ▶ 24 CHANNELS WITH 2 MANUAL PRESETS
- ▶ 99 PROGRAMMABLE LEVEL MEMORIES
- ▶ 9 PROGRAMMABLE LEVEL CHASES
- ▶ THE 'GO' BUTTON – THE SINGLE ACTION – MEMORY SEQUENCE PLAYBACK
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Angles' Supermarket

Julian Williams visits Norfolk's new Stage Store 'supermarket'

At a time when people are geographically on the move in a buoyant property era, East Anglia has experienced an unprecedented boom as the fastest growth area in house prices. Inevitably people are going there.

Way up on the road to Norwich where the B1077 crosses the A11, towards Diss, you come to a new 'Stage Store'. The brand new business, operating since the beginning of the year, combines under one roof three independent companies offering a complete range of services: Cindy Perry's Angles Theatre Services, Roger Steel's Angles Lighting Hire, and Mark Hall's Classic Costumes.

Opening every day of the week, their concept is to provide anyone from a school to a theatre or a TV studio with anything they may need, and they offer a large demonstration area where they can arrange demos of lighting, control and effects equipment.

Roger Steel, who operates the lighting hire operation, emphasised that they offer servicing to individuals as well as to amateur drama groups and professional companies. He has worked in rep. theatres in various parts of the country and at Leicester Polytechnic, establishing the technical point to their course. More recently he has handled jobs for Anglia TV for their Telethon and for the BMA conference in Norwich, while at the same time providing disco lights for an eight year old for her birthday party! He was recently asked to provide a smoke machine to test the ventilation on a poultry farm . . .

Cindy Perry, who runs the lighting sale operation, and comes from a background of sales and company administration in the theatre lighting business over the past ten years, has the East Anglia dealership for the CCT luminaire range and Eltec Drama Control equipment systems. Other items stocked include Lee colour filters, lamps, pyrotechnics, stands and accessories, Rosco scene paints and Lechner and Grimas stage make-up.

Mark Hall, who runs the costume and props operation, comes from a theatre family. He told L+SI that when someone walks in and asks for a period 1920's striped



Stage Store trio (left to right): Roger Steel, Cindy Perry, and Mark Hall.

blazer he can confidently ask them: "What colour stripes would you like?" From his 350 costume wig hire stock he supplies anything from big stage shows to small amateur groups, and also includes the new and expanding trend of the fancy dress market.

To celebrate their opening, during a weekend in the spring, the three 'Stage Store' companies hosted a three-day open event entitled 'It's a Try Out at the Stage Store', inviting everyone to join them for a fully equipped hands-on opportunity to try out and to get to know the many products on show. Companies represented included the Gradev Sound range, Eltec's range of memory control desks, CCT's full range and Lee Electric with a selection of film and television lighting. There were also make-up demonstrations and fun with fancy dress and carnival products. This family show, which involved children modelling for make-up demonstrations, included Radio

Norfolk and local press interviews. And there was a £50 'Stage Store' voucher draw.

Cindy Perry optimistically told L+SI: "The ambience and support from the visitors was marvellous, which has encouraged us to hold another event in the autumn."

Inviting a comment from one of their supporting companies, Phil Snowden, founder of Eltec Drama Lighting complimented them on their hard work and conscientiousness.

STOP PRESS

In October, Les Bell joined the Stage Store to look after Angles Sound Hire. Equipment ranges from Soundcraft mixers, JBL and Bose speakers to Citronic and Cloud disco consoles. "We can now offer a complete all-round service for the entertainment industry in East Anglia," said a 'Stage Store' spokesman.

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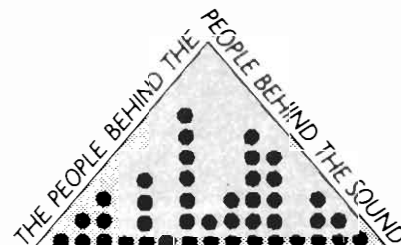
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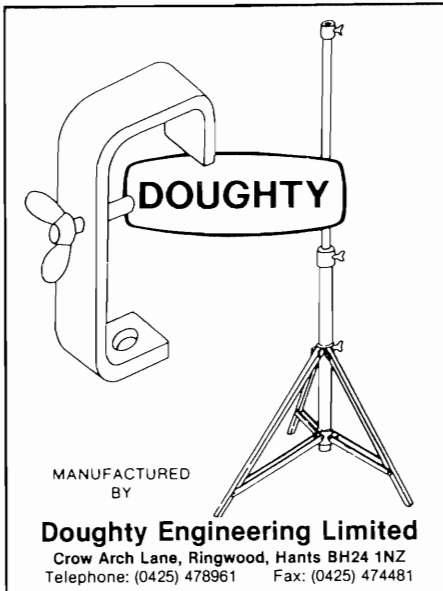
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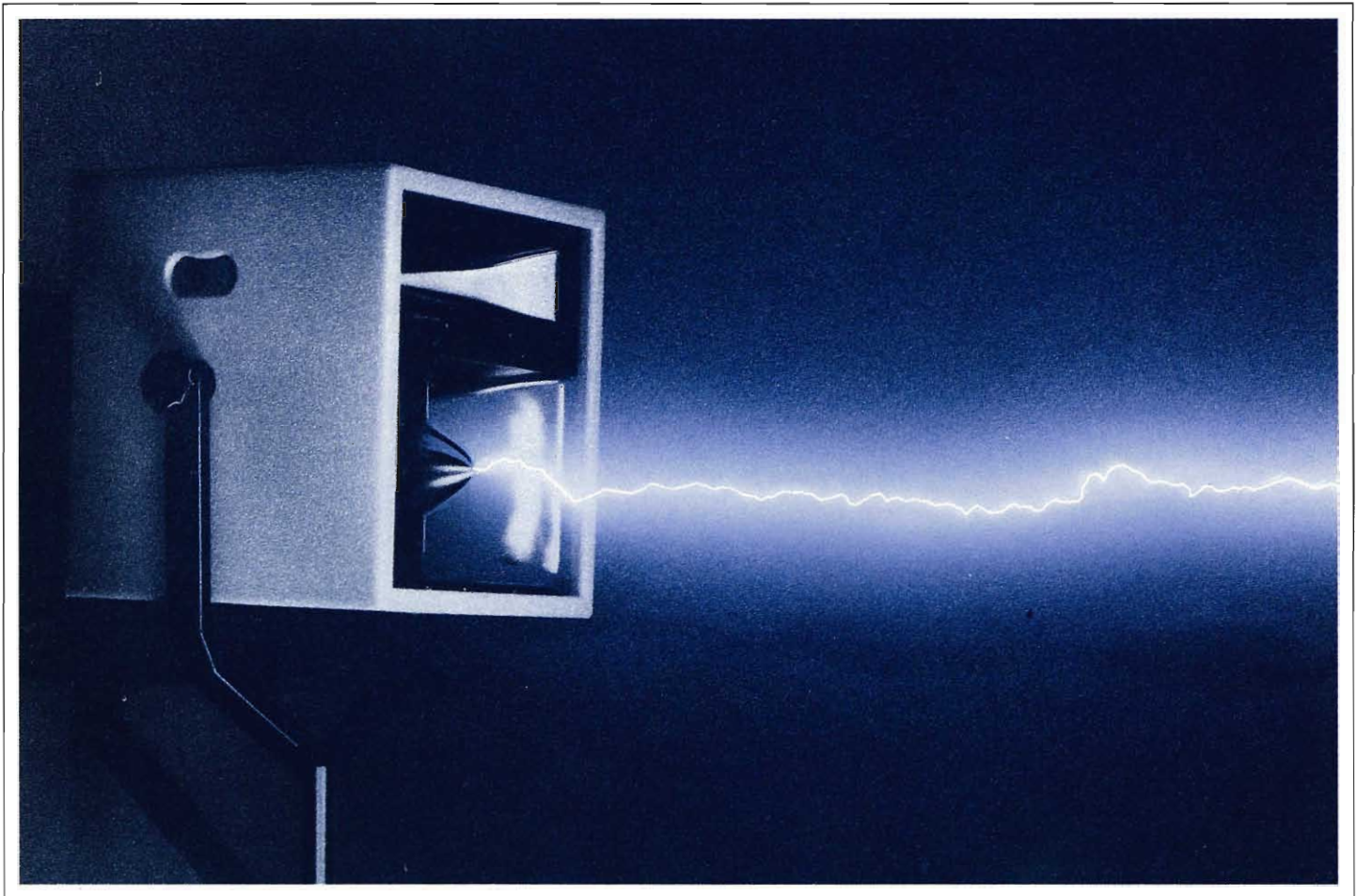
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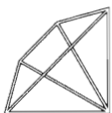
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Turbosound Limited and the Evolution of the Turbo

20 years ago, Tony Andrews set out to build better loudspeakers for live sound reinforcement. Today, the technological quest continues.

**Ben Duncan asks the technical questions.
John Offord provides the company background.**

Turbosound Ltd. was formed in 1987, combining the talents of Tony Andrews and Tim Isaac, both of whom had been designing audio systems for major artists for some time, with those of John Newsham, a well respected sound engineer. The company designed, built and rented innovative audio equipment, relying on word-of-mouth alone to spread the word about their radical sound reinforcement systems.

During the same period Alan Wick, together with Mark Hardy, operated Muscle Music, an extremely successful rentals company. In 1980, because of high market demand, the company began sub-contracting a large proportion of its rental business. Among these sub-contractors, Turbosound's equipment stood out as a far superior product in need of much wider exposure.

The two companies recognised in each other the necessary components for advancement: Turbosound's technical innovation and Muscle Music's marketing skills. This new relationship resulted in greatly increased business and, by mid-1981, they had joined forces to create The Turbosound Group Ltd. Two new companies were then formed in 1982 to market these products: Turbosound, Inc., to service the growing American market, and Turbosound Sales Ltd., to penetrate World markets through a network of national agents.

In 1986 the directors of Turbosound and BSS formed the Edge Technology Group Limited which then acquired The Turbosound Group of companies and Brooke Siren Systems. "The reason for this was to give both companies corporate strength in their various areas," said Richard Frankson, marketing manager for Turbosound.

The first result of the formation of Edge Technology was the creation of Precision Devices Limited - a wholly owned subsidiary - which manufactures all the bass and mid frequency drivers for Turbosound. "It started out of our difficulties in obtaining component parts," said Richard Frankson. "Also, it gives us much greater flexibility on design." Based in Rotherham, Precision Devices will launch themselves in their own right next year. "It has given them a very firm foundation having had the experience of working with Turbosound," continued Richard Frankson.

In June this year Turbosound relocated to the country. Just 18 months after the Rt. Hon. Kenneth Baker M.P. officially opened the company's new manufacturing facility at Capel, near Dorking in Surrey, the phenomenal increase in sales of loudspeaker enclosures has forced Turbosound to take on an additional 15,000 square feet of manufacturing and administration space, taking the total production capability to over 600 units per month.

This unscheduled action was in response to a 60% increase in sales over the previous 18 months. Alan Wick, Turbosound's joint managing director told L+SI: "We planned that the Capel facility should last until the early 1990's but when the delivery delay reached 16 weeks with every square inch of space being utilised, we realised that we were stretched, and that we would have to find additional premises quickly."

The new facility is now Turbosound's head office with all the sales, marketing and account functions being operated from there as well as manufacture and despatch.

In between the moves in August 1987, Tur-

bosound received the Queens Award for Export Achievement - the first time the Award had been given to a manufacturer of professional sound reinforcement products. In fact, about 85% of the group's £4m plus turnover is exported, and they remain Britain's only major representative in the field world-wide. "In terms of high power sound reinforcement equipment we could not look in this country for a competitor," said Richard Frankson.

To further expand its overseas market, the Group has just set up Edge Distribution Corporation (EDC) in New York. Wholly owned by Edge, the new operation will handle all products from Turbosound, BSS and Precision Devices plus other 'grade one' products for the industry. Managing director of Turbosound Alan Wick is currently in charge of the operation, flying over regularly from the UK to supervise operations.

Technical development is in the hands of Tony Andrews and John Newsham. Based at Hayle Farm at Capel, a prototype woodworker and two acoustic engineers complete the team that has kept the company at the forefront of speaker development. "They take care of day-to-day problems and product development," said Richard Frankson.

Turbosound's latest launch the TXD range, was unveiled at the APRS Show in London in June. Billed as a 'new concept', the series of enclosures has been designed to fully address the demands of the sound reinforcement industry in applications where near to medium projection and wide dispersion is desired, for example: audio-visual presentations, conferences, night clubs, theatre and small auditoriums, say Turbosound.



Eric Forth MP, parliamentary under secretary of state for industry and consumer affairs (left), with Tony Andrews, John Newsham and Alan Wick on the Turbosound stand at the 1988 Light & Sound Show.



John Newsham, Tony Andrews and Alan Wick receive the Queen's Award for Export Achievement in 1987.



Marketing manager Richard Frankson: "The Turbosound approach to enclosure design is both radical and far ahead of its time. Working on product of this level of integrity is extremely satisfying."



Tony Andrews at Hoyle Farm.

The next big development from Turbosound will be the UHQ or Flashlight System, where you can 'point' or 'shoot' the sound. Still in the R+D stage. "We hope to launch it in 1989," said Richard Frankson, "but we're stretching the limits of available materials."

One of the major contributing factors in the success of Turbosound Sales Ltd. has been Tony Andrews' innovative development of speaker loading techniques widely differing from those used in other enclosures.

These loading techniques are now known as the TurboMid and Turbobass devices and are covered worldwide by Principle Patents. These patented developments allow Turbosound to build full-range enclosures with exceptional fidelity, dynamic range and low frequency response - together with a significant reduction in size and weight.

Ben Duncan talked in detail to Tony Andrews and John Newsham. . .

BD: How did it all begin?

TA: "Twenty years ago I was at university taking a course in geology. Despite a keen interest in the subject, the revolutionary and expansionist atmosphere of the period made life seem far too mentally restricting for me. So I left, to involve myself in the musical culture of the time, which I felt was a vibrant vehicle of new consciousness. After a few months as a drum roadie (nowadays, a 'per-

ussion technician'), it had become painfully obvious that the sound systems of the time were quite inadequate for the needs of level and clarity. They presented a serious physical limitation on the feedback loop between what the musicians were playing and what the audience were hearing and feeling. Due to my long-held belief that evolution of consciousness is vital to our continued existence on this planet, I felt that I had found my task in life, and determined to apply myself to the evolution of loudspeakers!"

BD: What were your first approaches to improving PA speakers?

TA: "I constructed mixtures of 18" and 12" drivers and hf horns, on the basis of increasing the overall frequency response. Although my designs were good for a time, they still suffered limited efficiency and projection, although they were an improvement on the 4x12" infinite baffle column speaker, which was the popular approach in England at the time."

BD: What happened next?

TA: "As exposure to horn-loading techniques in England was minimal in comparison to the USA, we came across the benefits of horn-loading for bass speakers somewhat accidentally, and in the freedom of having minimal initial knowledge, we started evolu-

ing bass loading techniques along somewhat unusual lines by a combination of building enclosures and subjective evaluation. Between 1969 and 1982, our bass enclosures have evolved through at least six formats. However, the bass loading techniques we'd developed didn't prove successful for mid-range."

BD: What about compression drivers?

TA: "Despite the benefits of their efficiency, they suffered terrible distortion when driven at high level, which is not surprising when one considers the mechanical set-up inside. They were much more comfortable when used with a crossover point high enough to restrict the energy input significantly. Realising that cone loudspeakers were much better suited to the task of reproducing mid-range, our efforts focused on horn loading them. The first outcome was the 'pyramid' bin.

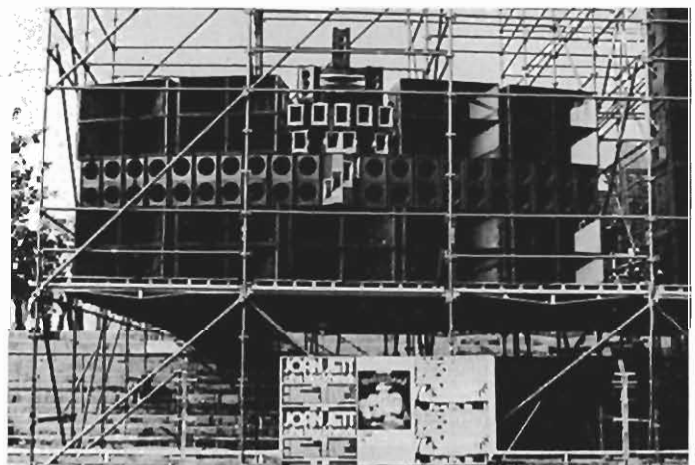
Then in 1972, I met Tim Isaac (ex-Imperial College), who shared my belief in cone mid-range, and a partnership developed which by 1975 had produced the first 'Turbo' devices. With these, we finally overcame the problems of distortion inherent in mid-range horn loading."

BD: How did your new invention get its name?

TA: "The mid device had a resemblance to a



A reminder of how competing PA systems were in the mid-70's - a mishmash of unmatched enclosures with big gaps between them. Most of the power was thrown away in acoustic phase cancellation. Location: Great Western Festival, Wembley Stadium, circa 1976.



Early Turbosound 'festival system' showing curved, point-source array. Note close-coupling of cabinets (no air gaps), and original tubular midrange Turbo devices. Location: Genesis Concert, Bochum, West Germany, 1979.

jet engine. So, by 1975 we had a cone device covering the entire vocal range (250 - 4kHz) allowing us to relegate compression drivers to the role of tweeters. Then we had a basic set of components suitable for full-bandwidth reproduction at the levels required, with acceptably low distortion content."

BD: How did you meet up?

JN: "Tony and I met quite by accident in Los Angeles while I was working on a studio project for a band I'd been live engineer with for several years. Before that, I'd combined many years as an amateur musician, sound engineer and on speaker building. In the day time, I worked on Sonar equipment, which taught me a lot about phase coherency and array techniques. Becoming disenchanted with the defence industry, I took the opportunity offered to me by Virgin - to go on the road with one of their new acts."

BD: So you went into partnership with Tony?

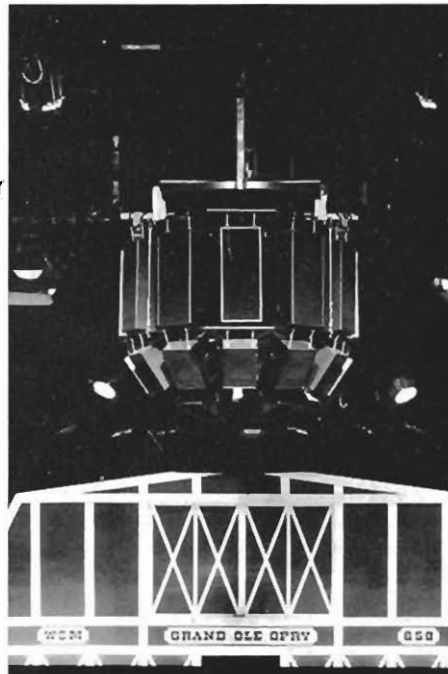
JN: "Well, it soon became clear from our discussions that we shared common ideals in our approach to high level sound reinforcement - remarkable, considering how unusual and unfashionable these ideas were at the time. I decided that on my return to England I would investigate Tony's PA system in more depth. I was stunned at the clarity and level - enough to convince the band's management to use the system on the next European tour, instead of the one they already owned. After two very successful tours, we decided that the way to continue the refinement of our ideals was to establish our own rental company in Europe - enabling me to continue system development on the road."

BD: How did you convince bands' managements of the benefits?

JN: "Well in the rest of the business, attempts at producing greater sound levels (and headroom) at concerts had only resulted in massive trucking costs and an even worse sonic result due to the amount of interference between individual system components. All this was contrary to our way of thinking. So we began to make business headway despite a general lack of interest from band management in sonic quality. But they **did** appreciate the savings in truck space that our very compact enclosures achieved."

BD: This was the period when you developed the packaging?

JN: "Yes. Experiences at this time led to great developments in the non-acoustic areas of durability, ease of transport, handling and set-up. This was very relevant in light of the



One of Turbosound's first central, flying cluster systems.

Location: The Grand Ole Opry, Nashville, USA - installed 1984.

fact that the stage access to many venues in England, and across Europe have small doorways - often preceded by flights of stairs. There are many stories of equipment that had to stay in the truck for the show."

BD: How did your system develop from a linear PA stack into the spherical cluster concept?

JN: "At an early stage - from about 1977 - development focused on avoiding mutually destructive interference and producing a unified wavefront from a number of individual units. Taking advantage of the projection qualities and directivity inherent in the Turbo mid device, we constructed road-going systems with individual Turbo units, allowing us to carry out numerous experiments. These gave us our first insight into correct point-source utilisation."

TA: "The early Turbos were tubular, relying completely on the central member for flare rate, giving a substantially plane wavefront. They were highly directional and consequently had phenomenal projective power. We decided to utilise these qualities along with what we'd learnt about array configurations in a large outdoor festival. The system was successful enough to put us firmly on the European rental company 'map'."

BD: This is where your approach deviates from conventional 'scientific' lines?

JN: "Right. The small size of the Turbo mid device allows the drive units to be placed close enough together so that at the lower end of their working range they mutually reinforce each other and create an evenly curved wavefront. But at higher frequencies, the dangers of multi-source interference increase."

TA: "Our units become progressively more directional, so that at the upper end of their working range, each one is acting like a flashlight beam. In other words, each unit is covering its own sector of the auditorium, with minimal interference."

It's our belief that a properly designed loudspeaker system should not require any dedicated external processing. Our systems have never required dedicated processors; we just recommend any high quality -24dB/octave crossover. We certainly don't believe in trying to fix deficiencies in the loudspeaker system by using artificial compensating electronics."

BD: Some sound system users must be curious as to how you have managed to achieve such a high level of performance without 'bolting-on' any processing electronics. Can you explain this?

JN: "To begin with, people should be aware what a processor is. By compressing certain frequencies in response to high levels, or by shifting the crossover frequency, it can help prevent damage to speakers from 'heavy handed' operators. The trade-off is that the quality of the sound is bound to be compromised by the protective action. A processor can also compensate for the limited frequency response to a speaker system, but only by boosting the required frequencies - which uses up power handling headroom and again, degrades sonic quality. It can allow the user to squeeze the last decibel of sound level from an enclosure of given cost. Often, it seems, this is allowed to happen without respect for the sound quality. On top of this, there are two crucial things a processor cannot do: it can't make a speaker more efficient, nor can it make the speaker produce more output at frequencies where the fundamental acoustic design is inadequate, without loss of headroom."

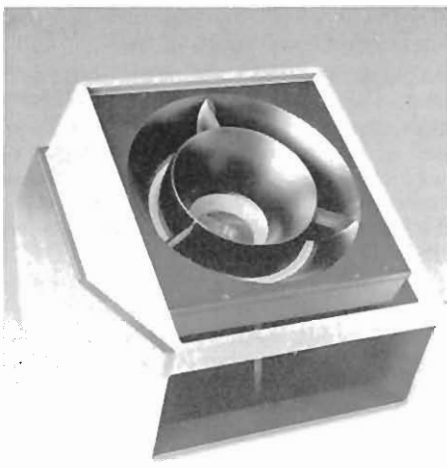
TA: "For us, being purists and fanatics at heart, compensating electronics does not represent a move forward. Today, everyone is jumping on the bandwagon of 'fixing' speakers with elaborate electronic boxes. We see this as an admission of defeat by other manufacturers: that they've given up



Flying the special flag: Turbosound at Partridge Green.



The final stage of speaker manufacture.



The new TFM-2 wedge monitor embodies radical principles to provide very high efficiency and power-handling in a compact box.

attempting to address reality, namely the design of loudspeaker mechanics! For example, protectors which shift crossover frequencies represent a 'quick fix' solution to the inherent physical weakness of compression drivers - a fragility which otherwise creates the need for regular and expensive maintenance. Our avoidance of processors underlines the fact that we meet the problems of transducer design head-on. With the **Turbo** principle, we've overcome the problems of traditional compression drivers by designing a new kind of transducer to replace them. The Turbo midrange device is almost as efficient as a compression driver. At the same time, it can work down to 200 cycles and up to 4k, and it's practically unblowable."

JN: "It even stands being driven down to 100 Hz, for vocal use; it's very forgiving."

TA: "All our drivers are tightly controlled by the enclosure. Great attention and continuous refinement goes into optimising our enclosures to match their associated transducers. For the transducer design alone, we work to balance a list of competing parameters: basic speaker size, voice coil size, flux density, compliance, resonance, moving mass and in addition the cone material itself. Regular transducer manufacturers don't want to be bothered with this level of engineering detail, and the quality assurance that goes with it. Within the EdgeTech Group, Turbosound is fortunate to have been recently joined by a drive-unit manufacturing subsidiary, Precision Devices, based in Rotherham."

BD: How does the Turbo device work?

TA: "The short answer is that we don't exactly know. We strongly suspect though, that we've invented harmoniously resonant loading techniques that increase and improve performance in a way not unlike the sounding-board of an acoustic stringed instrument. And although our methods haven't been along conventional scientific lines, we were nevertheless granted **principle** patents first on the bass Turbo (1975) and subsequently on the mid-range device (1977)."

BD: Aren't there a lot of speaker cabinets on the world market today that look similar?

TA: "Genuine advancement in any field is a relatively rare event. And it obviously has the power of excitement and advantage over previous state-of-the-art. Because genuine advancement is radical, both philosophically and appearance-wise, it's not

until general acceptance that a large number of other people and companies come along with a similar external appearance, pretending or making out that it was always part of the story, and that they knew about it all of the time. Like most things in life, appearance is deemed to be its intrinsic value. Now this is obviously a very shallow philosophy; due to our (mankind's) primitive attitude, it is **the** pre-eminent psychosis!

Returning to the question, there are a lot of cabinets that owe their appearance to our original work, but fortunately for use, most of them stop at the level of surface appearance. To date, I've personally not experienced a copy in **any** format (even where there is a degree of technical depth), that gave me the feeling that we'd been outdone with our own ideas. Suffice to say that a Turbosound loudspeaker cabinet has every component in tune and optimised, one to the other. It is not readily divisible into its component parts."

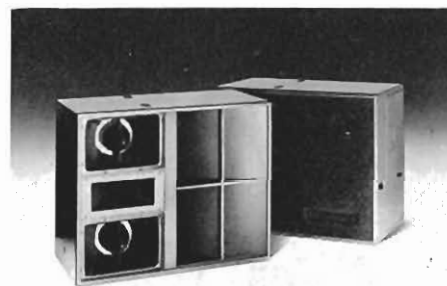
BD: How do Turbosound components compare to the constant directivity components advocated by leading US speaker manufacturers?

JN: "Our speakers are more directional at high frequencies - as previously mentioned, to avoid destructive interference."

TA: "Isobar charts are presently very popular, because they apparently provide 3D coverage information. This information however only relates to one operational device in a given space, at one time. Whereas in reality, for proper cluster evaluation, one would need to know the coverage pattern of all combinations of inter-reacting horns at various angles - not to mention the summed result of all the reflections and standing-waves in the room, the ones you can't avoid by judicious placement of the cluster. Despite being aware of these flaws in the story, it serves us no purpose to be left out of the 'data wars'. Probably the reason that multiple source isobar charts are not published (by **any** manufacturer) is because the pictures produced, although very ornate, picturesque and somewhat interesting, would be absolutely confusing and would give no common yardstick whatsoever."

BD: What are your thoughts on modern acoustic measurements, such as the TEF system?

TA: "Fundamentally it's good that we can view changes over very small increments of time, because the ear is extremely sensitive in this area. An obvious practical side-effect is the time-window capability, negating the need for an anechoic environment. But exactly what the information means in terms of good and bad sound is still being evaluated; the audio community is still gathering experience."



The Turbosound flagship: manufacture of the 2,500th TMS-3 is just coming up. "As far as we know, that makes it the most successful product in the field in the world," said Richard Frankson.



Quality Control: John Grahame tests an acoustic transducer.



Preparing a cabinet prior to paint spraying.

BD: You've recently brought out a new stage wedge monitor, the TFM-2 claimed to be a radical departure. What's so special about it?

TA: "The objective was a fairly universal requirement: to produce as much cohesive SPL as possible, from as small a box as possible."

JN: "The conventional way to achieve high power handling is with two bass-mid drive-units. This has a trade-off, in that you get lobbing effects off-axis at certain frequencies. We also wanted to utilise the characteristic efficiency and transient impact of the Turbo device (as developed for the familiar 10" midrange horn), together with pattern control."

TA: "The Turbo is inherently a long device. The challenge was to build one short enough to fit in a compact wedge. We designed our own dual-concentric driver with a through-the-pole hf compression driver. Overall, it's fitted with a ring to control directivity - inspired by the fresnel lens."

BD: How do you summarise your achievements?

TA: "Turbosound is founded and owned by people who have expressly set about improving the standards of sound reproduction and transmission - by a quantum leap. And one of the key evaluations throughout this 20 year period has been the enjoyment of music - particularly Funk music!"

The first part of this interview is based on a paper presented in May 1988 at the 6th AES conference on sound reinforcement, Nashville.

Sound Technology Behind the Big Screen

Ben Duncan talks to one of the UK's leading cinema sound installers.

Introduction

Peter Lodge is the man behind **Sound Associates**. The company began in 1958 in a West Hampstead mews. In 1966, they moved to Bayswater, to a film sound dubbing studio, for mixing and completing film soundtracks. There, they built two recording theatres and a viewing theatre, along with 20 editing rooms. In 1979, they became involved in the installation of the first Dolby stereo systems for cinema, being the first installers to be appointed by **Dolby Laboratories**. Over the past decade, the installation of these systems has grown to equal Sound Associates' long established involvement in the installation of projection systems for the export market.

In 1984, they gained the sole UK distribution rights for **Cinemeccanica** projectors, and from that date, they've been able to offer complete projection and sound systems to UK cinemas. All of Sound Associate's installation engineers and many of the office staff are ex-projectionists, with a wide experience in commercial cinema. They believe that this practical approach, combined with a real interest in cinema, together with the ability to supply flexible, top-quality equipment, is the reason that they are today, the foremost of UK cinema projection and sound specialists.

BD: What's the present scene in the UK?

PL: "With the onset of 'multiplexes' (Multi-screen cinemas) started by AMC - and now joined by Redstone, Warner, Rank and Cannon, **everyone** is busy. The installation business is definitely going through a boom period. We have completed 80 cinemas within the past year. Our present order book would have seemed incredible five years ago - or even two years ago."

BD: In what ways do the requirements and techniques of cinema sound installations differ from those of live music reinforcement?

PL: "First, we are dealing with the reproduction of recorded sound. We are not dealing with projecting a voice or instrument over a group of musicians who may have more amplifier power than the PA company! Secondly, the most important component is speech clarity. Thirdly, the stereo content of the music is fairly emphatic; that is compared to concert sound, where I gather the mix is mostly mono. There is the **immense** psychological pull of the image on screen, and hence a requirement for 3 tracks behind the screen with a hard-centre loudspeaker carrying the dialogue."

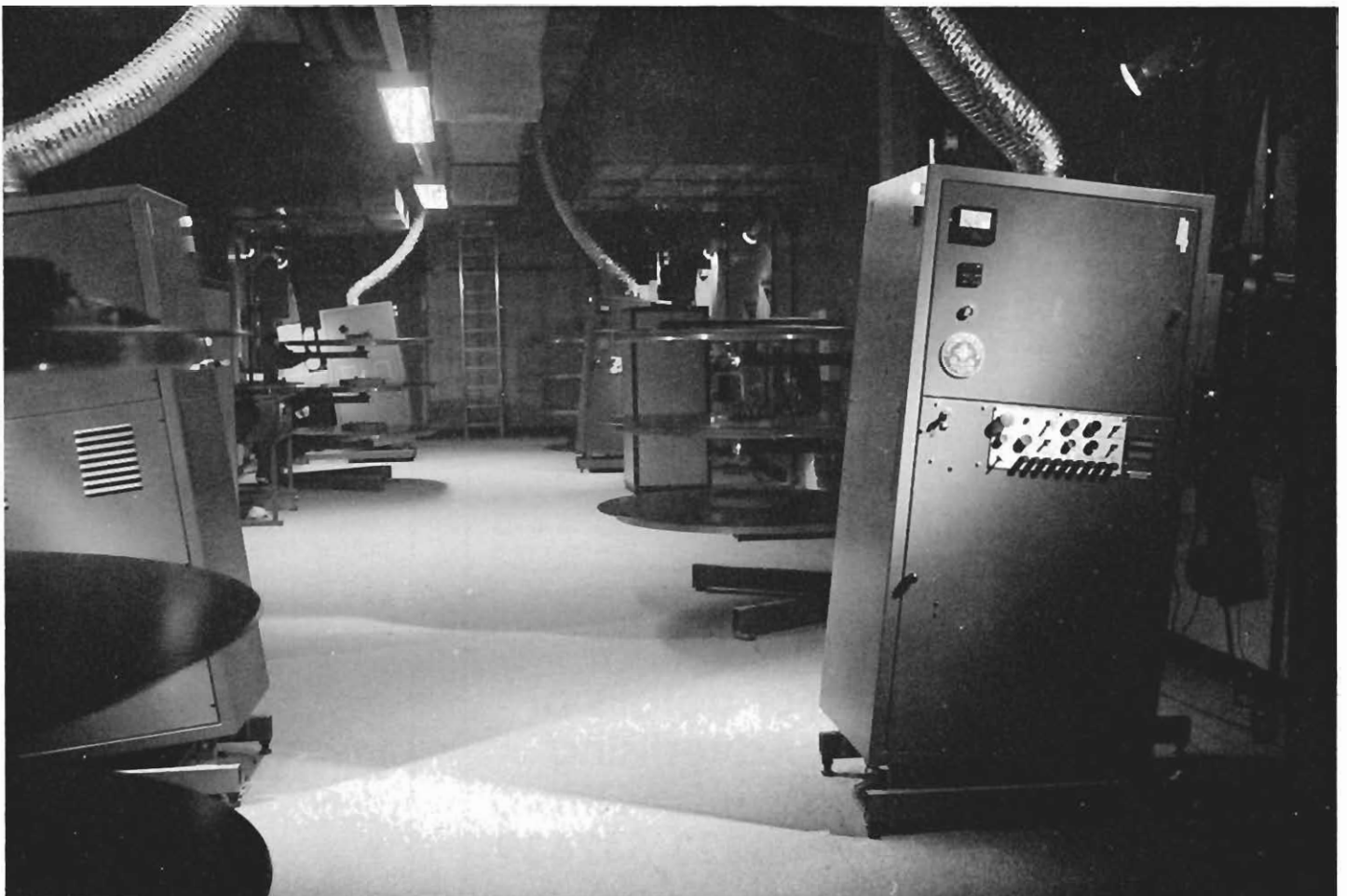
BD: What about cinema acoustics?

PL: "There is still the most regrettable ignorance of acoustics amongst cinema com-

panies, their designers and architects. The equipment supplier is seldom in a position to dictate. Judging by some of the concert halls in London, it is by no means exclusive to our business! Thank goodness for AMC, who from the start have paid attention to acoustics.

It has long been recognised that reverberation time needs to be severely controlled. In the average 300 seater cinema, it should be something in the area of 0.6s at 500 cycles, and reducing at higher frequencies. At lower frequencies, some increase in this reverberation time is allowable. Research carried out by Lucas Film in America (The originators of Star Wars, etc) has defined reverberation time with the size of theatre amongst the many other parameters controlling the intelligibility of cinema sound.

The increasing use of Lucas Film's THX system will improve the audibility and enjoyment factor of cinemas in the future. They point out, that the rear wall of the auditorium, opposite the screen, should contain the most absorbent material, since this is the longest path length, hence giving the most delay. Lucas Films are also making architects aware of the ability of hard, concave surfaces to focus reflections, thereby exaggerating the effect at particular seats."



Projection room at the American Multi-cinema, Milton Keynes: Cinemeccanica projection and Dolby sound systems for eight 10-screen cinemas.

BD: How do these factors influence the design of loudspeaker systems?

PL: "On the whole, we use single sources, meaning we rarely use more than one drive-unit in each frequency band. The exception is bass. The response of a single Thiele (vented) enclosure is omnidirectional. By using two close-coupled drivers (eg. 2x15") we gain a 90° conical dispersion pattern, giving us a measure of directivity. If stronger pattern control is required, more drivers are used, configured like a column speaker. For HF, the CD (Constant Directivity) horns we specify generally give us a dispersion of 90° in the horizontal and 40° in the vertical plane. Again, the idea is to prevent the sound splashing around. One of our recent installations was in the Fairfield Halls (Croydon) where the midband RT was 2.4 seconds! We nonetheless achieved acceptable intelligibility with 40°x20° CD horns, keeping the sound off the walls and ceilings as much as we could."

BD: So the business has retained the classic 2 way system established in the 1930's?

PL: "That is correct, except for the addition of sub-bass. The normal bass to mid/high crossover point is much lower than that used in 2 way music and speech PA systems. It is usually 500 to 800 cycles, in order that the ever essential dialogue comes out of the HF horn, and is **not** split between the two halves. If sub-bass is used, it is usually additive to the bass radiated from the standard existing bass loudspeaker, and starts from 80 cycles downwards."

BD: Is there any move towards using central clusters?

PL: "Central clusters would make no sense to the film business! There are normally three speakers, arranged behind the screen left, centre and right. Left and right are mainly used for stereo music and some sound effects may well be panned left or right, according to their position on the image. For the most part, speech is in the centre and it has been found empirically that if the classic 'phantom centre' beloved of the record business is used, the hard central picture image will make the phantom sound image most uncomfortable. Basically you end up with a situation which feels unreal and unbelievable."

BD: How has cinema sound changed in the past decade?

PL: "Dolby Stereo arrived in 1976. To their credit, Dolby has done a great deal to drag the business - kicking and screaming - out of the 30's and into the 1980's. For example, they cleaned up optical sound, beginning with the introduction of Dolby 'A' - the classic noise reduction used by recording studios. They also encouraged the labs into proper alignment and quality assurance procedures in their production of optical soundtracks. More recently, with their **Spectral Recording (SR)** Process, the silent parts of the soundtrack are truly silent! In a recent test, Dolby transferred a Compact Disc recording directly to optical and established that it still sounded like a CD - but from an optical soundtrack. In fact, with the SR system, and bearing in mind analogue's headroom, it is -15 to -18dB quieter than a 24 track digital recorder used in many studios.

The improvements are so great that Dolby S.R. optical soundtracks now challenge 70mm magnetic soundtracks. The cinema is one of the few large spaces where high quality, wide dynamic range sound systems can be used to their full effect."

BD: What about digital soundtracks?

PL: "Kodak explored this at a lecture in 1987.

Yes, you can put digital onto film. But the tolerances are **very** tight indeed, too tight for the lab's existing production tolerances. Plus it would need completely new hardware throughout the industry. Kodak concluded that digital needs 5 to 10 years of research, whereas Dolby SR is here **now**."

BD: Why is cinema going through a revival?

PL: "With modern equipment, the big screen is spectacular. Unlike the TV and video in peoples' living rooms, the cinema has the scope for generating excitement through deep bass and high SPLs. To attempt to do the same in a domestic situation could lead to (a) the loss of a spouse or (b), the neighbours beating on the walls, or (c), the house falling down.

It's my family's contention that I've spent the last 30 years enjoying myself by playing with big Hi-Fi sets, or rather to give its correct terminology of 15 years ago (before the onset of the Japanese flashing light syndrome) 'high fidelity sound'. Five years ago Dolby Stereo was the exception; today it is the expected norm and people will actively not go to a given cinema if it does not have high quality sound and picture.

Of course, sound is only part of it; a bright, steady, clear picture is also required. As the importers of **Cinemeccanica** 35 and 70mm projectors, we have also been busy improving the picture to match the sound. Summing up, cinema is still the best form of mass public entertainment."

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Recent Installations	
American Multi-cinema:	Cinemeccanica projection and Dolby sound systems for eight ten-screen cinemas. Barbican Cinema , London: Dolby sound system. Fairfield Halls , Croydon: Cinemeccanica 4k lamphouses. Gaiety Cinema , Bristol: Dolby sound system. Globe Theatre , Cardiff: Cinemeccanica projection and Dolby sound system. Leiston Town Council: Cinemeccanica projection and Dolby sound system. Lumiere Theatre , London: Dolby CP200 70mm sound system. Luton Library Theatre: Cinemeccanica projection and Dolby sound system. National Museum of Photography Bradford: Dolby SR processor. The Odeon Chain: Supply of Cinemeccanica projection and sound systems to Odeon Cinemas throughout the country. Plaza Theatre , Truro: Dolby sound system. Regal Theatre , Leamington Spa: Dolby SR processor. Weintraub Preview Theatre , London: Complete preview facilities. 178 other cinemas: Spares, repairs, help and advice.

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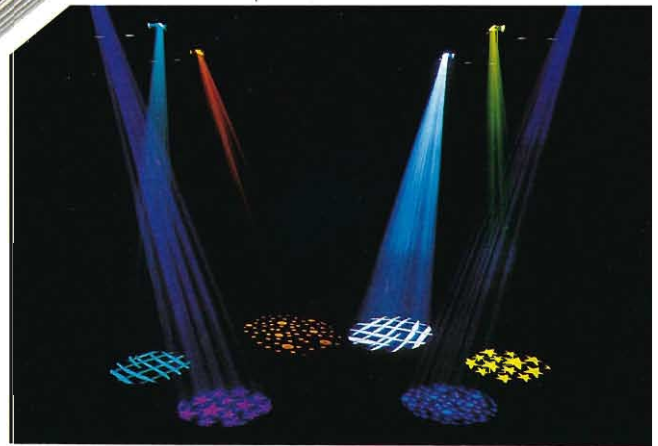
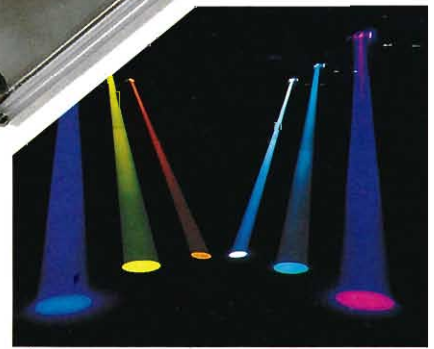
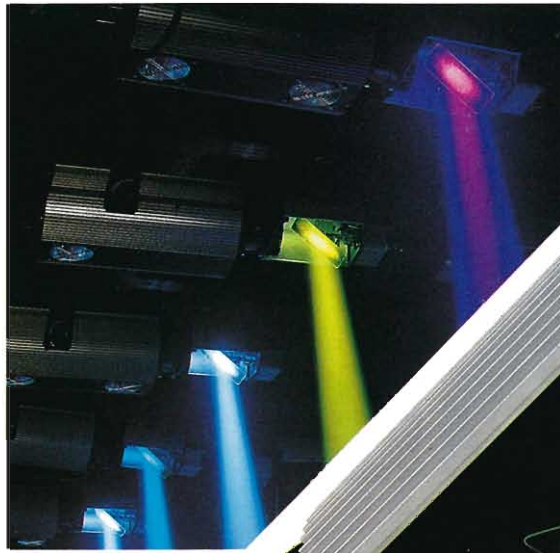
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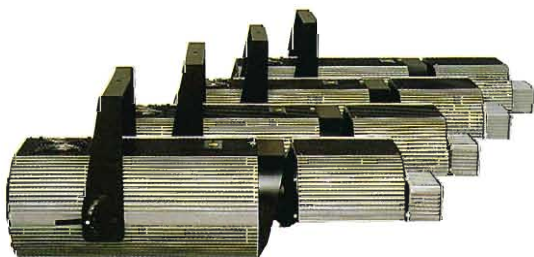


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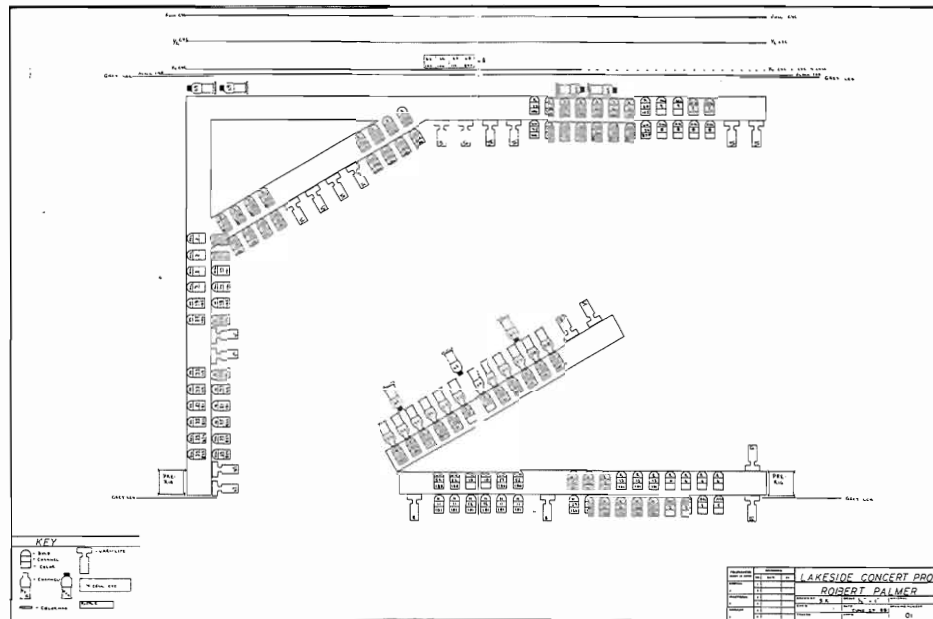
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ON TOUR

Robert Palmer Hammersmith Odeon Shaun Richardson

Shaun Richardson has the difficult task of not only being Robert Palmer's lighting designer but also his production manager - which means that he obviously doesn't have much free time on his hands. Fortunately he has a very good and confident crew who he trusts to keep everything in order for him when he is busy on production. His Vari-Lites operator Rick (Skippy) Hopton, acts as his focuser and touches up the programmes at the end of the day. At the beginning of the tour Shaun admits that it is difficult to find time to stop organising in order to programme the light show, and eventually he hopes to leave the production side of touring. He wants to do more lighting design, hopefully for bands that have a lot of variation in their shows like Robert Palmer. One of Shaun's favourite bands is Genesis and he would like to design for them because he believes that musically they allow a lot of space to try different things. He feels it is important not to get stuck in one straight line of music.

Originally from Toronto, Shaun Richardson worked his way up from club acts to designing for bands like Saga. He co-designed the last Steve Winwood tour and would like the opportunity to work with him again. Most of his tour experience has been with other peoples' designs: he has been lighting director for INXS, Tina Turner and George Michael, and he admires the work of top



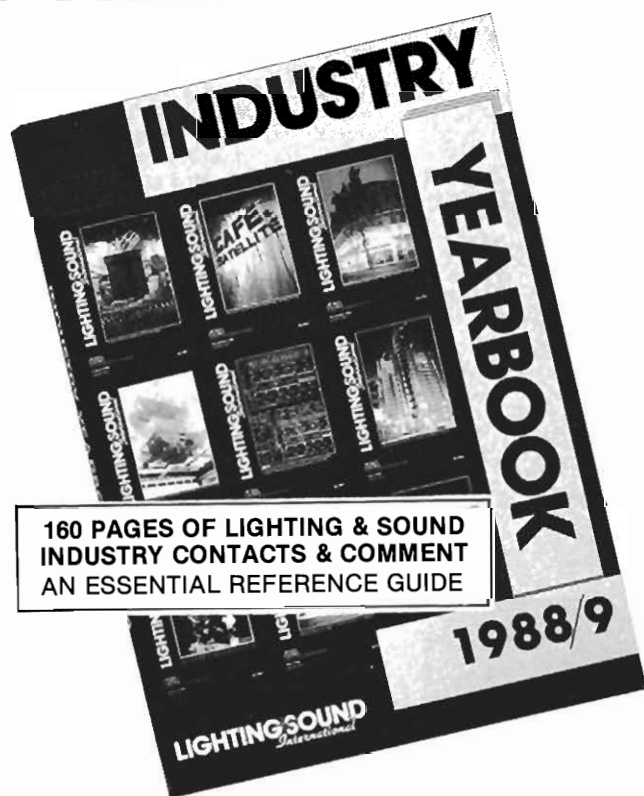
Part of the lighting plan for Robert Palmer - designer Shaun Richardson.

designers Jonathan Smeeton, Patrick Woodruff and Allen Branton.

"This Robert Palmer tour is supposed to be simple and small," explained Shaun. "The whole thing had to be kept to two trucks so the lights are limited. I've taken 20 Vari-Lites (10 mark 2's and 10

mark 3's) and I'm running the whole show off the Vari-Lite console with the VLD interface. There are also about 180 Pars on the system, 16 Lekos, 14 ColourMag colour changers and 16 4-cell cyc lights. The design is compact and based on a very simple stage design but one that, because of the

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Robert Palmer in Concert: lighting designer Shaun Richardson.

Photos: Steve Woodcock

way we've done the drapes and different tiers, allows me to create many different moods by just using the drapes themselves rather than a lot of different kinds of lights."

The tour had just arrived in the UK after doing 56 shows in 56 days in America because Robert Palmer does not believe in taking days off on tour! This meant that the show had to fit into anything from a 25,000 seat arena to a 1200 seat club and adapting a 200 lamp lighting system with ground support into a small club is not easy. In some places Shaun only used the 20 Vari-Lites but

because they are not in every cue of the original show, he would have to redesign a new show to come up with a cue for every part of the songs.

It is not often that the lighting for a show gets a mention in a national newspaper review but the following quote was taken from the Times: 'The lighting was devised and executed with a rare sense of style, conjuring evocative sketches against a textured backdrop.'

Samuelson's Crew: Stephen Nolan, Brian Condry, Rick (Skippy) Hopton (Vari-Lites).

Siouxsie and the Banshees Royal Albert Hall Tom Lesh

Tom Lesh originally started his professional life as an actor with a small theatre company on the South Coast. Unfortunately he had a bad motor-bike accident which resulted in him having to leave the profession, and switching to looking after the lighting for the company - something he had wanted to do ever since leaving college.

Tom always wanted to work in rock'n'roll, but theatre gave him the opportunity to learn about desks and lights. He secured a job with the Theatre Lighting Company working in their warehouse servicing and maintaining lanterns. Eventually he left them to seek his fortune in the rock world, and wrote to all the appropriate companies in London. He got no response. Tom then tried companies outside of London and eventually Entec gave him an interview and a job on the spot. He was told that he would have to spend two years working in the warehouse learning the ropes, but a month later he worked on a Sade show in Germany. He was given a good report and went straight out on a Lou Reed tour.

Whilst at Entec Tom spent nine months at The Marquee in the West End running their lighting system and making valuable contacts with bands that played there. His first tour as a lighting operator, not designer, was for Phil Wiffen on the Mission which lasted until August last year.

"I really like Phil Wiffen's work because he does his shows in a theatre-based way," Tom told me. "I suppose that I do too - but not consciously. I'm not one of those people who like straight rock'n'roll shows with millions of Par cans and I'm not into big trusses or moving lights."

Tom has designed for All About Eve, Bronski



Beat, and Julia Fordham who he particularly enjoys working with but, unfortunately, he could not do her current tour because he was committed to Siouxsee and The Banshees. The Siouxsee tour began in September taking in the UK, Europe and America and there are as yet unconfirmed plans to take it to South America, USA and Europe again next year.

The band had a lot of say in the set, which was designed by Hangman and Peter from the band, and they also like to add comments about the lighting. The concept for the show is one of a 'peep-show', starting off with a very small stage at the front which, as the show progresses, gets bigger up to mid set when the whole stage is opened for a couple of numbers. The show peaks at that moment with an acid house phase using lots of projectors and slow, moody effects. The second half of the show is also a slow building up of effects to a finale but this time without the aid of kabukis.

Equipment schedule:
(Chameleon Lighting)

- 3 x 40ft truss
- 2 x 28ft side truss
- 29 x bars of 6 Par 64's
- 4 x bars of 4 ACLs
- 6 x Chameleon narrow beam strobes
- 9 x Short nose Par 64 floor lamps
- 9 x Leko's
- 4 x CCT SIL 30's with Gobo rotator's
- 5 x Strand effects projectors
- 2 x fleecy cloud effects
- 2 x flame effects
- 3 x Chromosphere effects
- 4 x Solar 250 effects projectors
- 4 x Thomas 4-way cyc lights
- 6 x 1 ton motors
- 1 x 5-way intercom system
- 2 x Concept MK5 smoke machines
- 1 x Celco Series 260 way board
- 1 x Celco Series 230 way board
- 2 x Avo 72 way racks
- 30 x 3ft snap braces
- 6 x 20ft alloy pipes
- 2 x Pani long throw followspots

Crew: Scratch Hitchcock, Ian McKewan, Billy Lawford.



Peter Barnes' Moscow 'road crew'.

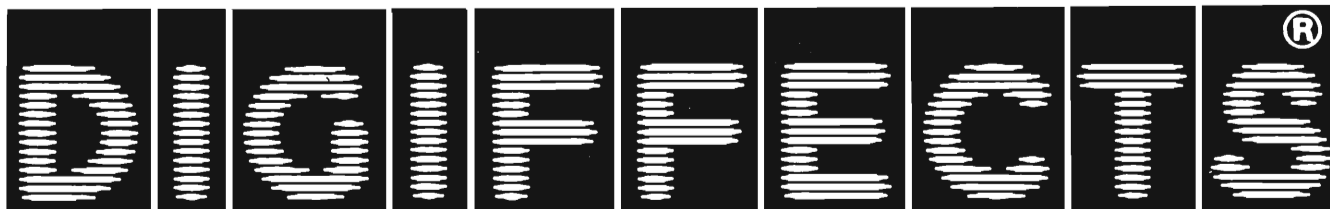
Big Country in Moscow with Pete Barnes

Recently Big Country promoted their new album called 'Peace in Our Time' by playing a gig at the Russian Embassy in London. They followed that by launching it with seven concerts in Moscow itself, and Pete Barnes, Big Country's lighting designer for the past five years, was there to look after the lighting.

This was the first time a band had played in Russia with a standing audience and also the first time a show was promoted without the involve-

ment of the State. Unfortunately, this meant that the promoters weren't allowed to make money from the shows (that would mean private enterprise!) and so they could not advertise them! The result was an average audience of 4500 - 5000 every night in an arena with a capacity of 8000.

Three truck loads of equipment went to Moscow and, naturally, customs opened every case. No interest was shown in the technical equipment but the catering cases, containing many cans of baked beans, came under very close scrutiny. The Russian authorities were obviously suspicious of a plot to open a restaurant in Moscow and impounded all the food. The next



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the Russian equivalent of disco lighting was being installed!

Originally Pete Barnes was going to take the stage set from the last Big Country tour, but two days before departure he learnt that they were going to sell the seats behind the stage. So out went the backdrops. However, when he arrived in Moscow he found out that they had changed their minds due to fire regulations! Despite more problems like not having enough power to do the show, it all made for an enjoyable and interesting visit behind the Iron Curtain.

**Equipment schedule for 'Big Country', Moscow:
(Chameleon Lighting)**

2 x 40ft pre-rig truss
108 x Par 64's
28 x aircraft landing lights
16 x ray lights
4 x 6 x 16 Leko's
60-way Avo rack
36-way Nova rack
60-way Celco Series 2 board
4 x Hitachi single phase 1 tonne hoists

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A Letter:

Dear Editor,
Please find enclosed a photograph of the 'Incredible' Tony Slee!



It was taken backstage at the 1988 Montreux Jazz Festival, Switzerland a few days after 'Mr. Incredible' overcame a bout of 'Swiss Runny Bottom' contracted at a local seafood restaurant. The flowers were a token of appreciation by the crew and catering girls for his efforts and kindness to us all for not once visiting the singular lav' in the backstage area!

(In fact, it was Tony's 90th birthday and we all had a whip-round!)

Tracey Patterson-Skinner

PS: Is there any chance of this great magazine having a letters page whereby 'on tour' stories, odes, gossip and blatant scandal can be circulated to us all? I do hope so!

Cheers!

(Comment reserved! - Ed.)

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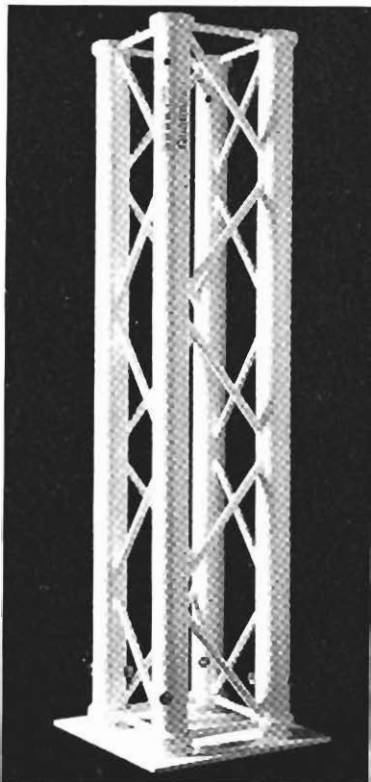
Astralloy, one of the UK's leading manufacturers of lightweight aluminium trussing whose Astralite, Structuralite, and Minilite systems are already used extensively through the exhibition, theatre and club lighting markets, have introduced two new systems.

Quatralite, a high load bearing box-type trussing of 50mm diameter tubes connected together with 19mm lacing, is constructed from the same high grade materials as Astralite and offers considerable user benefits. Its square section means that a universal fitting can be used for left and right hand corners, and the design minimises the variety of corner and tee pieces required to create any layout scheme.

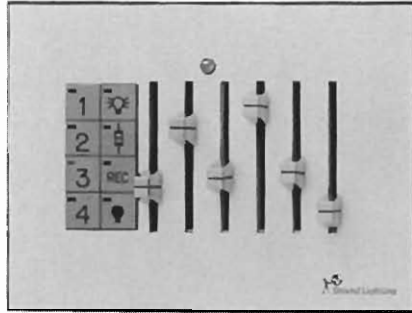
Available in a variety of colours it will be an ideal choice for hire and tour companies who can reduce their stocks of component accessories and still offer a comprehensive service. Astralloy say it will also speed up manufacturing, meaning shorter delivery times. All Quatralite sections have reinforcing end rings fitted as standard to eliminate the risk of flattened ends, and the whole system is based on 174mm centres. This measurement, the same as Astralite's base to apex dimension, enables Quatralite and Astralite to be combined, if required, in a single scheme design. The 174mm box section also gives Quatralite a rugged appearance perfect for designers looking to create maximum visual impact.

The other trussing debut is Bilite. Using the same centres as Quatralite and manufactured from similar basic components, Bilite is a twin tube system which although designed for lower weight-bearing applications, provides full load-bearing capabilities when used vertically. It can be used on its own or in conjunction with Quatralite and Astralite. Bilite and Quatralite are both available with a standard range of corners from 45° to 135° to suit the vast majority of design schemes, and special components can be made on request.

For further information contact Astralloy Group Holdings, 73 Meadow Lane, Leeds LS11 5DW telephone (0532) 465331.



Astralloy's new Quatralite.



Strand Launch Microdimmers

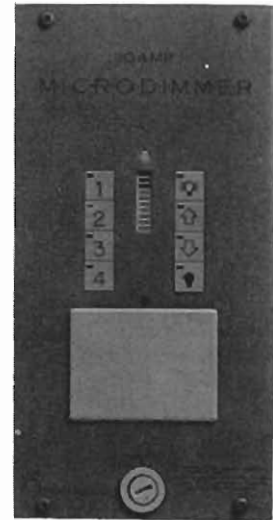
Strand Lighting have announced the introduction of Microdimmer, a new range of digital lighting controllers. Based on microcontroller technology, Microdimmers are suitable for dimming low voltage, fluorescent, tungsten, tungsten halogen, neon and cold cathode lighting. They are completely self-contained units, having their own front panel push button controls. Alternatively they can be remotely operated from a new series of low profile push button and linear fader control stations, designed to fit standard electrical contracting back boxes.

Available in popular 5A, 10A and 20A ratings, Microdimmers can be operated individually or linked for sophisticated scene-setting using each unit's own memory facility for recording preset selectable lighting states and fade times, up to 420 seconds duration.

Each unit has four recordable 'Preset' states, separate 'Raise' and 'Lower' buttons for manual override, plus instant 'Full' (panic) and fade to 'Off'. All buttons include embedded LED's to give visual confirmation of the last push action. A light emitting diode bargraph gives a proportional display of the dimmer's existing output intensity level. In addition to light intensity levels, individual 'Up' and 'Down' fade rates can be programmed for all appropriate pushbuttons according to preference.

Microdimmers automatically implement their own pre-determined default settings for all preset information and have full operational facilities immediately on 'power up'. All settings can be re-recorded according to requirement. Memory record facilities are normally concealed behind a discrete injection moulded access flap. The Record button can be disabled to prevent unauthorised program modifications. When linked together in 'scene mode', Microdimmers retain their own data independence, but can be simultaneously controlled from one or more remote Control Stations. Preset buttons at these remote Stations therefore call up overall lighting 'scenes' rather than a simple dimmer level.

Remote control stations are available in two basic types. Preset Select versions, mimicking the Microdimmer's front panel controls, and another series with faders which also enable direct recording from within the room. The latter use a slider



fader per channel for manual set up in addition to the four Presets and a remote record facility. These stations permit full 'scene-setting' without requiring any additional equipment for set-up. All control stations are extra safe due to the use of low voltage signals and the Station faceplates have hidden fixings to present a clean, uncluttered panel surface. Standard finish is white, with a choice of brass or brushed dark anodised alternatives. Other finishes can easily be provided.

Designed with control of the popular low voltage tungsten-halogen transformer-fed loads in mind, a special asymmetry detection circuit is incorporated for added safety. There is also a special 'heater-save' feature to reduce unnecessary energy consumption at higher settings. Fluorescent tubes are given an electronically controlled 'warm start' consistent with good tube life and can dim to near extinction when used with appropriate dimming ballasts and dependent on the tube type selected.

All digital dimming, record and control functions are handled by a single chip microcontroller with a special 'watchdog' circuit to constantly monitor the program. Any deviations detected cause an automatic reset and re-load of the light intensity levels and fade times that were in use at the time of the disturbance. The units comply with appropriate international electrical safety and radio frequency interference standards.

For full details contact Strand Lighting Limited, Grant Way, Isleworth, Middlesex, TW7 5QD telephone 01-560 3171.

Orion's Slave

In response to market demand, Zero 88 have developed a 24 channel programmable 'slave' to link with their highly successful and versatile Orion lighting controller. Each Orion Slave will add blocks of 24 channels which are driven by the master controls of the Orion.

An Orion and Slave may be simply linked together to make 48 channels, or, by using a special 'splitter', link up to five 'slaves' into one Orion to drive 144 channels. The ultimate installation, however, using a more complex series of splitters, would be to control up to 1224 channels - and all of these can be controlled by one Touchlight 12!

For further information contact Zero 88 Lighting Limited, Hart Road, St. Albans, Hertfordshire AL1 1NA telephone (0727) 33271.

Access Launched

Now available from The Great American Market is the new Access compact 48-channel computer lighting control system. It features 'big board' capabilities at a fraction of the usual cost, say GAM. It was launched in Europe at the PLASA Show and also at Photokina in Cologne.

Access will support up to 256 dimmers, depending on output format. Its cue memory capacity is 232 full-sized cues, 464 with removable library storage. Features include: six fully overlapping submasters with flash buttons, manual split dipless crossfader, two independent time faders with separate cue assignments, dynamic CRT 'Cue Sheet', and a choice of eight menu-selectable output formats.

According to Joseph N. Tawil, general manager of The Great American Market, Access is unique because it is powerful and sophisticated, yet easy to use without prior training. Instructions, menu selections, and 'Help' are always displayed on the CRT screen in straightforward language. The operator has instant menu access to all functions at all times.

"Access is a breakthrough in technology and cost," stated Tawil. "It is rugged, durable and small, yet it has all the flexibility designers ask for. It is compatible with all dimming systems - and it is affordable!"



The Access 48 channel system.



C Audio's MA 400 mixer amplifier.

For full details contact The Great American Market, 826 N. Cole Avenue, Hollywood, CA 90038 telephone (213) 461 0200.

Low Smoke

Le Maitre's new LSX machine converts the smoke output of either the Powermist or Smoke Processor machines into a low-laying cloud. The effect created is very similar to that of using dry ice, but removes the hassle of boiling water, cardice and the resulting condensation. The LSX may be used in conjunction with an existing Powermist or Smoke Processor by replacing the usual fluid used with a new molecular structured juice in order to achieve the best results. Cloud density, depth, and the area covered are all controllable by using the variable settings on the LSX in conjunction with the variable flow feature of the related smoke machine. The LSX should be floor-standing, but with the converter and accompanying machine raised, a waterfall effect can be created without any wetness.

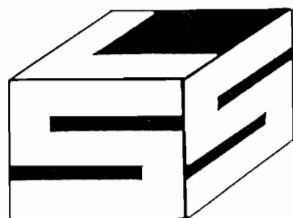
For further information contact Le Maitre Lighting and Effects Limited, 316 Purley Way, Croydon CRO 4XJ telephone 01-686 9258.

New C Audio Mixer Amplifier

C Audio, noted for its solid, somewhat conservative approach to high power amplifier design, has made a departure from tradition with the launch of its latest product, the streamlined 2u 19" rack mounting MA 400 mixer amplifier with integral effects unit incorporating delay, chorus and echo.

The MA 400, which offers a phantom powering facility, is ruggedly constructed and uses only the very best components available. Internally, 90% of the connections are made with high grade ribbon cable, thus eliminating almost all hardwiring, say C Audio. The compact 400 watt system provides both low impedance XLR and high impedance jack inputs and is recommended for keyboard players, small bands, AV presentations, installations, and sound reinforcement companies requiring compact units for conference work.

For further information contact C Audio Limited, Unit 13, Barnwell Road, Business Park, Cambridge CB5 8UY telephone (0223) 211333.



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TOA's New Flyer

A speaker system with handling capacity of 120 watts RMS continuous pink noise and 360 watts continuous programme material, was launched by TOA Electronics at the recent PLASA Show.

The SF-30 flying speaker is fitted with a constant directivity horn which ensures a uniform dispersion pattern of 90 degrees horizontal and 40 degrees vertical. It has a heavy-duty 12 inch woofer, high-efficiency compression driver and an exponential horn tweeter all housed in a bass-reflex enclosure. The small physical size and unique shape allows the speaker to be flown where size and height restrictions are a problem, making the SF-30 ideal for club and discotheque work, say TOA.



On the rear panel there are 1/4" phone jacks which can be converted into XLR connectors by removing the mounting panel and installing the XLR. Mid and high frequency level controls are provided on the side of the unit, and optional flying hardware is available in the form of the HY30 and HY31 flying brackets. The loudspeaker is finished in grey polyester and has a black punched metal front grill which is removable.

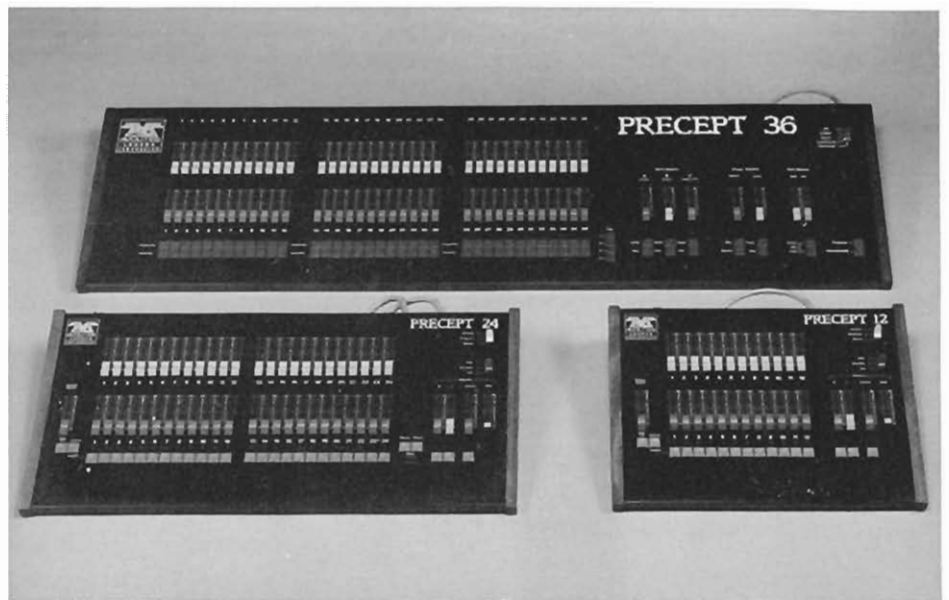
For full details contact TOA Electronics Ltd., Tallon Road, Hutton Industrial Estate, Brentwood, Essex CM13 1TG telephone (0277) 233882.

Rosco Smoke

Following the success of their 1500 Smoke Machine launched just over a year ago, Rosco have now introduced two new models, the 4500 and the 1300. Both machines incorporate the 1500's high quality engineering standards, combining continuous fail-safe operation and easy



Rosco's new 4500 smoke machine (left) with the 1300 (top right) and the 1500 (bottom right).



Avolites launch Precept range

Avolites launched their new Precept range of memory console at the PLASA Light and Sound Show. It consists of 12 and 24 channel 2 preset level memory consoles with analogue outputs and a 36 channel version with DMX 512 outputs. Complementing the range is the 'Linklight Multiplexer' which is a bi-directional unit utilising DMX 512 or AVAB protocol.

Pricing on the range is aimed at those users with a limited budget such as small bands, schools and colleges say Avolites. For full details contact Avolites at 184 Park Avenue, London NW10 7XL telephone 01-965 8522.

maintenance with total operating control, and were on view at the recent PLASA Light and Sound Show.

The high heat capacity of the 4500 enables it to produce high volumes of smoke continuously without shutting down to regenerate heat, as is so often the case with other brands, say Rosco. Weighing only 18.1kg, the 4500 can be operated either from the built-in controls or the remote control unit which is supplied as standard equipment. A sturdy, robust machine, the 4500 will withstand the rigours of rental operation and film location use. The Rosco 1300 Smoke Machine is a low-cost version of the 1500 operating from a remote-control station only, and weighs only 8.4kg.

Both the 4500 and 1300 models, like the Rosco 1500, are designed to allow total control over the quantity of smoke produced. A ratio of 10:1 can be dialled to provide design effects from a mere whisper to billowing clouds. All Rosco's Smoke Machines operate with Rosco's Academy Award winning smoke fluid, available in the original odourless formula and a range of scents, including lemon, strawberry and pina colada.

Technical information on the full range of Rosco Smoke Machines is available from Roscolab Ltd., Blanchard Works, Kangley Bridge Road, London SE26 5AQ telephone 01-659 2300.

GamColor CineFilters

A new line of GamColor deep-dyed polyester colour filters, CineFilters, is now available from The Great American Market. CineFilters are correction colours designed to modify the colour temperature and/or the intensity of light. Primarily a tool for film, video and still photography, they aid the lighting director in balancing different kinds of light with different spectral characteristics and adjusting them to the requirements of film and tape.

"Unlike the standard range of GamColors, these colours are based on technical priorities," said Joseph N. Tawil, general manager of the Great American Market. "We have classified them according to the change in K°, change in intensity per f-stop where applicable, and total transmission of light through the filter. Because of many variables in the studio and on location, we believe that other data may be misleading."


GamColor CineFilters are categorised as follows: Booster Blues, CTO Ambers, Neutral Density Filters and Source Correction Filters. They are available in 20"x24" sheets, 24"x50' rolls and



48"x25' rolls. They are .002" thick.

GamColor deep-dyed polyester colour filters are distributed in the U.S., Canada, Europe, Asia and Australia and are popular with many lighting designers and directors of photography because of their clean, clear, vibrant colours and durability in the most demanding situations say The Great American Market.

For technical data, swatchbooks, and a GamColor dealer list, contact The Great American Market, 826 N. Cole Avenue, Hollywood CA 90038, telephone (213) 461 0200.



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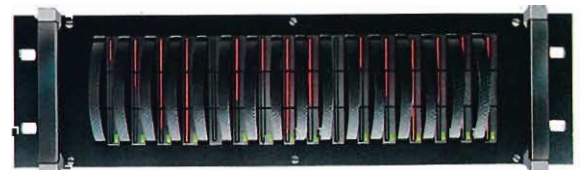
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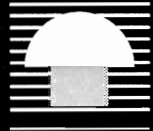
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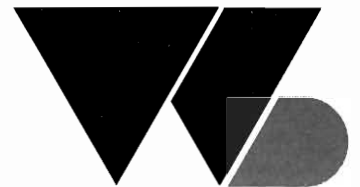
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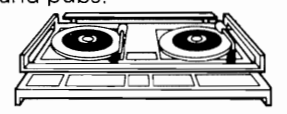
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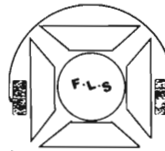
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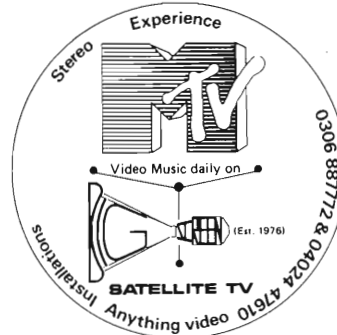
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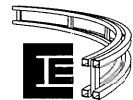
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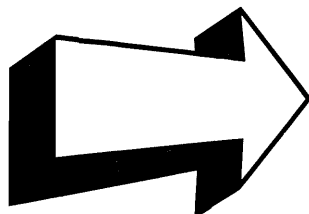
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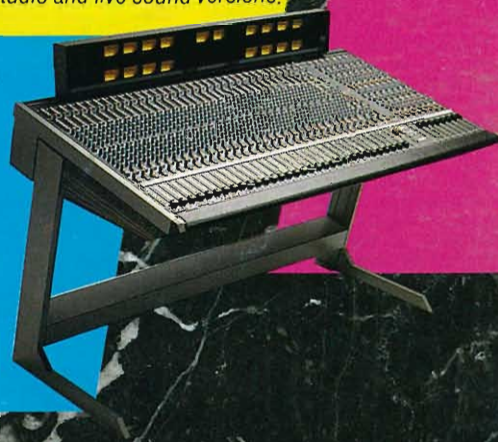
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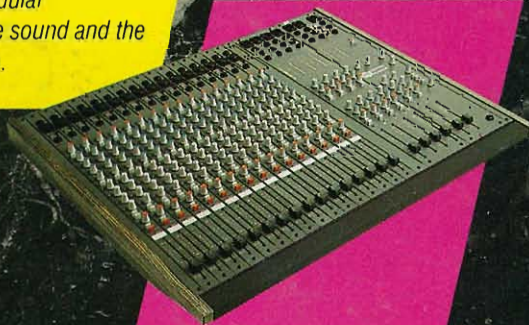
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