

LIGHTING+*Sound* International



'West 1' at Campus West, Welwyn Garden City
(see feature this issue)

PLASA

published in association with the Professional Lighting and Sound Association

January 1987

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£1.50

10/10 FOR PULSAR.

THE SCIENCE DEPARTMENT

THE SCHOOL
WELLINGBOROUGH
NORTHAMPTONSHIRE
NN8 2BX



Telephone: Common Room (0933) 222428
Headmaster's Secretary (0933) 222427

Please reply to:

25 April 1986

Dear Sirs,

Pulsar Digital Interface

Having just finished the School production of Max Frisch's "The Fire-raisers", I must tell you how pleased we have been with your digital interface for complete computer control of stage lighting.

Our installation is a 36 channel rack with a two preset manual desk. As rehearsals progressed, it became evident that a greater flexibility and speed of response than could be provided by the manual control was needed to do justice to the producer's demands (what's new!), so your digital interface was purchased and installed 10 days before the first performance. Two fourth year boys were completely self-taught by the Tutor program in the package you provide and became fully proficient in operation of the system within 24 hours. They operated the system faultlessly and to great effect for the performances - all 72 cues!

Your software provided the much looked for speed of response to producer's demands during technical rehearsals and completely eliminated the time consuming business of writing out cue sheets. The variety of cross-fades possible was fully exploited during the production with a smoothness which was fully professional.

Many congratulations and thanks for producing such an effective package at such a moderate cost.

Yours faithfully,

Ian H. Rowse

Ian H. Rowse
Senior Science Master

RECEIVED
28 APR 1986

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Another M33 central lamped unit which is again surprisingly effective at its budget price. Multiple miniature rays of light radiate from the ball in all directions, and the revolve motor can then spin the rays around the venue.



Ventaglio Fanning Beams in action and static.



The Minifutura Pinball in action.

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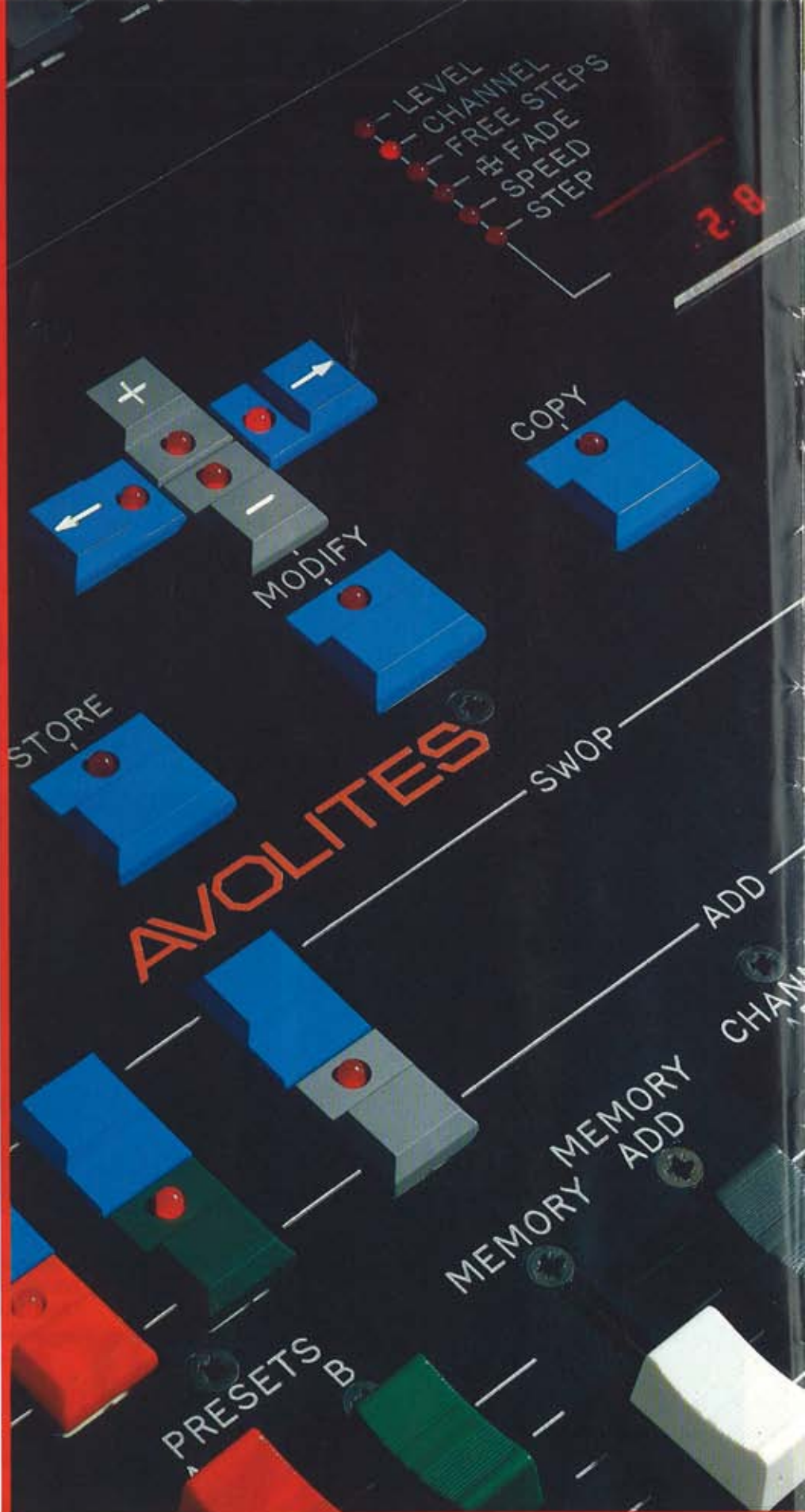
The Rolacue series has been designed to meet the demand for sophisticated control of light in small to medium applications. Easy to program and operate, Rolacues offer large memory capacity, rapid memory and chase programming and modification, memory lock and comprehensive preview facilities in an attractive compact format.

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Avolites also manufacture computerised and manual hoist controllers and flight cased multicore drum reels. We carry comprehensive stocks of cables, connectors and components including the widely used Socapex SL 61 Series – this complete range of ancillary items complements our lighting control equipment . . .

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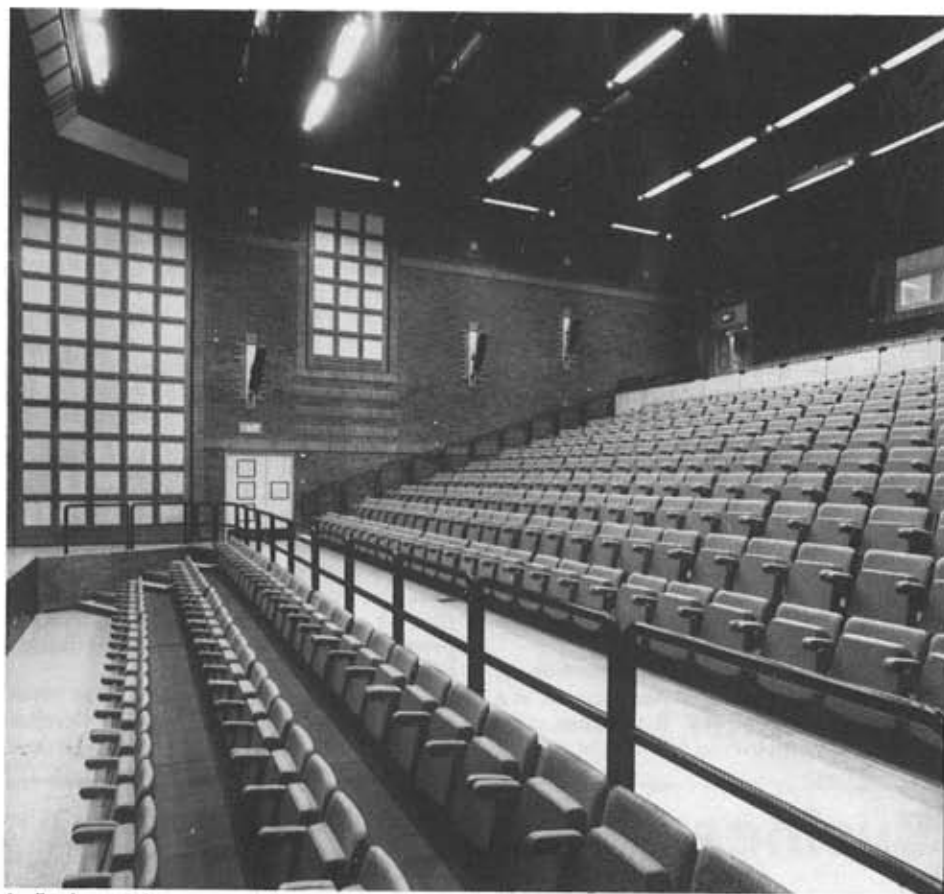
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LIGHTING+SOUND *International*

JANUARY 1987

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Auditorium of the new Redhill 'Harlequin', featured on page 13 of this issue.

LIGHTING+SOUND
International

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LHS - Strand for Starters

Hugh Leslie sets up Leslie Hire and Sale

After spending many years in the West End, and becoming almost a permanent Covent Garden fitting at Donmar, Hugh Leslie left late last year to set up his own operation, Leslie Hire and Sale, at the Business Village in Wandsworth. And he will be starting from a position of strength, with a new Strand dealership due to commence on January 12th.

I asked him if he intended to open a shop in the West End sometime in the future. "No thank you. I am pleased with my 2000 square feet in Wandsworth, with ground floor warehousing, easy access and parking space. At least here my customers won't be wheel clamped! The Covent Garden area was becoming a joke, and it was almost impossible to park or get delivery vans in or out. Also, the rents and rates are astronomic, which all has to be paid for by the customer at the end of the day."

So would LHS Limited be cheaper than other companies? "On many items yes," said Leslie. "But more importantly, it means I can spend the money saved on more services for my customers. For instance, I will be operating a free same day delivery service for sales to customers in the West End, and I have one or two other novel ideas in the pipe line."

Digging for information, I asked him why he'd left Donmar in the first place. "When it became clear that Ian Albery was to buy Donmar at the expense of selling off the hire assets, and when Strand Lighting told him that the sales dealership would be terminated when, or if, he bought the company, I realised that everything I had worked for over the last seven years was either being sold off or being taken away. The only alternative as I saw it was to start again with another company, but this time with one that could not be sold from under me. That is why LHS was formed.

"I think it was always the intention of Maybox to dispose of Donmar because, as a hire and sales company, it was not complementary to their core business of owning

theatres," he continued. "They offered it to Ian Albery who set about looking for the necessary finance to purchase it. The situation was very difficult for twelve months while negotiations went on. Then White Light offered their support. However, they made it a condition that the hire equipment was sold to them and that Donmar did not start up another hire company."

I then questioned him on the rumour that he had put in a bid for Donmar. "Before starting LHS I thought I could keep Donmar together as one company if I could raise the necessary funds and buy it myself. I did raise over £250,000 which I understand was in excess of Ian Albery's bid, but the Board decided not to accept my offer, out of a sense of loyalty to their managing director," he explained.

And how would his new operation work? "I will be following the hire and sales formula which worked so well at Donmar. The hire department will be equipped with the best and most up-to-date lanterns, control equipment, special effects, smoke guns, etc. and also stage drapes - any colour you like as long as it's black! - curtain track, braces and weights. All this will be at reasonable hire rates, especially for West End managements and commercial presentation companies. Roy Naraine is my hire manager, and that means I can guarantee our customers the highest quality service and technical support.

"Obviously I was very pleased to be appointed a Strand distributor. This means that I can continue to supply the Strand products which I am most closely associated with. I would have found it impossible to ask my customers to buy this make of lantern one day, and another the next. The fact is I like Strand products, and so do my customers. That also goes for the other sales agencies that I have negotiated, including pyrotechnics, curtain track, scenery fixings, flame retardants, and gobos."

The one remaining question was what would happen to the famous Donmar Reference Manual? "As the originator and



Hugh Leslie - leaving Donmar and the Reference Manual behind.

editor of the first Reference Manual I fully realise how important the manual is to our industry. I was over the moon when the ABTT awarded it one of their hook clamps. It contained information on lighting, but more importantly it also covered other technical equipment used on stages, and in particular special effects. The second edition which I also edited, contained even more information about equipment and its possible uses as well as an article by Francis Reid about the first steps of stage lighting. It was a very important publication, and I would not like to see the work wasted.

"Before I left Donmar, there were plans to produce a third edition for publication in the early spring of 1987. It is a very costly publication, and if Donmar plan to publish another edition, I hope they will resist the temptation to turn it into yet another sales catalogue for lighting equipment," he concluded.

John Offord

Business

Kliegl/CCT Link

On December 2nd, CCT Theatre Lighting Limited of London and Kliegl Bros., Universal Electric Stage Lighting Company of New York, signed an agreement that will see the assembly and manufacture under licence by Kliegl Bros. in the United States of CCT's range of luminaires for stage and television.

Kliegl, one of the oldest established manufacturers of entertainment lighting equipment, will be marketing CCT equipment throughout the United States, Central and South America. The agreement completes CCT's worldwide distribution network.

"Needless to say, we are all pleased with this further pat on the back for British theatre technology," CCT director Phil Rose told L+SI.

Audilec's New Base

Audilec have recently moved to a larger base at Laindon, Essex, having outgrown their Southend premises. Director Phil Price told L+SI that it will give the company increased warehouse space for their stocks of Toa pro-sound equipment, Audio-Technica microphones, and Jamo loudspeakers.

The new address is 6 Hornsby Square, Southfields Industrial Park, Laindon West, Essex SS15 6SD telephone (0268) 419198/9.

ADB Appoint Furse

As the sharp-eyed will have noticed from an advertisement in our December issue, ADB of Belgium have appointed Furse Theatre Products of Nottingham as their sole UK distributor. Developments will be monitored with interest on the new arrangement, which links one of Europe's leading manufacturers of theatre and television lighting with one of Britain's oldest names in the industry.

Roger Rabbit for Samuelson

Samuelson Lighting have been awarded the contract for supply of lighting and crews for 'Who Shot Roger Rabbit?' produced by Toontown Limited. Co-produced by Steven Spielberg with funding from, amongst others, Walt Disney Productions, the 10-week British shooting schedule commences on January 5th with filming on three stages at Cannon Elstree, and at a converted factory in West London.

ABTT Trade Show

The 1987 Association of British Theatre Technicians Trade Show, due to be held at Hammersmith's Riverside Studios in London from March 5-7, has now sold 80% of available stand space. For details of remaining space, telephone ABTT on 01-434 3901.

Avolites for Barbican

An Avolites QM 500 180 channel memory lighting console is due to be commissioned at the Barbican Centre Concert Hall in the City of London in mid-January. It will be the first-ever permanent installation of a 180 channel Avolites desk in the UK, and the first with time cross-fade. It will have 10 remote masters to enable operation from other points in the hall.

As part of the all-round upgrading, the installation also includes the first up and running programmable house light control in the UK, Barbican technical director Roger Fox told L+SI.

New Dealerships for Donmar

Donmar Limited, based in London's Covent Garden, have announced a string of new dealerships that will change the face of the organisation. Top of the list is Arri and Imagination Technology's memory lighting control systems for television, film and theatre. Other dealer arrangements include CCT, Green Ginger, Pulsar, and James Thomas Engineering.

Donmar also stock numerous other products from major brand names including Strand Lighting, Hall Stage, Lee, DHA, Le Maitre, Rosco and Powerdrive.

"We want to provide what people want," manager James Bishop told L+SI, flushed with the feeling of success after supplying a major order for new equipment to the South Bank Concert Halls complex.

Dial Sound and Lighting

Andy Blackwell has reported to L+SI that he has reorganised the structure of his organisation, and under a new partnership arrangement with Kris Blackwell has formed 'Dial Sound and Lighting' for wholesale distribution of lighting and sound equipment.

The majority of major brand names are supplied, including Pulsar, Mode, Coemar, Le Maitre, Bose, JBL, Ramsa, Citronic, Rosco, Optikinetics, Powerdrive, Technics, and Zero 88. Shipley Dial Limited will remain as the company undertaking installation projects, which currently include sound and lighting equipment for the discotheque at the 3B's complex at Bridlington, a major local authority venue currently undergoing a major re-work prior to opening for the 1987 season.

Soundtracs in States

The Board of Soundtracs PLC have announced that AKG Acoustics Inc. of Stamford, a wholly owned subsidiary of AKG Acoustics of Vienna, is to distribute their products in the United States as from January 1987. A combination of the two product lines is extremely complementary say Soundtracs, and will facilitate further growth and penetration into their respective markets.

Starlight in the North

Starlight Design of Bourn, Cambridgeshire, have announced the completion of two major projects at The Pagoda in Carlisle, and the Doon Inn, Blantyre.

Lighting equipment supplied for the Pagoda included a chrome Isoframe Spaceframe including Design Line in 4 channel, 2 x 4 channel Pinspot zones, 4 channel scanner bank, Rolasphere, vertical harvesters, Stratos, Scan Bar 8's, 3-lamp helicopters, wall mounting mirror balls, scatter strobes, a ZR41 smoke machine and 300w stage cans. A Pulsar touch panel, Mercury, Touchlight 12, and a Logic 8000 provide the control, and design was also by Starlight.

At the Doon Inn, where design, supply and installation was all in the hands of Starlight, lighting equipment included an Isoframe Spaceframe, 4 channel Pinspots, 4 channel scanner banks, 4 channel Design Line, 4 channel random panels, 8-lamp waver, scatter strobes, 360° scanners, an illuminated dance floor, 300w cans and mirror balls, with control by Commander, Cross Fade 2, and F160. Sound equipment included Bose 302 speakers, Minimax speakers, a SM350 mixer and BA400 cassette deck.



Tom Simpson pictured with Bose and Citronic equipment at Pyramid's new East Grinstead showroom.

Pyramid in Sussex

Run jointly by its two founders, Tom Simpson and Ken Berreen, Pyramid Lighting and Sound Services was formed in July last year and specialises in installing sound and lighting systems in theatres, clubs, pubs, schools and discotheques. In November they moved into their new showroom and offices at 137a West Street in East Grinstead, which features a permanent working display of the products that the company sells and installs, including Bose loudspeakers, Beyer microphones, and a range of lighting for theatre and club use.

Pyramid's location in East Grinstead is a significant one, because surprisingly, and to the best of our knowledge, there is no other professional sound installation company in the mid-Sussex area. Until now, managers of local pubs and clubs wanting to install sound systems or disco facilities have had to go to London or Guildford for the necessary expertise.

The Simpson-Berreen team is an experienced one. Tom's background includes many years working with hi-fi systems and on professional installations, and Ken is a talented lighting designer with a long list of show credits. Together they've completed their first major project, the APV Social Club in Crawley, and have been designing lighting and sound systems for use at fashion shows at some of London's top hotels, including the Savoy, the Hilton and Dorchester. Their client list includes Woman's Journal, Jaeger and Bruce Oldfield.

Pyramid will also hire out stage lighting and PA equipment and amongst its clients in this area are the Adeline Genee Theatre in East Grinstead, and the Crawley Borough Council.

Guests who attended the opening of their new showroom included Alan Kilford and John Dodson of Bose UK, Stephanie Scrope and Peter House of Beyer Dynamic, David Nibbs of Lightronix, and technical staff from some of the local theatres.

Anchor at Paul Farrah

Paul Farrah Sound have now added 'Anchor' to the list of products for which they have sole UK distribution.

Already well established in the USA with their self-powered speakers, the Anchor products range from the 'Seville' normal lectern stand with an in-built self-powered speaker of 75 watts, to the 'Liberty' - a battery/mains operated unit capable of penetrating a crowd of 5000. Facilities on these units are bal/mic in, line in and out, volume controls and EQ.

The flagship of the Anchor 'line' is the 'Liberty' series. Made in 'Tuff Tech' roto-moulded polythene exterior fused to a cellular foam layer, it contains an 8" woofer and a tweeter for music playback and at the flick of a switch a re-entrant horn comes into use for speech projection. Available in various combinations, it has bal/mic, line in and out, tone, volume controls and extension speaker out. The Liberty can be used with its internal battery lasting up to 4 to 6 hours or can be used on mains supply.

Full details of the range are available from Paul Farrah Sound on 01-549 1787.

OHM Expansion

Since the introduction of their MR range of sound reinforcement products at the British Music Fair, the fortunes of OHM Industries have turned in a sharp upward direction, resulting in expansion, diversification and the formation of a new division with the company, OHM Sound Reinforcement.

Sales manager Simon Brown told L+SI that

warehouse space is no longer at a premium due to demand for the products, and extra factory space has been made available as a result. Chester-based Smithfield Electronics have recently been appointed as distributors of OHM's sound reinforcement products to the disco and installation markets.

Among recent installations by OHM was the North Sea Ferry St. Nicholas. High power sound in the discotheque and cabaret room is provided by a system comprising MR228 and MR Woofer speaker cabinets powered by Bell amplifiers. Negotiations are currently underway for the fitting out of the newly-commission Konigen Beatrix, and other Sealink Ferries.

PLASA Plan Seminar

PLASA are proposing to hold a seminar for local authority entertainment managers and leisure officers with the object of promoting products and services of members. It is hoped the event will take place in late February or early March at 'West 1' in Welwyn Garden City's Campus West complex. The endeavour will be to illustrate that local authorities can obtain good value using member's equipment for specifically low budget installations.

Plans for the seminar will be formulated at the Association's January committee meeting.

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Rimini Boost

Organisers of the 1987 SIB International Exhibition of Equipment and Technology for Discotheques and Dance Halls to be held at Rimini's Trade Fair Centre in Italy from May 4th to 8th have forecast an even bigger event this year. The 1986 show saw a total of 380 exhibitors and over 12,000 trade visitors confirming SIB Rimini as one of the major international trade shows for the industry.

The 1987 show will be the fifth event, and running concurrently will be the second MAGIS exhibition of equipment and technology for cinemas and theatres.

HHB at Scrubs Lane

HHB Hire and Sales have just opened their new headquarters at 73-75 Scrubs Lane, London NW10 6QR telephone 01-960 2144. A special reception was held at the new premises on December 4th.

New Base for DDA

As from January 1st DDA started operating exclusively from new premises in Hounslow. Their brand new factory/office unit is situated only a mile away from their old factory, and still only a short distance from both Heathrow and Central London.

The new address is Unit 1, Inwood Business Park, Whitton Road, Hounslow, Middlesex TW3 2EB telephone 01-570 7161.

Meantime, the success of their AMR24 console is now spreading outwards from the UK and Europe to the Far East. Recent orders include a 28/24/2 console for Blue Max Productions of Hong Kong as well as a 36/24/2 for the School of Music, and a 28/24/2 for DIG Studio in Tokyo.

Further consolidation continues in Europe with an order for a 40 circuit console with 64 channels of Mastermix from STK Studiotechnik Klever for West Germany and an order via UK dealers Turnkey for a 28/24/2 console for Beethoven Street Studios.

Laser Specials

Lasergrafix Limited of Royston have recently provided lasers for two prestigious charity events. 'Ghostbusters' animation sequences were used to enhance a spectacular laser light show from two Argon lasers at the Royal Albert Hall in aid of the National Children's Homes. The event was sponsored by Birthday Shoes and Alton Towers and was attended by a multitude of celebrities. For the Mencap Charity Ball in conjunction with Julianas discotheques, an Argon laser was temporarily installed at the Club on the Park in South London to provide special effects.

Two new systems were taken to lighting giants Samuelsons in November for the opening of their refurbished premises at Samcine West, where the Ghostbusters animation module received a standing ovation.

A recent installation project undertaken by Lasergrafix was the provision of a 1.5w White Light Krypton laser in the newly opened Pleasure Dome at Irvine in Ayrshire.

Lighting Lloyds of London

Interior lighting requirements for the new Lloyds of London provided a whole string of problems, and the 8,500 luminaires are unconventional to say the least. The sprinkler head of the fire prevention system had to be accommodated within the unit, and a more extensive problem that had to be overcome was that the lighting should not create glare or annoying reflections, especially in view of the computer work-stations and data terminals dotted about the building. A further problem was the different air supply and extraction rates within the building.

The contract was awarded to Siemens, who developed the special luminaires in their own lighting laboratory. The units consist of a deep-drawn metal housing in a matt black shield with a diameter of 1.3m. Every luminaire housing has a



8,500 special lighting units were installed at the new Lloyds of London building.

diameter of 600mm with a 65mm aperture in the centre of the sprinkler head. Air is extracted through the base opening which has a diameter of approximately 130mm, to provide balanced heating and cooling air levels.

The high-grade, optically controlled specular louvres with parabolically shaped V-cross-shielding and side reflectors are made of high-gloss anodised aluminium. The components of these specular louvres guarantee precise glare limitation is achieved, preventing annoying reflected glare on all computer terminals and visual display units.

Lighting planner for the project, which also included special lighting in other parts of the complex, was Frederick Wagner.

NEW DEALERSHIPS

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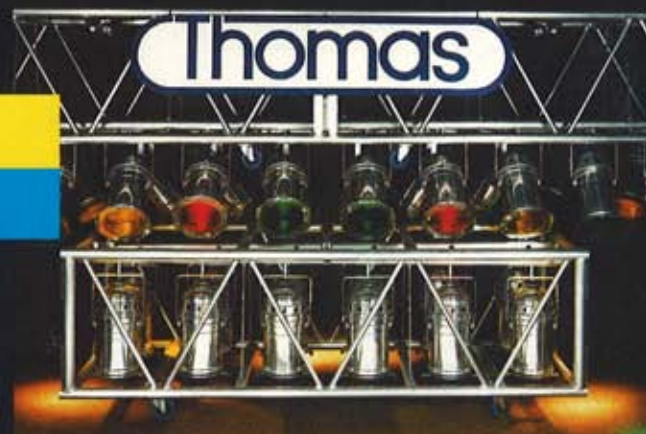


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U.S. DISTRIBUTION

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30B Banfi Plaza North, Farmingdale NY 11735
Tel: (516) 249 3662 Fax: (516) 420 1863

People . . .

Formerly with Strand Lighting as their Scottish-based representative, **Ken Walker** joined Northern Light at the beginning of November. The move formed part of the sales expansion plans of both companies. Ken will be working throughout Scotland specialising in the promotion of Strand Lighting products through Northern Light, which will free other members of NL sales staff to work on larger projects both in Scotland and outside.

Fresh from opening night successes at Broadway Boulevard in Ealing, the Palace in Blackpool, and Jet Sets Wine Bar in Huddersfield, Laserpoint's senior technical operator, **Gino Malocca**, is set to start a new role in sales alongside **Steve Johnson**. Gino will handle all laser hire business in the UK, together with supporting the Laserpoint discotheque installation sales. It's all part of an expanding sales operation at the company to cope with the launch of their MiniScan and PowerScan low cost laser display systems.

Steve Dennis is the new national promotions manager at Aureon Entertainments, based at Luton, following the departure of **Stewart Hunt** who left the organisation to go into business on his own account.

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Ian Brown Joins WB Lighting

Formerly with SIS, Ian Brown (right) has moved across town in Northampton to join WB Lighting. It was Ian's first day at his new desk when L+SI editor John Offord pictured him with managing director Roman Walanta.



Two New Audilec Shop Accounts

Brian Dunn, manager of Audilec's Bristol base (right) is pictured with Eddie Moore (left) following the recent announcement by Audilec of two new shop accounts: Eddie Moore's Music Shop in Bournemouth and Swindon, and Bristol-based Rock Centre. Also in picture are Craig Gilbert (manager of guitars and amplifiers) and John Wiles.



Furse Line-Up

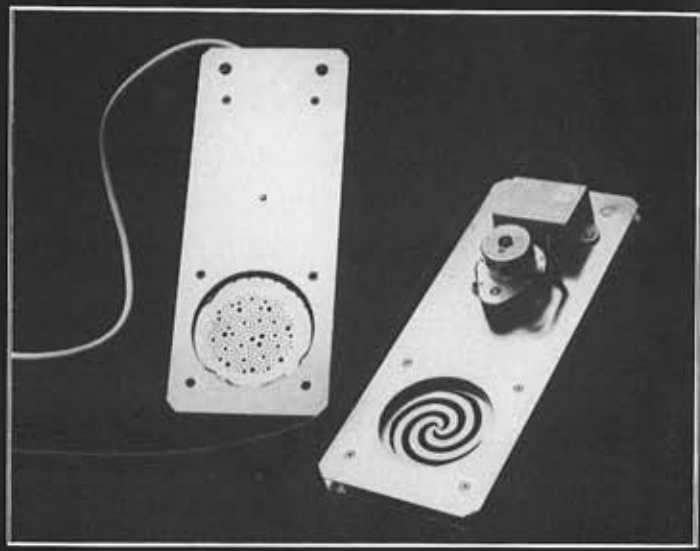
Crown House Furse general manager Jeff Widdison (left) gets his UK sales and marketing team in the limelight ready for a major 1987 sales effort. Left to right: L. McCall, N. J. Fathers, C. R. Smith, A. Marks, R. M. Massey, R. M. Atkins, D. J. Griffiths, E. Owen, J. McAlonan, S. L. Niblett, G. Dudley and N. Newton. Absent on the day were R. Holmes, N. R. Kenton, and I. M. Hume.



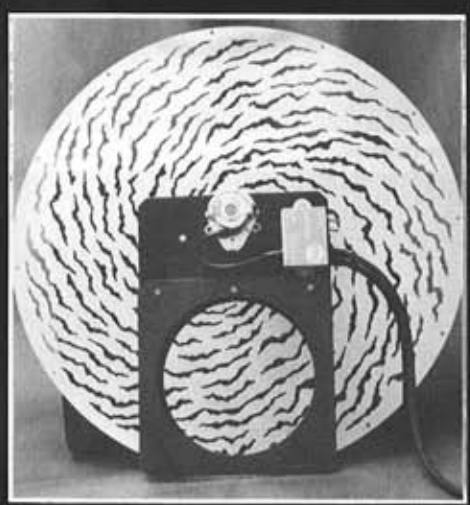
EFFECTS EQUIPMENT

Gobo Rotator

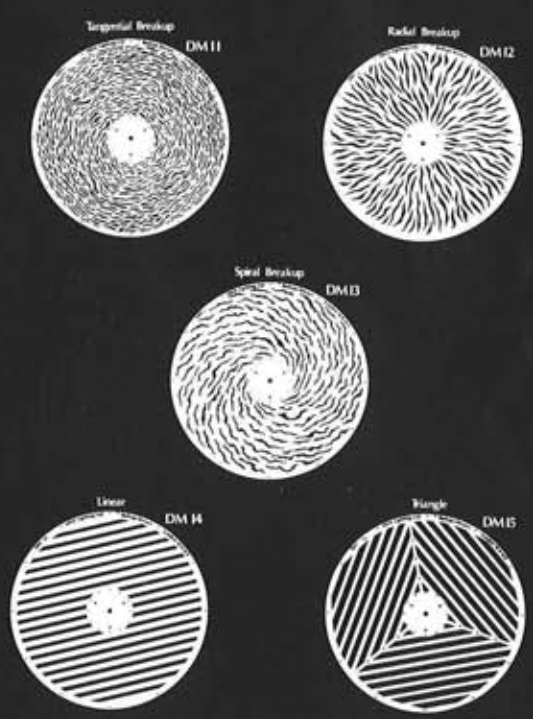
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Spots, Takes B size Gobos



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Entrance to Redhill's new Harlequin (above) and the plush interior of the new Millionaire nightclub (below).



The Harlequin and Millionaire

John Offord visits two new venues in Redhill

Within the space of just 10 days, two new venues opened their doors for the first time in the centre of the Surrey town of Redhill. The 'Harlequin' is the Borough's own new multi-purpose entertainment centre, while the 'Millionaire' is Aureon Entertainments' latest nightclub. Together they will make a big impact on the leisure scene in the area, and it will be interesting to see how they develop their respective styles - bearing in mind that the major regional centre of Croydon is just up the road.

The Harlequin, opened on December 6th, is part of the new Warwick Quadrant development that gives the town a centre to shout about. Out front there is plenty of red-painted steelwork, and the entrance to the venue is opposite a new library, and above the ground level shopping area. It is warm and very inviting, and although the auditorium is essentially a rectangular flat floor area, when converted to a proscenium-style format it too has a fair degree of warmth and intimacy.

A balcony at one end of the hall has four rows of permanently fixed seats, and when the retractable seating units stored underneath it are pulled out, a total audience of 494 people is possible - 422 if the elevator is used as an orchestra pit. To provide the 'shape', hinged wall panels can be opened out and a pelmet flown in to produce a temporary 'proscenium arch'. Flying facilities are provided above the stage area so produced, and there are three lighting bridges and two catwalks above the centre of the hall.

Northern Light tripped all the way down from Scotland to supply and install the Strand Gemini 120 way control desk and adjacent trolley for independent houselight and orchestra pit lighting control. They also supplied socket boxes and the stage management prompt corner facilities panel. All luminaires (all Strand) including follow spots were supplied by Donmar, as were the internally wired bars and other bits and pieces of theatrical ironmongery. A. S. Green of Lancashire installed the lifting equipment, motorised winches, tabs, curtains, 30 hemp sets and general stage equipment including a 2-speed house tab track. Drapes were by Mick Tomlin.

Performance sound is based on a Soundcraft 400B 12/4/2 mixer with 38 mic inputs and 28 loudspeaker outputs. There are 20 tie-lines to the jackfield in the prompt corner facilities panel. Other equipment includes a Revox B77 tape, a Technics SLD210 disc replay unit, various AKG mics and 2 Tannoy 'Cougar' portable foldback speakers. Sound installation was by Showstrand, and the theatre consultant for the project was John Wyckham.

Man in overall charge at the venue is entertainments manager David Gardner, but the task of looking after all technical matters is left to key men in technical manager Ian Townsend, and chief technician John Hewitt.



Entrance to Redhill's new Millionaire.

Prior to his move to Redhill, Ian was chief technician at the new Epsom Playhouse for two years, and before that in the computer



'Hide-away' front of house lighting positions at The Harlequin.

industry. He'd decided that the theatre was in his blood, and studied 'behind the scenes' before landing his job at Epsom, and starting out on his career in the entertainment business.

John Hewitt began his theatrical career well before he left school, helping out at the Adeline Genee Theatre in East Grinstead before he went to Croydon Technical College to study his chosen subject. He then went on to spend a year as technical manager at Brighton's famed Zap Club prior to his appointment at the Harlequin.

You can rest assured the venue is in the safe control of two very capable pairs of hands, and a keenness to get the venue working well is highly important to both of them.

Around the corner, and about three hundred yards down the road, Aureon Entertainments opened their Millionaire nightspot on November 28th. A venue in traditional twenties cinema style, it showed its last film in the early seventies when it became Busby's, a Top Rank Suite. Aureon took it over two years ago, but it has had a chequered history as a nightspot, and its licence was taken away earlier this year.

Over half a million pounds has been spent on refurbishing the venue to take it well up-



Harlequin stage management with a pantomime flavour.

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market, and coupled with a new security package that obviously impressed the local magistrates the new Millionaire is now alive and well. The colour scheme is apricot, green and grey, and several different levels have been created by designers Trevor Stone Associates. Intimate areas are cleverly linked together, and an excellent 50 cover waitress-served restaurant is separated from the main area of the club by a glazed screen.

The light show is based around a Laser Systems laser installation, with lighting equipment on three identical two-dimensional chrome diamond-shaped rigs. Each rig contains 18 Par 36 Le Maitre pinspots, two 4-headed Multiluz helicopters, two 12" Mirrorballs, four 120° Par 36 scanners (Satel), two 360° Par 36 spinners (Multiluz), four 300W LSD coloured Floods, four 300W Sun Floods, eight 6" lengths of cornflower blue neon strips, and 16 Aric architectural multicoloured Zip strips. The smoke machine is an Optimist Turbo, and between the rigs there are 20 lengths of Mode Arc Line. On the columns there are two Starballs, and scattered about, six stationary Mirror Balls.

Control is based on a Light Processor Commander with a system sensor, a Metro console, and a control for the Mode Arc Line. There are 18 LP CMP ID lighting packs, with six on each rig.

Sound is taken care of by two Technics 1200's with Stanton 680EL cartridges, and the tape deck is a Technics RSB205. Mixing system is a Citronic SM450. Other equipment includes a Sansui SE88 equaliser, two HH M900 amplifiers, and Shure mics. The speakers are Martin Audio comprising 2 x



Control at the Millionaire with Light Processor with System Sensor and Arc Line control on the left, and Laser Systems' control on right.

18" bass enclosures, 2 x 2 x 12" with horn (full range), 2 x 1 x 15" with tweeter (full range), and 2 x 12" horn top speakers. Design and supply of the lighting and sound systems was by Dick Carrier of LSD.

The venue is managed by Alex Lowey and unit manager is Steve Spalding. With a capacity of 500, roughly the same as the nearby Harlequin, Redhill has suddenly had sprung upon itself a quality of nightlife product that spans the general leisure and entertainment spectrum in the mid-range capacity.

It has two good, warm, attractive, and comfortable venues - both capable of running additional events that will keep the doors open and the tills busy for much longer periods than the usual evening and late-night fair.

The Harlequin is ideal for the bigger banquets and for events as diverse as dog shows and civic functions. The Millionaire will be the 'in' place to go for that special private party.

And both venues have the booking plans to prove it.



Harlequin technical manager Ian Townsend at the Gemini control.



Harlequin chief technician John Hewitt at the Soundcraft desk.

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SIS - a Centre for all Reasons

John Offord takes a look at SIS's expanding Northampton-based operation

One of the UK's leading manufacturers and suppliers of discotheque equipment to the trade, SIS of Northampton have set themselves up for a major expansion drive in 1987. Early in 1986 they purchased the freehold of a 24,000 square foot factory and office complex, and straight away moved in their manufacturing division. The sales and administration office joined them during the late summer, and when I visited SIS in early December the worst of the painting and decorating routine was over, and staff were settling down to make best use of the benefits of having the operation all under one roof for the first time.

But 1986 hadn't been without its problems. On the day director David Mitchell was due to pay the deposit for the freehold of 15 Gray Street, a cheque for £35,000 from a continental client bounced, and the money still hasn't come, and probably never will. That problem obviously took some riding, and it wasn't exactly a downhill run getting the new premises ready with a shortage of cash at exactly the time all those hidden extras start coming to light.

David Mitchell's start in the lighting and sound industry 15 years ago came by an unusual route. Parallel with Oundle School and University, he set up an amateur film production company, eventually turning the ground floor of his rented home into a studio. He then decided to use the equipment for "other things", and started making jingle machines. It began well, but with a full-time job at GEC, and the company losing money David moved in to close the operation down a few years later. "Instead, I decided to batten the hatches to get the business on its feet mainly to protect the family money," he told me. "Something fairly dramatic had to be done."

What happened to SIS in 1978, and the beginnings of the company as we know it today, was the simple pinspot. "We started off by saying 'let's try for 200', and we made a list of people who were possible buyers for them. We did an estimate of how many they would take, say 10 to this guy, and 40 to that. Then we actually rang all these people, and found that on telephone orders alone we had exceeded the 200. It simply grew from there. We had a chart of how many pinspots we were selling, and that was quite interesting because it started off at 120. When it went above the thousand I didn't bother any more. I suppose we are doing between 3000 and 4000 a month now," he explained.

"But you can't expect a business to survive on a pinspot, so we then developed other things that didn't 'move'. We didn't want anything that moved because everyone was making moving things and having loads of problems. So we went into lanterns, and things like T-bars that you could hang them on. To start with they were all our own manufacture, and it built up quite nicely.

"Eventually we had to accept that we were going to have to get involved with moving lights, and we started production of the scan-



David Mitchell in his new demonstration showroom. "The purpose is twofold - one to provide a central area for products to be seen working under one roof, and secondly to provide a centrally located showroom for SIS clients to bring their customers to and to use as a selling tool. All we need is a few days' notice, and we also have a restaurant and a facility for discussion in private."

ner, which has been extremely successful." By 1983 the company developed production into helicopters and spinners, and now has a wide range of moving effects.

A steady relationship within the trade had been developing as the company expanded, and David Mitchell decided to make the decision to go 'trade only'. "We came to a cross-roads. We were getting enquiries from club owners and we had to decide whether to go for them, which would ease our cash flow a great deal, or to say 'no, we are trade only', and re-direct enquiries to retail outlets. On a couple of occasions we have been

caught out, but we have never deliberately supplied retail, and do not intend to.

"Because of this, we have gained a lot of support from the people we supply. They know they are safe when they give us a drawing with specifications of an installation. It has also helped us develop new products, and increase business. Our clients will come to us and say 'we want your product, but while you are at it can you also supply such and such?'. I think the growth has come from this trust aspect."

To make the whole operation profitable, David Mitchell targets for 60 per cent of his turnover from own-manufactured products, with the remaining 40 per cent from wholesale supply of leading brands, having developed the operation into a 'one-stop' base for installers and retailers to call on, centrally located in the country.

And the new premises is ideal for this type of operation. Loading from the trade counter is easy, a demonstration area enables clients to bring potential customers to SIS to view products under discussion, and a quiet area in the company's restaurant is an added attraction to take a trip to Northampton when purchasing lighting and sound equipment.

Of the total 24,000 square feet at Gray Street, SIS use 13,000, and David Mitchell has divided the rest into four units, three of which have already been sub-let. It still gives him more than ample for production areas, stores facilities, a trade counter, demonstration room and studio, offices, restaurant (complete with pool table courtesy Hazel Grove Music) - and a sauna suite for staff and their families.

A total of 22 staff are employed, and looking after all production and development is factory manager Dave Riley. The sales and



The entrance to SIS's new HQ at 15 Gray Street Northampton.

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SIS factory manager Dave Riley.



Spinner and Scanner assembly - part of a batch for export to Australia.

administration side is looked after by Wendy Styles and Sue Riley (wife of Dave). Following the recent departure of former sales director Ian Brown across town to W.B. Lighting, David Mitchell is also looking after major sales projects until a replacement takes over the vacant desk. (The post of sales manager for SIS was advertised in our December issue.)

In the factory itself, a new powder coating plant with both manual and automatic systems has been installed, and this will improve quality and shorten delivery times. But as most manufacturers are well aware, matching production and orders is never an easy task. One of SIS's problems is getting enough good quality motors to keep the assembly

lines busy and to meet demand for products. "When we started making scanners we thought we would manufacture 100 a month. But we can't keep up even though we are now producing 800 a month. One recent order to Australia was for 230 in one batch alone," said David Mitchell.

The current export figures for the company are nowhere near as high as SIS would like, but competing directly with Italy and Spain in this product area is no simple matter. "We were sending a lot of goods abroad, but then the pound got stronger and it's difficult to get the market back even though sterling has now changed its mind. About 15% of our equipment went directly abroad last year, but people like Squires are also shipping our

goods overseas as well. With the 'invisibles' we are probably exporting about 25 per cent," he explained.

I asked him what he thought of the Spanish and Italian competition. "I think they do a good job, and the reason they get their goods made so much cheaper is because they don't have to pay the money - their wage levels are much lower. Nobody, in my opinion, could make a pinspot quicker than us, but our cost is the same or even higher than they can get them into this country fully made. The components they use are quite often not so good. We would like to think, and I hope we are right, that we get about a .1 per cent return rate on our own products, and I can fairly safely say that that is a



Wendy Styles supervises administration and credit control and also assists on sales.



David Mitchell - looking for major expansion in 1987.



Sue Riley runs SIS's computerised stock system, sales and purchase ledgers.

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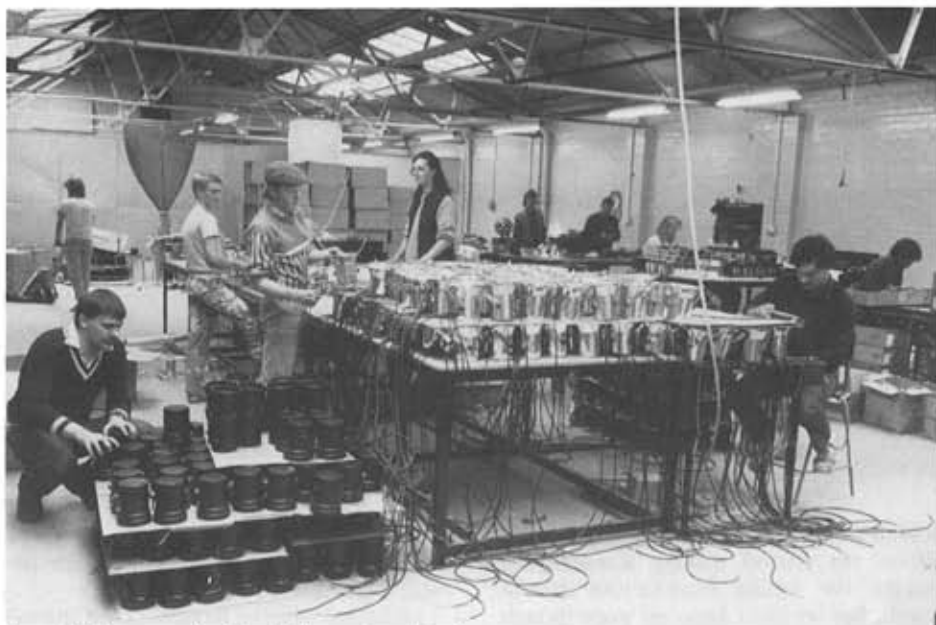
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An order in preparation for Carlsboro Sound Services.

reliable product. We don't have the overheating problems that the imported items suffer from. I could show you a box of spares needed for imported products, where we have perhaps supplied foreign goods on a wholesale basis. In relation to turnover, it is a very large number of spare parts compared to the very low percentage on our own products.

"We don't get motors going wrong because when we actually invent a product we use a motor that will more than cope with the job. Just as an example, when we designed our mirrorball there was a problem

with mirrorballs falling down all over the place because people were supplying unsafe motors. When we built ours, we put in a bearing which was attached to the motor shaft, and short of someone being able to break the chain there was no way that our mirrorball could come down.

On the state of the industry in the UK David Mitchell is critical about the situation on the installation scene. "I think there are an awfully large percentage of 'here today, gone tomorrow' companies, and it makes it very difficult to take risks from our point of view."



Assembly of the new SIS 'Octolite', an 8-head Par 36 spinner. By staggering the positioning of the lamps, the beams from the Octolite will fill almost any shaped room. The pods can all be pointed in a multitude of directions.

To counter that, and also with a view to expansion, he is looking to break into what he calls the 'semi-domestic' lighting market. "Although it is cut-throat, I think the quality of the purchasers is a lot better. If, for example, I can get things sorted out well enough to supply someone like BHS I would be very pleased. A lot of the major companies will come and look at your factory, and I would not be at all worried about that. Firms like

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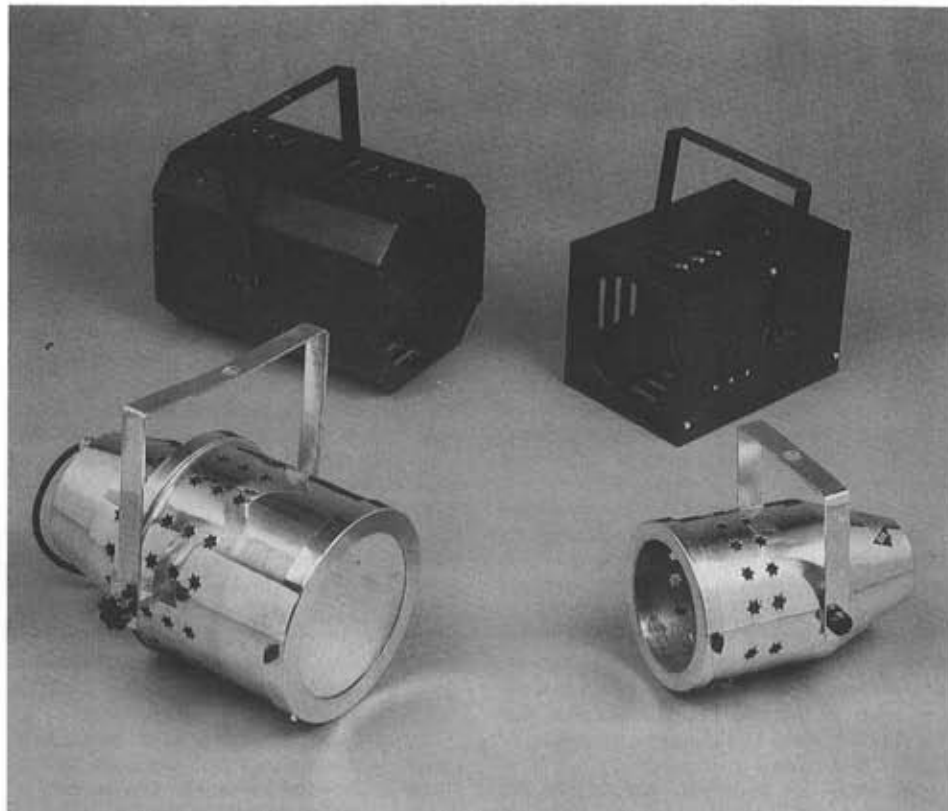


The new 'Dice' spins on two axis and splays light in a multitude of directions.

Marks and Spencer regard how well you look after your staff as almost as important as the quality of the product, and I have nothing to hide on that score. I certainly think we have got enough skill to be able to do it."

Another area of growth is in the manufacture of exclusive products for other major suppliers in the industry, and several items are currently being developed in this area. At present such products only account for a small part of SIS turnover, but David Mitchell expects it to grow significantly in the future.

At the end of the day it's your reputation



The popular SIS lanterns, clockwise from top left the LP1000 'Supazit' Par64 spotlight, the LP300 'Parzit' budget-priced medium angle spotlight, the LT150 - the baby of the range, and the LT300 up-market Par56 lantern.

for quality and service that counts, together with special relationships built up over the years with key customers. David Mitchell is proud of such connections, and cited one example. "As far as I know we are Squires

largest supplier, and also Squires is our largest customer," he said. And with over 400 UK and overseas trade clients on his books 1987 looks like being a growth year for SIS.



David Mitchell, foreman Steve Jaynes and Dave Riley with the newly developed 'nodding scanner'.



An early stage in the development of an Octolite. In the background are parts for the new SIS 'Dice'.



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Queues at the Quadrant

Roger St. Pierre takes a look at Merseyside's latest Nightspot and talks to Satel's Paul Morrison

If on any recent Friday or Saturday, you had been at Liverpool's new Nightlife At Quadrant Park club, jam-packed full with 2,500 disco-goers having a great time, you would find it hard to credit the club is located in Bootle, one of the most run-down areas of one of Britain's most depressed cities.

Outside, all is gloom and decay - pot-holed streets, deserted docks, abandoned warehouses, dirt and rubbish and - appropriately enough - it was drizzling when I arrived.

Inside, well, that's a totally different story, for owner Jim Spencer has brought to Liverpool's night scene a venue which captures the spirit of the old Top Rank Suites and Mecca ballrooms, but allies this to up-to-the-minute technology.

Amazingly, it's Jim's first venture into the club scene - he made his money in the steel industry - but thanks to his own intuitive sense of what's needed for today's market and the immeasurable help of a consortium of local disco suppliers, he's come up with a venue which, despite the cynicism of his rivals, who all said it could no longer be done on such a grandiose scale, he's made it work.

It was importers Satel who supplied the Spanish-made lighting, and their managing director Paul Morrison explained to me how the project was put together. "Instead of each going in with a bid for our own part of the work, the companies involved got together and offered a package. Over the months the scheme was drastically amended - Jim has strong ideas of his own - but with so many talented people involved the end result proved to be first-class."

The actual lighting installation work was carried out by Hi-Tec, a Bootle company run by Wayne Winstanley and already well-known for its installations at such prestigious venues as Stringfellow's in London, Mr. B's in Weston-Super-Mare, Japanese Whispers at Barnsley, the Rooftop Gardens Wakefield, and Mr. G's in Aberdeen. Lighting design was a joint accomplishment between Graham Barron of Satel and David McMurdo of Hi-Tec.

Level Acoustics did the sound installation, Dagar Contracts made the impressive lighting rigs and lifting machinery and Seaman's Signs did the neon while "outsiders" Laser Systems of South Wales put in the laser system.

The club is sited within a vast one-time warehouse - taking up 17,000 square-feet of the 60,000 square-feet available. Another 20,000 square-feet has been used to provide what is the largest pool hall in Britain - offering some 40 tables.

"The pool hall was the start of it all, explained Steve Fleury, a young Canadian who is operations director at Quadrant Park.

A former employee of Mickey Mouse - he worked at Disney World in Florida - Steve moved to Britain with his English wife Jane and was immediately fascinated by the very different scene here: "In North America, it is the sound which is all important, while in the

UK the emphasis is very much on the lighting systems. The rigs you have in clubs here are really mind-blowing for a Canadian!

Steve was involved with the project from the start: "Having realised the need for a pool hall in the area we went out on the road and covered the country looking at how other people do it. Once we decided to add a discotheque to the project, we went out on the road again and visited clubs from the North of Scotland right down to London. A hell of a lot of research went into this place.

"Now we've got to decide what to do with the other 20,000-plus square-feet. We could go in for a restaurant, a live venue, a health club, a gymnasium, who knows what?"

The club project alone cost some £1½ million and was a very complex undertaking. Fittingly, since Jim Spencer's main business is Spencer Steel, some 100 tons were used in the building conversion - for everything from ballustrades to joists: "And the floors would have been steel if they'd been able to tack a carpet to it," quipped one of the on-site installation people.

Sited on two levels, the club boasts a large dance floor downstairs, two smaller ones upstairs and a huge central well through which the two main lighting rigs rise and fall.

There are three "double-sided" bars (you can walk right round them) and one further bar while downstairs you can buy burgers and other snacks. Upstairs is a really good pizza and steak restaurant - fresh ingredients - which offers good value and is regularly packed. Quite an achievement when you see just what a disaster most club restaurants are.

Capacity of the club is 2,500 and on some nights people queue right round the building waiting to get in. And Nightlife At Quadrant Park is open, and does good business, seven

nights a week. "On Tuesdays and Sundays we have really low admission charges and aim to make our money on barrellage - we're there simply to sell beer. But we still use top-flight deejays and that helps bring the people in," said Steve Fleury.

A bank of Zero 88 Mercury System controllers is the nerve centre for an impressive lighting scheme which features, among other things, eight Satel Geminis, eight Satel Vulcans, 16 Satel Walkers, a mass of pin spots, and on each of the two main rigs two Kreluz vertical harvesters, a waltzer, a mini Neutron Star, neon on the top and bottom of each canopy and on each of the arms, plus numerous other bits and pieces.

There's a Clay Paky light cannon, a smoke machine, a spectacular waterfall effect and lots more.

Sound-wise, there's an Electrovoice system and imaginative use of state-of-the-art speakers, including speaker tiles on the ceiling and speakers mounted on the central lighting rigs. These latter are BS speaker tiles, four on each canopy of the rig, giving 360 degree sound dispersal.

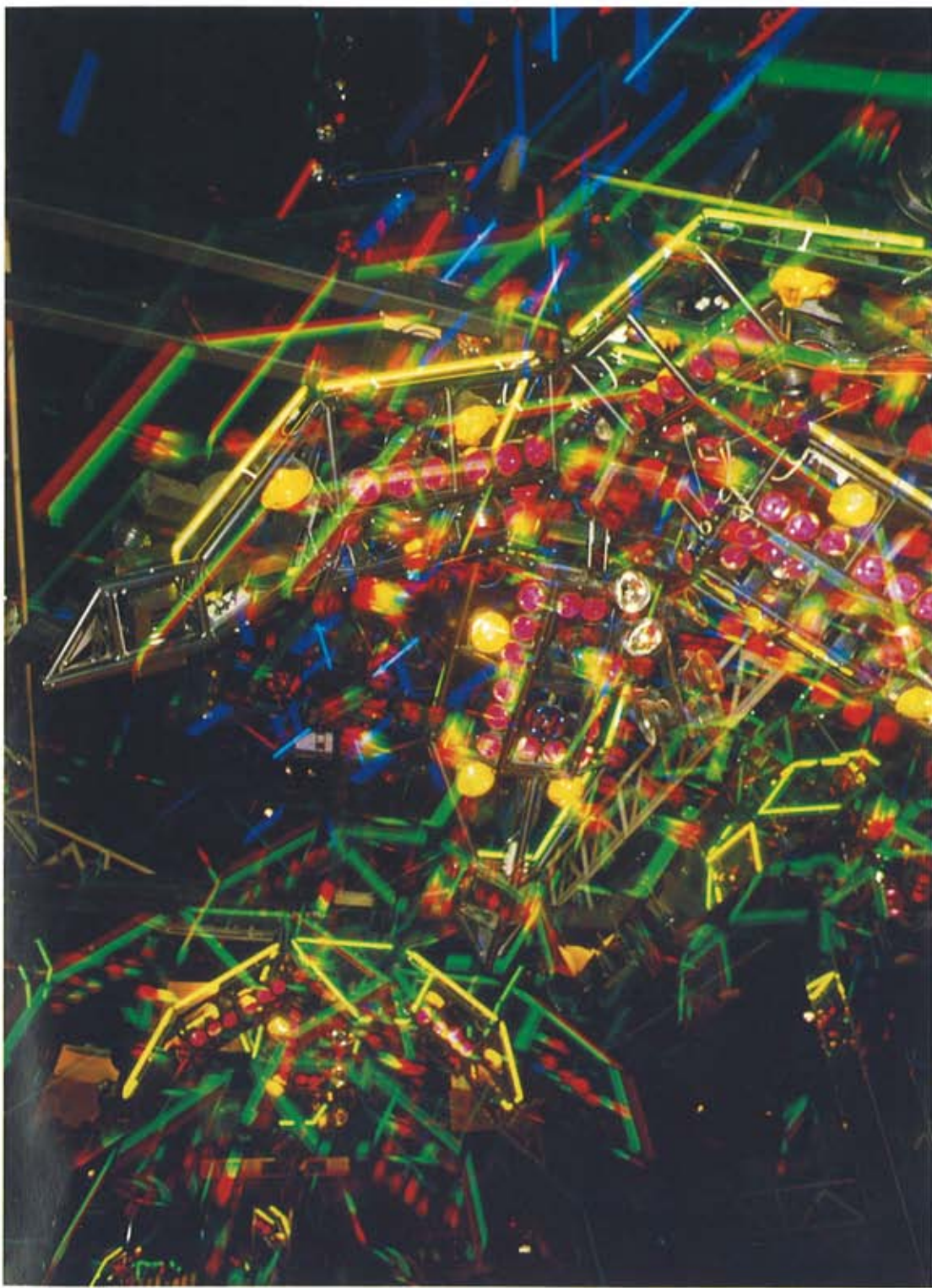
For Satel, the club is a great showcase for an impressive range of products imported from Spain by the two-and-half-year-old company whose offices and warehouse are at Ellesmere Port, a short drive away via the Wallasey Tunnel under the broad Mersey.

The company's three directors, MD Paul Morrison, who looks after sales and the technical side of things, designer Graham Barron, and Pete Westwater, who is also in sales and says: "I'm the one with the hammer" since he's the director most involved in the practical side of things, are all ex-McCormack staff.

As Paul explained: "McCormack's wanted their business to grow fast and diversify beyond discotheques, but our hearts were in



Quadrant Park Nightclub captures the spirit of the old Top Rank Suites and Mecca Ballrooms, but allies this to up-to-the-minute technology.



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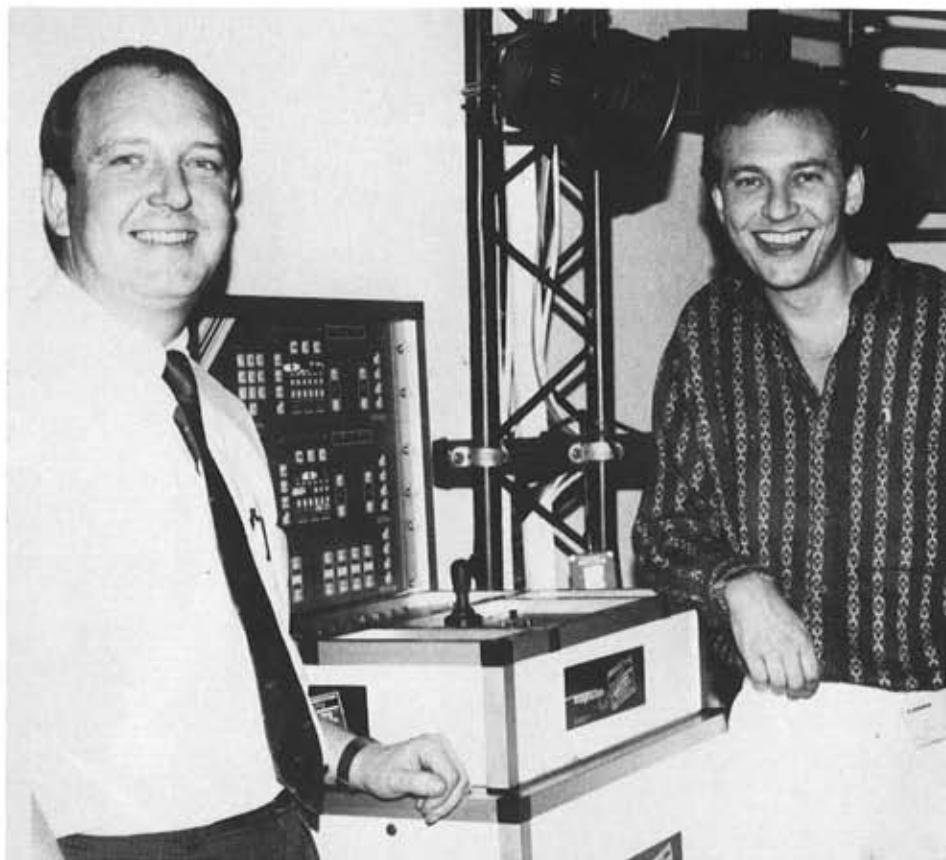
"Satel in Madrid thought their sales here could be far better and they believed we were the right people to set up Satel in the UK. They've been making disco lighting since way back in 1965. Their boss, Manuel Fernandez is one of the true pioneers of this industry.

"That he was right has been proved by our success. We turned over £380,000 in our first year, £560,000 in the second and are on target for ¾ million in our third.

"They are very much in the mass production business, rather than doing custom-built one-offs, and their products range from Par 36 pin-spots up to Geminis, Gyroscopes and large centre-pieces. We carry the entire product range and our sales are only restricted by product availability.

"Of course, our business is influenced by currency fluctuations. That's the way it always was and is for importers - but it's a swings-and-roundabouts affair and tends to follow a predictable pattern. The peseta has a known record for losing value against the pound on a seasonal basis.

"The pound always seems to buy fewer pesetas in the middle of the holiday season when all the package tour people are off to the sun."



Satel's Graham Barron (left) and Paul Morrison pictured at the recent PLASA Light and Sound Show.

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Lighting in action at Quadrant Park - looking up from the dance floor and (below) a general view across the upper level of the club.





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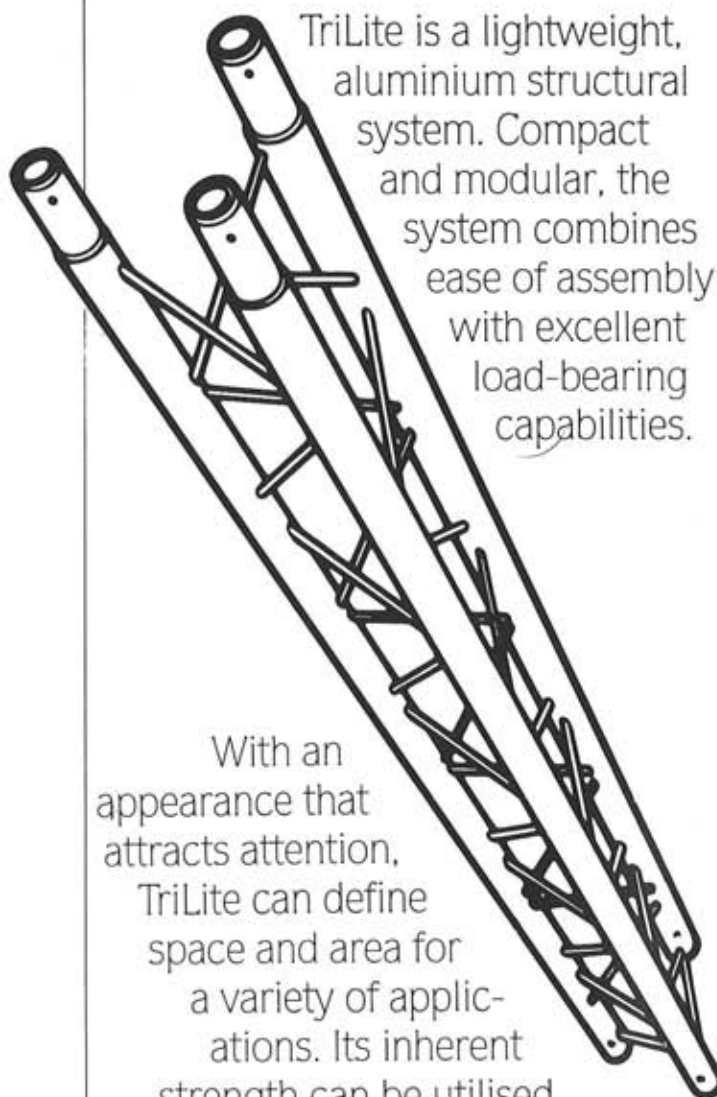
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West 1 at the Campus

A Local Authority in the Disco Business

Welwyn Hatfield District Council have just re-opened their Campus West complex after a major refurbishment that includes 'West 1' - a fully fledged nightclub and function suite. And in my view it may well turn out to be the first of many similar local authority projects that will see civic enterprise expanding into the discotheque and club scene in an effort to encourage maximum use of their leisure venues.

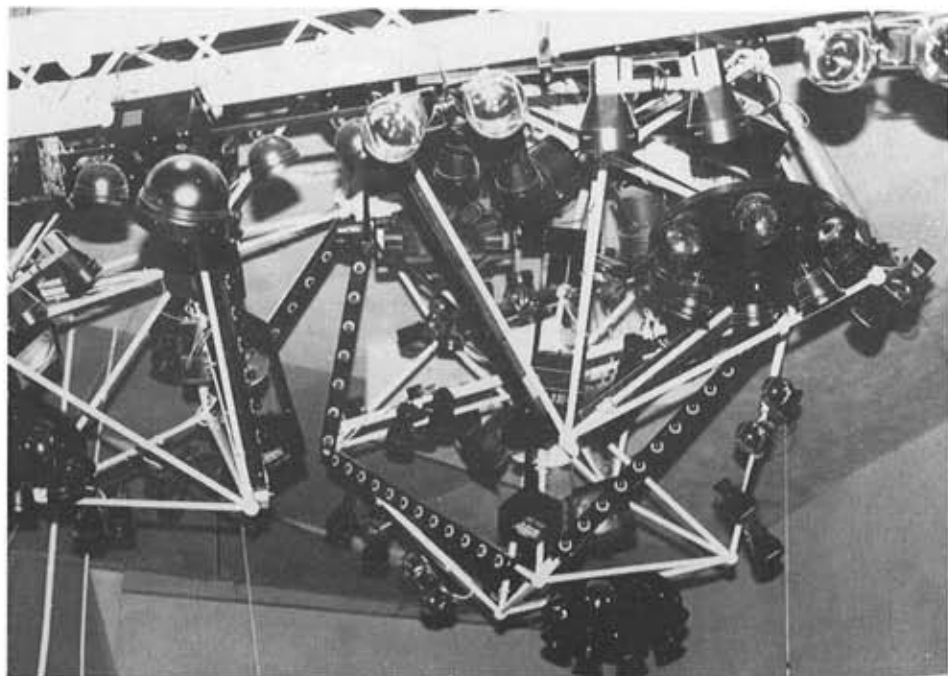
Originally built in 1973, and centrally situated in Welwyn Garden City, Campus West has never hit the highspots on the national entertainment circuit. It was designed at a time when official sources were still recommending small, 'creative' and intimate theatrical spaces, and the 365-seat auditorium within the complex was never going to make itself pay using professional product. But times have changed, and a more realistic view has prevailed. "It became increasingly apparent that a drastic change of use was in order if the Campus was to compete for people's leisure time and survive in this highly commercial and competitive field," according to a recent Council statement.

With the 750-seat Hatfield Forum a few miles away, and operated under the same management as Campus West, it was decided to let that venue take on the bigger product, and the courageous decision was taken to spend upwards of £½ million on structural and cosmetic alterations at the Campus to create an up-to-date complex that had "something for all ages".

The complex re-opened in late November, having been closed since April 1986, and the area for general use and private hire has



Robert Holgate, operations manager at Campus West. "I've never seen a building that can do what this one can do."



The central part of the lighting rig is a Meroform construction that opens out under its own weight as it is lowered from one central crane.

been increased by an astonishing 40 per cent, and the layout designed in such a way that many events can run concurrently. The main theatre/cinema auditorium, now largely used by flourishing local amateur societies, has been enhanced by the upgrading of the original foyer facilities into a Piano Bar and by addition of the adjacent Park Lounge. The exhibition hall is now 'Roller City'.

Top of the list as far as we are concerned is the 'West 1' nightclub - originally the main suite - with the side annexe converted into a bistro area. In many ways this is the "heart" of the new Campus West. Local authorities who own nightspots per se are few and far between, and those who go the whole hog and put up the latest in lighting rigs and install the latest sound equipment are practically non-existent.

"We aim to demonstrate that this local authority for one is not afraid to take on commercial rivals in the provision of leisure and entertainment," say the leisure department. In the Council's own terms, the emphasis is on "the blatantly sophisticated". Pam Bull, chairman of Welwyn Hatfield Leisure Committee said: "The new Campus West is the result of months of hard research and feasibility studies. This is an attempt to get the building 'right' and get into the 1990's. It was a courageous decision to go down this path but we believe we have made the right decision and it will provide a whole range of new opportunities."

So what's the vital selling point at Campus West for lighting and sound equipment providers looking for a share of the local authority market? The lighting and sound equipment and installation by Avitec Elec-

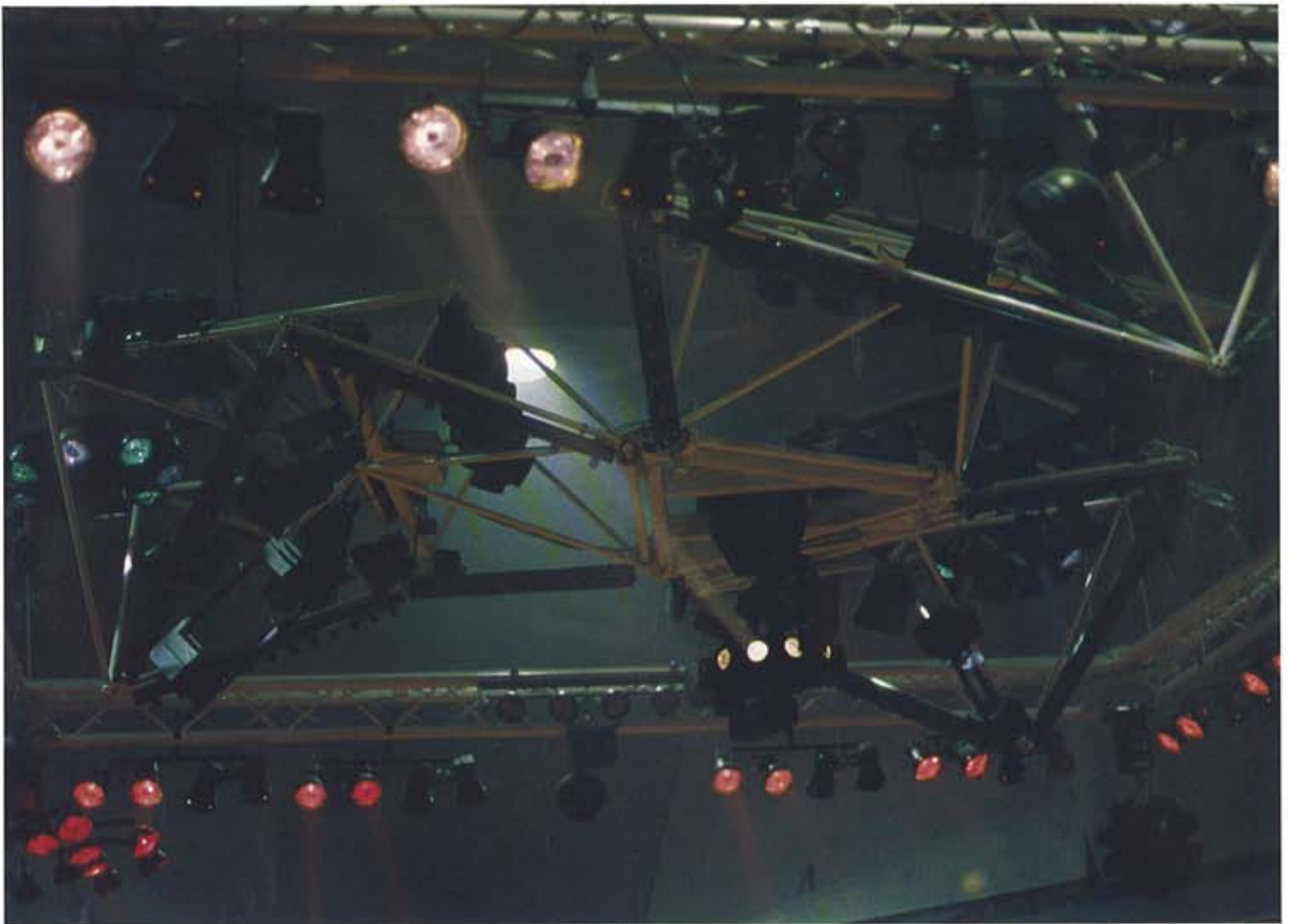
tronics of Hitchin is highly effective - and so one would expect from a group who proudly boast that they are Europe's largest club lighting and sound equipment distributors, and who have been responsible for many leading discotheque installations both in the UK and on the Continent.

But it is also highly **cost-effective**, and most particularly so when viewed in relation to local authority budgets, and in relation to the total cost of the work at Campus West. Against the near-million of the total project, the lighting and sound installation stands in at £35,000.

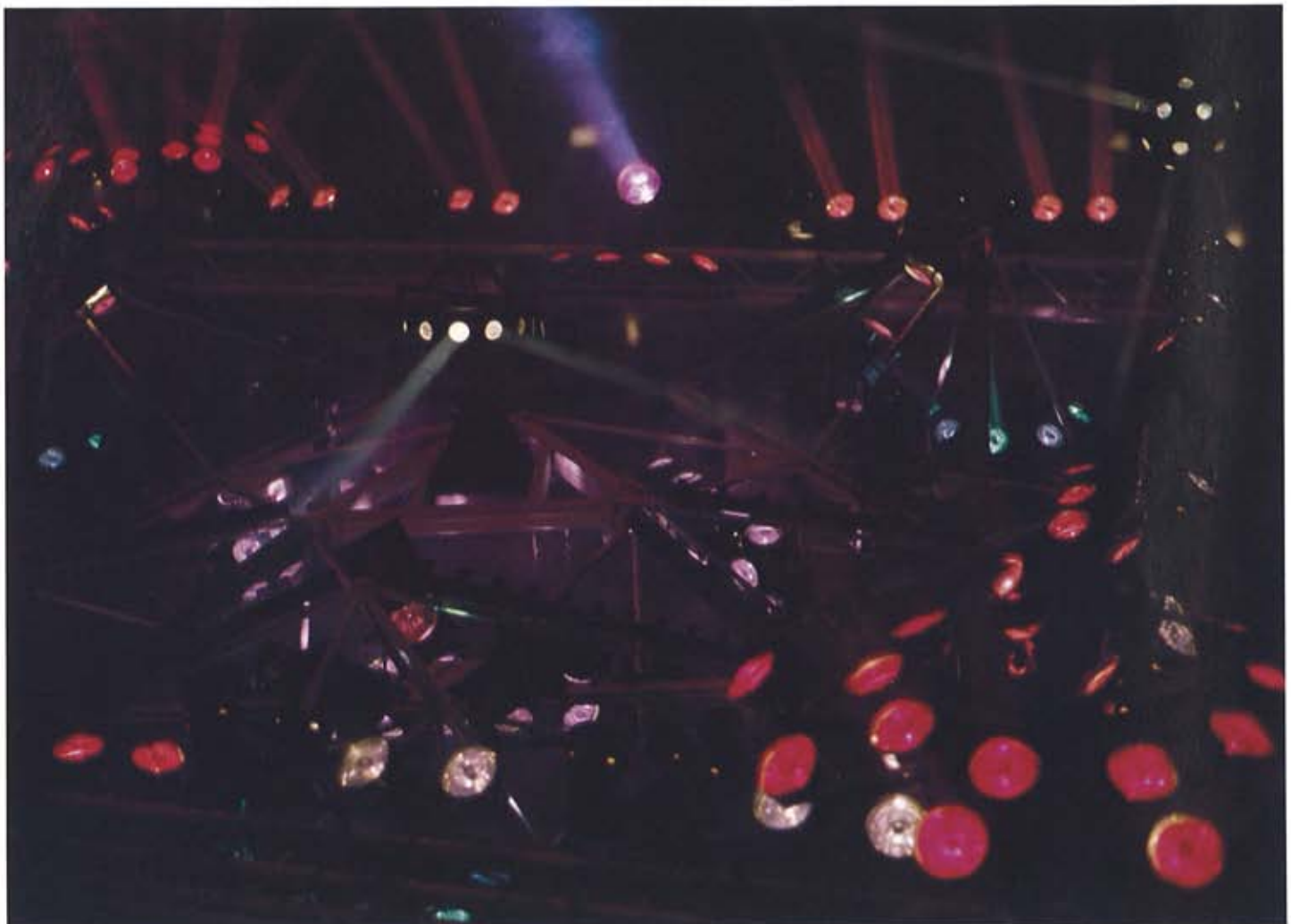
All lighting equipment is attached to one rig hung centrally over the dance floor area in West 1. The outer part of the structure is a square of white-finished Trilite, and centrally within it hangs a Paul Dodd-designed Meroform construction that is essentially a three-piece unit that opens out under its own weight as it is lowered from one central crane. It's all highly simple, but very adequate and effective, complementing perfectly the subtle blues, greens and pinks of the general decor.

Equipment includes a Clay Paky Astron 3, 3 Kremesa 20-lamp Jota 'harvesters', 3 Unicopters, 2 Kremesa 20-lamp helicopters and 2 Clay Paky Sputniks with a selection of wavers, scanners, strobes, pinspots, and some Avitec Light-Lines. Control is based on a Light Processor 414, a touch panel with system sensor and an LP434 touch override. The smoke machine is a Jem ZR41c Jumbo Fog Generator - "and it does an excellent job" according to Avitec's sales director Andrew Morris, who showed me the installation.

Sound equipment includes 2 LAD 828P turntables, a Soundout 'Clubmaster' mixer, a Dod graphic equaliser, Avitec Beta crossover



The West 1 lighting installation by Avitec is neatly packaged within a white-finished Trilite outer square frame.





Local authority disco business - queuing up for 'West 1' at Campus West.



Avitec's Andrew Morris at the West One controls.

and Beta amps. Four Dynacord CL808 bass cabinets are stacked together in a special enclosure, with mid-high speakers Avitec PRO400 which include EV and JBL components. The fill-in sound system is by Mission as is the CD player. The speaker stack unit and DJ control area were designed by Norman Gray.

The man in charge at the venue, including the rest of the complex and also Hatfield Forum, is operations manager Robert Holgate. He was appointed in May 1985, and his previous post was at the Lea Valley Ice Centre. Prior to that he'd been a Mecca man for five years, which is probably as good a reason as any to back up the feeling that Welwyn Hatfield have got their plans and appointments just about right in this particular area.

"I've never seen a building that can do

what this can do," Robert Holgate told me. "For a local authority to take the bull by the horns and go this far is incredible. There has been no hesitation in spending what was necessary to get the project right."

The consultant architects and interior designers for the project were RMJM London Limited who are based in Welwyn and they have been put forward for an award for their work at Campus West at the next Annual Interior Design International at London's Olympia.

Due to very high regular usage of the building, discos are only held twice-weekly at the present time, but because of their immediate popularity, Robert Holgate expects to be running four nights a week by the Spring.

West 1 has been given a 'life expectancy' of five years in its present format, and the in-

stallation has been designed in such a way that additions to the lighting effects can easily be achieved. They are considering the addition of a laser, and a small lighting rig for the ancillary dance floor has already been ordered. It's all part of a plan to keep interest on the boil.

And it's my guess that interest in this project won't be confined to the young people of Welwyn. Many local authority men will be making their way to the town in the not too distant future to see exactly what they've been up to at Campus West. And I'll place a few bets that it will be the first of many local authority contracts that will go the way of Avitec and other installation companies on the lighting and sound installation scene.

John Offord

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Cluster Cover

Ben Duncan looks at two Constant Directivity Cluster Systems

Speech PA is the art of getting an intelligible message into a public space. Ideally, the sound should be loud enough to be easily heard, yet without discomfort, irrespective of where we're standing. One approach to large scale coverage is to literally spread the sound with lots of low powered speakers - a **distributed** system. The diametric opposite is to use a single speaker, or group of speakers, to beam sound at everyone in the building, from a distance. Systems like this are nothing new - central groups or **clusters** of horn speakers can be glimpsed in 40 year old Hollywood movies. Since then, sound system designers have gone whoring after 'stereo'. And in doing so, they've displaced common sense: real stereo imaging (as experienced on a good domestic Hi-Fi) simply doesn't lend itself to crowds and public spaces.

In late 1975 Electrovoice patented a new family of horn speakers, having **constant directivity** (C.D.), which opened the way to using central horn clusters to full advantage. Subsequently, the idea was widely publicised by Altec, who introduced their own 'Mantaray' C.D. horns in 1978. Today, 9 years later, the ready availability of computer design aids, together with economic changes have brought clusters back into vogue. So what are the benefits?

First Principles

In putting speech or music into any large space, the challenge is to get a good measure of direct sound at every point. If we're not in a direct line with a speaker cone or horn mouth, we're left with the reverberant soundfield, which isn't particularly intelligible or smooth. The familiar distributed system with many individual speakers only serves to generate multiple time delays and stirs up reverberation, making communication even more confusing and irregular than it need be.

At airports, the trouble comes when you're walking midway between two sound sources - your flight announcement is barely intelligible. The most reverberant spaces are big ones, and they usually come hand in hand with high ceilings. Fortunately, this is exactly the kind of environment where clusters can be successfully applied. With a single group of horns hung high above everybody, the inverse square law can be used to advantage.

How? Well, for coverage immediately below, the distance is relatively short, so the dispersion is made wide. Meanwhile, to reach the furthest points without overlap, we need a narrower dispersion. This amounts to concentrating sound power into a smaller area of solid space. If we then assume for simplicity that the power applied to each drive unit is the same, it's evident that the sound pressure level can be arranged to balance - loudness remains the same whether we're underneath the cluster, or over in a far corner. To grasp this intuitively, think of a hosepipe: If it won't reach, it's instinctive to put a finger over the end. The amount of pressure in the pipe is constant, but the water can reach further because our

finger focuses the water into a narrower jet.

So much is true of any horn speaker, but few speakers are capable of radiating a constant sound level into 180° of solid space (i.e. a hemisphere), over the range of speech frequencies (say 200Hz to 5kHz), let alone over music's bandwidth (40 to 18kHz). A common direct radiator speaker, for example, has a **beamwidth** which narrows down more and more, with ascending frequency. At 3kHz, we need to be dead on axis with the cone to hear any sound. Horn speakers are better, because the horn flare can be shaped to control dispersion.

Constant Directivity horns take this a step further, allowing us to build up a regular and

well defined coverage over most of the audio bandwidth; CD horns 'stay in focus' over a wide range of frequencies; each individual horn can cover a definite elliptical segment of the floor below, like a stage spot. In a system like this, the wholesale distribution of direct sound is evident, since wherever we stand on the floor, we should be able to look up **into** the throat of a horn.

Golden Rule No.1 about coherent sound is 'The fewer the sound sources, the better'. With more than one speaker, there's always scope for complex interference. At the same time, in real life, we nearly always need more than one speaker to produce sufficient acoustic power; and with CD horns, we'll be



A general view of Telford Ice Rink showing location of the two loudspeaker clusters.



A close-up of one of the Telford Ice Rink loudspeaker clusters. The system can handle full-range music and also permit clearly audible announcements over crowd noise.

using 8 or more speakers, to cover points both close and distant. Yet having souped up the sound level and coverage by using a number of speakers, CD clusters retain the sonic purity of a single source, provided the distance between them is insignificant, relative to their distance to people down below. If so, there's synchronisation - the sound element. Moreover, destructive phase cancellation is allayed by the ease with which we can focus a cluster: the individual sound sources needn't **fight** against each other, and we can easily direct the sound-field to avoid bad, reflective surfaces in the auditorium, for example.

Turning to economics, the costs of our cluster's more elaborate hardware may well be higher. It will certainly involve an active crossover, HF & LF horns and a bundle of amplifiers, but installation time (hence the cost of labour, delays and penalties) will be less, because assembling all the speakers in a single, central location is bound to be quicker. Ideally we end up with a PA that's far better, for about the same money.

Altec Clusters at Telford

In 1982, Telford New Town's Development Corporation set about building an ice rink. They sought a sound system which would handle both full range music (i.e. Ice Disco), and permit clearly audible announcements over crowd noise. Put into figures, they wanted an articulation loss of less than 15%. So they approached Mike Joyce (then working for Rank Strand), who came up with a ground plan, centered around a single cluster. Prior to this, the majority of UK ice rinks had struggled with lots of horns and columns spread around a distributed system (The UK's first C.D. cluster system was installed in 1983, at a rink in North London). About this time, Mike had attended an Altec loudspeaker development seminar in Cambridge. This amounted to using an Altec computer programme in conjunction with a programmable calculator, to map the sound dispersion of Altec's **Mantaray** horns.

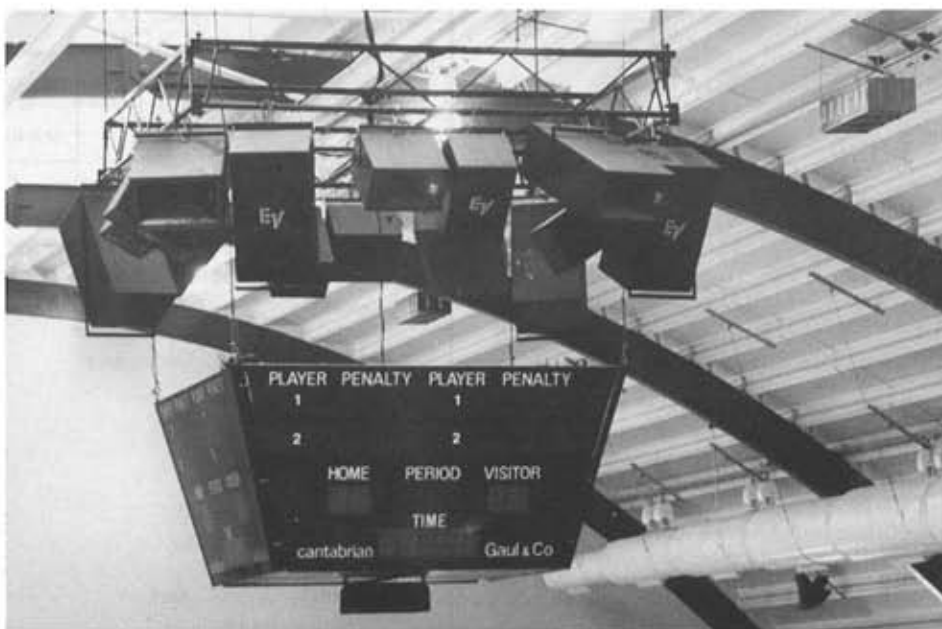
The venue has tiered seating along one side only, and the challenge was to equitably cover both the rink and the seating with a single system.

Using Altec's computer-aided design routine, Mike began by choosing a likely location for the cluster, roughly equidistant from all points. The next step was to measure a series of key parameters from the plans, such as the distance to the floor below, and to the furthest seat. The computer then spews out a map of the required soundfield pattern, as viewed from the cluster's perspective. The final step is to discover which hardware to use to achieve the indicated pattern. This is an iterative task (i.e. suck it and see), where the designer decides which Mantaray horn+driver combinations are likely to do the job, and the computer goes on to plot out the SPL (Sound level) contours for any particular combination.

In the event, a single, central cluster was tried, but the sound level varied too widely over the tiers of seating: inevitably, it was much closer to the seats in the centre of the tier, and therefore louder. To overcome this, a compromise was necessary: the rink ended up with twin clusters, each covering half of the length of the rink and the corresponding half of the tiered seating. Eventually, the clusters were specified to comprise the following Altec components: six 816 (1 x 15") bass enclosures, vital for full range music; one MR931-12, a 90° x 40° short throw Mantaray horn firing directly below;



A general view of Slough Ice Arena. The FC100 priority paging horns are visible between each roof span on both sides of the rink. The unusual roof shape lent some positive characteristics to the reverberation.



The speaker cluster at Slough (see diagram for layout). The electronic scoreboard is hollow in construction and the central PI 100 speaker is just visible protruding from below. It gives sound cover to the area immediately underneath the unit.

two MR64A's, 60° x 40° long throw Mantaray horns, covering the seating, and three MR11594 90° x 40° Mantarays, for the intermediate distance coverage.

Electrovoice at 'The Ice Arena', Slough

Slough's Ice Arena was a joint project; Electrovoice importers Shuttlesound designed and supplied the components for the cluster, while Soundtrack (Audio Visual) Limited of Southend did the installation, and organised the subsidiary systems, like priority paging. In common with the majority, this system had to be built to a tight budget, but nonetheless, it stars EV's latest, second generation C.D. horns, the HP series, introduced in 1985.

The acoustic starting point is good - the arena is a semicircular building, the shape of a giant Nissen hut. So it's lacking in sharp, angular corners that aggravate reverberation. Better still, the inner skin comprises a honeycomb cladding, which is doubly good at absorbing sound - meaning that (ambient) crowd noise is surprisingly low key. Seating is in shallow tiers along the sides, and Shuttlesound made no attempt to focus the cluster output into this area. Instead, it's concentrated wholly on the ice itself, an area that's 90' (30m) wide and 190' (60m) long.

The cluster is arranged on a 10' x 10' truss (see drawing). A PI 100 full-range speaker sits underneath, its 100° dispersion covering the skaters immediately below. HP 1240 (120° x 40°) short throw horns then cast sound into two flanking ellipses, covering the short distance to the edge of the ice. Next, medium throw HP940 (09° x 40°) horns project elliptically into the intermediate length of the rink. Finally, HP420's (40° x 20°) cover the extreme distance.



Slough Ice Arena - amplifiers on right, processors in centre, and stand-by batteries on the left.

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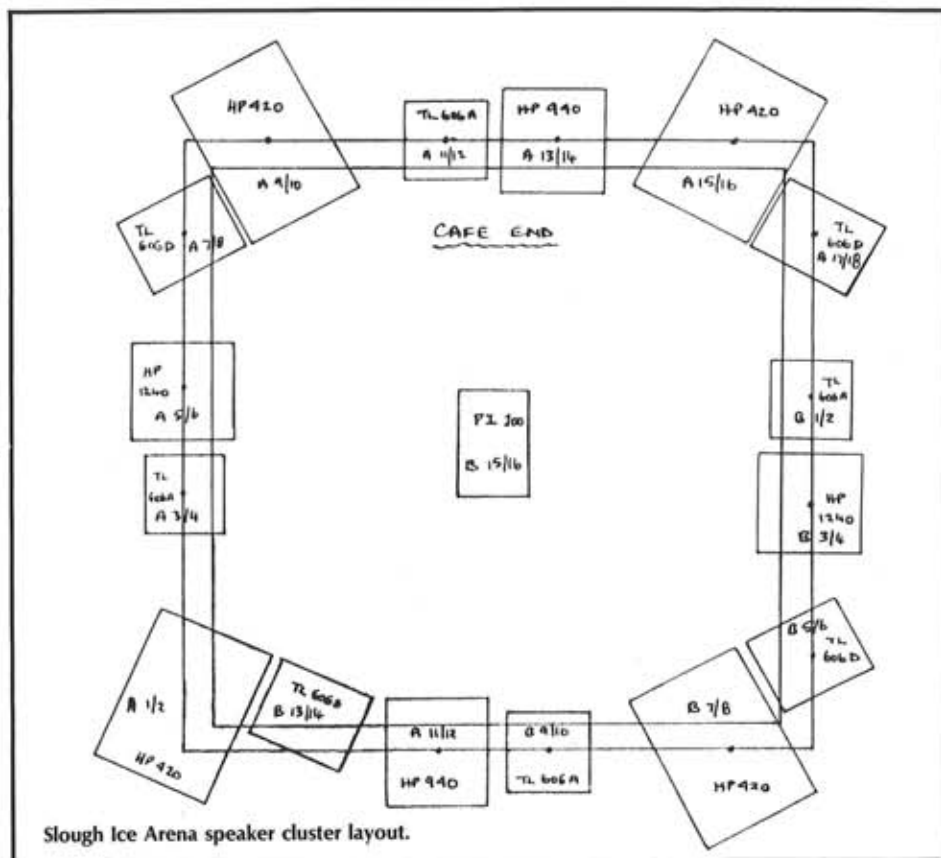
All the horns are pointed downwards, enough to avoid introducing any sound into the seating areas. The first generation of CD horns had a limited bandwidth, but EV's new HR series incorporate vanes to break up destructive interference patterns. The upshot is that constant directivity extends up to 18kHz, so separate HF C.D. horns are no longer required for a full top end response, necessary for music. The HR series maintain constant directivity down to 800Hz, where a pair of TL606 (1 x 15") or TL606A (2 x 15") bass cabinets take over, for short and long throw respectively.

Because it's a budget system, the truss is fixed in position, and the power amplifiers (see illustration) are located at a distance, fed via chunky 4mm² cables. Soundtrack wisely used a multicore with an overall screen, to nip any potential radio interference from taxi cabs in the bud. But where the budget allows a motorised hoist (for ease of maintenance), there are distinct advantages in keeping the speaker cables short by mounting the power amplifiers on the truss itself.

The seating area is covered by a series of FC100 horns, hung against the roof's curve, and angled tangentially onto the seats. Although it's a distributed system, it has some of the benefits of the cluster: with the FC100's being 20 feet above the heads of the audience, sound level is reasonably constant irrespective of one's position. And second, the sound emanating from the FC100's goes directly to where it's wanted; little of it is

ANOTHER CLUSTER

Not all central cluster systems use Constant Directivity components. In our March issue, in Part 2, Ben Duncan looks at alternative cluster systems installed by Turbosound and Avitec.



Slough Ice Arena speaker cluster layout.

Some C.D. horn central-cluster systems in the UK

Venue	CD horn manufacturer	Supplier	Installer
Barbican	Electrovoice	Shuttlesound	Barbican Technical Dept (in collaboration with Shuttlesound)
Olympia & Earls Court (s systems)	EV.	Shuttlesound	Spectrum Audio & Peter Barnett (consultant)
Slough	EV	Shuttlesound	Soundtrack
Balleyhandwood, Belfast	EV	Shuttlesound	Page 1 System Technology
Telford	Altec	Rank Strand*	Audio Visual Systems (Halifax)

* (Now supplied by Audix)

bounced off adjacent surfaces, or escapes onto the ice. But just to make sure, the FC100 sound is delayed, so it's synchronised with the central cluster whenever general announcements are made. The FC100's are also invaluable for Ice Hockey matches, where the racket calls for some extra welly.

This is a good moment to outline the status of 'auxiliary' sound systems as required in today's indoor arena installations, taking Slough's specification as typical. Here, we're talking about situations like a power failure, or fire, where the sound system (i) obviously needs to keep working, and (ii), staff need to be able to alert each other and evacuate sections of the crowd, in an orderly manner. First step, the PA racks run from an adjacent rack, packed with batteries which cut in and keep it running for over an hour after mains power is lost. Next, the wiring to the FC100 horns is FC200, a fireproof silicone-rubber.

It is distributed in such a way that whole sections can 'go down' without losing the remaining PA. Third, the rack contains an EPROM (programmable memory chip) with the staff announcement 'burnt in'. But don't go confusing this with ugly synthesised voices - there's no mid-Pacific accent - just an authoritative English voice, recorded onto the silicon, in much the same way that modern synths can sample short sounds. When triggered by the smoke/heat sensors,

the central cluster is automatically muted. Then the EPROM replays the staff alert messages into the FC100's, saying something like "Mr. Holmes please speak to Dr. Watson". Having alerted the staff and the fire officer, he/she has three minutes to assess whether it's a false alarm, or for real.

If the 'fire' can't be verified false in the allotted time, and the alarm reset, the EPROM then goes on to tell people to leave the ice "... by the nearest exit".

And what about cluster safety? Well, as in clubs and at rock concerts, the Slough cluster's support technology is a belt and braces job. The truss has safety cables, and in any event, it's rated to handle four times the static load it presently carries. Being supplied and flown by the main contractor, Soundtrack's sole responsibility was to see that the horns and cabinets were securely attached.

Altec Importers & System Designers:

Audix Limited, Station Road, Wenden, Saffron Walden, Essex CB11 4LG.
Tel: (0799) 40888.

Electrovoice Importers/Distributors/System Designers:

Shuttlesound, 15 Osiers Estate, Osiers Road, London SW18 1EJ.

Soundtrack are at 23 Farriers Way, Temple Farm Estate, Southend-on-Sea, Essex SS2 5RY.
Tel: (0702) 619583.

SHOW PAGE *with PLASA News*

PLASA to Expand Activities EGM Resolutions Carried

All three resolutions put forward to the Extraordinary General Meeting of the Association held at Novotel on 11th December were given a sizeable majority in favour vote by members present.

Chairman Peter Brooks welcomed well over 30 members, and outlined the Committee's thinking on the development of the Association, following a request earlier in the Autumn that each Committee member put forward their own particular ideas on how PLASA should, or should not, develop.

He then moved the first resolution which was the addition of six further objectives to the existing single objective 'to provide co-operation between and act generally in the common interest of the members in all matters concerning the Lighting and Sound Industry'.

The two further resolutions, 'that a full time secretary and such supporting staff as become necessary from time to time be ap-

pointed and that suitable premises for an Association office be found' and that the Association take over and run this magazine, resulted in considerable discussion and pointed debate. Treasurer Ken Sewell had earlier outlined to members present the financial implications of taking on a full-time secretary and of running Lighting+Sound International, and Vice Chairman John Lethbridge had put forward the arguments for integration of the secretariat and the magazine.

The first proposal on additional objects was voted 29-2 in favour, the proposal for a full-time secretariat 25-7 in favour, and the proposal for PLASA to take over L+SI 23-11 in favour.

The Committee will now sit and work out the best way to achieve the changes, and enter a period of discussion and negotiation that will be necessary to bring them about.

PLASA Joins Disco 'EEC'

At the invitation of the VDDA (Verband Deutscher Diskothekenausstatter), the heads of the five European trade associations met in Düsseldorf on November 26, on the occasion of the Discotec trade fair for the purpose of agreeing on the foundation of a European Association.

Chairman Peter Brooks and Vice Chairman John Lethbridge represented PLASA at the meeting which also included representatives from AITE (Spain), DIN (Netherlands), VDDA (Germany) and APIAD (Italy).

There was general agreement among the participating associations that the establishment of a European organisation would be desirable, and the following objectives of the newly founded association, which bears the name **European Federation of Entertainment Technology**, were formulated:

- To promote international trade in European products
- To promote the professional image of European products
- To co-ordinate the interests of the individual associations and to improve the international flow of information

It was decided not to create a presidium and instead a loose form of association was chosen. For a period of one year beginning on January 1st 1987 the office of 'chief representative' was created, to which Signor Ticozzi (President of APIAD, Italy) was elected. It was resolved that the chief representative should have no decision-making power, but would act as a contact for the co-ordination of information among the member associations. He would also represent EFET outwardly.

Decision-making would take place at meetings held regularly at various nominated trade fairs, and the first of these was planned for Amsterdam during January. Following meetings are planned for Madrid in April, Rimini in May, and at the PLASA Show in London in September. At the September meeting, the organising country and its association for 1988 will be decided. (It is planned that each member association co-ordinates activities and exchange of information for one year at a time on a revolving basis)

Ten Contest Three Committee Places

As we went to press voting was in progress for the PLASA Committee, with members having a choice between 10 candidates for three vacant seats.

Vice-chairman John Lethbridge, Neil Rice, and Roy Millington have stood down by rotation, and have offered themselves for re-election. The 'new' seven on the voting paper are David Bearman of Turbosound, Martin Bailey of Tannoy, Eddie Davis of Sound Creations, Dennis Eynon of Malham, Geoff Jones of Laser Systems, Martin Prescott of Martin Sound and Light, and Amerjit Sound of Musicraft.

First ABTT Northern Ireland Trade Show

The Association of British Theatre Technicians' first ever Trade Show in Northern Ireland finally went ahead in the Cambridge Ballroom of Belfast's Park Avenue Hotel on the 22nd and 23rd October, and more than 200 individuals and organisations attended.

Eight exhibitors showed equipment representing most of the major suppliers in the theatre world who sell in Northern Ireland. Local Strand agents GEP brought over from England the full Strand Lighting show, as well as A. S. Green's stand and a

Exhibition Diary

Showfair '87

February 3-5, 1987.
Bournemouth International Centre.
Management: BIC, Exeter Road, Bournemouth, Dorset.
Telephone: (0202) 22122.

Frankfurt Music Fair

February 7-11, 1987.
Frankfurt Fair Centre, Frankfurt, West Germany.
UK Representatives: Collins and Endres,
18 Golden Square, London W1R 3AG.
Telephone: 01-734 0543.

ABTT Trade Show

March 5-7, 1987.
Riverside Studios, London.
ABTT, 4 Great Pulteney Street, London W1R 3DF.
Telephone: 01-434 3901.

Club Sound, Light + Design '87

March 8-10, 1987.
Winter Gardens, Blackpool.
North West Exhibitions,
Winter Gardens and Opera House,
Church Street, Blackpool FY1 1HW.
Tel: (0253) 25252.

SIEL 87

March 28 or 29 - April 3, 1987.
Porte de Versailles, Paris, France.
Organisation: Bernard Becker Promotion,
161 Boulevard Lefebvre, 75025 Paris.
Telephone: (14) 533 74 50.

Pub, Club and Leisure Show

April 7-9, 1987.
Olympia 2, London.
Angex Ltd., Europa House, St. Matthew Street,
London SW1P 2JT.
Telephone: 01-222 9341.

Nightclub & Bar EXPO

April 13-15, 1987.
Georgia International Convention Center,
Holiday Inn Crown Plaza Hotel, Atlanta, USA.
Nightclub and Bar Magazine,
305 W. Jackson Avenue, Oxford, Mississippi 38655.
Telephone: (601) 236 5510.

USITT Conference/Exhibition

April 22-25, 1987.
Hyatt Regency, Minneapolis.
Show Manager: Richard James, 486 Fullerton
Court, San Jose, CA 95111.
Telephone: (408) 225 6736.
National Office: 330 West 42 Street, Suite 1702,
New York NY 10036.
Telephone: (212) 563 5551.

Expo Musica, Madrid

April 22-26, 1987.
Madrid, Spain.
Organised by IFEMA (Institucion Ferial de Madrid), Avda
de Portugal, s/n Casa de Campo, 28011 Madrid 11011.
Telephone: Madrid 470 10 14.

AUDIO VISUAL 87

April 27-30, 1987.
Wembley Conference Centre, London.
EMAP/MaLaren Exhibitions Ltd.
PO Box 138, Token House, 79-81 High Street,
Croydon CR9 3SS.
Telephone: 01-688 7788.

SIB Rimini

May 4-8, 1987.
Rimini, Italy.
Ente Autonomo Fiera Di Rimini,
PO Box 300, 47037 Rimini, Italy.
Telephone: 0541/773553.
UK enquiries: Disco & Club Trade International.
Telephone: 01-278 3591.

Lighting World 5

May 11-13, 1987.
New York.
National Expositions Company Inc.
49 West 38 Street, Suite 12a, New York NY 10018.
Telephone: (212) 391 9111.

Sound Comm 87

May 19-21, 1987.
The Business Design Centre, Islington, London.
Organisers: Batiste Publications Ltd.
Pembroke House, Campsbourne Road, Hornsey, N8 7PE.
Telephone: 01-340 3291.
(Assn. of Sound and Communications Engineers).

NAMM Exposition

June 27-30, 1987.
McCormick Place, Chicago, USA.
Larry R. Linkin, 500 N. Michigan Avenue,
Chicago IL 60611, USA.

PLASA Light and Sound Show

September 6-9, 1987.
Novotel, Hammersmith, London.
Exhibition Bookings: David Street,
Telephone: 01-994 6477.
General Enquiries: PLASA general secretary,
Roger Saunders, 1 West Ruislip Station,
Ruislip, Middlesex.
Telephone: (08956) 30718.

Association of Entertainment and Arts Management Conference & Exhibition

November 16-18, 1987.
Harrogate, Yorkshire. Organised by Brintex Limited.

selection of Merricks Sico equipment. Session Music had a full range of Pulsar equipment on display, and Andromeda Lighting brought in Pan-can and Avolites. Stage Services North showed the CCT range and Rosco materials.

The two sound specialists, Baird's of Belfast and Walker's of Coleraine (the only non-Belfast based local exhibitor) had a massive range - TOA, Peavey, OHM, Yamaha and Dynacord, to name but a few.

Two men who were warmly praised by the organisers and who had enough faith to go over without local representation, were Nick Mobsby of Eurolight and Fred King of Specialist Lamp Distributors. Eurolight had their full range of memory lighting controls and Green Ginger desks and as a result of the show have arranged to be represented locally in Northern Ireland.

New Visitor Rules for Musik Messe

When the Frankfurt Music Fair opens its doors for five days from 7th to 11th February it will differ from the preceding events in that the first two days will be reserved exclusively for specialist dealers and their employees, from home and abroad. On the following two days, the fair will also be open to people with a professional interest in music. As in the past, the final day is primarily for members of the general public interested in music.

The changes have been made by the organisers in response to proposals put forward by dealers and exhibitors. Over 840 exhibitors from 32 countries will be at the 1987 show, with leading visitor countries Great Britain, France and Italy, followed by Japan and the United States.

More Shows Announced

With Bournemouth International Centre taking over where Entertainment 86 left off, and promoting their own ShowFair '87 at the BIC in early February, the Association of Entertainment and

Arts Management have just announced that their own **Conference and Exhibition** will be held at Harrogate from 16th to 18th November. It will be organised by Brintex Limited.

The Association of British Theatre Technicians have announced a repeat of their **Trade Show North** in Manchester, this time at the Royal Exchange Theatre, and although precise dates are not yet available, it will take place during October.

Still in the North, but earlier in the year, the **Club Sound, Light and Design '87** show will be held at the Blackpool Winter Gardens from 8th - 10th March. Billed as a 'total package' exhibition, it is being organised by North West Exhibitions (First Leisure) with assistance from Disco and Club Trade International magazine.

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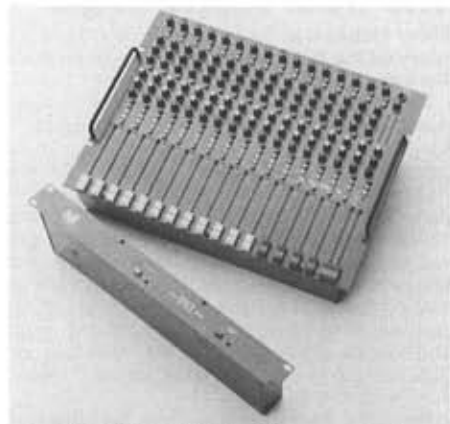
OH, YES - THEM!

EQUIPMENT *News*

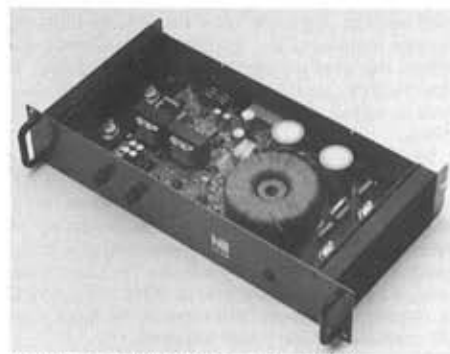
Hill Audio Expand and Improve Range

Hill Audio have announced improvements to two of their most popular mixer and amplifier ranges whilst maintaining the same prices.

The 'Multimix' 16/4/2 rack mounting mixing console is now supplied with the PS1 power supply as used with the Soundmix range of consoles. This leads to lower noise and an improved phantom power circuit say Hill. Other improvements include direct outputs on each channel, Eq defeat, +4/-10 dB sub-group output switching and PFL metering. The new console includes a back plate punch-panel to allow for the easy fitting of a 37-way D-connector. This can be wired to access the inputs, outputs or insert points and rack-mounting patch-bays are available to interface with this socket thereby further increasing the versatility of the mixer.



The Hill Audio Multimix mixing console is now supplied with the PS1 power supply.



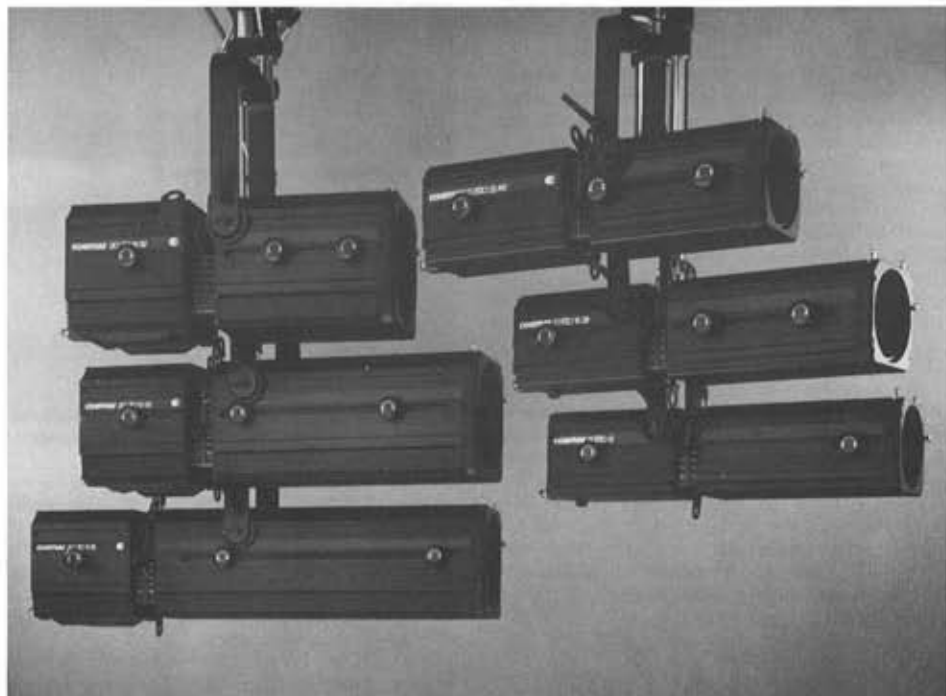
New in the Hill '00' Series - the DX300.

The popular '00' Series DX500 amplifier has been replaced by the DX1500 which offers greater power output, improved cooling using DC controlled continuously variable speed fans, more versatile connections including external earth lift switch and improved internal layout leading to better specifications. New to the range is the convection-cooled DX300. The '00' range will be expanded early in 1987 with the introduction of the DX800 which falls between the 300 and 1500 in performance.

For further information and brochures contact Hill Audio Limited, Hollingbourne House, Hollingbourne, Near Maidstone, Kent ME17 1QJ telephone (062 780) 555.

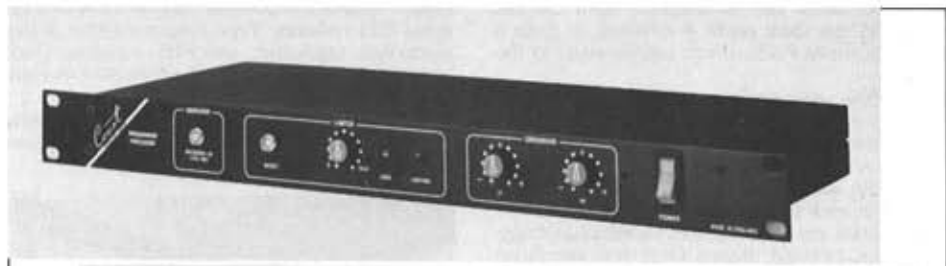
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Coemar Profile Spots

The Coemar range of profile spots, first launched at Photokina, is now available from W.B. Lighting Limited of 4 Tenter Road, Moulton Park Industrial Estate, Northampton NN3 1PZ telephone (0604) 499331.



The new Court Programme Processor.

Programme Processor from Court

The new 'Programme Processor' from Court is primarily designed for their new Signature Series speaker systems, but is equally suited for all types of speakers and sound systems, considerably enhancing their performance and easy to install and operate say the manufacturers.

A three in one stereo unit, the Programme Processor consists of a live or recorded Equaliser, which except under the most difficult acoustic conditions does the work of a graphic equaliser at the touch of a button. The Equaliser is optimised to enhance the performance of most loudspeakers providing extra 'punch' to the sound, reducing vocal and midrange distortion, and improving high frequency performance on vocals and instruments.

The second section is a Limiter and Compressor, which has no effect on normal music, but offers increasing limiting as the sound system is driven harder. The fully automatic limiter provides increased signal dynamics, as well as some degree of sound level control and speaker protection say Court.

The third section is an Electronic Crossover with a normal output, and sub-bass output for increased system power handling and frequency range plus a conventional 2-way crossover internally set for 250hz (adjustable).

The Programme Processor is available with a tamper-proof cover to prevent further adjustment, and is 19" rack mounting, one unit high. Full details are available from S. J. Court and Associates Limited at 3 Primrose Hill Studios, Oppidans Road, London NW3 3AG telephone 01-586 5139.

The Light Touch from Multiform

First launched at the PLASA Show, two new products for the switching of lighting effects via remote switch packs are now available from Multiform Lighting.

The Remote Switch Panel (Model LSP 430) is a 12 channel low voltage 19" x 1U unit designed for low cost switching of motors or lighting where the instant response of touch switching is not required. It has a standby/active master switch.

In the standby mode the LEDs blink slowly to indicate the channels that have been pre-selected. When the master button is pressed all the pre-selected channels are activated. The unit is designed to control three four channel switching packs, and it can be powered from the external DC output of the packs themselves. It can also be used to Enable/Disable controllers and power packs via their remote Enable or Disable inputs. The panel is also provided with a separate DC input for 10-18V DC supply from a separate power pack and a mains powered version is also available for use in situations where there is no DC voltage source.

The 'Light Fingers' (Model TSB 431) is a brand new Touch Switchboard providing the normal latch/flash control of three zones of 4 channels, but also including the facility to route 4 channel effects to any of three zones. The effects can either be from the Low Voltage output of a separate controller or from an internal variable speed patterns generator.

Using the latest type of polycarbonate film with under-surface printing, Light Fingers provides a waterproof touch pad area that is electrically isolated and hence intrinsically safe. The switchboard can be used as the heart of a very cost effective 4 channel - 3 zone system when used in conjunction with a small effects controller with low voltage output, such as the Multiphase 412 and 3 switchpacks. The lighting in each zone can either be touch switched manually or the effects routed through from the Multiphase controller.

The Light Fingers switchboard is low voltage powered which can be supplied from the DC output of the slave packs it controls, or from a separate mains P.S.U. which can be fitted to the rear.

Both new units are fitted with standard 4 channel DIN interface sockets to allow easy connection to most four channel control systems. In addition, they can both be powered from DC supplies of 12-18V, allowing compatibility with most other manufacturers' products.

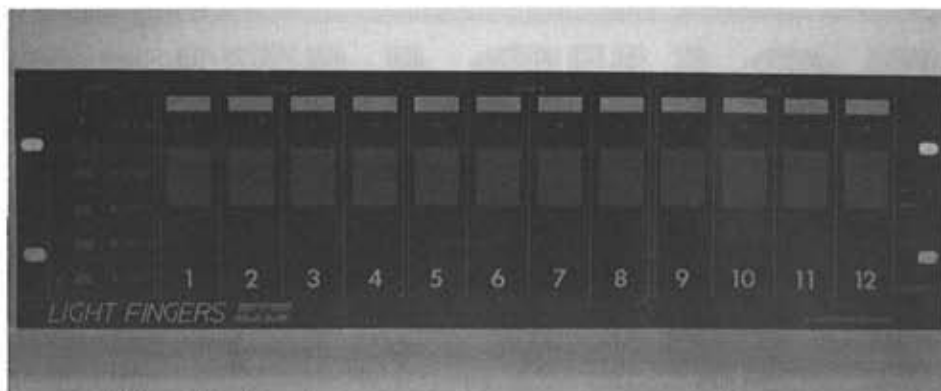
Full details are available from Multiform Lighting, Bell Lane, Uckfield, Sussex TN22 1QL. telephone (0825) 3348.

Wellard Middle Monitors

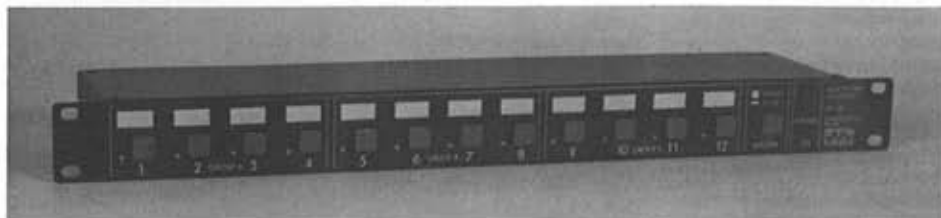
Elliott Bros. of Oxford have announced that they have been appointed distributors of the 'Middle



The Wellard Middle Monitor Loudspeaker, a 2-way, active, design for mixing and quality monitoring.



The new Multiform 'Light Fingers'.



Multiform's new LSP 430 Remote Switch Panel.

Monitor' by Wellard Research.

Filling the gap between the usual gigantic studio monitors and desk-top speakers or cubes, these active bi-amped monitors can provide listening levels adequate for any studio, and their ability to reproduce detail make them excellent for critical monitoring, especially on digital editing and remix, say the manufacturers.

Their size will be particularly attractive to those smaller studios, such as dubbing, editing, and remix control rooms. As they have their own amplifiers built onto the cabinet, no additional rack space is occupied by amplifiers.

Wellard's unique cabinet sandwich of mica, wood, and lead eradicate the problems of cabinet resonance, and this, combined with the highest quality components such as 1% tolerance metal film resistors, Type One computer grade electrolytic capacitors, and PTFE insulated silver coated cables make the Wellard Middle Monitors "second to none".

Further information is available from Elliott Bros. of Osney Mead, Oxford OX2 0ER telephone (0865) 249259.



Dual Source Luminaire

Pictured above is Lee Colortran's new motorised multi-purpose dual source luminaire, announced in our November 'Equipment News'.

Bespoke Enclosures

R. C. Kimpton has informed L+S-I that he has set up the business of RCK Loudspeakers to manufacture high quality bespoke loudspeaker enclosures and fittings.

He also offers a service in the construction of complete custom-built systems using high quality drive units for bands, i.e. 4 x 12 lead guitar enclosures, bass stack, vocal PA, keyboard and wedge monitors etc. Installation work and special fitting is undertaken for night clubs, discotheques, fun pubs and mobiles.

RCK are based at 26 Rodborough Avenue, Stroud, Glos. GL5 3RS telephone (045 36) 2961.

Trio from Audio Logic

Rhino Distribution Equipment Division have announced the introduction of three new products from the US manufacturer, Audio Logic.

The MT66 Stereo Compressor-Limiter provides dynamic range compression from 1:1 or infinity:1, simultaneously accompanied by its own noise gate to ensure quiet operation of the unit when no signal is present. Features included on the front panel are 'link' switch to join both compressors for stereo tracking, a 5 LED bar graph to indicate gain reduction, gate, threshold, ratio, attack and release controls, plus input and output controls and 'compress' to activate the compressor. At the rear are both balanced and unbalanced inputs and outputs, along with side chain inputs and outputs that can be utilised in changing the compression characteristic.

The X324 Stereo Crossover can be utilised in either a stereo 3-way or mono 4-way capacity in order to provide precise frequency splitting, with maximum simplicity in setting up. Balanced inputs and outputs phase inversion on all six outputs are further features of the X324 which simultaneously offers the user an additional summed output of low frequencies from both channels that allows a mono sub-woofer connection in stereo installations.

18dB/octave Butterworth filters in a 'state variable' configuration ensure welcome driver protection by rapidly rolling off the frequencies at the crossover point, whilst the flat passband frequency response eliminates peaks and dips in the output. An electronic switch on the front panel adds a 2-pole high pass filter at 40Hz. No patching is required for mono operation of the X324 since all connections are made internally.

Containing a total of 4 independent expander-type noise gates, the MT44 provides user controllable release time, threshold and range with variable attenuation from 0dB - 100dB. A key input is provided for gating by a signal other than the input, whilst a control output on each channel provides triggering for other devices such as a drum machine. When the selected gate or key signal rises above the threshold, the control output sends out a +5 volt DC level. Smooth hitch-free setting up and glitch-free operation of the Audio Logic MT44 Quad Noise Gate is further enhanced by visual monitoring via an LED on the front panel which indicates each channel's activity during operation.

For further information on all three products contact Rhino Distribution Equipment Division, Burnham Road, Dartford, Kent telephone (0322) 74003.

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11 mins



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It's not hard to see who can take the heat. And who can't.

If you're still sceptical, there's nothing to stop you performing the same test.

Pick up some of their filters and put them on hot lights for a while.

You've got to admit, it's not every company that invites you to buy from the competition.

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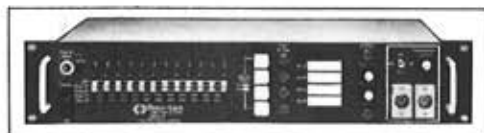
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Choosing Colour Filters

Francis Reid tries the new ROSCO SUPERGEL GUIDE

Of all the variables under the control of the lighting designer, COLOUR is probably the area where new technologies offer least help after the design has left the drawing board.

Modern microprocessor intensity controls offer a total fluidity barely dreamed of twenty years ago. New sources provide more incisive beams; and increasingly sophisticated optics enable these beams to be tailored to any desired size, shape and texture. Digitally instructed motors offer steadily increasing flexibility in remote control of direction. But, although at the very peak of the market VariLite offers an instant choice of 120 colours through remote dichroic mixing, colour planning for 99.99% of lighting designers involves choosing a palette of fixed filters. (Semaphores can give a four or five filter change on one spotlight, but their size, cost and inflexibility for mixing limits them, in my view, to inaccessible positions in old theatres.)

Certainly the technology of the filters has improved in recent years with the new generation of heat resistant filters offering greatly improved colour stability. I also have a hunch that the manufacturers have been quietly strengthening the mechanical structure of these filters - my memory may deceive me (it often does) but when the new heat resistant material was introduced in the early seventies it seemed flimsier and therefore more difficult to cut and handle than it is now.

But how to select the right gel? (No matter how sophisticated the self-extinguishing material, conforming to a whole library of DIN and other standards, I hope that we will continue to call it 'gel'). The available choice is very wide. Several manufacturers - notably Rosco, Strand and Lee - have extensive ranges. Alas they all seem to have consulted a different bingo caller for their identifying numbers. In saloon bars they tell a tale - it may be apocryphal - that an international committee sat regularly for several years to establish an international standard for numbering filters, but gave up on discovering that an eight digit code might not be sufficient for all the potential variants.

Of course the only real way to find out the effect is to try it. But there is rarely budget to cut up alternatives, and certainly never time to go up and down the ladder swapping them. I have always relied on looking at the light transmitted through a gel: partly by holding a piece up to the light (normally in-

candescent) or passing light through it (usually with a small spot beam torch) on to the setting or costume material, or their designs. And, of course, always noting the effect on flesh.

Now I warmly welcome a new aid. It's called the **Supergel Guide**, published in both pocket and poster form, and it offers suggestions on how to use Rosco Supergel filters. Rosco emphasise that its recommendations are not hard and fast rules but guidelines. The Guide's method is to group and subgroup filters into the following categories:

ACTING AREAS
Acting Areas Warm
Acting Areas Cool
Acting Areas Neutral
ACCENTS
Accents Warm
Accents Cool
CYCLORAMAS AND SKYS
EVENING AND NIGHT
SUNLIGHT
MOONLIGHT
SPECIAL EFFECTS

The 'Acting Area' gels are sufficiently delicate to fall on faces, tinting the flesh without disturbing it. 'Accents' is a useful mid-Atlantic word for highlights on scenery and for the side and backlights that surround the actors, sculpting them and creating space rather than making faces visible. (The visibility of eyes and teeth that enables an actor to project being, of course, the function of the acting area tints.)

A concise general statement summarises each group whose individual filters are listed with a brief application note. These are at their best when they refer to the content within the filter of colours other than the predominant one - for example 66 Cool Blue is noted as being "a cold tint with a hint of green" whereas 82 Surprise Blue is a "Deep rich blue with a slight amount of red". The warnings are also particularly useful: 15 Deep Straw "tends to depress colour pigment values - use with care to avoid disturbing skin tones".

I studied the latter statement while considering the light transmitted through the sample in my swatch book and decided that it could indeed be a dangerous colour. But I liked its richness and took the risk of putting it in backlighting parcans for 'Cinderella', knowing that the oomph from a Par 64 dilutes what can be an overstated colour in an ordinary spotlight. It gave me what I

wanted, although when dimmer it needed careful mixing with a circuit of 85 ("deeply saturated blue with a hint of red") to neutralise that tendency of 15 to "depress colour pigment tones on the scenery and, especially, costumes". This was backlighting and so any tendency to "make skin tones seem artificial" was compensated by the tints hitting the actors from the front. (And here I was using the lavenders in which Rosco excel.)

The arrival of the Supergel Guide just as I was about to 'gel-up' my pantomime plan tempted me to try abandoning my usual method of using a mix of tried and tested filters from several manufacturer's ranges. Instead I experimented with using only Supergel. Some of the filters were familiar friends but in selecting others I compared what the Guide was saying with my own observation of light transmission through the swatch samples.

In general it worked. In a rig of just over 200 spotlights I had to change during rehearsal the colour in only eight - and this was because, while 73 blue had just the right green content for most scenes, it was just too much for the costumes in one key scene and so had to be modified to the 82 ("deep rich blue with a slight hint of red") which is an old favourite of mine and was already sculpting from side ladders behind each wing.

So I found the Guide useful, if only to confirm what my ancient experienced eye was seeing through the samples in my swatch book. It will be a very positive aid to youngsters if they use it critically - and fortunately the Guide sticks to its promise of not making hard and fast statements so that the actual words have to be subjected to interpretation by the user. Disco designers will find it particularly useful for selecting colours which are strongly dramatic yet do not make the customers look unhealthy.

Perhaps the second edition could make suggestions for complementary filters to provide good 2-colour and 3-colour mixing groups. And we should all help Rosco by submitting what we as users consider to be improvements on their wording - perhaps Rosco might like to organise a competition?

PS: I have not mentioned the Rosco diffusers whose impact on lighting design will, I believe, soon accelerate considerably. But this is a subject I hope to take up in a future issue of L+S.

ACTING AREAS/NEUTRAL

These colours, in the lavender and blue ranges, work as complementary colours for both the warm and cool area colours, or where just a touch of colour is desirable. The Supergel diffusers offer the designer extra flexibility. Neutral colours appear warm or cool by contrast with other 'warms and cools'.

Supergel

52 Light Lavender

53 Pale Lavender

54 Special Lavender

57A Lavender

58A Deep Lavender

78 Trudy Blue

Applications

Excellent for general area or border light washes. It is a basic followspot colour.

Use when a touch of colour is needed to slightly cool white light.

Warmer than 53. Flattering for skin tone but will turn warm when dimmed.

Gives good transmission without destroying night illusions when used as a second area lighting colour.

Excellent backlight. Enhances dimensionality.

Rich medium blue that warms to lavender when dimmed.

ON TOUR

Eurythmics

Wembley Arena

Catriona Forcer talks to lighting designer

Lawrence Park

On Wednesday 10th December The Eurythmics gave a special Gala Concert in aid of the Princes Trust and The Prince and Princess of Wales were their special guests. I went along to interview Lawrence Park - one of our younger lighting designers, with fresh and exciting ideas - and was very impressed by his stylish lighting for the show.

How did you start off as a lighting designer?

After school I worked at the City Hall in Newcastle as stage crew for the various bands that passed through there every week. After about nine months I started doing casual work for a band which Chameleon Lights were lighting, and I became friendly with the crew. Six months later Chameleon rang me and asked me to crew for them, and I moved to London and worked for them for the next two and a half years on bands like 'Our Daughters Wedding', 'Vadis', and 'Altered Images'.

When did you become The Eurythmics' lighting designer?

The Eurythmics were one of the first bands I did the lighting for, and this was before Sweet Dreams was a hit. We did a tour of universities and clubs with a small lighting rig and I've been with them ever since. For the club tour they toured solidly for one and a half years. Then I went freelance, which enabled me to move back to Newcastle. I think that I've been lucky and I've had some good breaks in my career.

Do the band have much influence in your lighting design?

Fortunately I'm normally left to myself to design the lights. The band did make suggestions at the beginning of the tour, which I took into account. Originally they wanted an all-white show, but I thought it would be too limiting and suggested basing the show around white but adding colour where I thought necessary. Annie occasionally has her own ideas or she asks where I think it would be best for her to stand, but basically I'm given a free hand.

How long is this present tour?

The tour started in mid-July in the USA where we spent ten weeks, and then we came home for a short rest before starting to tour Europe. We were 12 weeks on the Continent although we had to have a week off in the middle because Annie lost her voice and had to cancel a few shows. We are now doing the British section which finishes before Christmas, and we then depart for New Zealand, Australia and Japan. During the summer we should be appearing at various festivals.

What other bands do you work for?

My other main act is Sade. I took over in the middle of a tour which unfortunately means another lighting designer lost a job. That was a shame, but I think someone would do the same to me, and I was thrilled to be asked to do Sade as she is one of my favourite acts.

Do you have a personal trademark in lighting designs?

I'm very fond of Pattern 252 projectors because I think that they give a very good effect on Rosco screens. I've always got to have a back projection



screen because you can do so much with it. I don't like using a lot of lights and I hate to see a show which has a thousand lights and no effects because I think that it's a waste of the band's money. I think that some bands have to have more lights than their nearest rivals regardless of how good it looks.

Have you seen any shows which have particularly impressed you?

I don't get to see that many bands, but there are two shows which stick in my mind. The first was Siouxsie and the Banshees on their Juju Tour in 1982. I was working as a rigger on the tour and the lighting designer was Peter Barnes - who was absolutely brilliant. The other band was Bauhaus because they had a totally different approach to lighting design. They never use many lights but they used everything they had to great effect. It was always very stark but really good.

Is there any band you would like to light?

I'd have to like the band's music before I would work for them. The one band I would love to light are Big Audio Dynamite because I think that their music is very exciting, and it is going in a new direction. A lot could be done for them.

I would also like to light Talking Heads. They are a brilliant band. Their lighting designer, Abbey Rosen, is working as one of my crew on this tour.

What are your plans for the future?

— just to be able to work with bands I enjoy. I still love touring because I love travelling and seeing the world. I would never have been able to see the world like this in any other job!

Equipment Summary

- 3 x 40' trusses
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- 28 x Raylites
- 60 x A.C.L.
- 24 x Lekos (6 x 16)
- 6 x 1k fresnels
- 6 x 4 cell cyc units
- 9 x single cell cyc lights
- 6 x Chameleon Strobe units
- 2 x Patt. 252 effects projectors

Control:

- Avolites QM 500
- 2 x 60 channel dimmer racks

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