



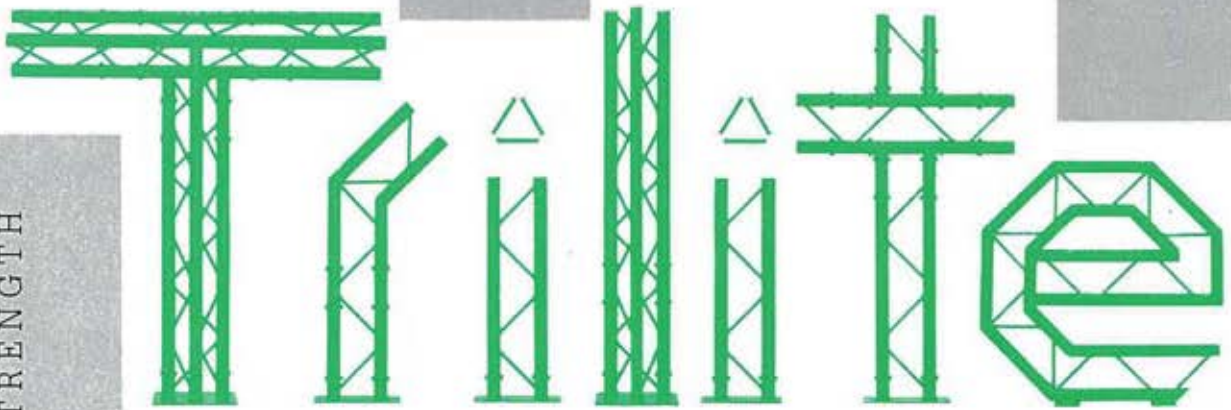
LIGHTING+SOUND

International

SEPTEMBER 1989

PLASA SHOW CATALOGUE
WITH THIS ISSUE
(UK ONLY)

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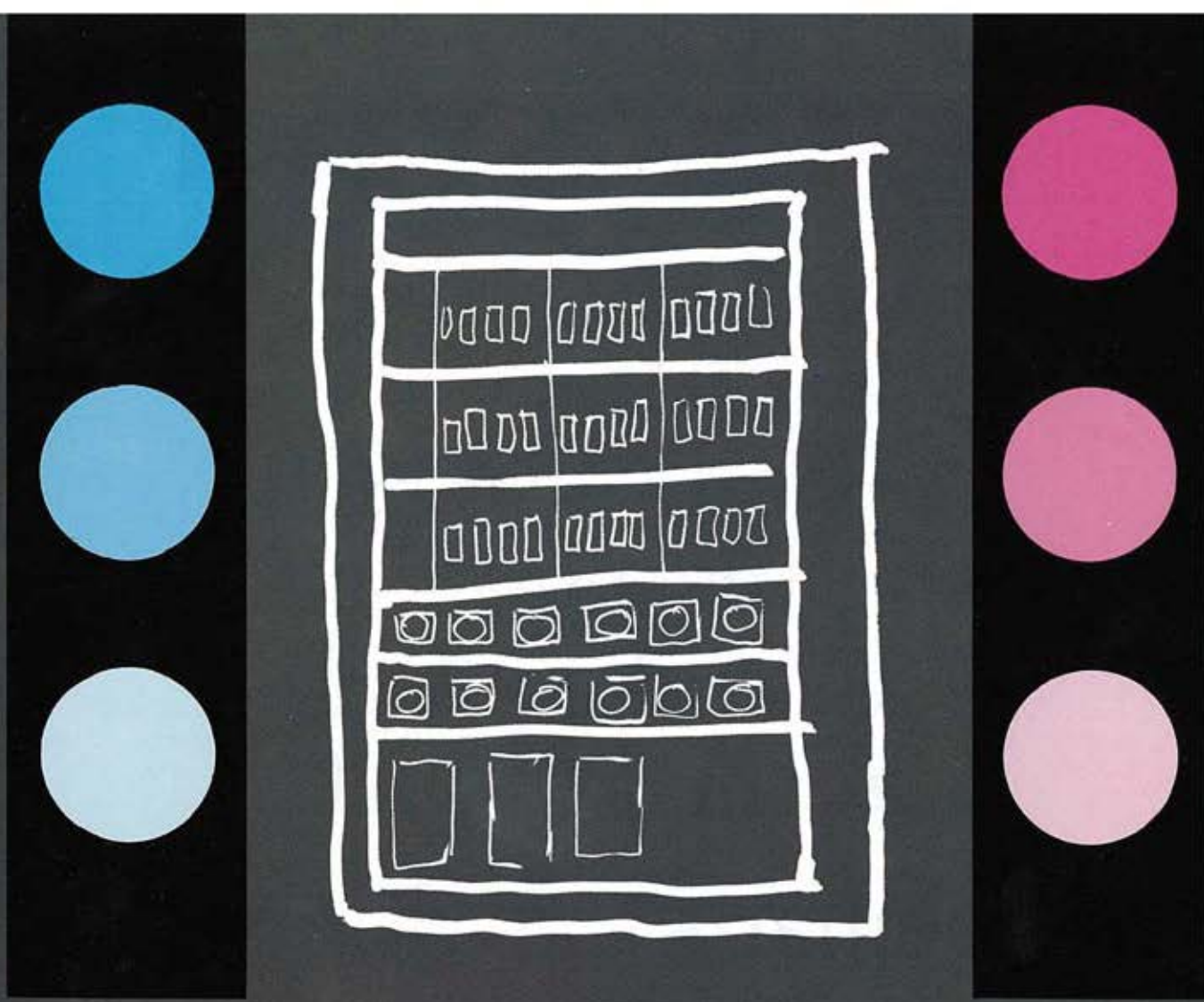
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LIGHTING+*Sound* International

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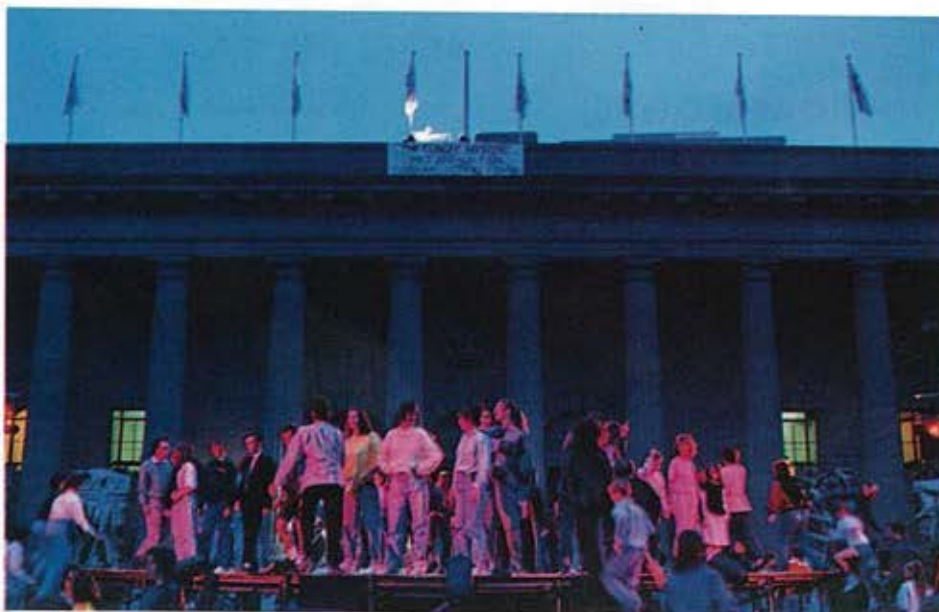
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Cover Story

Our cover story this month (pages 39-42) features the staging of *The Dundee Mystery*, a modern version of a medieval pageant expanding on the events of Christ's life. The production is the result of a collaboration between five writers, all members of the Dundee Playwrights' Workshop. Pictured above is a scene from the play in which Christ makes his final appearance to his followers. The front cover shows the preparations underway with the start of the focus session in Dundee's city square.

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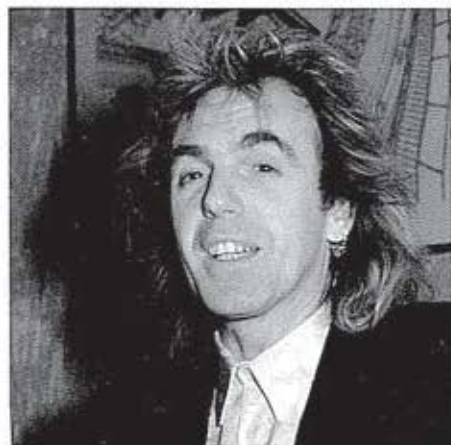
Stringfellow Launch

Charismatic ex-Hippodrome boss Peter Stringfellow (right) has accepted PLASA Show organiser David Street's invitation to officially open the '89 Light & Sound Show, which takes place September 10-13 at Olympia 2 in London.

Few details were available as we went to press, and all David Street could tell L+SI was that Stringfellow had confirmed that he would attend the event on Monday September 11, in between jet-hoppings to supervise his latest club projects in the United States.

In a year when the PLASA Show is once again setting new boundaries and embracing an ever-widening field of entertainment activity, it is appropriate that a man of Stringfellow's stature, who has a record of pushing ahead of the rest of the field in many aspects of club/discotheque operation, has agreed to endorse the event.

With no transport or postal strikes in the offing, the 1989 PLASA Light & Sound Show looks set to be a winner, confirming its presence as easily the major UK show. On the world scene it has also moved further ahead of many rivals, and now ranks second only to SIB/Magis in Italy in the league of international shows catering specifically for the live entertainment/discotheque lighting and sound industry.



AT THE SHOW . . .

The Official Show Catalogue gives you all the information, apart from a few well-kept secrets here and there, but L+SI's editor has pulled out a few appetisers . . .

SHOW CATALOGUE

Accompanying this issue of L+SI (our largest to date with 96 pages) is the biggest Official Catalogue ever produced for a PLASA Show (UK only). A total 92 pages gives full contact and event information on all exhibitors. Plans of all three floors and an index to exhibitors is located from pages 25-31, and this is followed by information in stand order.

SHOW SEMINARS

For the first time, PLASA has arranged a series of seminars to take place during the Light & Sound Show. The Seminar Theatre is located on the Second Floor where there will be facilities for late registrations. Some of the personalities taking part are pictured on the facing page. A full programme/booking form was included with L+SI's August issue, but outline programme information is reprinted on page 10 of this issue.

ANNUAL DINNER

Following its success last year, PLASA are organising an 'Annual Dinner' again, and it takes

place at the Royal Garden Hotel Kensington on Sunday 10th September, the opening day of the Show. Already well booked, there may be a few tickets left when you read this page. The way to find out is to put in a call to Tony Andrew at the PLASA office (0323) 410335.

AFTER THE SHOW . . .

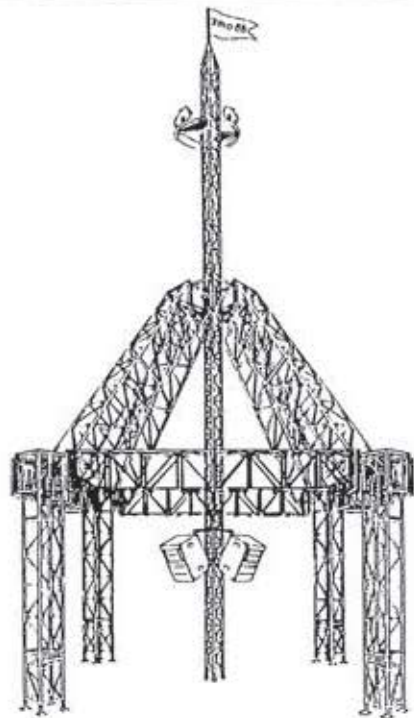
Regular features of previous years will take place again this. **Disco International** will be holding their annual Awards Night on the Monday of the Show (11th), but this time it promises to be an even bigger occasion. The event at Le Palais will be filmed by Granada for a special two-hour 'Hit Man & Her' spectacular for transmission the following Saturday. Pete Waterman will comper the evening.

Go to Stand F108 for more information and a ticket if you're lucky.

On Tuesday night (12th) it is **Pulsar's** turn to play hosts when they hold a party at the Camden Palace in conjunction with Cay Paky. It starts at 9 p.m. and tickets will be available on the Pulsar/Clay Paky stand (G33).

BOOK BAZAAR

Lighting+Sound International is organising a technical 'Book Bazaar' - with the expert assistance of Cara Lancaster, and this will be part of the L+SI stand (\$220) on the second floor. A comprehensive selection of titles from many publishers will be available for sale including those recently reviewed in the Book pages of L+SI.



Presentation Pyrarig

Surrey-based Presentation Consultants have been commissioned to design and build the lighting and frame work for Zero 88's stand at the Light and

ADB

lighting systems

"EUROPE" Theatre Range

Europe 1000/1200W Fresnel 2000W

Europe 1000/1200P.C. 2000W

Europe 1000/1200W Zoom Profiles



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Simon Molseed



Charlie Paton



Francis Reid



Tony Andrews



Roger Pearce-Harvey



John Cecchini



Dave Martin



Robert Menzies



Fred Ampel



Jerry Gilbert



Nic Wakefield



Mike Shaft

SEMINAR SPEAKERS

Featured here are some of the industry personalities scheduled to speak at the programme of seminars to be held in conjunction with the coming PLASA Light & Sound Show at Olympia (September 10-13). Speakers not pictured include Susan Dandridge, Hermann Sorger, John Offord, David Kerr, David Bearman, John McCue, Bill Wardrop, Mark Burgin, Eric Presley, James Foster, Tony Gottelier, John Breley and Duncan Scott.

For more information see page 10.

Sound Show 89. The impressive structure, called the 'Pyramid', will stand some 45 feet from the ground floor. It will be the first exhibit that visitors to the exhibition will see as they enter Olympia 2.

The Pyramid is built entirely from standard Light & Sound Design truss components and, of course, all lighting will be from Light & Sound Design also. This will include Par cans and Molefays all fitted with Coloumag and Molemag colour changers. This system is now universally accepted as the premier colour scroll system, say Presentation Consultants.

Crazy on Crackers

Since L+SI spread the word on Crackers (cracked oil 'smoke' machines) following a visit to Los Angeles in January, British manufacturers and distributors are having a field day coming up with the goods. JEM (stand F56) have got one they're simply calling a 'Cracker', and M&M Lighting (stand F141) have the 'Junior' from Reel EFX of Hollywood. There may be more . . .

Masterlite Launch

Another new product first talked about in our pages (June and July issues) is the Masterlite system from Rolight of Holland. First seen at the Showlight event in Hilversum in May, M&M Lighting have been quick off the mark to gain the UK and Eire distributorship.

Designed for disco and club use, the Masterlite system is an attachment designed for Par 64 stagelights and adapts the light into a powerful, concentrated beam with rapid interchanging of nine colours.

There's more information in the Catalogue, but go to stand F141 for a close look.

Avitec Battle Lines

Avitec boss Tony Kingsley is predicting a battle for supremacy on his stand (G24) between the Kremesa 'Genesis' - "a light show in its own right" - and their own Gamma 'Light Mover'. A Dataflash display will also knock your eyes about . . .

Meanwhile, across the floor, **WB Lighting** will have the Coemar Jupiter 1200W as 'pride of place' unit, in a display that "will open your eyes to what can be achieved with 'intelligent' lighting". And next door **Pulsar** and **Clay Paky** will be presenting the latest repertoire in their Golden Scan Show series courtesy those ever-green lighting jocks Carl Dodds and John Lindsell coupled up to Oska.

Ground Floor Extras . . .

Continuing their European tour, **Celco** will have the complete range of their '89 control boards plus the Series 2 dimming system and the latest edition of their 'Satellite' newsletter on stand G4.

Par Opti Projects have an even bigger stand (29-32) to show off their twinkling fibre optic bits and pieces, and it will be a Plasa show first for **First Audio** who link with **Turbosound** on stand G22.

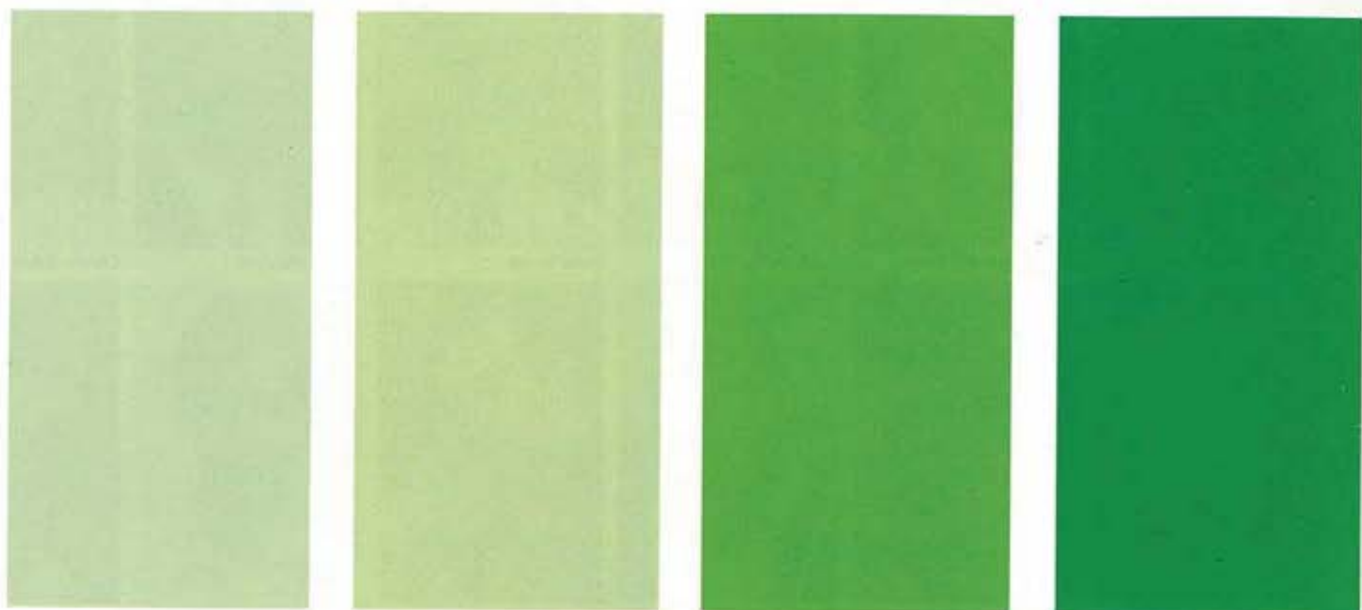
Completing the Gang of Four ground floor light shows will be **Laser Systems** who will demonstrate various new products including Coloursweep and their Cyclops II laser control system.

the "EUROPE" RANGE has been selected
for "HAMLET EUROPEAN TOUR"
(directed by Yuri LYUBIMOV)

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lurks in forests, and
is green all over?**

Supergel Green Gel

Like Kermit says, it isn't easy being green. There are so many jobs to do.

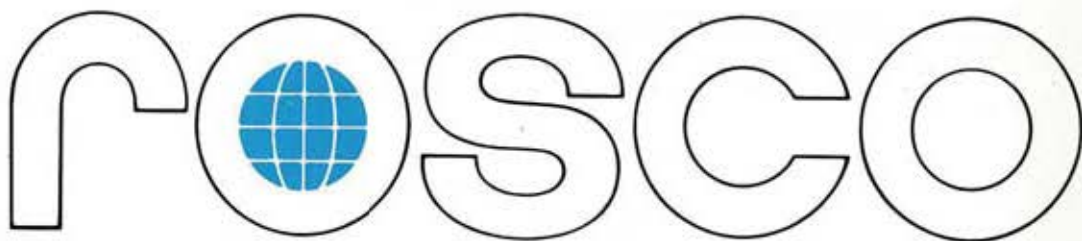
Sometimes you must carry a scene by creating pastoral effects. Luckily, there are Supergel 86A, 89,90 and 94 gels. They generate a wide range of naturalistic illusions, from dense forests to airy fields.

At times you must become the sea itself. It's a good thing there are Rosco blue-green gels that show up as light reflected from water.

Other times you're called upon to effect mystery or danger. Supergel has several green gels perfect for the role.

These days a green gel even has to be an electronics genius, acting as a Chromakey background for video. For this job, we developed 385 Chroma Green. Or re-create the period look with 388 Gaslight Green.

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SUPERGEL

Two Floor Shows

As you enter the PLASA Show First Floor area from the escalator, Roscolab's colourful summer stand will feature their new Chiller Module, designed to produce low-lying fog on demand, and possibly to take the heat out of the occasion if the weather stays warm. Not far away, JEM will have their big Heavy Fog's latest variants together with the 'Roadie' for massive smoke effects that will be able to sweep away even the most belligerent of performers, plus the previously mentioned 'Cracker'.

This area of the Show has many more 'stage' related suppliers and manufacturers present including Avolites with their new QM500-TD featured in our June article on Eurovision 89 from Lausanne, and Eurolight with their brand new 'Applause' lighting control. Cerebrum, Lytemode, Pancan, DHA and TSL also feature in this area.

Lightfactor and Batmink have stands related to their own and distributed products. The King's Sound 'Team' projector will feature on the Batmink stand, amongst many other units, and Lightfactor will have a wide range of equipment on view from Laser Media, Studio Due, Collyns and D.A.S. in addition to their own lighting control equipment. Other discotheque regulars include Citronic, Anytronics and Tobysound.

In the 'Italian' area Fly, Music & Light Production, King's Sound, ProgramSistem, Spotlight, Artick and Tecnitron feature, backed up by APIAD and ICE, the Italian Chamber of Trade (stands 105-107 for more information). Other stands here include AC Lighting, OHM, Infinity International and Kelsey Acoustics.

Moving across the bar area (the haunt of most of the publishers present), sound notables Formula Sound, Farrahs and Harrison Information Technology feature. Light Engineering have been spreading their wings of late, and their stand looks worth a visit (F115) to see what the 'top secret' Sextet is all about!

AUTUMN CLEARANCE

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In the fourth main area of the first floor on the east side of the Olympia 2 complex, another major mix of industry regulars includes no less than 21 PLASA members, mostly manufacturers, and a mix of everything from NJD Electronics who are creeping stealthily into the stage market, Thomas who say "watch this space", Starlight Design who seem to add to their range by the week, and the big boys of the industry, Strand Lighting. Strand will be giving away their new Strandbook (reviewed L+SI, August), and have a new followspot on show - as will CCT Theatre Lighting with their new 'Pursuit'.

UKD will have a ProgramSistem show and MultiForm Lighting will be launching their new 'Quattro' club controller. Le Maitre Holdings will have all four arms of their operation on one site including LSD, Jivelight and Icelectrics with a lot of new gear across the stand. Lamba (F162) also have a big range on view, with equipment from Numark, Stanton and Martin (S215 on the second floor).

CALLING ALL MANUFACTURERS

Any companies/designers interested in the production and development of sound limiting devices are advised to study Ken Dibble's feature in this issue, page 33.

And we won't be looking for commission!

The big sound boys have the big sites on the Second Floor, with RAMSA, Harman, Audilec, RCF, TOA, Shuttlesound and UK Sound, Wharfedale, HGM and Smart Acoustics between them representing almost all the major names in sound equipment. The few missing ones you would have already visited on the way up.

Second floor lighting companies include B+K Showelectric, who will be launching their Varyscan, and you then have to negotiate the difference between our own Lighting Technology Group who did the blue job on the Lloyds Building in the City of London and Light Technology of Belgium with their new Dalton lighting controls.

Visually, the star of the floor will be the two stands of Optikinetics and Laserpoint who have a combined presentation for the occasion. "If you thought last year's Optikinetics stand was bright, then you'd better wear two pairs of shades this time".

But after you've admired it, don't forget to turn round and rest your eyes on the L+SI stand and browse through the publications in the PLASA Book Bazaar. Newcomers Laser Magic are also situated on the second floor.

We've probably mentioned about half the stands at the Show on this quick flip through the Catalogue as it runs through the presses - which means this is just half the flavour of the event, and a meagre measure at that. To taste the rest, make sure you visit the PLASA Light & Sound Show at London's Olympia 2 from September 10-13, and keep right up to date with all that's happening in the industry.

LIGHT & SOUND SHOW SEMINARS

PLASA's Light & Sound Show, London, has established itself during the past 12 years as one of Europe's key events focusing on the professional lighting and sound contracting industry. Over 150 companies will exhibit at this year's show being held at Olympia 2 in London for the second year.

From its original concentration on products for the night club industry, it has evolved into a much broader based event. And this year the show will play host to a series of wide-ranging seminars covering many topics of major interest to anyone involved with lighting and sound in the entertainment and leisure industries.

The seminars are grouped under the following headings and timings:

- | | |
|-------------------------------|--|
| Sunday 10 September, 15.00 | — The DJ Debate |
| Monday 11 September, 11.30 | — Moving & Intelligent Light |
| Monday 11 September, 15.30 | — Visual Presentation Techniques |
| Tuesday 12 September, 11.30 | — Live & Touring Production Technology |
| Tuesday 12 September, 15.30 | — Sound Dimensions |
| Wednesday 13 September, 11.30 | — Installation & Interior Design |

Under each heading there will be a number of short presentations by industry professionals on specific topics. Speakers will then form a panel to discuss and debate points raised and to provide an interactive forum for the audience. Although these subjects appear at first quite disparate, they are in fact linked by a common factor - presentation. The presentation of an image - whether sound, light, visual or aesthetic - is central to all topics and provides the foundation to the series and the show. Each session will last approximately 2 hours.

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£2.5m Hull Night Club Development



The design division of John Taylor & Associates Ltd have been appointed by Land Leisure Holdings Ltd as architects and interior designers, in conjunction with lighting consultants, Light Angles Ltd, for their £2.5 million night club development in Hull.

The night club, to be known as Studio Circus, is situated on a prime, central site close to Hull's other main amenities. Originally a synagogue and community hall, the building was vacated by the Jewish community recently. When the refurbishment and extensions are completed, the form of the original buildings will have totally changed, being encompassed in a massive frame of non-structural steel, lit internally by lights and lasers.

The complex will consist of a night club/disco with a separate, but attached fun pub to be called 'Sound City' with DJ and video screens. The venue is due to be opened in late 1989 and, while the night club will open from 9pm to 1.30am, the bar will be restricted to normal pub hours.

The interior's feel will prove to be dramatic, reflecting the architectural expression 'Machine age enviro-tec', with the emphasis on high tech light circus. Double height patent glazing to the front will open up the internal 'light circus' environment.

Situated next to the central dance floor and stage (for live entertainment), the DJ console will be circled by a curved feature staircase leading to the first floor, containing a second smaller dance area, restaurant, and a members V.I.P. bar.

The light show rig spanning two floors, will have attached to it, moving Spars and pods onto which will be located the light Circus, with lights, lasers and smoke cannons, and the video wall will transmit the latest videos.

Cannon Cinemas choose Bose

A major coup for Bose's new cinema sound system was revealed last month, as Cannon Cinemas formally opened its newest multi-screen centre at Ocean Village, Southampton. Cannon's choice of Bose equipment for the five screen multiplex represents, say Bose, the first major commercial installation in a dedicated cinema centre. (Bose cinema sound is currently installed at the Pyramid Theatre in Redhill, but this is a multi-purpose theatre auditorium). The Bose Cinema Sound System comprised of four parts: the Acoustic Wave Cannon System, the 802 Series II, the 102 Reinforcement/Surround system, and the Cinema System controller.

In the largest Ocean Village theatre, capable of seating 450 people, the Bose System includes one Acoustic Wave Cannon, two pairs of 802s, and six pairs of 102s for surround sound, artistically concealed in a fabric-covered plinth running around the auditorium. In the other four screens, various configurations of the system have been installed using one pair of 802s and between four and six pairs of 102 surround speakers, as well as an Acoustic Wave Cannon. All five cinemas are equipped with Dolby SR, guaranteeing the highest possible analogue source.

Laser (lā'zer)

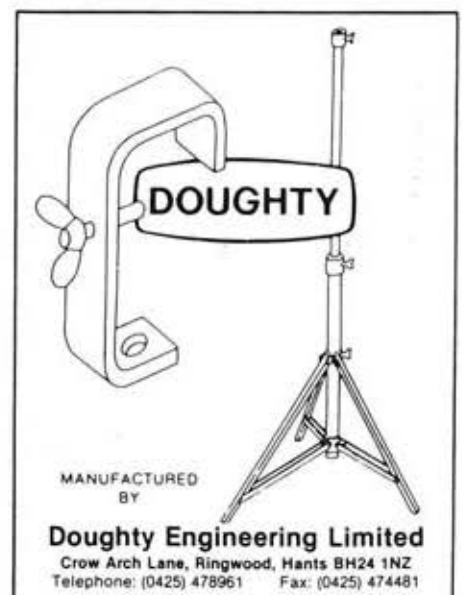
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Creation (creā'tion)

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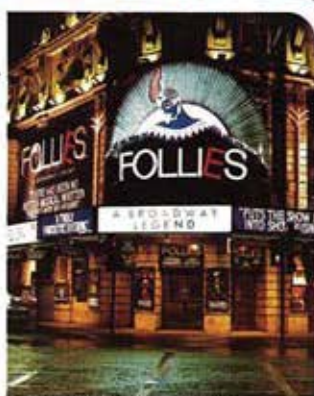
Our design team creates *exciting lighting* schemes to suit all environments, each individually tailored for maximum impact.

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MD's Club — Knokke, Belgium



Shaftsbury Theatre — London



Phantom of the Opera — World Wide

ACTION LIGHTING
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PEOPLE

● Avitec UK have announced the appointment of **Stuart Graham** as engineering manager. Stuart has worked for the last 10 years with Cossor Electronics, latterly as development project manager, and his main task at Avitec will be to streamline the engineering department and to co-ordinate the technical team under Richard Miller, technical manager, to ensure fast, professional service to clients' repairs - both at Avitec's engineering department and on site. He will also monitor quality of equipment distributed by the company, with particular attention being paid to new items from overseas suppliers.

Stuart's appointment coincides with Avitec's acquisition of a further 1000 sq.ft. of adjoining space, which will be used to house a larger engineering workshop and office, an expanded design department, and a customer conference area.

● **Martin Locket** has joined Theatre Projects Lighting Hire client contact team, working alongside Peter Marshall and John Singer, TPL's rental manager. Martin was previously with Keylight for two years.

Selecon New Zealand

In a contract they were proud to gain, but very anxious not lose on their home patch, Selecon New Zealand have announced that they have won the contract to supply the stage lighting equipment for the Aotea Centre in Auckland.

The 2,300-seat theatre incorporates restaurant and conference facilities, and the contract is the largest arts centre/theatre project to be finalised in Australasia for the past five years.

The equipment being supplied by Selecon includes over 400 luminaires comprising Zoomspot 2000 and 1200's, Selecon fresnel 2000, 1200 and Minifresnels, cyc 500/4 battens, Strong 2kW Xenon followspots, RAT orchestra stands, spot-bars and other lighting accessories. Also to be supplied by Selecon are 37 Rosco Nivoflex professional stage series platforms.

On the European front, around 100 Selecon lanterns will be found amongst the lighting equipment for the Dutch tour of 'Cabaret'. Supply was through Amsterdam-based Jansen Jansen.

Hot Summer Madness

Mike Wilson-Roberts, the proprietor of Kaleidoscope in geriatric Bournemouth, has been trying to become the first lager-swilling disco gear retailer to have climbed all the Scottish 3000-foot mountains in one season. So far it has taken nearly four months to do 210, leaving 69 still to attempt - but all the time thoughts of the disco industry have not been far away.

"Not wanting to put anyone's **Bose** out of joint I have needed to be up early in the mornings, starting the day with a bowl of **Neil Riddles** to see my on my way. Around mid-day in the heat I have felt a little **Citronic** but after a couple of cold lagers I have been ready for the afternoon. Mind you, in the evenings I have found myself getting a touch of the **Dave Winfields** but it hasn't **Addad** up to much. I climbed **McKenzie's** mountain and felt very **Fanet** but it was worth seeing the **twinned** summit. After taking off my boots to give my feet a well-earned rest I **Piccadillied** my toes and then went for an **Avitdeco** over a nearby 1000-foot cliff. After becoming a member of the **SSBC** (Stark Staring Eonkers Club) on the completion of my task I shall go on to become the first Englishman to have visited all the whisky distilleries (121 of them) and by that time I should be ready to enjoy this year's trade show as I shall be well and truly **Plas-ed**."

and on a slightly more serious note Alan Paulus of Trafalgar Lighting told us how they recently solved a serious effects problem:

"We have supplied on hire both the lighting and sound systems for Renaissance Theatre Company's West End run of **Look Back in Anger** starring Kenneth Branagh and Emma Thompson. We delivered the equipment on a Sunday and received a 'phone call a day later from the production manager with a complaint.

"Apparently one of the sound effects was an announcement on the radio. As the radio in question was an old-style wireless, the speech beautifully recorded on Revox and reproduced via our installed system was of such quality it wasn't the least bit authentic. We were asked if we had any 'distorted' speakers they could use instead.

"The solution we used was to put in a sub-hired separate speaker, but for obvious reasons we can't tell you the make."

Note: Sorry, but no further £5 payments will be handed out for any more summer stories - Ed.

Lee Win Bolshoi Order

Officials from the Bolshoi Theatre in Moscow visited Lee Colortran's Manchester headquarters recently to sign a £61,000 order for various lighting, dimming and control equipment.

The order destined for the Bolshoi Theatre comprised a Prestige 3000 lighting control desk, 45 ways of IDS (Intelligent Dimming System), and an interface to control a further 380 ways of existing dimming. Installation was carried out in August. During their visit the three Bolshoi officials received full product training on the equipment and were also shown the manufacture of further products in which they have expressed interest for the future.



Bolshoi Ballet executives join Lee Colortran VIP's at Manchester (left to right): Jim Pollard (managing director, Lee Colortran), Galina Kutkova, Igor Pushwin, John Burgess (sales and manufacturing director, Lee Colortran), Jury Kolesnikov, Barry Brown (Lee's agent in Russia), Michael Barchevsky.

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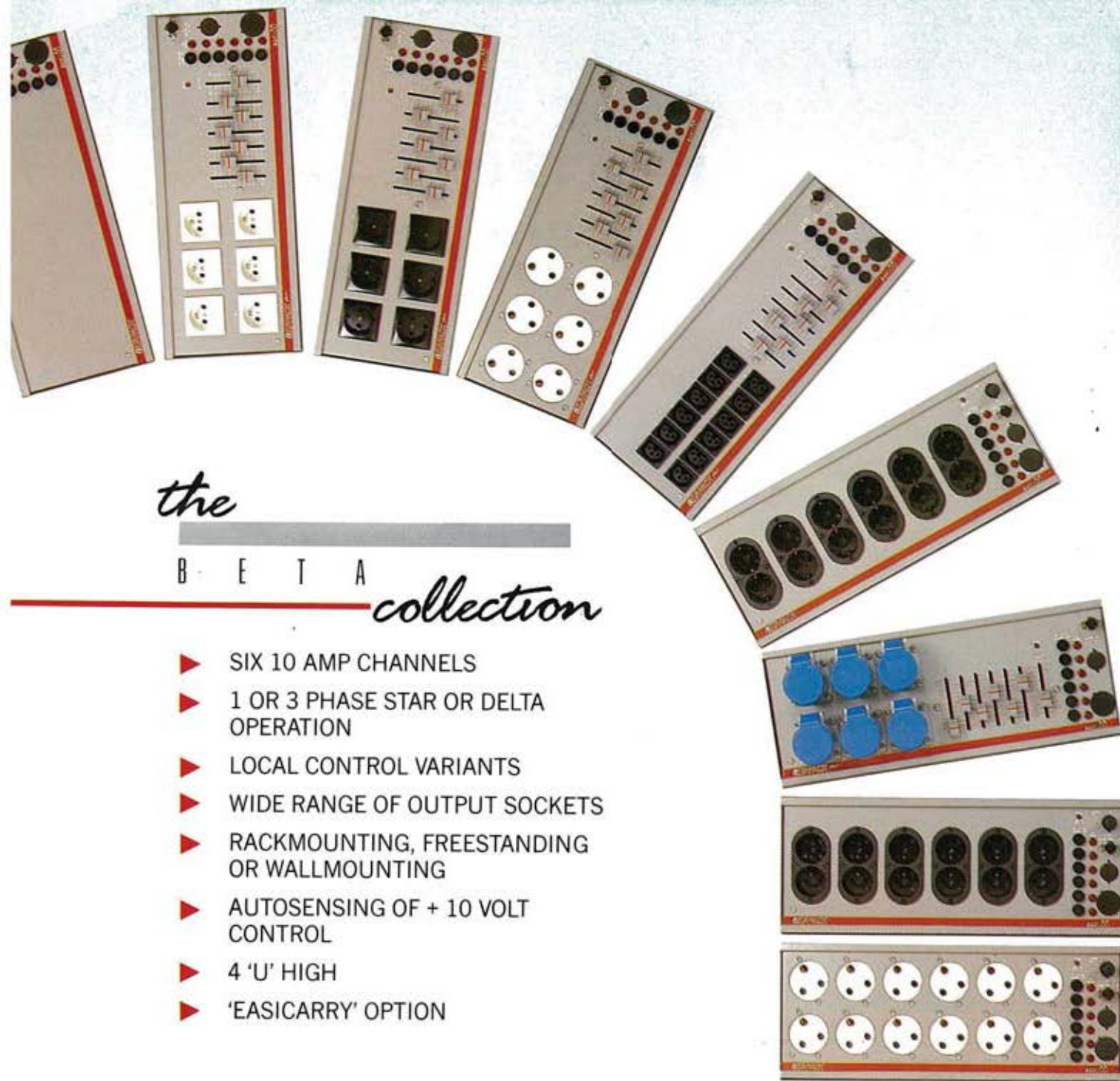
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MOVING JEM IN 1990

JEM's managing director Nigel Morris has announced that January 1990 will see the grand opening of a new 7,000 sq.ft. showroom and office facility at their complex at Spilsby in Lincolnshire, specially designed to enable the company to cater for the presentation and hire sectors of the industry.

Diversification and considerable expansion will be the order of the day, and JEM Theatrical Supplies and Special Effects has been set up to cover this area of the industry. The new operation will supply smoke machines, complete lighting rigs, lighting effects, pyro systems, lighting controllers, stage props, make-up, costumes, etc. The idea is that everything needed for a customer's event can be supplied from one source.

"At last JEM will be able to offer its customers a unique pyrotechnic system," Nigel Morris told L+S. "Over the years we've been inundated with enquiries, but we didn't want to go into the market place until we were sure the products were right. Many hours and a great deal of expertise has been put into producing our pyro system to ensure its reliability, safety and cost effectiveness."

Three well known faces from within the industry will be joining the new JEM operation, but so far Nigel Morris will only say that one of these will be Laurie Taylor-Duncan, who is moving back to the UK from Los Angeles. "We are all very confident of its success," said Nigel Morris, "as it will also have the back-up on the manufacturing side of JEM Smoke Machine Company Limited and JEM Pyrotechnics and Special Effects Company Limited. We will also be stocking a small range of up-market discotheque equipment."

New Dealership

CLASS (Commercial Light and Sound Systems Ltd) has recently added Guardline Lasers to its dealerships covering London and Southern England. The company will make available lasers for hire, demonstration and sale.

Vestax Europe

Vestax of Japan is best known in Europe for musician and home recording equipment. In Japan, however, they are the market leaders in DJ equipment. Vestax are also firmly established in the US and are enjoying considerable success there.

With the formation of Vestax Europe, the DJ range will be launched and is to be on show at the Light and Sound Show at Olympia, Stand F125 on the first floor. The new range is comprehensive and includes mixers, amplifiers, turntables, loudspeakers, headphones and microphones.

Laser Moves

Laser Magic have recently moved to larger premises in East Sussex, and their new unit houses a display area, larger offices and workshops.

The company have a large number of hire systems available for any event large or small and they will also be aiming to make a far greater impact on the installation market by providing state-of-the-art laser controllers and an improved back up service. Laser Magic's new address is: Unit 39, Cradle Hill Industrial Estate, Seaford, East Sussex, BN25 3JE telephone (0323) 890752.

Carlsbro for Phantom

Carlsbro Electronics have supplied three of its Colt 45W keyboard combos to Andrew Lloyd Webber's Really Useful Group. The amplifiers are destined to be used by the pit orchestra for keyboard monitoring during the Swedish run of Phantom of the Opera which begins in Stockholm in the autumn.



365 for One

During Nott 89, Teatro's distributor, Berkey Technical offered a Teatro Tratto 15/28 G to the first person to correctly estimate the number of components in the profile spotlight.

Above, Bent Ingemann of Berkey and Mike Lowe (left) of Teatro hand over all 365 components to the winner, Steen Bjarke, on the stage at the Kongelige Teater, Copenhagen.

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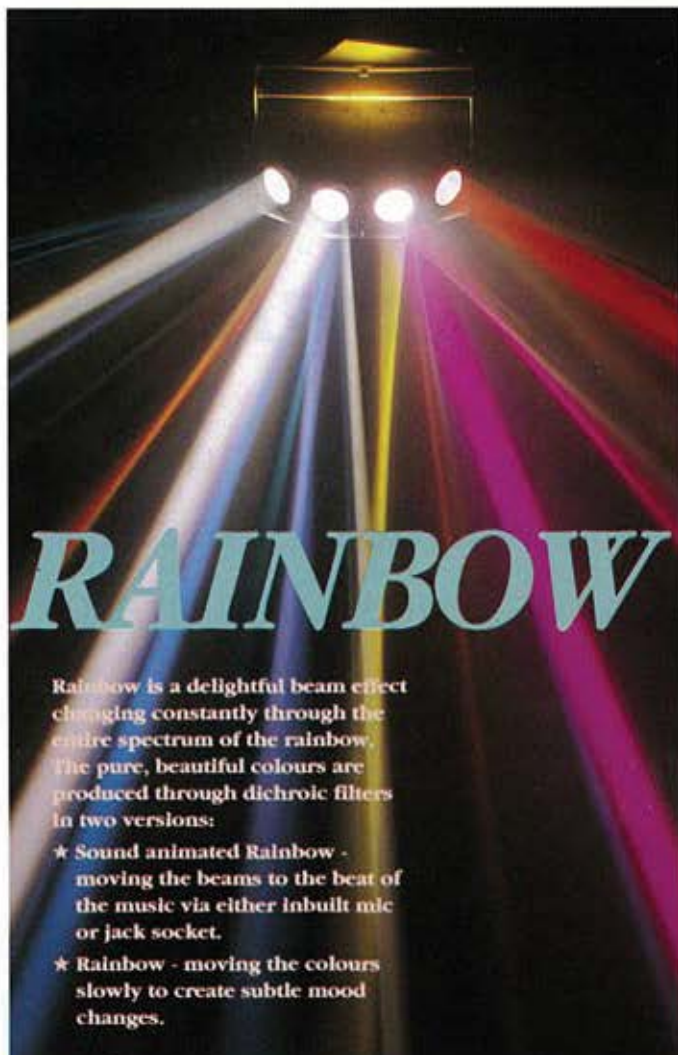
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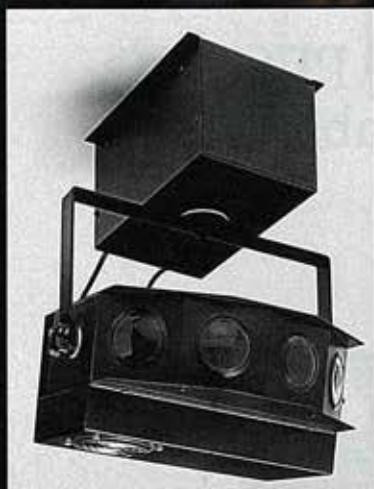
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Editor's Postcard home . . .

Jersey is many things to many people . . . a holiday at home and away from home, a yachtsman's dream land, a shopper's paradise, a beautiful place in which to retire for those who amongst us are fortunate enough to have considerable disposable income. To Ian Sharpe, Ramsa sales and marketing manager, the island is more than a 'stop over', it is a symbol of success, for it is here that the first Interior Sound System has been installed outside its manufacturing base of Japan.

To mark the happy event, a few selected guests were invited to fly to Jersey to witness the installation in situ and to join in the celebrations. A certain happiness grasped me as I was invited by Ian Sharpe to attend this trip. Suddenly, and for the first time in my life, I was not prepared to query Ramsa selection procedure, but found myself readily accepting - I still wonder whether I would have so readily accepted it had the venue been somewhere else other than Jersey.

I was not going to miss this one, so I set off early, and gave myself plenty of time to board the plane that was to take me to sunny Jersey. At the end of a very pleasant flight, I was met at the airport and taken to The Royal Yacht Hotel in St. Helier to freshen up before taking a short walk to the town centre for our 'rendezvous' at a somewhat enchanting Italian restaurant, The Trattoria Centrale.

On entering the restaurant, I gave a passing glance to some of the more eager guests, who with glass in their hand, had already started celebrating. A strong believer in 'first things first' I asked Ian to be introduced to the Oriental gentleman and to any other people I should meet. It was at this time that I met, for the first time, the deputy managing director of Panasonic, Mr Hashiguchi, along with Phil Price from Audilec and Brian Pucky, from Envotech; the latter being the system installer.

Introductions over, I proceeded to the bar, and it was at this point that I noticed the system was working and that the sound it produced was so relaxing that it succeeded in creating the type of atmosphere which is in keeping with such a venue. What was more noticeable, to me at least, was that the diverse music played on the system was a reinforcement to the system's ability to maintain an ambience in spite of the murmur of the many guests who by this time had congregated around the bar.

The guests were escorted to the long table - edging one length of the restaurant, where an excellent meal was served. The music was so enjoyable and so was the conversation.

I was pleasantly surprised to find that the speakers were difficult to pinpoint as they blend in well with the decor and that at no time was the sound directional causing those annoying flair spots that are so common with such installations.

I later learned from Ian that the installation consisted of four WS-K30 Air Sound Speakers, two WS-K10K FGM speakers and two WS-K40K sub-bass speakers. The system was powered by the WAM50 four channel power amp, with the sub-bass driven by a WP-9110 slave amp. The latter addition was found to be necessary because of the zoning requirements of the restaurant as a different sound was required in the bar/reception area, which at times doubles as a disco.

The whole system was specified with the use of Ramsa proprietary acoustic simulation computer aided design system (CAD). I understand that the use of this system will be available to all potential Ramsa customers with venue sound in mind.



I took this picture from the long table which edges one length of the restaurant. We had an excellent meal!

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Believe it or not, the Icelanders could teach us a thing or two about Rock and Roll.

Ah yes, the Icelanders. Well known for their good taste in all things musical.

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Frequency Response (± 3 dB): 120 Hz to 20 kHz
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CONTROL 5

Frequency Response (± 3 dB): 75 Hz to 20 kHz
Power capacity: 125 Watts
Sensitivity: 91 dB SPL, 2.8V, 1 m
Dimensions: 187 mm x 231 mm x 119 mm deep
11 3/4 in x 9 1/8 in x 9 in deep

CONTROL 10

Frequency Response (± 3 dB): 35 Hz to 27 kHz
Power capacity: 300 Watts
Sensitivity: 94 dB SPL, 2.8V, 1 m
Dimensions: 300 mm x 432 mm x 103 mm deep
24 in x 17 in x 11 in deep

CONTROL 12SR

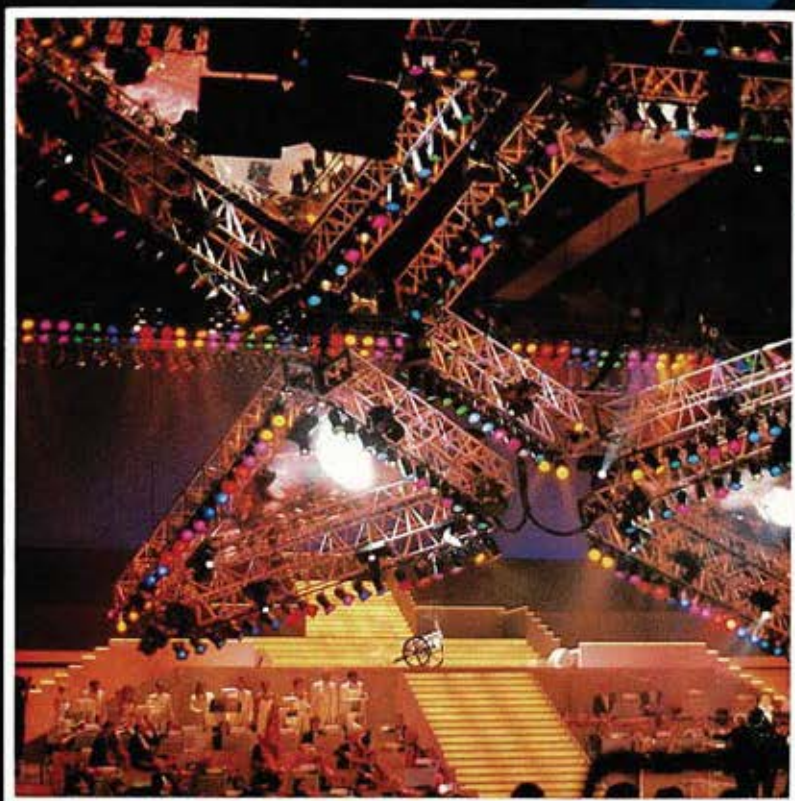
Frequency Response (± 4 dB): 35 Hz to 26.5 kHz
Power capacity: 400 Watts
Sensitivity: 97 dB SPL, 2.8V, 1 m
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FLASHLIGHT OF UTRECHT

Steve Kemp profiles one of northern Europe's major rental and sales operations



Gerard Jongerius and staff outside Flashlight's Utrecht-based premises.

Flashlight has long been known as the major supplier of lighting equipment in The Netherlands. Steve Kemp talked to Gerard Jongerius, chairman and managing director, about the formation of the company, and its growth into one of northern Europe's largest rental and sales organisations.

"In 1973, I was working on tour as the lighting designer for Herman van Veen, a Dutch cabaretier. I had been with Herman for seven years and I was beginning to feel that I wanted to use a little more equipment on the show. At that time, there was not that much lighting equipment available in Holland, so I suggested to Herman that it might be a good idea to buy a few lights of our own. As he was not interested in purchasing equipment, I decided to buy the equipment myself, so I bought 32 500 watt ADB PCs and rented them to the show. Because we were touring all over the country, it soon became known that I owned equipment, and more and more people called to ask if it was available for rental. I, of course, said yes, and before I knew it, I was supplying lighting equipment to many of the major Dutch performers such as Toon Hermans, Paul van Vliet and Golden Earring.

"Then in 1974, Herman's bass player, an old friend of mine, left the group to go and

play with a band called Focus and I was asked to provide the equipment for their European tour. I bought an old ADB 48-way control desk from the Dutch National Ballet in Amsterdam and went off with my lights. At that time, of course, the touring lighting industry was in its infancy and we didn't have the equipment that's available now, but, nevertheless, the tour was very successful and I made a lot of money! I was then asked by the band to light them on tour in America, Japan and Australia. We didn't take lights with us but decided to rent equipment locally. Of course, during that time I became aware of new types of equipment, especially in America. So, on my return to Holland, I decided to manufacture some of this equipment myself, and it became very popular because it was designed for touring.

"We began to grow as a company and after two years, our original store, which was about 60 square metres, was becoming too small for us so we moved to much larger premises and made the decision to always say to our clients, 'Yes, we can do it'. Our stock of rental equipment increased, including the first laser in Holland, and we started supplying theatres and theatre companies as well as touring bands and cabaret artistes."

In 1980, the company decided to move again to larger premises, and to set up a sales organisation at the same time. As most rental customers were asking where bulbs, colour, spare equipment and so on, could be bought, it seemed a logical step for Flashlight to provide this additional service.

"Also, at this time, I took on our first exclusive sales agency. This was for Emil Niethammer. These lanterns were already very popular in Germany and Austria so I gave it a try in Holland. They have now become very successful here too. The one and two kilowatt zoom profile lanterns are now used in most theatres in this country and have become the industry standard. I believe they're the best profile lantern in the world."

In 1979, it became apparent to Flashlight that the use of computers for stock control and administration was becoming a necessity. In the next ten years, they spent 350,000 guilders (approximately £100,000) on developing a stock control programme specifically for their lighting equipment rental and sales business, as there was no specific software in existence that could cope with the vagaries of the industry. This comprehensive programme now copes with stock control, rental and sales, plus the en-



Ed de Boer, manager of Flashlight's sales shop.



Gerard Jongerius, chairman and managing director of Flashlight bv.



The company's purchasing manager, Fons de Vreede.

tire company administration, from quotations and invoicing, to client information and company records. The programme has also been sold to other lighting organisations wishing to computerise their own stock control.

"Up until 1982, I was still touring with Herman van Veen visiting most of the theatres here and many in Germany, Belgium and France. This provided me with the contacts that I needed to expand the sales area. I believe in close personal contact with all our clients. This is a small and specialised industry which requires a high degree of service. Listening to a customer is very important."

In 1984, Flashlight moved into their present home in Oregondreef, Utrecht. This is an ideal location, close to the highway with easy access and parking for trucks and vans. Utrecht is in the very centre of the country and the national highway system is excellent. Schiphol airport, and central Amsterdam, are half an hour away and any part of the country can be reached in about an hour and a half. International destinations are also within easy reach by road: Paris is only five hours away, as is Hamburg; Brussels and Dusseldorf are both a two hour drive; Cologne and Frankfurt can be reached within four hours. This is an important advantage in an industry which requires the constant movement of equipment and personnel.

It's the 16 full-time staff at Flashlight who are the heart of the organisation and they are very good at what they do. Says Gerard, "Most of our employees have been with me for a long time, some for as many as 15 years. Each department head is entirely responsible for his own decisions, he runs his department as if it were his own. We are a client-based company and the relationship that our staff have with our customers is very important to us; we have a reputation for listening to what the customer wants, not providing him with what we think he might need."

"The sales side of the company is managed by Ed de Boer at the sales counter and Willem Verhaar on the road. Purchasing is controlled by Fons de Vreede and deliveries are taken care of by Ronald van Leeuwen. We are exclusive agents for Avab, DeSisti, CCT, Niethammer, Lee, The Great American Market, Celco, Powerdrive, Zero 88, Clear-Com, Spotlight, our own ALC dimming system and most recently, Triple E Ltd. Precision Stage Hardware. We are also stockists of most other major manufacturers' equipment: Philips, Rank Strand, lanaro, ADB, Rosco, DHA, Pani, Le Maitre, Strong, Altman and Thomas. We are very proud of our demonstration room. Here we keep a large range of different manufacturers' equipment, all of which is hung on low bars so that the customer can reach the lantern and actually handle it. Throw distances are marked on the floor and beam spread widths are marked on the white wall. Clients can spend as much time in here as they wish, getting used to handling a new type of lantern or comparing one manufacturer's equipment with another's. Buying expensive lighting equipment which may be in constant use for many years is a serious business and we feel that the client should be given as much help as possible."

In 1988, Flashlight became agents for DeSisti Lighting. This was an important step for them as the TV market is growing in Holland in leaps and bounds and they were looking for a high quality range of equipment to cope with these needs. The national TV

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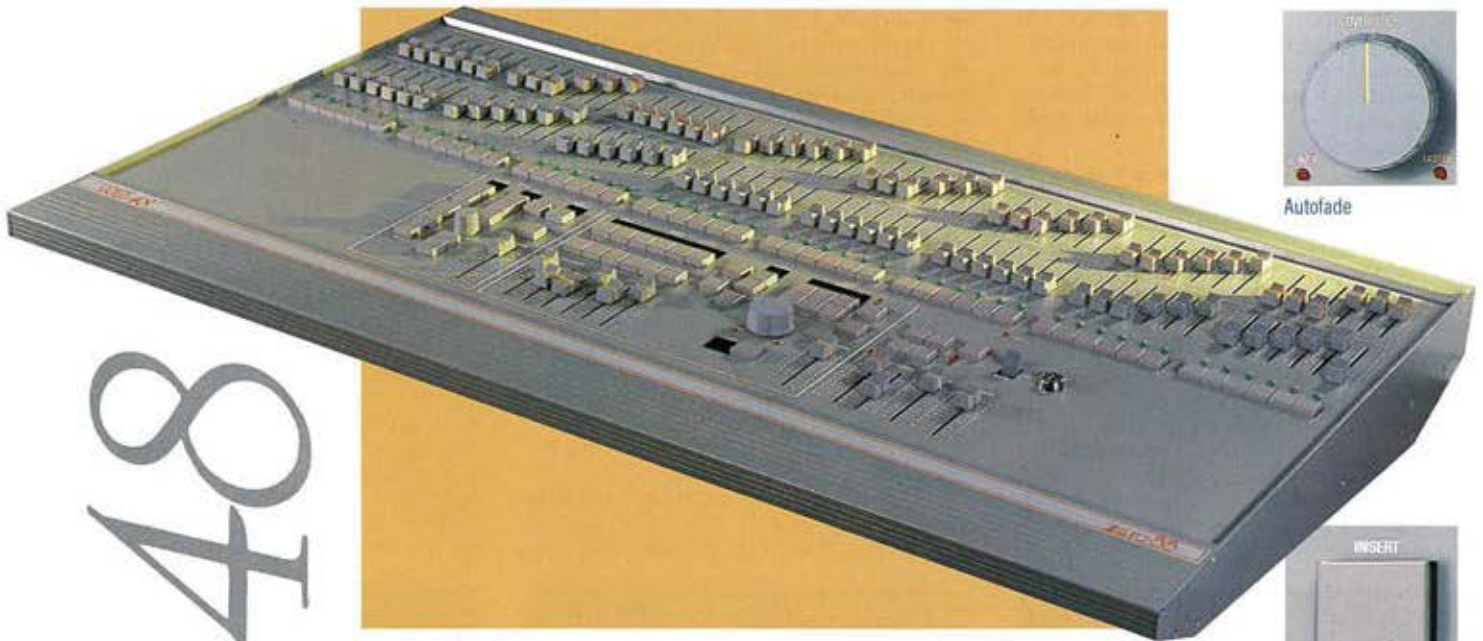
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network, the NOS, is scheduled for privatisation in the near future and the already large TV and film market will expand even further. "We have to be prepared for the future," says Gerard.

"Our rental department has grown out of all recognition in the 16 years of its existence, and equipment has become so advanced. It's a bit different from my original 32 500 watt PCs! In the last two years, we have brought our rental stock up to an international standard. For touring shows, we have developed our own six bar and multi-core system which is compatible with any other rental system that uses 16 pin Harting plugging. We now stock nearly 2,000 Par 64 units in both black and silver. Altman Lekos provide the basis of our profile stock for the touring side of the business; we have about 250 units in various beam widths.

"Our truss stock is now at about 600 metres, consisting of LSD folding truss, Slick mini-beams and a pre-rig system that contains two six bars per section.

"We have recently updated our control systems to cope with the current trends in the market. We use mainly Celco Gold and Major desks for the larger shows and 60 channel Zero 88s for industrials and fashion shows.

"We have now standardised our dimming system to ALC dimmers. This system we build up and market in our own manufacturing department and we find that it's very dependable. These, as I mentioned before, will interface with any other rental company's cabling system.

"It still amazes me that bands coming to Europe from the UK or US continue to transport containerloads of equipment across the Atlantic or Channel. It's so expensive! Perhaps they think we don't have electricity here! Maybe this will change in the future, and people will realise the usefulness of our services and our ideal location. We can now duplicate almost any equipment, and service these shows from Europe. Lighting plots and drawings can, for instance, be faxed to us and we can provide whatever the lighting designer requires. Our crews and riggers have earned a very good reputation and most of them speak at least three languages.



Altman Lekos in store.

"The theatre side of the rental department is also expanding. We have exclusive rental contracts with many of the large, subsidised companies all over the country including De Nederlandse Opera, Het Nationale Toneel, Het Nationale Ballet, Amsterdamse Toneel, Ro Theater and many others. We also provide equipment for touring commercial theatre shows and large industrials, as well as long-running productions such as Cats in Amsterdam. Our theatre rental stock includes Neithammer, CCT, Altman, and Rank Strand profiles, ADB and CCT fresnels and PCs. For control we use three Kliegl Performer 2s and Avab 202s, as well as other smaller control desks.

"We have recently invested in a large amount of DeSisti TV and film equipment to cope with this fast-expanding side of the industry, and now we have over 100 5ks, 80 2ks, 50 1ks and a large amount of HMI equipment including two 12ks. We also use ALC dimmers for TV control supplied with 16 amp Ceeform outlets.

"Our next investment will be in a scrolling colour change system. We have several types on test at the moment, but we're only

interested in the most reliable."

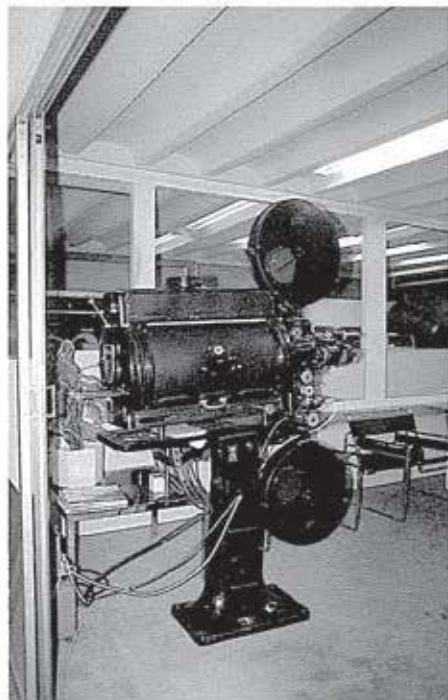
Last year, Flashlight invested in two 40 foot trailers as well as a fleet of smaller trucks to move all this equipment around the country. These are, of course, also available for hire. The rental department has come a long way in 16 years.

Said Gerard: "All this is watched over by our rental manager Ruud Lucas Luijckx - we just call him Ruud! He's ably assisted by Frank Brok, Dick van Wijk and Martijn van Beverwijk, who maintain a very high degree of quality control. It's very much our policy that all equipment leaving our warehouse must be clean and in perfect working order."

Three and a half years ago, Flashlight decided to set up its own manufacturing department. This is headed by Fried Buttstedt and Ton Tersteeg who deal with research and development. The technical manager is Ron de Haas, Paul Bergs is in charge of production, and flight-casing is taken care of by Joop van de Wal. The Flashlight ALC dimmer is manufactured here. This is a 5k per channel digital dimming system containing its own mains patch that has been developed for touring and rental purposes, and forms



Willem Verhaar in the demonstration room.



Pride of place for an old movie projector.



Patrick Jordan, Flashlight Productions' technician.



Fried Buttstedt - research & development.



Ton Teerstag - research & development.



Jan Bruin - financial controller.



Ron de Haas - technical manager.



Ruud Lucas Luijckx - rental manager.



Vance Bryan and Lex Van de Haak - Flashlight Productions bv.



Willem Verhaar - sales manager for the road.



Dennis van de Haagen - crew chief for Flashlight Productions bv.

the basis of Flashlight's rental stock, and is now available for permanent installation as well. Recently, 200 have been installed in the Zuidplein Theatre in Rotterdam. "We haven't openly marketed this product yet, but by the end of the year, we'll have printed information and specifications available and the dimmer will be on general sale. By that time, we will be looking for agencies in the rest of Europe, the UK and the US," said Gerard. The manufacturing department also takes care of 'one-off' development of special orders such as the control of neon and fluorescent tubes and other specialised projects.

"There are two other companies under the Flashlight umbrella," Gerard explained, "although they're not owned by us, they operate via our building and rental facility and we have an extremely close, day to day relationship with them. These are Flashlight Productions bv and Vanguard Rigging, both of which are owned and managed by Vance Bryan. Lex van der Haak is the operations manager and Dennis van der Hagen is the crew chief; Patrick Jordan and Yvonne Deege are the two full-time technicians. They deal with the larger productions which require more than just the dry hire of lighting equipment. They contract lighting designers, provide freelance crews, trucking, catering and general production services for any type of show, no matter how big. At the moment, they have a Vari*Lite system here on long term rental, which is run by Dennis, the crew chief.

"Vanguard Rigging has a large stock of Verlinde and CM chain hoists plus all the other equipment associated with rigging, including computer control systems. They provide rigging services, not only for the



Part of the lighting store at Flashlight's base.

Flashlight group's larger productions, but to broadcast, and other, rental companies. A large amount of their work is for Mojo Concerts, who are the largest promoters in this country, to whom they supply extra rigging facilities for tours that come through Holland, playing the larger venues.

"Last, but definitely not least, I have to mention Barbara Borstlap and Marijke Hensbergen who run reception, and our new financial controller, Jan Bruin."

Well, that's Flashlight as it stands at the moment, but what about the future? Their present home is full to bursting point and a move to larger premises is scheduled for early 1990. The new building will contain about 3,000 square metres for rental space, including an area where large rigs can be pre-hung and cabled, 500 square metres of office space and about 1,000 square metres of space for the sales department, which will include a demonstration facility based on the present design where clients can spend time

browsing, but which will contain more equipment and be much larger. A 'super-market' is also to be included which will handle everything from spare lamps, gobos and colour to pin hinges and stage hardware. A 48-hour delivery service will be available for products that are not in stock.

The most ambitious part of this project is to be a large fully-equipped studio which will be available for video recording, film shooting, rehearsal or live performance. Gerard Jongerius has indeed come a long way since his days on the road with his 32 lamps, and is now a major force in an ever-expanding area. He will certainly be ready for the demands that 1992 may bring.

Despite this expansion, Gerard still believes in personal contact with his customers and tries to visit each theatre and major client at least three or four times a year. He still means it when he says to them, "Yes, we can do it", and the Flashlight policy remains: 'We never say no to a customer'.



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THE STAGE RADIO STATION

Ben Duncan looks into a well-researched British product which seems set to revolutionise stage monitoring and freedom of performance, as well as improving outfront sound quality



The Radio Station designed by Martin Noar and distributed by Personal Radio Systems.

Stage monitoring began on the rock 'n' roll stage circa 1966. Despite the sophistication and brute power of modern systems, many artistes still have difficulty hearing themselves on stage. There are three fundamental problems. Because a lot of artistes insist on using 'Name mics' (the SM58 is notorious), the flat acoustic response needed for maximum gain before feedback isn't achieved, even assuming the monitor's speakers' response is flat. The outcome is that quite stringent EQ is needed to prevent howlround at the SPLs required.

The EQ creates its own problems. The second problem is one for the audience: the monitors' output impinges on the microphones, meaning the monitor mix becomes a part of the live sound outfront. Turning down the levels helps, but how many red-blooded performers rely on their monitors for the adrenalin that high SPLs produce?

The 'muddying' of outfront sonic quality can be judged by the fact that the monitor mix is itself composed of numerous individual mixes, and their individual sound-fields have random phase relationships with the original sound, as well as slight, but highly variable acoustic delay. If the time

delay is greater than 15 to 20ms, it will be perceived as reverb, adding richness to the sound. But usually it's shorter, so it ends up conflicting with the direct soundfield.

Thirdly, the musicians' own monitor mixes are coloured, by each other and by reflected sound from the outfront PA. He or she who turns up loudest wins. . . Similarly twisted considerations apply to monitoring in the theatre and 'electrified' opera: Artistic discipline is higher, so monitoring levels are lower. Ironically, this makes the outfront sound all the more likely to prove distracting!

Direct Injection

Ways to overcome these setbacks are just beginning to emerge. Last year, Crown introduced 'The Differoid', a microphone which cancels out distant sound sources in favour of local ones. Next month, the developments in stage monitor speakers will be discussed. Right now, **Personal Radio Systems UK** have a product which deftly side-steps the problems of providing high SPLs on stage: the monitor mix is 'direct injected' via personally moulded earpieces! Suddenly, the monitoring system is following performers to the edge of the apron, or even into the auditoria. The system relies on pro-

ven radio mic technology, albeit reversed: Artistes wear easily concealed beltpack receivers (instead of the usual transmitters), while the transmitter resides in the wings.

The transmitter operates in stereo. Personal Radio Systems conservatively quote a range of 'up to 60 metres', with an antenna clamped or screwed to a mic stand. Although radio mics makers optimistically cite ranges of up to 200 metres, **The Radio Station's** range is inherently superior on any given power, as the base station's transmitting aerial can obviously be so much more efficient.

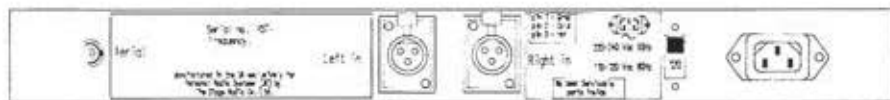
Input drive is monitored on the transmitter's three colour LED bargraph, so the monitor engineer can set the optimum level, as well as keeping an eye on it from a distance in the dark. Input interfacing is transformer balanced, via XLR sockets. The engineer has a local monitoring socket for cans, with a volume control. It's taken off the final audio drive to the transmitter's modulator.

The performer's beltpack is similar in size to the genre worn for radio mics, measuring about 4 x 3 x 1½" (110 x 70 x 35mm). It almost raises the question, 'If artistes who already use radio mics begin to wear any more beltpacks, won't they begin to look like soldiers?' One thing is certain: the aerial is discrete, being integrated with the cable which feeds the earphones. Realising that the individuality of performers' is heightened as soon as you start interfacing with the intimacies of their anatomy, Personal Radio Systems' package price includes an appointment to Harley Street (or other hearing specialists). The intention is to arrange for earpieces to be created and tailored to be comfortable and acoustically matched to their ears. Two sets will be made. Personal Radio Systems intend to keep one to be rushed to the artiste, should they ever lose their own set. In use, the earpieces press-fit into a pair of Sony earphones (model MDR-E464-EX), supplied with the package.

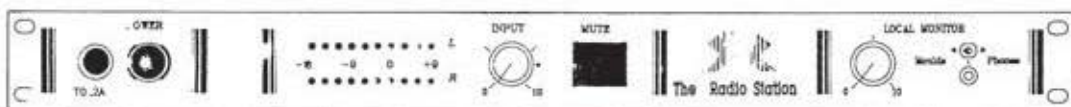
Real World Design

The Radio Station has been designed in close consultation with rental companies and artistes; a lot of thought has gone into the practicalities of its use and anticipating potential problems. Martin Noar who is the designer at **The Stage Radio Company** (who manufacture the unit) has spent five years developing the system after 10 years experience with radio mics.

Recognising that some performers would be lost without the physical sensation of bass, the system has been tested and proven alongside conventional monitors fed with low frequencies alone. There's also the possibility of setting up ambience mics on stage, so the monitor signal fed to the earpieces doesn't make the artistes feel so isolated. In fact, The Radio Station can be used by individual musicians alongside full-blown conventional monitors. The earpieces provide enough acoustic isolation to override any spurious phase relationships between the two systems.



I.E.M. Tex Panels



What happens to musos who cast their earpieces to the audience - or who just prefer cans? The receivers feature a two position EQ switch. The alternate position provides EQ for conventional headphones, which can plug into the receiver beltpack. The transmitter's monitoring section has a complementary EQ switch too, so that the monitor engineer can verify the sound experienced by performers who've chosen this option. One apparent snag is that the jack socket is the 3.5mm kind, hardly the most rugged connector in the environs of the stage. However, most monitor engineers accept that this makes emergency replacement easy (in case a new headset or earphones have to be bought in a hurry from a local hi-fi shop). The problem of accidental withdrawal is something that many sound engineers will have already perfected; generally, it involves gaffer tape.

Radio headphones are by no means new, witness Stevie Wonder's use of just such a system over four years. But past systems were custom engineered, cumbersome and moreover, incompatible with European and UK transmission standards. In other words,

ILLEGAL. . . For UK users, The Radio Station system radiates 10mW ERP on the frequencies presently allocated by the DTI for the entertainment biz. Any other frequencies in the 174 to 125 MHz range can be supplied to order for overseas users. A UHF option is anticipated in the future. This will open up the number of channels available.

Early User Reports

Cane Green are the first UK rental company to equip with The Radio Station. They've been running a pre-production prototype for four months. They plan to have six Radio Stations on the road as soon as they're available. By the time this article is published, production will have begun. Sound engineer, Chrys Lindop, is a great advocate of 'discrete' monitoring, having first experienced it when mixing for Stevie Wonder. He's set to use Personal Radio's system during the Rick Astley US tour this autumn.

He reports: "For a sound engineer, it's wonderful, because it brings down levels on stage. . . making it easier to operate because there's less spill. The whole sound tightens up significantly. My pet hate used to be that

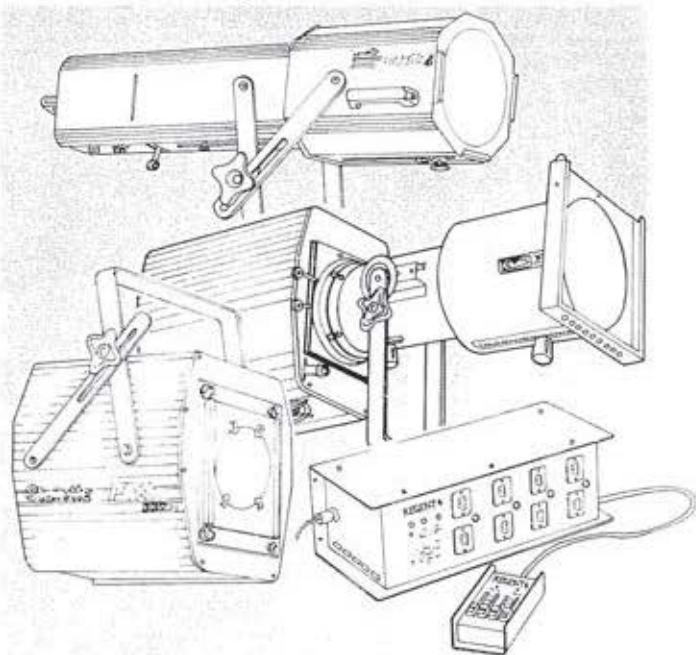
almost everytime I was called up to the stage, it would be to sort out the monitors. It was timewasting and frustrating. . . I wanted to be outfront, mixing, not worrying about monitors!"

Another system is already in use by 'The Outfields' drummer, Paul Reed, and touring the USA. Paul reports: "It would be impossible to improve this system of monitoring. At first I was using it along with my ordinary bi-amped wedges as I wasn't sure about it. But now I've dropped the wedges altogether and used The Radio Station totally. I can't see anything bettering it."

The Stage Radio System is distributed by Personal Radio Systems (UK) Ltd., Unit 2, 12/48 Northumberland Park, London N17. Telephone 01-801 8133. Export enquiries: Roma Vincent. Telephone (0372) 728481.

Personal Radio Systems are able to demonstrate The Radio Station. Although specially moulded earpieces are obviously ruled out, there's a choice of four sizes of off-the-shelf earpieces.

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VOLUME REGULATION: THE FORGOTTEN MARKET

Ken Dibble

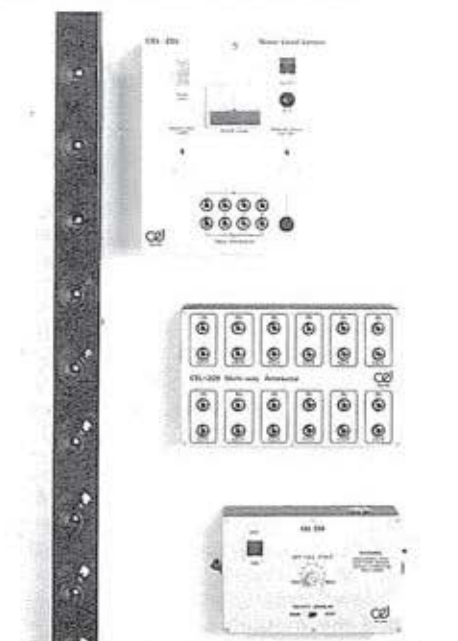
Because of an increasing awareness of the environment in which we live and a new found consciousness towards health and general well being, regulation - whether it be to protect ourselves from our own folly or to moderate the activities of social minorities for the benefit of the population at large - is very much a part of the age we live in. So whether it be seat belts in cars, safety in the design of buildings, safety in the workplace or in leisure activities, excesses in the consumption of alcohol or drug abuse, most activities which are likely to be harmful, or are likely to have an adverse effect on the population at large, are rapidly becoming subject to regulation of some sort.

So it is with exposure to loud music. Unregulated, and in the hands of irresponsible operators, all the evidence suggests that hearing damage will ultimately ensue, both to those responsible for its creation and to those who assemble to enjoy its performance. It can also be distressing to those prevented from enjoying the peace and quiet of their own homes. So whilst we may debate the actual levels at which loud music becomes harmful, whilst we may argue the point at which intrusive sound becomes nuisance, whilst we may argue for the freedom of the individual to do as he or she might like, there can be no argument that at some point, some form of regulation becomes socially desirable.

It is not the intention of this article to make the case for or against the principle of volume regulation. Given that volume regulation in some form or other is inevitable, we will take a look at the various legislative controls that can lead to the compulsory provision of a sound limiting device, take a brief overview of the existing market, identify the short-comings of the currently available products and come up with some suggestions regarding the type of device that might be better suited than those at present available.

When is Volume Regulation Necessary?

1. Environmental Noise Control: This is likely to arise as a result of complaints from



The Cel-206 Noise Level Limiter, Cel-209 Multiway Attenuator and Cel-208.

neighbours being brought to the attention of the local authority Environmental Health Department. Usually an Environmental Health Officer or noise specialist will first visit the premises for an informal word with the manager in an attempt to come to an amicable agreement that the volume will be kept down to an acceptable level, at certain times of the day, or whenever agreed. In practice however, and for a variety of reasons, keeping the volume down is not easy to achieve and eventually it becomes necessary to install a sound level limiter.

If co-operation in this form is not forthcoming, the local authority may have to resort to the issue of a Section 58 Notice under the provisions of the 1974 Control of Pollution Act, or else may recommend to the licensing authorities that the provision of a sound level limiter, set at a specified level, becomes a condition of license. That way they have got you by the short and curlies!

2. The 1986 DoE Disco Code of Practice: The instrumentation requirements of this CoP (see Disco & Club Trade International, March, 1987) are considered by many to be somewhat over zealous in terms of the problem it seeks to address. It has been found that among the few local authority areas where this Code is being implemented, straightforward volume regulation by other means is being accepted as complying with the spirit of its intentions and to provide adequate regulation.

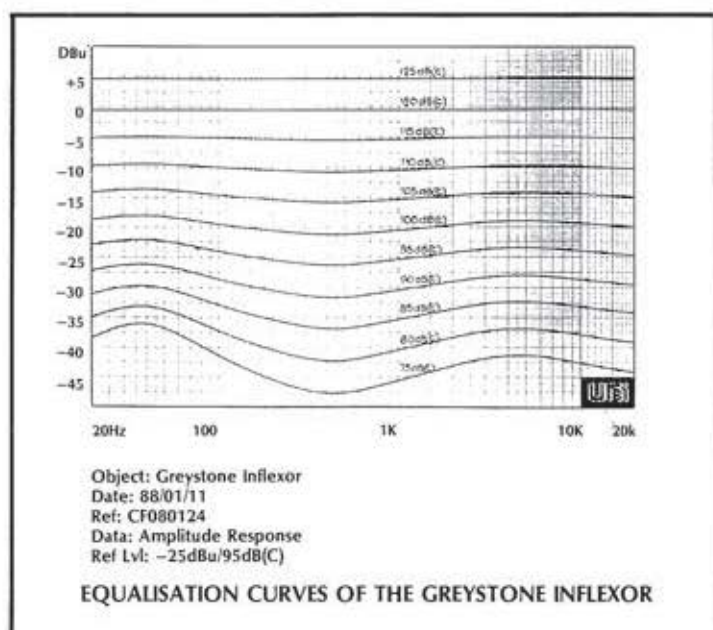
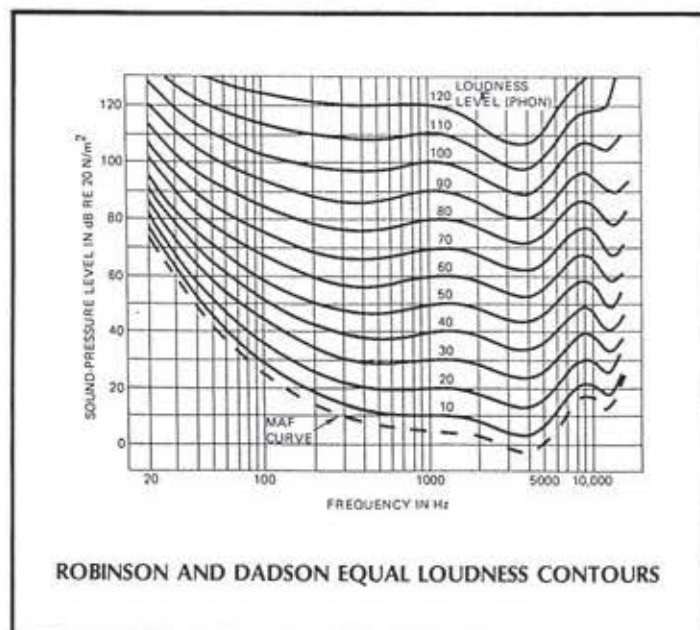
3. Health and Safety at Work Regulations: This issue was fully discussed in L+SI, September 1988, and although these regulations do not come onto the statute book until January 1st, 1990, when EEC Directive 86/188 comes into force, clearly the requirements must be taken into account in the planning of any new facility or the refurbishment of any existing venue.

4. Sound System Protection: Even given a responsible operator, protection is considered an essential requirement for any sound system of any quality. Given that the 'adrenalin level' for modern music is around the 96dB(A) mark, it is invariably the case that because the combined effects of the excitement of the performance and of TTS (Temporary Threshold Shift) the operator is frequently unaware that the volume level has crept up to 6-10dB during the course of the evening. Thus, some form of level indication on the DJ console, combined with overall volume regulation, is necessary. At least two major installers are currently fitting a regulatory device as an integral part of the sound system architecture and requiring its use as part of the warranty conditions, whilst one national operator is fitting such apparatus in every new installation as a matter of course.

The Available Means

Sound level limiters tend to fall into four different modus vivendi, as follows:

1. The Sound Level Switch: These devices usually rely on a sensing microphone coupled to a variable threshold level detector for



their operation, usually providing some form of visual or audible warning before actually operating. Examples include the well-known Castle Electronic Orange, the Aims Minim and the CEL-206. Whilst this type of device may be suited to simple control requirements in a smaller venue, there are a number of inherent problems. The first is that most modern amplifiers dislike repeated switching transients, usually sustaining considerable damage as a consequence.

The second is that the inrush current to a large power amplifier can be 100A or more on initial switch-on, typically reducing to its quiescent current draw over approximately a 0.5 second period. In order to avoid tripping the mains power breaker to the building when several such amplifiers are turned on together, these are usually powered up sequentially allowing a few seconds settling time between each turn-on. In an attempt to address this problem, some recently introduced amplifiers have an integral 'soft-start' facility to limit the inrush current to more manageable levels whilst one manufacturer has incorporated an inbuilt start-up sequencer as well. But this sophistication tends to come at the upper end of the price range and cannot yet be considered the norm.

The third problem is that of low frequency energy delivered to the loudspeaker system whenever the control electronics are switched on or off whilst the power amplifiers are active. This can annihilate thousands of pounds worth of loudspeakers in an instant and is, again, usually overcome by a sequenced start-up procedure - often automated in order to avoid accidents.

A fourth problem is that of fallibility in that any enterprising DJ or band will just run an extension cable to another socket which is not subject to control by the device. Alternatively, chewing-gum or a conveniently pre-formed rubber item obtained from a machine in the loos will be used to modify the microphone sensitivity.

Finally, it will be found that in many areas the Fire Officer will require that a public address provision is available at all times in order to control an evacuation of the building. Clearly, should an alarm sound whilst the sound system is shut down, there is no means of public address and for this reason fire authorities do not favour, and in some instances will not accept, this approach.

Among its advantages however, are its relatively low cost, ease of installation, it does not normally require specialist setting

up, it is simple to operate and, because it employs a microphone sensor, it automatically takes account of the size of the audience present.

2. Sound Level Attenuator: These devices are not dissimilar to the basic sound activated switch except that the method of control is by attenuating the audio signal line thus reducing the drive level to the power amplifiers. Examples include the Beam dBa, the CEL-206 (which has the option of either or both modes of operation) and the Formula Sound Guardian - which includes an emergency PA override to comply with the fire authorities' requirements.

This is an altogether preferable means of control as it overcomes all the problems associated with mains power switching. However, most are still microphone operated and are therefore open to tampering and, because they need to be connected up as an integral part of the sound system, are only suitable for use in venues where a permanently installed house system is provided.

3. Dynamics Compression: This is an altogether different approach in which the dynamic characteristics of the incoming audio signal are monitored and the gain structure of the sound system maintained within pre-set parameters, thus effectively regulating the maximum volume levels attainable irrespective of any equipment control settings. Although off-the-shelf commercial compressor/limiters can be used for this purpose if carefully set up, there is, to my knowledge, no dedicated device working on this principal.

Such apparatus can be extremely sophisticated in that RMS and peak values can be independently set and in the case of a bi-amplified sound system, the attack, release, threshold and ratio controls can be optimised for each section of the system. Further, an equaliser can be inserted into the compressor side-chain so that the system can be made frequency selective in its operation.

Among its many advantages is that the sound is actually perceived to be louder than it actually is, thus averting the need for quite so much volume. Further, by careful selection of equipment coupled with critical setting up, such a system can be virtually inaudible in operation and can actually enhance the perceived sound quality in many situations. And probably more important is the fact that at no time is the sound system switched off or even attenuated so there is not

the embarrassment of the stoney silence or the contravention of the fire regulations associated with the more established control methods.

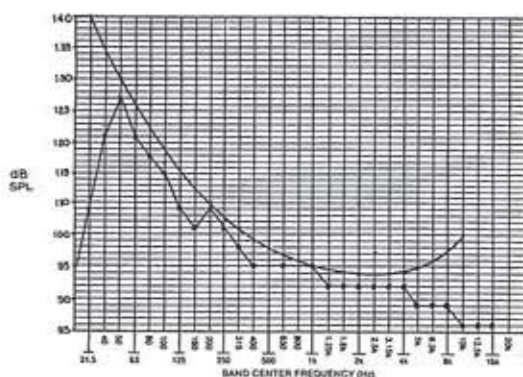
Its drawbacks are that it can only be used as part of an installed house sound system, the hardware is unlikely to be familiar to the Environmental Health or Public Protection Officer, setting up is a specialised operation and finally, the apparatus does not lend itself to any form of calibration such that the EHO can document the settings and stand up at the licensing hearing and categorically state the limit levels imposed.

4. Aural Compensation: This approach cannot, strictly speaking, be called limiting, although it does seek to address the problem from another angle. The method is largely psycho-acoustic with the object of removing the need for very high volume levels by increasing the perceived impact of the sound as it is reproduced. The one system which is at present commercially available is the Greystone Inflexor. This device was fully reviewed by myself in the March 1987 issue of Disco & Club Trade International. In brief, it modifies the system equalisation characteristics according to the standard Equal Loudness Contours attributed to the human ear, as shown in Fig 1, progressively reducing the amount of LF and HF lift until at above about 100dB(A) a flat response is obtained, thus fooling the ear into thinking that it is hearing a sound which is louder than it actually is! The response vs sound level curves of the Inflexor are shown in Fig 2.

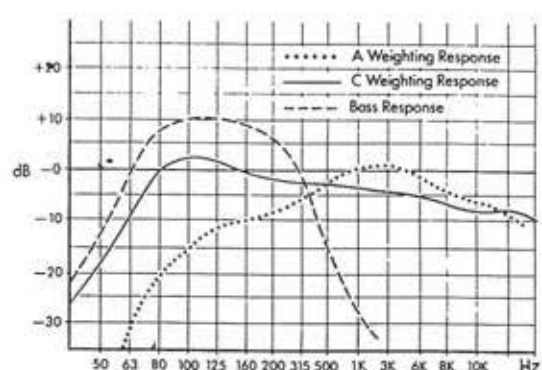
As with the dynamics control approach, the device is inserted into the audio signal chain rather than being connected to a microphone, relying therefore on the relationship between the low level signal and the reproduced SPL for its information. Therefore, whilst freed from the mic tampering problem, the system can only be incorporated into a permanent installation and does not compensate for the changing acoustics of the environment as the venue fills up. It has, however, been found extremely effective in encouraging a generally lower order of volume requirement, although, because of the effects of TTS towards the end of the evening, a more conventional fall-back provision is usually required where predictable control is necessary.

Frequency Weighting

Sound levels are traditionally measured using the dB(A) unit, the (A) signifying that

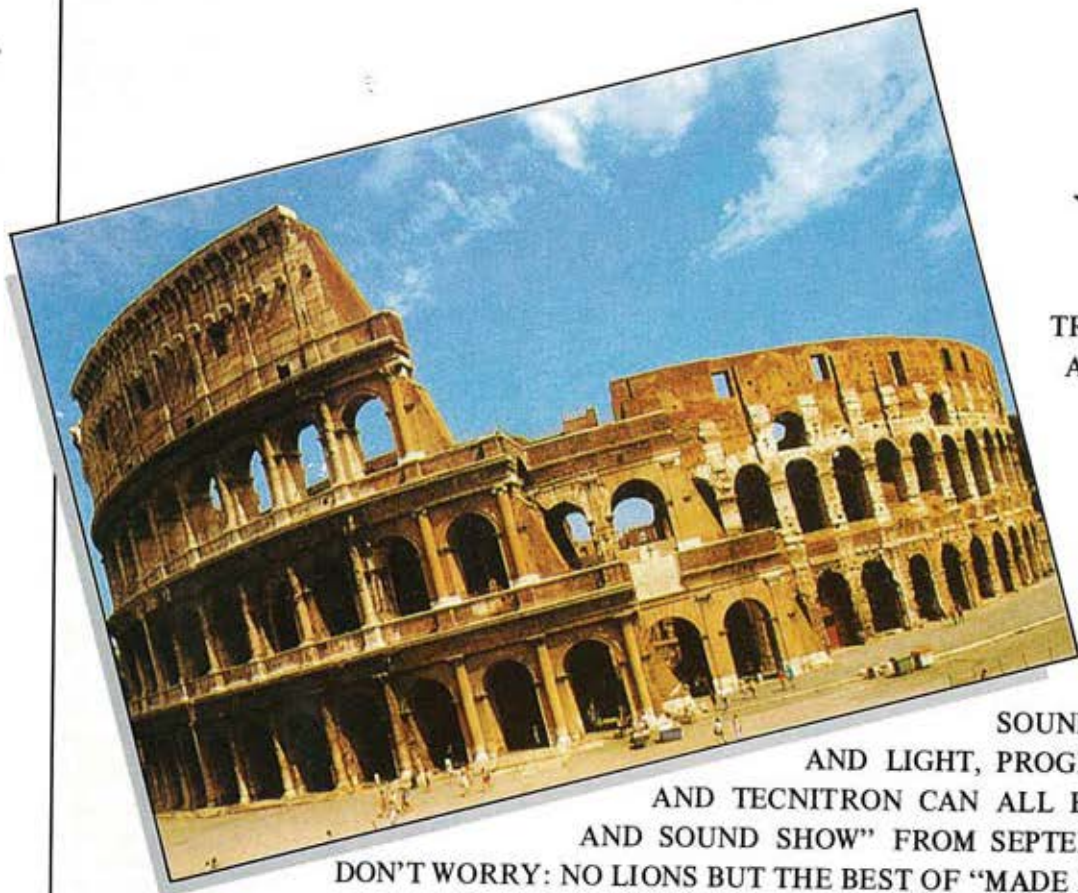


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Beam dBa controller and display units.

'A-weighting' has been applied to the measurement. The A-weighting curve is an attempt to equate the meter reading with the perceived volume level of a sound by taking account of those Equal Loudness Contours again. In essence it means that the decibel meter is less sensitive to bass and very high frequencies than it is to mid-range frequencies, and therefore the device is non-linear. Fig 3 shows how a peak sound level of 125dB at 63Hz can be accommodated under the envelope of a 96dB(A) meter reading.

One of the problems experienced with all the microphone operated systems is that they are normally A-weighted and therefore frequently operate on crowd noise, i.e. applause, singing along with the music or screaming, often tripping out with no music playing at all! But when adjusted to a higher threshold level in order to overcome this problem, it will be found that the required level of control over the bass thump - especially in an environmental noise situation - is not provided. This is a very common situation, in which it is better to use a limiting device which is not A-weighted, or one which enables A, C, or linear weightings to be selected according to particular needs. One model, the Aims Minim, even provides a bass emphasis setting, as shown in Fig 4, for use in situations where the predominant

bass beat remains a problem, and will adequately control the low frequencies without being affected by the crowd noise. The choice of the correct weighting is thus critical to the success of any regulatory system

One of the principal benefits of using a dynamics compressor is that being line operated it is not subject to crowd noise anyway. Also, any device provided with a side chain insert facility can be given a frequency weighting by the insertion of a weighting filter or a graphic or parametric equaliser into its side chain interface, thus rendering the device frequency selective. This can be an extremely effective means of control where one particular band of frequencies are causing problems - perhaps due to room modes or resonances, and will avoid the need for unnecessarily harsh system equalisation at lower volume levels.

LAEq Regulation

The Disco CoP and the Noise at Work Regulations both require that measurements are made in LAeq units. This is a method of sound level measurement which is not only A-weighted, but which also takes the period of exposure into account. Unfortunately, none of the limiting devices currently available has the 'time integration' facility necessary for LAeq measurement.

Display

Apart from the Cel-206, which has a properly calibrated dB(A) meter on its front panel, none of the available devices provides a real-time readout of the sound level. The Aims Minim has a green-amber-red 'traffic light' system and the Beam dBa has LEDs at 3dB increments, but these are far from predictable. Experience suggests that a limiter becomes far easier to live with, if the operator is provided with an accurate real time readout in decibels.

The Requirement

As a consultant regularly involved in noise control situations and noise related litigation - especially in connection with Section 58 Notices or licensing appeals, it is my view that there is no device at present available which meets the need, or even goes half way towards providing a satisfactory solution. Given that there are now four different aspects of legislation on the statute book which can lead to compulsory provision of a volume regulatory device in licensed premises, L+SI editor, John Offord, felt sure that there must be an enterprising manufacturer out there who might come up with something better than that which is currently available if given some guidance. So, for what it may be worth, here comes a rather different design approach which, in my opinion, might effectively address the problem.

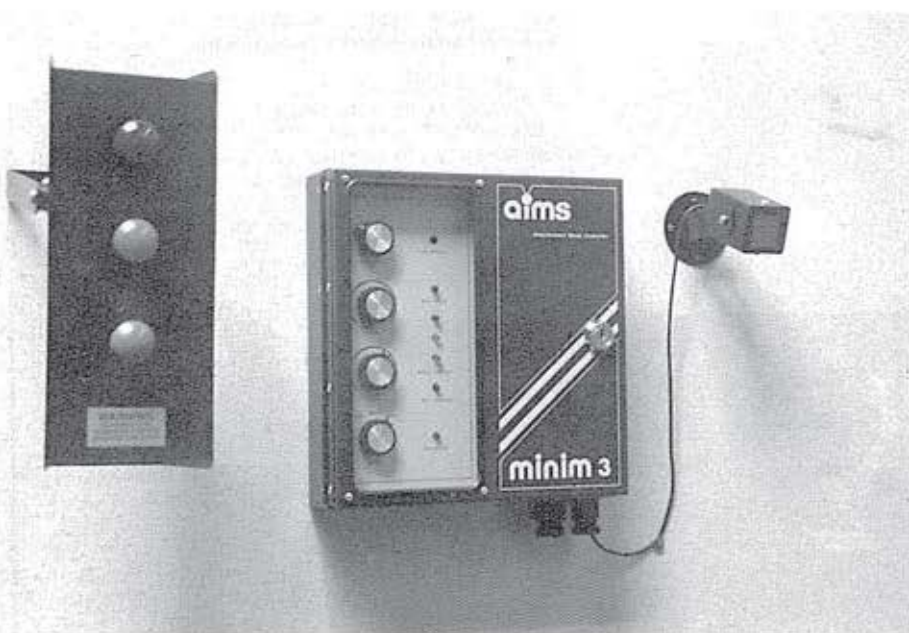
Design Considerations

Apart from the really basic level of technology employed with most of the existing designs, there are three fundamental problems to be addressed.

1. That the power output necessary to fill an empty room is vastly different than that required to generate the same volume level when the place is heaving. In order to compensate for this difference the system needs to be microphone operated, not line level operated.
2. There is nothing more embarrassing than to find your system shut down in the middle of a gig because you didn't see or hear the warning beacon. So let's go for a precision compressor/limiter to restrict volume maxima rather than shut the system down.
3. TTS is a big problem. It is not unusual for the old ears to become 6dB, or in some cases 10dB, less sensitive after several hours exposure to loud music. So come midnight, to the operator who has been out there all night, the system sounds quiet, flat and boring, so up goes the welly! The fact that to everyone else it is far too loud is quite beside the point. So we need a reasonably accurate and representative means of continuously monitoring the sound level - i.e. a proper sound pressure level meter at the operators' desk. Based on this criteria, here's my proposal.

1. Presentation:

Given that enforcement invariably falls to the Environmental Health Officer of the local authority - whose familiarity with audio is principally based on the decibel meter, it makes sense that the general approach and form of presentation should be more of a measuring instrument and less of an out-board processor. This has the psychological benefit of making it user-friendly to the EHO, thus inviting the confidence of the authorities in its ability to do the job, whilst distancing the DJ from any immediate familiarity.



The Aims Minim 3 entertainment noise controller.

2. Constructional Form:

The unit should be suitable for either wall mounting as a steel cased stand-alone unit with conduit entry knock-outs, or for rack mounting, and should be provided with an intruder deterrent so that the system shuts down in the event of any covers being removed or the microphone wiring being tampered with. There should be no user controls on the front panel and provision should be made to enable the local authority to officially seal the unit to ensure that once set, it cannot be tampered with.

3. Method of Operation:

Having regard to the earlier discussion, and to the ready availability of high quality VCA devices, it seems clear that the device should comprise a two-stage, line level compressor/limiter rather than a simple cut-out or attenuator, the gain function of which is controlled by an external reference microphone connected to a sound pressure level meter circuit. Clearly, the subjective performance of the compressor section at least, will need to be of a very high order so that its operation is not audible until the limiter stage is brought into play. Also, the provision of side chain access would be useful to facilitate frequency selective operation when required.

4. The Metering Section:

The SPL meter should be a Type 2, slow response (as defined by BS5969), 'integrating' instrument, should be provided with internally selectable 'A', 'C', 'Linear' or 'Bass' weightings (see Fig 4) and should feature a front panel LED or back-lit LCD display. Having regard to the need for 'Linear' or 'Bass' weightings, the meter scale should at least extend to 125dB (see Fig 3).

A further facility should be provided so that the SPL display may be in one 'weighting' whilst the threshold feed to the compressor/limiter VCAs may be in another. Thus, the actual control section may be set, for example, with a linear, time integrated response whilst the display is registering the equivalent LAeq value as required by the legislation.

An internally adjustable microphone calibration control should be provided and the unit should be supplied complete with a reference microphone with security wired cable set and protective mounting cage. An optional slave display should also be available for those situations where the device must be installed some distance from the operators' desk.

5. The Compressor/Limiter Section:

It is suggested that four electronically separate signal paths be provided, all regulated by a single set of controls, to enable the operating threshold, ratio, attack and release characteristics of the compressor to be set up, the limiter section operating as a pre-set clamp related to the compressor threshold setting.

6. Trip Warning Section:

In a conventional cut-out type of limiter, the provision of advance warning that the device is about to trip is obviously essential. In the type of device now being proposed however, it is envisaged that volume will be reduced progressively to the point where it becomes necessary to engage the limiter as a final volume clamp. Therefore, as there is no cut-out, there is no requirement for a trip warning provision. What is needed however, is an LED gain reduction indicator - just as normally provided on any good quality com-

pressor/limiter device - on the front panel of the unit, duplicated on the optional remote display panel.

7. Emergency Evacuation Control:

This facility only exists at present on the Formula Sound Guardian, but if we are using a VCA processor as the basis of the regulation system, why not provide a separate overriding mic input by using a DC ramp from the microphone pre-amp to drive on the compressors and shut down the music channels - which is more or less how the Guardian works.

Summary

So there we are. A very different box of tricks than anything at present available - in essence, a compressor/limiter which, instead of being controlled by the dynamics of its own line input signal, is controlled by the dynamics of the reproduced sound field via a calibrated microphone, and which incorporates a sound level meter as a means of continuously monitoring the sound level.

Such a system would be largely self-regulating in terms of the sound-absorption provided by an empty or full house and would avoid the embarrassment of the traditional cut-out devices at present used. Obviously such a unit would need to be carefully calibrated and set up - probably by a consultant in association with the EHO, using a calibrated Type 1 SPL meter and/or analyser - to see that all is in order, but that is largely the case with the present devices anyway if they are to provide an effective means of control.

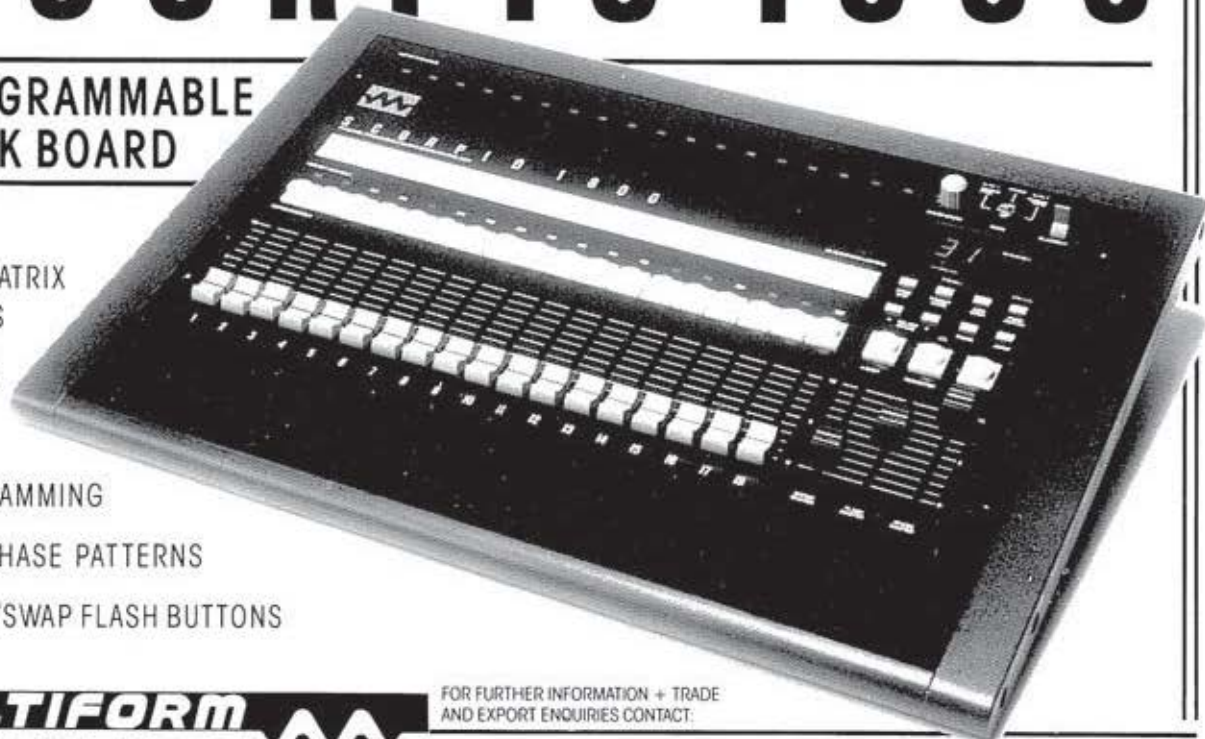
I'd be interested to hear the response of other users of this type of equipment to this proposal, or to hear from any manufacturer interested in pursuing this matter further.

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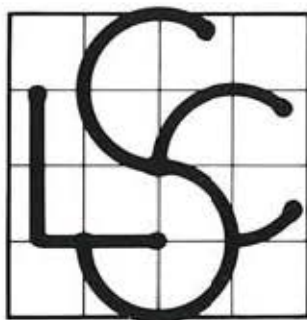
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DUNDEE'S LATEST MYSTERY

The Story of Man from Creation to Doomsday



Outside the Caird Hall in the city square, Mr Herd (Hered) replies to the press.

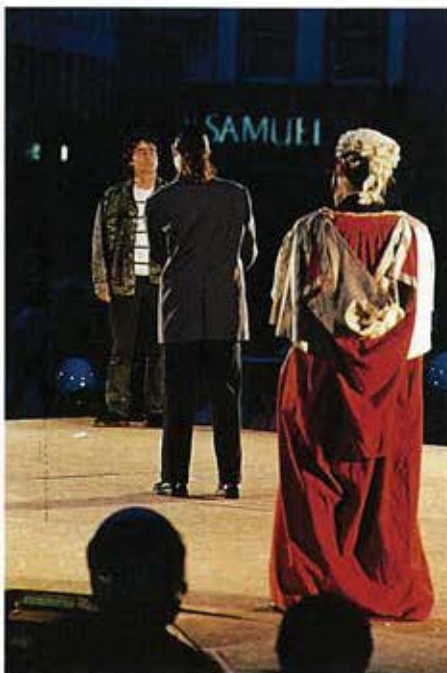
Photos by Murray.

A discovery in Dundee city archives of a 15th Century props list led to the recent staging of the Dundee Mystery Play. Scored onto a crumbling manuscript were details of the city's 1454 Corpus Christi procession, a then yearly series of pageants depicting events from the bible. When the Reformation swept

Scotland after 1567, the Mystery Play became a thing of the past. Based on their findings, the townspeople of Dundee put together a contemporary version of the story of creation and the birth and persecution of Christ. L+SI invited Neil Goodwill, chief technician and lighting designer at Dundee Rep, and Graeme Adamson and Paul Smith of Apex Acoustics to describe their involvement in the production.

any one time. However, for all of them to be successfully heard without feedback and without the restrictions imposed by hand-held mics seemed an insurmountable problem.

Our knight in shining armour came in the form of Radio Tay DJ Graeme Adamson,



Josh Mann (Christ) under interrogation.

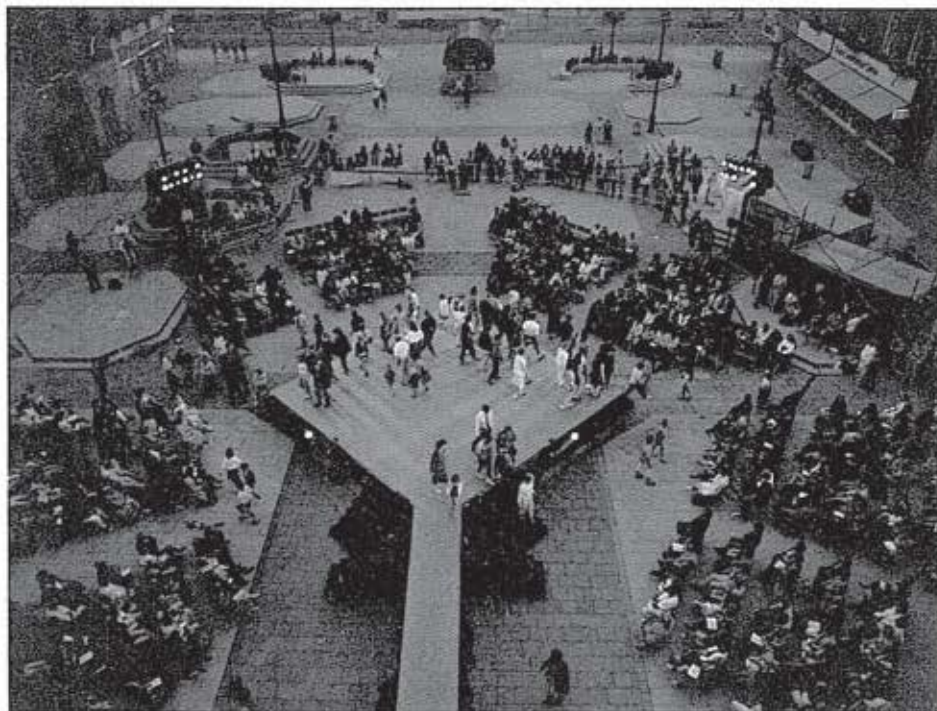
Five writers, 400 actors, dancers, singers and musicians, a team of directors, a choreographer and a musical director created The Dundee Rep People's Theatre production of 'The Dundee Mystery'.

When I first came to Dundee in February I was told by Cliff Burnett, an associate director of the Rep and director of 'The Mystery' that something big was going to happen in the summer and that he would be needing my help. The first consideration was whether the council budget was going to be sufficient to cover the lighting and sound hire, crew wages, fees and transport. I worked very closely in this respect with production manager Frank Chinn whose main job is that of general manager at the Byre Theatre, St Andrews.

The sound design proved to be a major problem at the start because the second half of the play was to be performed on a diamond shaped stage in the city square with a 1,000 strong audience on all four sides. There were never to be more than 14 performers on stage and within the audience at



Josh Mann appeals to the crowd for support.



The stage is set for the telling of the story of man, or in this case the story of the Mann family, whose members include Josh, Gloria and Stella - the representatives of contemporary society. Above is a view of the city square acting area from the top of the Caird Hall.

whose own company, Apex Acoustics, is responsible for much of the theatrical and outside broadcast live sound in Eastern Scotland. The miraculous Sennheiser MKE 2 miniature mic taped to each of the leading players' foreheads and connected to a Micron transmitter proved to be the answer to all our prayers. The other performers were covered by four PCC mics on the stage floor. In an ideal world it would have been nice to hang the main speaker system over the stage in a cluster, but since that was not possible it was decided on a surround-sound type system.

The production's first half took place inside the Caird Hall which has a reasonably good sound system, but one with a distinct lack of the type of mics we required. We decided to mainly rifle and half rifle the hall's acting area, with a few PZMs and SM.58s supporting.

The lighting proved less of a problem, although it was quite a while before we could ascertain whether or not there was an adequate three-phase supply for the City Square. Fortunately, the theatre was dark during the week that 'The Mystery' was on, so I was able to use equipment that would otherwise have been tied-up. The majority of the equipment came from Northern Light in Edinburgh, including the M.24 desk and racks. It seemed strange to be using manual desks inside the Caird Hall and a memory desk outdoors where it was still light for much of the performance, but because of the restricted plotting time indoors, I was thankful we had chosen the M.24.

It would have been wonderful to use a programmable light source system but, unfortunately, the budget would not stretch to it. I resolved to use mainly Par 64s for their brightness and weatherproofing, although a few Baby 5kW's would not have gone amiss.

I was lucky enough to have an excellent LX team consisting of Greg Turbyne, my assistant at the Rep; Steve Sims, ex-chief at the Rep, and on a busman's holiday from Lancaster University where he is technical director; and Jim Taylor, technical director at the Gardyne Theatre, Northern College in Dundee. The fit-up period was between Monday and Friday and we were told that

there was a possibility of us not being able to have access to Caird Hall on the Tuesday because of a Nalco strike. As a consequence, we worked extremely hard on the Monday in order that Cliff Burnett could have a tech run-through in the evening, but with a large, restless and mainly young cast we could not seriously plot the majority of lighting states until after their departure. A great deal of coordination was required between the stage manager and Greg Turbyne operating the MINI-2 desk on stage left and myself on the Tempus desk and Soundcraft mixer in the control box at the back of the Caird Hall. You are probably wondering why we didn't operate everything from the control box. Two reasons: the control box was physically too small, and secondly, the length of control cable needed would have been astronomical, as anyone who has been to the Caird Hall will testify.

Fortunately, the strike did not affect our work and we were granted access to the Hall on the Tuesday, but everyone wanted to proceed with the City Square fit-up as Dundee was experiencing the hottest weather probably of all time. Needless to say, had it been raining that day, the doors to the Caird Hall would have been locked. During the work in the Square, we had a slight trauma - on switching on the M.24 we found that the whole rig came on at about 30% and then certain lights came up to full and then dimmed to 30% without any instructions having been keyed in. It was only when Steve Sims replaced the de-mux cable linking the desk with the first of the racks that we realised that we did not have to make a panic call to Northern Light.

Greg and I could not start the focus until 11.00pm, and even at that time, there was still some light remaining. I came to the conclusion that people are not supposed to need toilets in city centres late at night; they were, as ever, all locked, and to think that we had sent back the first portacabin because it was too cluttered with chemical loo compartments, benches and tables!

The three performances went extremely well and the reviews were very complimentary. The only bad weather we encountered was on the Monday morning get-out when

there was steady rainfall. My only regrets were that the sound inside the Caird Hall fell short of that achieved by Graeme Adamson in the City Square, and that I hadn't got higher lighting stands or towers in the square, with the consequence that occasionally members of the audience were dazzled. Nobody complained, but I have always maintained that one should never shine lights into the audience's faces unless as a blinder effect.

It was gratifying that nobody lost their temper, although it was necessary to discipline some members of the company from time to time. We also managed to break even financially, which puts us in good stead with the City of Dundee District Council for future productions. Furthermore, everyone learnt a great deal on both the technical and artistic sides whilst enjoying themselves communally at the same time. I look forward to next year. **Neil Goodwill.**

Installing and operating a sound reinforcement system out-of-doors in a city centre, especially in Scotland with its notoriously unpredictable climate, could appear to some as utter insanity. It was certainly a thought that had occurred to us on more than one occasion. We were, however, pleasantly surprised, not only by the favourable weather, but also by the complete lack of problems with RF interference.

Many factors could have created difficulties. For example the raised stage area which was constructed entirely from scaffolding and the potential RF interference from taxis, 2-way coms etc, and 120kW of dimmers only a few feet away in the same portacabin.

A large degree of the success could be attributed to the use of the Micron 'CNS' body-pack mics along with Micron's antenna distribution amplifiers being fed from carefully positioned Yagis. Two were used: one for 6 VHF radio mics, the other for 5 UHF mics. We also had the invaluable help of two sound technicians, Greg Turbyne and Steve Sims at the 'sharp end' of the operation. Their sole responsibility was the swapping and careful fitting, of the radio mics to the 32 actors and actresses who used the Microns.

The mounting of the MKE 2s on the performers' foreheads proved very effective. The clarity of sound and consistency of levels were very satisfactory and were, we felt, helped by the positioning of the speakers, which received many positive comments.

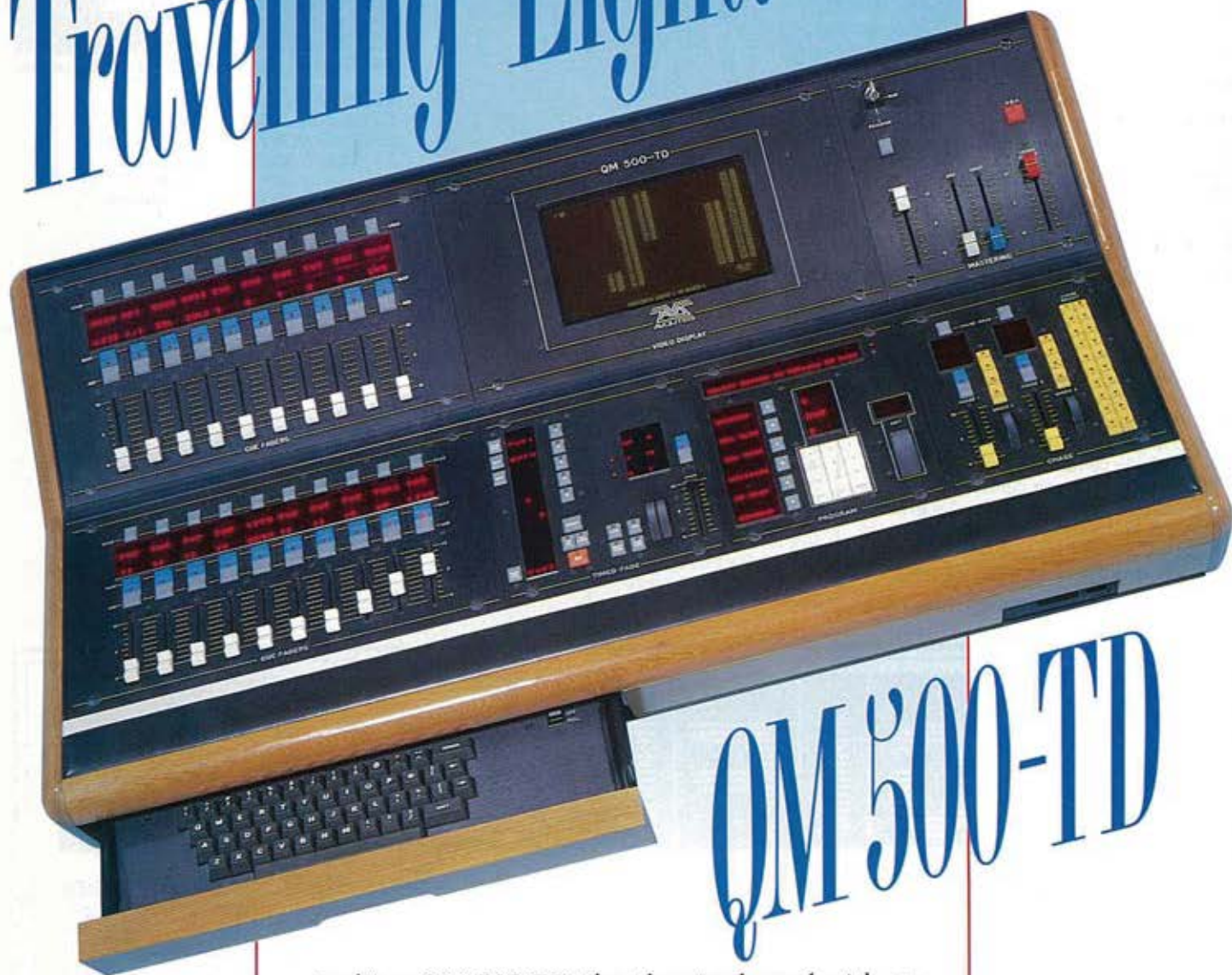
Apex Acoustics has, for some time now, used Canford Audio's HPS speaker cable which is of co-axial construction giving a cable with conductors of 2.5 mm square cross-sectional area, yet one which is able to fit a standard XLR connector. Although not unduly flexible, it does give excellent power transfer and maintains a good damping factor.

To ensure that entrances to the City Square were kept free of trailing cables, the speaker cabling was run along with the LX multicore on the overhead wiring between the lamp posts at the four corners of the area. Each of the four cables fed two 802s in parallel from each amplifier output.

The mic plot itself was only finalised during the dress rehearsal due to the nature of 'The Mystery', but this proved less of a problem than one might think. The users of the various mics and the change-points were all marked up on the script, so it was merely a case of a few minor alterations as the rehearsal progressed.

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Graeme Adamson of Apex Acoustics at the Yamaha desk.

The mics for the band were fairly simple, but most effective, especially Kevin Murray's computer which gave the backing track for most of the main musical numbers. The output was fed to the square in stereo which created an amazing effect especially if your seat was fairly central!

'The Mystery Play' was certainly one of the most challenging productions we've ever encountered, and because of the difficulties to overcome, one of the most rewarding. Let's hope we can achieve as much next year.

Graeme Adamson and Paul Smith.

Equipment List:

- 40 x Par 64 1kW (narrow/medium)
- 1 x 60-way RS M.24 desk
- 60 x RSE Act One dimmers
- 2 x RSE MINI-2 dimmer racks (6-way)
- 6 x Powerdrive wind-up stands and frames
- 80 x 15 amp cables of varying lengths
- 7 x 12-way 30 metre multicores
- 6 x 4-way 30 metre multicores
- 6 x 63 amp 3-phase cables and distribution board
- 18 x Par 64 1kW
- 3 x CCT Starlette 2kW fresnels
- 2 x Minuette 1/2kW floods
- 2 x Silhouette 30° Profile spots



Neil Goodwill operating the M.24 lighting control.

- 1 x RSE MINI-2 desk
- 1 x RSE 6-way MINI-2 rack
- 12 x Patt 243 2kW fresnels
- 2 x Patt 828 2kW fresnels
- 4 x Cadenza 2kW Profile spots
- 4 x Kodak Carousel 35mm projectors
- 2 x Dissolve units
- 20 x Par 64 1kW
- 1 x Yamaha MC 2404 Mixing desk
- 2 x Carver PM 1.5 power amplifiers
- 16 x Bose series 2 loudspeakers
- 11 x Micron TX501/RX510 body pack radio mics
- 11 x Sennheiser MKE 2 mic capsules
- 2 x Micron 8-way antenna distribution amplifiers
- 2 x Micron 3 element Yagis
- 1 x Alessis Midiverb II
- 4 x Amcron PCC 160 microphones
- 2 x Shure SM 58 microphones
- 2 x AKG C451E/CK1 microphones
- 3 x DIs for music computer & synth
- 1 x Soundcraft 200B mixing desk
- 2 x Bose amps and EQ
- 2 x AKG rifle mics
- 4 x AKG C568 half-rifle mics
- 6 x Shure SM58 mics
- 2 x AKG C451 mics with CKI capsules
- 2 x Tandy pressure zone mics

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'THE GREATEST DISCO IN THE WORLD'

Our originally reluctant reporter warms to a new-style night out: Andy Collier goes Ragazzi in Desenzano

Disco is big business in Italy. Not a profound statement to be read in a journal dedicated, in part, to that very industry. But a closer look into the psyche of the disco generation and the investment in it gives an insight into the reasons why the Italians are pre-eminent in disco effect technology, and what the phenomenon of Genex, *'The Greatest Disco in the World'*, is all about.

Living here, in the north of Italy, it is impossible to escape the omnipresent disco. The more obvious venues, seen in profusion in popular tourist resorts, are mirrored in the countryside by equally grand, neon bedecked edifices. Switch your car radio to FM and you can scan through interminable stations with non-stop disco-generated music whilst waiting for the disco-generated traffic jam to let you through.

Although there are Government-sponsored schemes to develop rural areas for tourist interests, the fortunes invested and re-invested in these more remote discos never seem to be warranted by the chance of attracting a passing Dutch car (with caravan and adolescent offspring) desperately cooking on obscurely signed motorway access.

The capital investment needed for buildings and equipment (and to regularly change names, themes, and equipment)



Genex: Inside the main entrance, fronted by the bar and with one of the disco areas beyond.

could never be recouped in the few short months of the Italian tourist season alone. No, the discos are built and updated just as much for the indigenous population as for the tourists.

Whatever their size, these discos are

more than entertainment centres; they are fashion houses: an office clerk's plumage could consist of two thousand pound's worth of jacket, shirt and designer-slashed jeans (which might have taken him the past two years to save for). He, and his



The Winter disco in action.



The Summer disco - open-sided with a vaulted tubular structure and sculptured PVC tarpaulin cover.

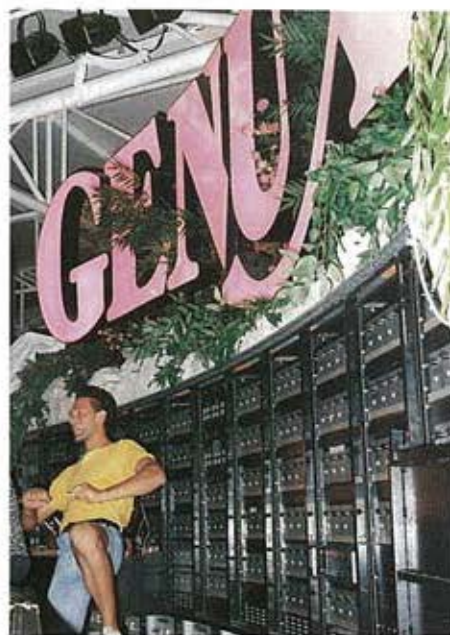
jacket go to the disco to be seen, and will follow troupes of his friends to the favoured venue on a particular night. A whole village-full of *ragazzi* (literally kids; but in this context the disco-going class of unattached teens to 30 year-olds) will alight on a disco an hour's drive away, seemingly unwilling to enjoy themselves all together on their own door step.

Ask any ten of these *ragazzi* what attracts them where, why and when, and you'll get thirty philosophically-considered answers (the Italians love to talk). In the main it comes down to the music, the people, and the lighting. They always seem to mention the lighting. For music to be the principal attraction of a disco is predictable, and goes some way to answering why a cramped ex-garage with no amenities apart from cement bench seats and a single strobe light but with the latest music and an excellent sound system, is *THE* place to go in Milan.

But for lighting to be a major element? I am beginning to realise just how cynical I was in thinking that the disco lighting effects industry was self-created and self-regenerating. In such a competitive entertainments industry, any one of many

fragile factors can mean the difference between commercial success and failure. Most 'successful' discos simply close on the nights they guess would be poorly attended, so they are always full. Tricks of the trade abound; free entrance and drinks for the fashion-makers, high prices for the fashion conscious; professional disco dancers to decorate the stage; exotic, heavily decorated interiors; bigger and better sound systems. Not forgetting, of course, high-tech robotic lighting effects.

When Genux was in the planning stage, four years before it opened, all these factors had to be carefully considered. In order for a disco to prove a commercial success, it has to fight hard in a lucrative, but ruthless market, and the owners of Genux were, and are, determined to offer a wide range of entertainment to the widest audience. They spent over three years getting planning approvals, and were pleased that they involved the fire authorities at an early stage. Fire regulations are very strict in Italy, and there are weekly reports of discos, theatres, cinemas, clubs and concerts being closed on sight of any failure to abide by the rules. Surprisingly, there are no regula-



Dimmers and amps provide high tech backdrop.

tions governing the level of sound, although various disco employees' unions are discussing the subject at the present time.

The original scheme was for a modestly-sized but imaginative disco somewhere in the heart of Italy's tourist nightlife in the area of Rimini on the Adriatic coast. But it was considered to be an 'old fashioned' idea, and it soon changed to an alternative location further north near Lake Garda, a few kilometres outside Desenzano. With the change of venue came a clear and ambitious idea of the final concept: the biggest and best all-year-round disco, with space to expand in order to keep it at the forefront of leisure needs throughout the nineties. Thus Genux 'The Greatest Disco in the World' was born with a 20 billion lire silver spoon in its mouth.

It is impossible to miss the entrance to Genux as you drive south from Desenzano, past the all-important Autostrada access towards Castiglione and the countryside of the Po valley. Two arterial Autostradas join near Desenzano, and offer a catchment area north-south from the Brenner pass to Modena, and east-west from Venice to Milan. Just off the Autostrada, a gigantic illuminated sign strides the freshly-tarmacked road which leads to a car-park that the British Airports Authority would be proud to own.

My visit was timed for 12.30am, a mere 90 minutes after the doors opened. Any hesitation on my part at the thought of having to camouflage myself as a regular disco-goer (when in fact I don't possess the garb, and anyway, this time of the morning has long since been reduced to a blurred mark on my alarm clock) was dispelled as soon as I left the car. A couple in their mid-sixties were eagerly tripping towards the entrance, whilst a young lady was persuading her six year-old twins back into their Belgian-registered Volvo. Genux is a far cry from the cliquey, expensive discos elsewhere: entrance is £4.50 - £5.50, and it is free two nights of the week.

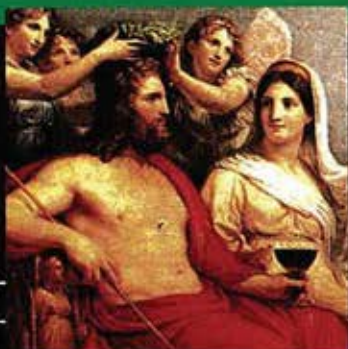
The initial impression of Genux is that of a mammoth garden party held in and around an up-market landscaped shopping mall. Once inside, the mythical shops dissolve into bars, ice cream counters, sandwich bars, acres of garden furniture and dance floors, but the fountains,



Ambidextrous lighting effects from Mario with his twin Coemar Uragano 3-preset manual consoles. Andy Collier is pictured left in disco mode.

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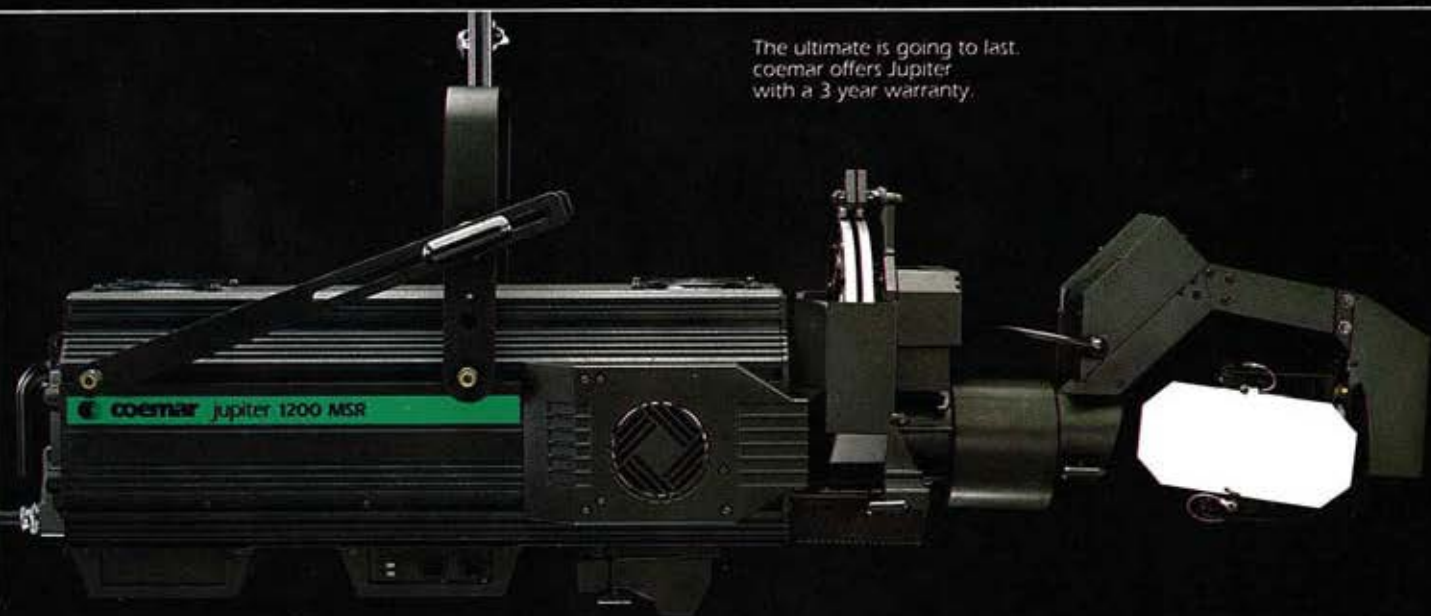
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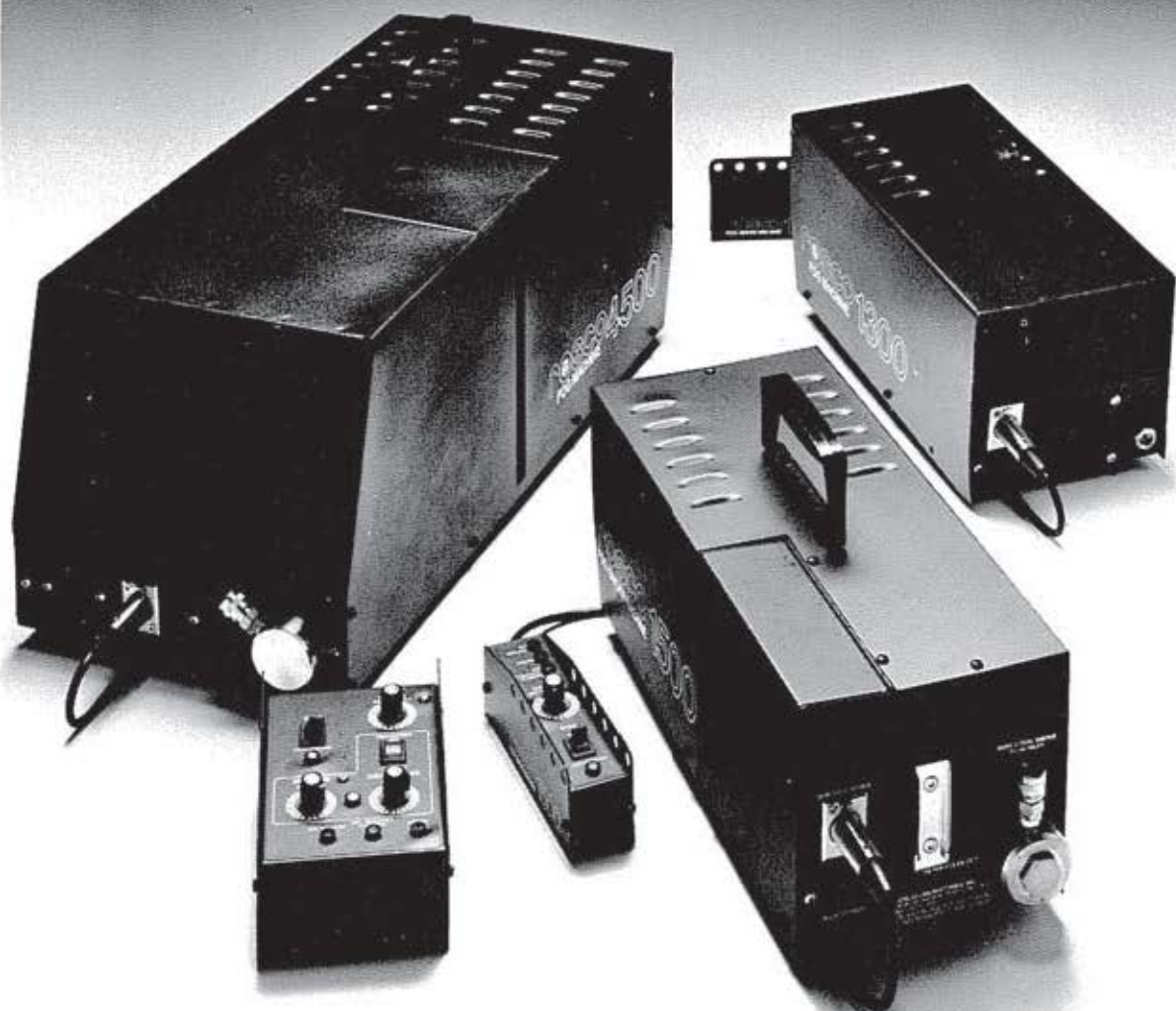
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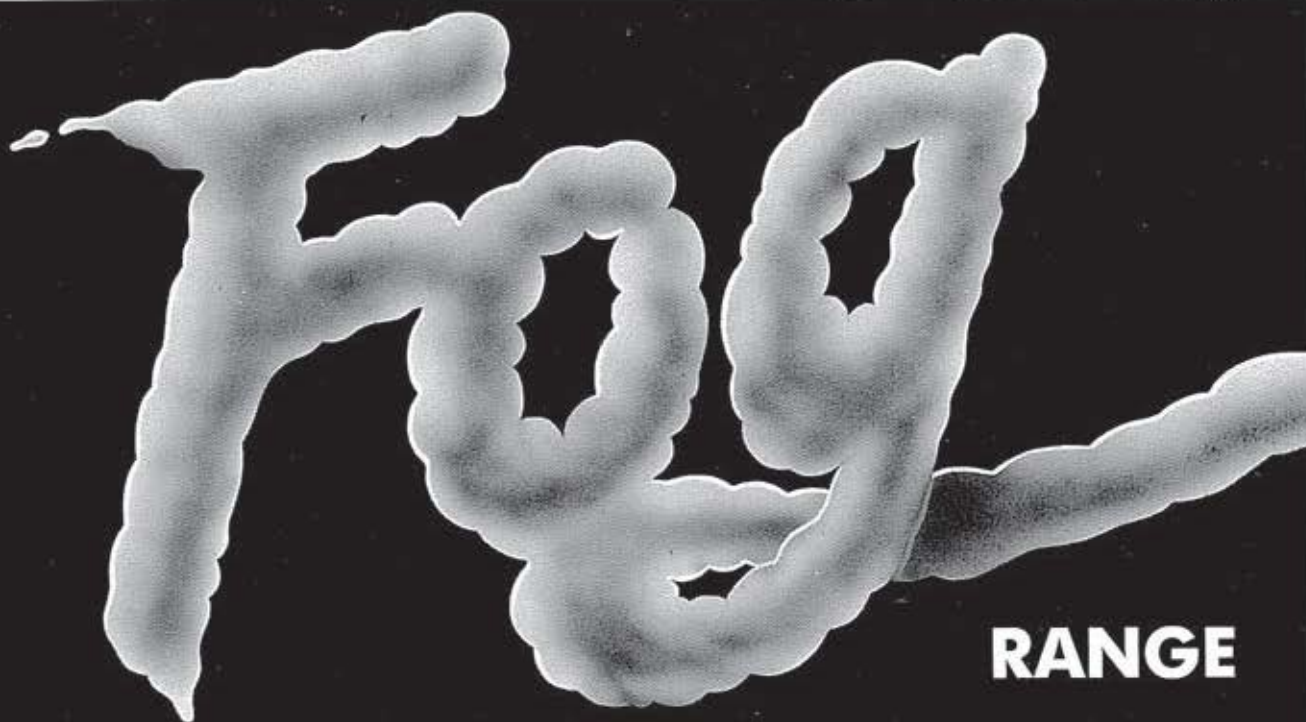


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Genux: The illuminated dance floor inside the main building.

streams, walkways, architectural ingenuity, and sense of enforced relaxation, remains. The theme of the complex is said to be a winding garden path, modelled on the English garden tradition of the late 18th century.

The emphasis is on quality of materials, and an empathy with nature, rather than an abundance of plastic decoration. Natural white stone predominates, and Botticino marble is occasionally seen beneath the feet of the dancers, if you can blink your eyes in time to the xenon flash tubes. The path and bridges are subtly lit with spherical street lights and step-edge lighting, and illuminated streams meander beside and beneath the path with pulses of submarine lighting slaved to the disco music. Flower beds grow their own floodlighting. The object of Genux, I was told, was to respect the beauty of the lake area, and to complement its atmosphere.

The garden path entwines the two sections of Genux: the summer and winter facilities. During the winter months, the open air dance floor and associated bars and gardens are closed, and a second main entrance takes you straight into the newly-opened disco building.

The summer dance floor is open-sided with a vaulted tubular structure and sculptured white PVC tarpaulin cover. The DJ and LJ controls are below a huge illuminated Genux logo, and the simple natural theme of the gardens is repeated for the control platform where the mixing consoles are surrounded by rough-hewn granite blocks. A wall of sound equipment and 200 dimmer channels forms a techno backdrop to the consoles.

Mario, who is in charge of lighting at Genux, believes totally in spontaneous lighting, and demands sophisticated manual control wherever possible. He specified Coemar 3-preset Uragano desks for the static and strobe lighting, with the Jupiter automated projectors being con-

trolled from a custom computer desk with full manual override. To give himself space to breathe during a typical five hour stint at the console, Mario also specified Zero 88 Mercury controllers (supplied by Coemar under their Quadro trademark) which are diode-bridged onto the group master lines of the Uragano desks to automate some chase effects.

The complement of lighting units is continuously updated, and the current style includes single and multiple strobes combined with 16 jupiter automated projectors, and less high-tech parcans. Mario is very excited with the moving-beam Jupiter projectors, and says that they are the best disco effect he's used - "better than lasers". Professional dancers are always on the dance floor, and Mario is constantly balancing his lighting effects with Jupiters to highlight the girls. The lighting has been updated several times since Genux opened, and it was the first to have Jupiter and Ritmo projectors.

During the summer period, the main entrance opens into a 150m long covered walkway with the famous 6m high marble male statue on a small hill at the far end. The statue holds a large rotating mirror ball between its hands, and specially-made Coemar 1200W MSR profile spotlights play onto the faceted ball, sending miniature shafts of light into the sky.

The path leads on past another bar, and diverts in various directions to take in views of the gardens and eventually onto the terraces of the winter building. These terraces are havens away from the dance areas, and provide a vista of coloured lights from the disco; floodlit, sculptured frames of the white tented roofs; the path outlined by miniature street lights; all set against a starry night sky.

The new building houses three dance floors and four bars which can be used either individually or collectively at the press of a few buttons. Each dance area

has a separate control suite and sound and lighting systems, and by controlling the intermediate motorized soundproof doors, the facility can be quickly transformed from a single large disco into two or even three smaller ones. Each area has 200kW installed lighting, with a further 500kW available for special effects. The lighting control is similar to the summer disco, but Zero 88 Sirius desks are additions here. Two of the dance floors are marble, and a circular illuminated floor is also installed.

The two main dance floors have stages attached for live groups. The three sound systems interlink, and altogether have a capacity of around 30kW. Music from the outdoor disco is also relayed through to the internal dance floor when Genux nears its full capacity during the summer.

The key to success for Genux is its diversity: whilst the main summer disco area was heaving to the latest New Garage music with a little *New Beat* thrown in for the oldies who can remember back to January this year, the winter stage and dance floor was swaying with the oldies who could remember back to January 1949. This was Thursday, which was *ballo liscio* ('smooth dancing' - ballroom) night. The less active can sit down to enjoy a drink, *gelato*, or even popcorn and observe either dance floor from a variety of angles. Unlike many of its rivals, Genux is open all week, and there are nights dedicated to revival music, sixties music, private parties, country & western or any other style that will attract up to 14,000 people a night. Yes, it is big. Needless to say, the peak attendances are at the weekends, which confirms that the Italian disco-going population is as important to nurture as the tourists.

The whole of Genux sparkles with the polish of a massive marketing machine; the obvious signs of a management who intend to make the most of their investment by keeping in close contact with the public and its whims. The Genux logo and winged horse are prominent. It is impossible to live in the area without relating the winged horse to Genux, even when it's 100 feet in the air being towed along the lakeside by a microlight aircraft. Advertising is carefully targetted to the main age group of 14-35, and to the anticipated catchment areas. The car park is frequently polled for clues to the origin of visitors on their car license plates, and further information is collected through written questionnaires.

The importance of the technology employed has been confirmed and emphasised by the results of this market research. The sound quality is of paramount importance, and every effort is made to have the best possible. Power failures are not uncommon in Italy, and are often prophesized by the advent of rain clouds, or a cup final scheduled for TV. If the sound should ever fail at Genux, even for a few seconds, the dance floor would empty, and that is totally unacceptable to the management. Thus the whole site is powered by two generators which drop in automatically if there is a glitch in the main network supply. The diversity of the lighting rig ensures that any failure is limited to individual effects only.

The total covered area is 20,000 square metres (about five acres or two hectares). The next phase of construction is now underway, and this will add three swimming pools to the disco facilities, and later,



Dynamic lighting effects provide atmosphere for the ragazzi.

a motel. Needless to say, Genux are not installing just ordinary disco swimming pools; these, I was told, would be really imaginative too: one of them will be the shape of Lake Garda.ouch!

Genux Sound
supplied by Outline of Brescia

Summer Disco

- 3 x Technics SL 1200 turntables with Stanton 680 EL cartridges
- 1 x Technics RST 10 double cassette deck
- 1 x Electro Voice PL 68 microphone
- 1 x Outline PRO 612 modular mixer
- 2 x Lion's EP 29 graphic equalisers
- 1 x Lion's PE 1005 equaliser

- 1 x Lion's LM 200 limiter
- 1 x Dynacord PDD 14 delay
- 1 x Dynacord DOL 90 delay
- 2 x Formula Sound AC2
- 2 x Lion's CX4 electronic crossover
- 1 x Klipsch KSM 1 200W professional stage monitor
- 10 x Lion's LF 500 (440+440W RMS) power amp
- 12 x Klipsch KP 450B LF 2x 15" 300W bass reflex cabinets
- 16 x Klipsch KP 450B HF 100W
- 3 x Lion's LF 300 (250+250W RMS) power amps
- 6 x Klipsch KP 250 150W 3-way bass reflex speakers
- 2 x Klipsch KP 301 200W compact speakers

Winter Building

- 6 x Technics SL 1200 turntables with Stanton 680 EL cartridges
- 2 x Technics RST 10 double cassette deck
- 2 x Electro Voice PL 68 microphone

- 2 x Outline PRO 608 modular mixer
- 2 x special interconnection system for 3 mixers
- 2 x Lion's EP 29 graphic equalisers
- 2 x Lion's PE 1005 equaliser
- 1 x Lion's LM 200 limiter
- 11 x Lion's LF 500 (400+400W RMS) power amps
- 1 x Formula Sound STAGE 15
- 1 x Dynacord PDD 14 delay
- 1 x Dynacord DOL 90 delay
- 2 x Formula Sound AC2
- 2 x Lion's CX4 electronic crossover
- 16 x Bass units 2 x 15" 400W RMS
- 16 x Bass/mid units 1 x 12" 200W RMS
- 16 x Mid/high 1 x 2" 180W RMS
- 1 x Subwoofer (custom-made) 4 x Studio 400W drivers
- 8 x Lion's LF 700 (600+600W RMS) power amps
- 9 x Lion's LF 500 (440+440W RMS) power amps
- 1 x Lion's CX2 crossover per subwoofer
- 4 x Lion's EP29 graphics
- 4 x Lion's CX4 crossover per subwoofer
- 1 x Lion's EP14 graphics

Genux Lighting
supplied by Coemar

- 16 x Robot 400/SP
- 32 x Jupiter 1200 MSR
- 8 x Ritmo 1200 MSR
- 8 x Coral 1200 MSR
- 66 x Jet strobo
- 1 x Strobe 5000
- 2 x Xenon beam
- 14 x Strobe light 700
- 8 x smoke machines
- 310 x Luxor Par 64 1kW
- 72 x Antares 1000/2000W
- 50 x Ribalta 40W UV lights
- 100 x Ribalta 500W floodlights
- 5 x Accento 20/35
- 8 x Teatro Acuto PC 2000W
- 8 x Sequenza 1000/1250W floodlights
- 2 x Pilota 2500 CID followspots
- 3 x Testa 700 MSR followspots
- 422 x 200W floodlights
- 41 x 1000W floodlights
- 4 x special 1200W MSR narrow angle profiles
- 3 x Coemar Uragano 48 channel 3 preset desks
- 3 x Coemar Uragano 24 channel memory (Zero 88 Sirius)
- 5 x Coemar Quadro
- 1 x Super Robot controller
- 2 x Jupiter computers
- 1 x Jet strobo controller
- 10 x Sigma 5 dimmer packs
- 100 x Coemar Rack Power dimmer racks



The Winter disco central dimmer room.



The famous marbleman with the rotating ball!

PLASA News

A Few Places Remaining . . .

The race to see and be seen is hotting up as bookings for the Association's Second Annual Dinner gather momentum as the deadline date approaches. There are only a few places remaining for the event to be held on Sunday 10th September from 7.30pm onwards at The Royal Garden Hotel, Kensington - so if you haven't already reserved your seat to dine with the rich and famous, now is your chance to do so. Contact the PLASA office on (0323) 410335 for a booking form for the dinner.

Book Bazaar

Lighting and Sound International will be running a Book Bazaar throughout the duration of the PLASA Light and Sound Show. Books covering a wide range of topics relevant to the industry will be available on Stand S220.

Seminar Bookings

Registration is now underway for attendance at the seminars planned to take place in conjunction with the Light and Sound Show. The seminars will focus on such areas as moving and intelligent light; visual presentation techniques; live and touring production technology and installation and interior design. Delegate fees are £85.00 for access to all six sessions, £40.00 for a whole day and £25.00 per single seminar. A special ticket is available for the DJ session at £10.00. All tickets include automatic entrance to the Light and Sound Show. There is still time to register before the show, but it is also possible to register on the day at the information and registration area on the Second Floor, Olympia 2.

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Exhibition Diary

PLASA LIGHT & SOUND SHOW '89

September 10-13, 1989.
Olympia 2, London.
Exhibition Organiser: David Street,
3D Services, 10 Barley Mow Passage,
London W4 4PH.
Telephone: 01-994 6477.
Association Enquiries: PLASA general secretary,
Tony Andrew, 7 Highlight House, St. Leonards Rd.,
Eastbourne, East Sussex BN21 3UH.
Telephone: (0323) 410335.

ABTT NORTH

October 26-28, 1989.
Oldham College, Oldham.
Enquiries: Mr D.W. Cusworth, 4a Meriton Road,
Handforth, Wilmslow, Cheshire SK9 3HB.
Telephone: (0625) 523391.

LIGHTING DIMENSIONS INTERNATIONAL 89

November 17-19, 1989.
Nashville, Tennessee.
Enquiries: Patricia Mackay or Jackie Tien,
Lighting Dimensions, 135 Fifth Avenue, New York,
NY 10010, USA.
Telephone: (212) 677 5997.

SIEL

February 17-20, 1990.
Porte de Versailles, Paris.
Enquiries: Bernard Becker Communications,
22/24 rue de President Wilson - 92300 Levallois-Perret,
Paris. Tel 33 (1) 47 56 50 00.

SOUND NINETY

February 20-21, 1990.
Heathrow Penta Hotel, London.
Enquiries: SCIF, 4b High Street, Burnham,
Slough, Bucks SL1 7JH.
Telephone: (06286) 67633.

ABTT GLASGOW TRADE SHOW

March 14-16, 1990 (provisional).
Scottish Exhibition & Conference Centre, Glasgow.
Enquiries: ABTT, 4 Great Pulteney Street,
London W1R 3DF.
Telephone: 01-434 3901.

FRANKFURT MUSIC FAIR

March 21-26, 1990.
Frankfurt Fair Centre, Frankfurt, West Germany.
UK Representatives: Collins and Endres,
18 Golden Square, London W1R 3AG.
Telephone: 01-734 0543.

SIBMAGIS

April 1-5, 1990.
Rimini, Italy.
UK Enquiries: PLASA general secretary,
Tony Andrew, 7 Highlight House, St Leonards Road,
Eastbourne, East Sussex BN21 3UH.
Telephone: (0323) 410335.

USITT

April 11-14, 1990.
Milwaukee, Wisconsin.
National Office: 330 West 42 Street, Suite 1702,

New York NY 10036.
Telephone: (212) 563 5551.

PUB, CLUB & LEISURE SHOW

April 3-5, 1990.
Olympia 2, London.
Enquiries: Angex Ltd, Europa House,
St Matthew Street, London SW1P 2JT.
Telephone: 01-222 9341.

VISION & AUDIO 90

April 22-25, 1990.
Earls Court, London.
Enquiries: Emap Maclaren Exhibitions Ltd,
840 Brighton Road, Purley, Surrey CR2 2BH.
Telephone: 01 660 8008.

EXPO MUSICA

(dates to follow)
Madrid, Spain.
Enquiries: IFEMA, Avda de Portugal,
s/n Casa de Campo 28011 Madrid 1101.
Telephone: 470 10 14.

APRS

June 6-8, 1990.
Olympia 2, London.
Enquiries: APRS, 163a High Street, Rickmansworth,
Hertfordshire WD3 1AY.
Telephone: (0923) 772907.

ABTT TRADE SHOW

June, 1990 (provisional).
Riverside Studios, London.
Enquiries: ABTT, 4 Great Pulteney Street,
London W1R 3DF.
Telephone: 01-434 3901.

PLASA LIGHT & SOUND SHOW

September 9-12, 1990.
Olympia 2, London.
Enquiries: David Street, 3D Services,
10 Barley Mow Passage, Chiswick, London W4 4PH.
Telephone: 01-994 6477.

PHOTOKNA

October 3-9, 1990.
Cologne, West Germany.
UK Representative: Tony Pitman,
12/13 Suffolk Street, London SW1Y 4HG.
Telephone: 01-930 7251.

DISCOTECHOGATEC 90

November 5-9, 1990.
Messe Dusseldorf, Dusseldorf.
Enquiries: Dusseldorfer Messegellschaft mbH,
NOWEA, Postfach 32 02 03 D-4000 Dusseldorf 30,
West Germany.
Telephone: 0211 45 60 01.

LIGHTING DIMENSIONS INTERNATIONAL

November 17-19, 1990.
Orlando, Florida.
Enquiries: Pat Mackay or Jackie Tien,
Lighting Dimensions, 135 Fifth Avenue, New York,
NY 10010, USA.
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To talk here of individual product lines would be preclusive, a call from you however will bring the information and any technical specification required by return post.

That's useful, but UK Sound is much more than just the distributor of the right stock; new staff, with extensive knowledge of the commercial market, are backed by

Shuttlesound's considerable expertise in system design and installation. Our staff are on hand ready to talk to clients and discuss any problems or technical queries.

Above all else remember - UK Sound is for the commercial customer who wants to talk sound business.

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Unit 15 Osiers Estate
Osiers Road, London SW18 1EJ, England
Tel: 01-874 2050 Fax: 01-870 9300

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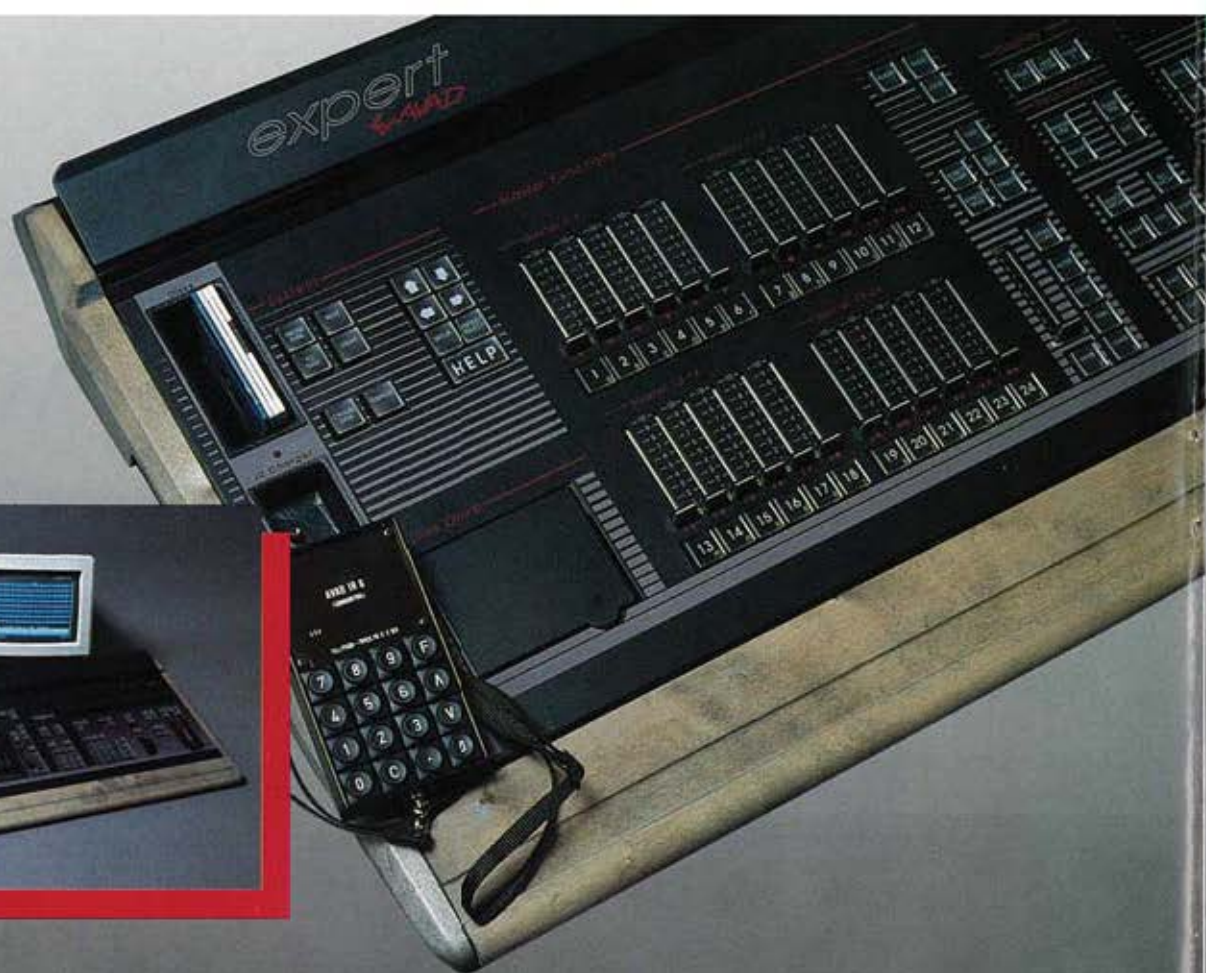
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ANYTHING GOES?

Julian Williams



One of the set pieces from Anything Goes.

Photo: Anthony Crickmay.

At a time when the standing of theatre technicians is being brought into question (see *Fantasy Island*, L+SI August), Julian Williams talks to two leading exponents about their role, and how they have made it work for them - and for theatre.

In this article he meets Mike Odam behind the scenes at the Prince Edward Theatre.

These guys say if it has a plug on it, then the Production Electrician has to install it. Their challenging life can see them rigging lamps one week and out chiefing on a show the next.

Leading production electrician Mike Odam (known to most as 'Dobbin' in the trade) has 17 years behind him, and is now one of those few top grade PE's who has more than enough work on his plate, being booked-up months in advance. In fact he often has to get others to help him out with his work schedule.

As far as we know, though he takes the occasional trade show if it sounds good, Odam is the only PE whose principal work comes

from the theatre. "In this capacity it is my job to take ideas from the lighting designer and turn them into reality - ensuring all the hardware and personnel are in the right place at the right time . . . and working! This allows the lighting designer to create his images without the worry over technical problems."

And when the show is up and running and the LD moves on, he sees it as his function to organise the re-lights at the subsequent venues the production may go to, thereby dealing with all the inherent problems such a move contains.

With partners Paddy and Ian (Patsey) Paterson, Mike Odam runs Limelight Services from its Guildford base - surrounded by the tranquility of the Surrey hills. Their services span the whole industry from the professional market to the local amateur societies, covering theatre, conferences and trade shows. And they haven't looked back. In the early part of last year there were no less than nine shows running in London's West End alone for which their services were provided. These included, among others, 42nd Street, *Les Miserables*, *Follies*, *Kiss Me Kate*, and *Phantom of the Opera*. Added to this

there were three major UK tours which included *My Fair Lady*.

No matter how small a client's order may be he gets the same attention and service as is given to the vast touring lighting rigs' goes the company motto.

This time, the show is 'Anything Goes'. Life as a production electrician, says the unflappable Odam, in this latest musical blockbuster American-styled show, is for once very straight-forward; but still it has had its difficulties. The lanterns are a simple mixture of Lekos and Par cans, with 8 Spot Bars, 2 booms a side, a big ground row and a lot of backlight on the cyc. There are about 50 practicals. Said Odam: "There is nothing new, and there should be nothing difficult about it. There are light boxes and pea-bulbed handrails around the set, and a big Fibre Optic Cloth - all traditional, tried and tested theatrical lighting.

"With this show though it was just the sheer volume of it," he continued. With all the practicals being wired to American lower voltage there were many problems converting the wiring to the British standard."

The problems they had came from a com-

bination of the fact that the set travelled badly, although it was constructed as the American touring set, and the different standard of the wiring.

Mike Odam got involved with 'Anything Goes' in January when he and production manager Simon Robinson of Martyn Hayes Associates, Peter Kemp, and scenery builder Richard Mara went over to the States to see the touring production before it finished its run. They then went on to New York to compare it with the production now in its third year, and still running.

He came back and worked out a price to wire up a new set built from scratch - although it was eventually decided to bring over the touring set. As those in the industry know, it is difficult to quote a price up-front and the need to do so ahead of time, led Odam to experience difficulties, as there were many unknown factors involved in using the existing set. "One of the usual problems," he explained "is that it is impractical to work on a set when it is in a scenery store and you can't get to it to fix something. It has to be put somewhere where it can be totally rebuilt."

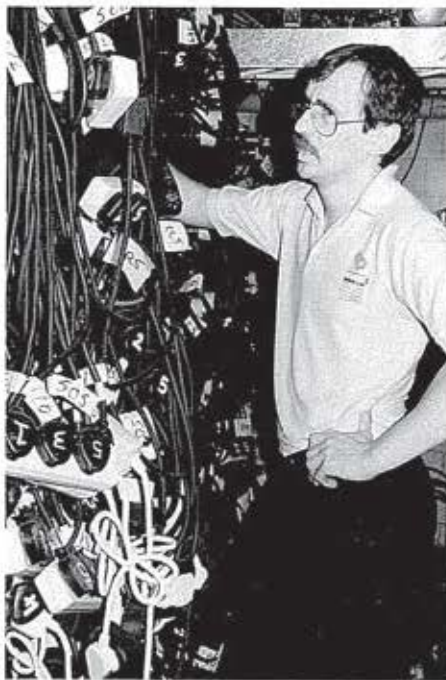
He had to make a decision to either start from scratch in completely rewiring it or just to mend what was necessary and change it in line with Westminster Council's regulations. They opted to keep all the practicals with the American wiring, and transform the racks down to 110 volts to keep the power exactly as it was, and therefore send 110 volts into everything. But they couldn't get hold of a big enough transformer in time.

In the end they encountered so many problems that they had to re-wire almost everything. They came across some of this when the set was in the store but it wasn't until they got into the theatre, about an hour before the final dress rehearsal, that they discovered that the multicore cables feeding the practicals on the truck/revolve were badly damaged - a fault that only became apparent once the revolve was in use.

So for the first week of previews they didn't have any practicals while they re-wired the set. This meant taking the set to pieces on the Saturday night to get into the bottom of the revolve mechanism. There are 24 circuits involved, so they had to put new multicores up through the centre pillar where there is little space, and they will have to be replaced again in six months time as a matter of course.



Mike Odam and the electricians get together to deal with a wiring fault.



Mike Odam in the dimmer rack cage beneath the stage of The Prince Edward Theatre.

As he starts so far in advance on a show, I asked Mike Odam if he could handle more than one show at a time. "You certainly can't handle more than one of the big shows like Aspects at the same time, as it's physically impossible," he told me. However, although the production period can run for three months, as they start to run down on one project, he can often get away to commence work on the next.

Talking to him in the dimmer rack cage beneath London's Prince Edward's stage he commented: "What is going to turn into a big problem is that Westminster Council now say that if a show has run for three months it has to be permanently installed - which will mean replacing all the portable dimmers, plugs and cabling"

With this in mind they have attempted to make the neatest 'temporary' installation, taking a lot longer, and making up all the spiders and cabling to the exact lengths, so it doesn't look worse than it might, to blend it into the system. For additional dimmers they are using Strand's Act series. There are 75 5kW dimmers and 36 2kW dimmers in the 'temporary' installation on top of the theatre installation.

One problem with these large shows is that they can't afford the expense of a permanent installation. The Council are insisting that it's a permanent installation in trunking or in armoured multicores after three months. The shows don't know as a rule if they are going to be running that long or longer, perhaps even for three years or so. So it's done temporarily in the traditional way with TRS along spot bars looping across the grid and down into the dip traps, and so on, like jumping dimmers from upstage left to feed something on the circle front because you have run out of dimmers.

As Odam explained, this has now all got to change because of the Council's three months rule on a fixed installation - whatever the cost. This goes right through the whole rig back to the switchgear and the mains installation, with hard wired dimmer racks.

"Another of the difficulties with this show is the amount of power they are pulling out of the building, possibly over-loading one of the incoming mains as on one phase there is so much power being drawn they are having to rewire the air conditioning onto a dif-

ferent supply to balance up the phases. The worst situation is the full-up during the curtain calls, demanding in this case a power in excess of 1600 amps - far more current drawn than either Evita or Chess were using on the same stage!"

The cyc and ground row draw most of the power with 75 x 5kW dimmers - and this area alone uses more power than was used on Chess. There are 86, 4 cell cyc units. There is a conventional Flood Bar in front of the cyc and from behind, there is a 'light wall' of seven stacked bars, backlighting the RP screen. As this is on 'non-stop' for the duration of the two hour show, and only five feet or so from the cyc, there is a problem with the light leaking from air vents and the colour and frost burning out. Especially the blues!

Odam continued: "Luff's, being the main hire supplier, are asking James Thomas Engineering to develop a triple colour frame so we can get a piece of heat-shield filter before the actual colour - and then a bit of frost. This will provide an air flow between the three filters avoiding them welding together. At the moment it's a vicious circle spending the entire show taping up the leaking colours, generating even more heat and more leaking colours. It's a four hour call every day to go along replacing colours alone!"

There are 36 M&M Rainbow Scrollers which, according to Odam, run very quietly.



Pictured with the 'Howie Batten' ground rows, Mike Odam gets to work. Note the distance from the RP screen above him and the back wall.

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Mike Odam with the many transformers on stage for *Anything Goes*.

Their particular problem is that they draw so much current from the MUX on the Light Palette house board that there isn't enough current up there to drive them. So it was decided to run them from a separate Strand M24 control. "This is not a problem with the unit," Odam explained, "but others should be aware of the amount of power it takes off the MUX demultiplexing system."

Part of Odam's job is often to complement the house crew of a theatre. To set up the LX crews to put on the productions he often has to organise a specific crew at a moment's notice to do an all-nighter on a production. On the very big technical shows such as *Time*, a separate crew was negotiated specifically to run the show, where they are not involved in the running of the building, though this was exceptional. It is still normal practice these days that once the show is running the house crew take over.

Odam is now off to work on two 'Phantom' productions - back to back - and will be spending a month on each production, in Toronto and in Stockholm. This will be followed by a trade show in Tokyo. He says he gets booked up a long way ahead and cannot always be available to do the occasional trade work when it comes up.

He sometimes works jointly with another production electrician such as Howard Eaton where, on high tech shows such as *Time*, *Phantom* and *Aspects*, the work is split down the middle so that one can look after the conventional nuts and bolts and the crewing, while the other looks after the new special effects and the development of new ideas.

I asked Mike Odam how he sees the development of the production electrician's role with the approach of the '90s and if he sees it as a major role in the staffing of a production. He said: "If productions continue to be as big and as complicated as they are now we will end up with the production electrician being on a par with the production manager, which would become more of an administrative type of job as it covers so many parts of a show. There would then be

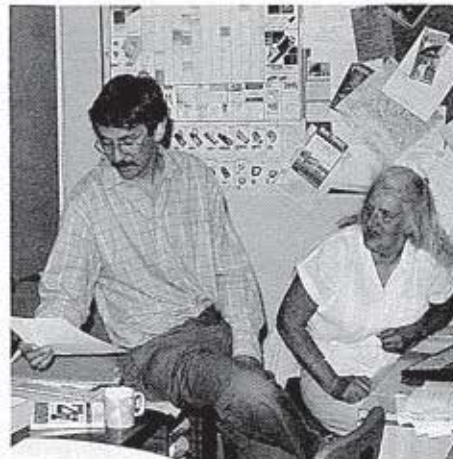
three or four assistants or foremen 'types' to delegate to the electricians.

I then questioned if his company had come forward with its production electrician service when he had seen a change in this area, or whether he had established the service in response to an era of high tech shows. In his view it was a case of being in the right place at the right time. When they were working on *Time* they thought it was inefficient that everything was being built in the theatre during the fit up, and when something needed buying it was necessary to track down the company manager for the money.

"One person should be totally responsible for the lighting installation," said Odam. "Whereas the production electrician would sit down and work out all the pieces to do the job and then go round to the management and say he needs a cheque for this and cash for that, we wanted to see the role have a more defined administrative responsibility. So we set up our own company with our own accounts and suppliers, having more clout and more back-up facilities. The supplying companies don't have relationships with all the producers as a dedicated company such as ours can have."

On the other hand they aid the lighting designer, and I asked Odam if it was the lighting designer who created the need for the role. "It was partly the designers who need their assistance," he said. "But rather than being a design assistant the job developed as a technical department on its own. Though the big designers have their assistants to keep track of the paperwork and look after the follow spots and so on, they have now got the production electrician who takes away all the technical worry."

Looking from here into the future I asked if we were following the trends of the Americans. He feels they are going along parallel courses and feels they are very good in keeping the paperwork up to date. However, in his view there is so much generated that you can get swamped by it. The danger is that as it's there you actually



In the offices of the company are Mike Odam and Paddy Paterson who, together with Ian Paterson, run *Limelight Services* in Guildford.

believe it because it says so - but in reality some things are questionable.

For example, as Odam explained: "A mistake I made with the computer software on this show when the programme printed out the colour call, was that after I had ordered all the gel I found that it hadn't printed out the colour needed for the scrollers." He just saw the paperwork which said 'gel order'. "It makes you relax," he said, "and I relied on it without doing all the homework. It was there on the paperwork, so it must be right!"

Despite that, in the future he still sees the paperwork being generated from the production electrician's side, where they may have more technical knowledge and experience than the designer's assistant.

The difference between the American and the British way of doing things is, according to Odam, as follows: "We get the minimum paperwork and the plan, and then sit down and tot it all up and come up with a list that goes to the hire shop with all the other information that they need to rig the show. In America, it seems, you get all the information given to you by the designer, including the colour call, which is in fact the responsibility of the production electrician.

"Even though we are technicians", he continued, "We have more creative input over here because in the States if it's not right it's down to the paperwork... the show is built around the paperwork. Whereas here we say we will go away and solve the problem and work out the rigging. The designer gives the production electrician the problem to solve. It's not the job of the designer to work out the rigging for these lamps. "We just need to know the position where they want them and we will get them there."

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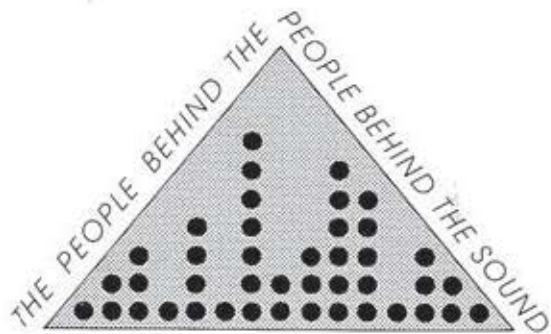
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VICTORIA'S

Ruth Rossington samples some new-style Glaswegian hospitality

With the eighties about to draw to a close, the past decade has been witness to a remarkable turnabout in the city of Glasgow's fortunes. It is once again an important port and boasts major engineering, textile, chemical, brewing and whisky-blending industries, and as the city prepares to be European City of Culture 1990, it is clearly experiencing something of a Renaissance.

Situated in the heart of Glasgow, on the famous Sauchiehall Street, is just one example of the new-look Glasgow. Victoria's nightclub occupies a prime site on what were formerly auction rooms, built during the reign of Queen Victoria. Where once the flotsam and jetsam of people's lives went under the hammer, a different beat can now be heard.

The whole concept for the venue was hatched at a Rangers football match where James Mortimer, one of the owners, and Bill Smith, whose company Night Flight Sound and Lighting carried out much of the sound and lighting installation, met regularly to discuss both the team's progress and plans for the club.

Once inside the venue, it is clear that the intention has been to approach the leisure market on several different levels, by providing not only main areas for dance and cabaret, but complementary satellite facilities. There would be nothing particularly remarkable about Victoria's, if it were sited in the heart of London's West End. What is remarkable about the venue is that it is one of the few upmarket options in Glasgow, and as such, is likely to set a precedent for other nightclubs in the area to follow. I emphasise the word nightclub as opposed to disco, for the 'live' element is the all-important ingredient in this melting pot of ideas.

The nightclub is typical of its genre: it reflects, like so many of its contemporaries, a new approach to a fluctuating market. Tastes and fashions are becoming increasingly tran-



sient, so much so, that venues are now finding it necessary to offer wider options, thus reducing the chances of them becoming victims of the fickleness of human nature.

The facilities are arranged on several levels, and the programme of refurbishment has been designed, by Jim Dey, to create an intimate atmosphere based on the Vegas-style nightclub, only without the Vegas. I hesitate to refer to it as a theme bar/club, because quite clearly it's not, but each area has its own distinct identity.

The main disco offers a peculiar mix. A centrally placed dance floor provides the focal point for the room, from which richly upholstered and elegant seating areas radiate to the outer walls. And yet the actual lighting design and furnishings on the rig remind one of the tropics. The sound coverage on the dance floor is from two Bose 302 bass bins and four Bose 802 top units, which are fed through Citronic amplifiers, with control from a Citronic SM650 disco mixer. Bose speakers and Citronic equipment are used to provide infill sound throughout the venue. The lighting rig is a custom made curved Trilite rig with cross spars and is studded with SIS pinspots, Optikinetic's scanner units and SIS spinners. The effects lighting comprises two Clay Paky Golden Scans (their debut in Glasgow), together with Clay Paky effects, the Astrodisco and the Astrobeam. SIS star-

balls, Optikinetic terrastroses and Lampo derby beam effects complete the line up.

A three channel Pulsar modulator has been modified to work the Golden Scans automatically when required. Garlanding the rig are Par Opti side emitting fibres intertwined around the white foliage which embroiders much of the venue. Dark reds and mid blues with white flashes synthesise with the rest of the effects to create a hot, steamy, jungly feel.

The installation of the lighting and sound equipment was undertaken by only two engineers who worked alongside the builders and architect so that all cables and trunking could be put in at construction time, and not as an afterthought. All the amplification, dimmer and switching packs, controllers etc are racked in the power rooms for easy servicing and maintenance, and all the functions are fed remotely by low voltage from the DJ box. Night Flight also installed the video system, together with the surveillance systems and intercom programme.

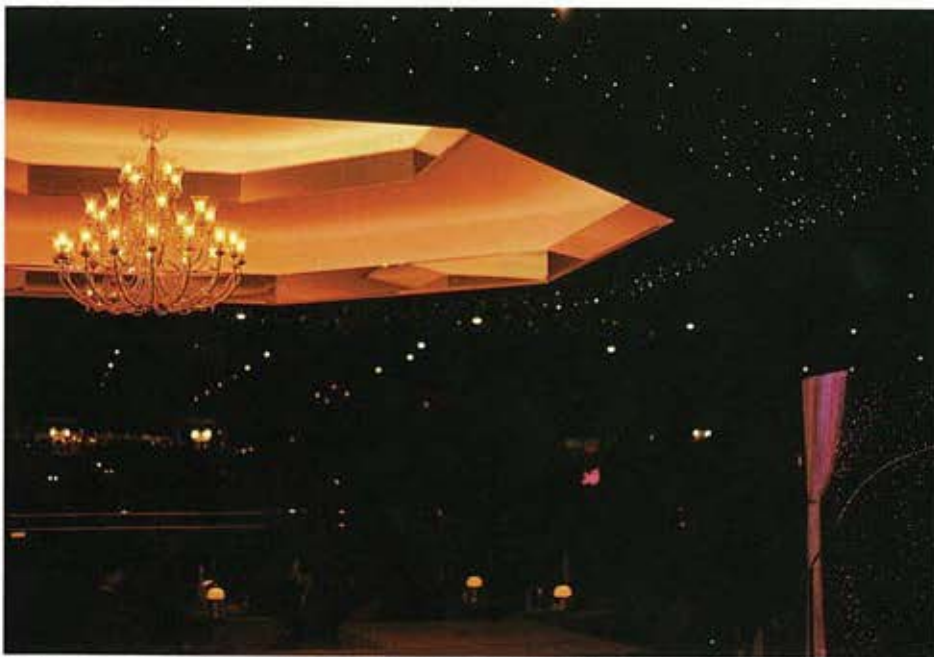
As one moves from one area to another, one is constantly aware of the amount of thought that has been put into the venue. Mirrored staircases festooned with balloons and glittering, twinkling lights open up what would otherwise be rather dark and uninviting routes of access. Fibre optic signs provide entrancing colour changing directions to the various corners of the building. Consisting of a single light source, these are sequentially controlled and are attractive by their very simplicity.

From The Piano Bar drifted, as one would expect, blues music on a cloud of smoke and chatter. The room is dominated by the centrepiece of the bar which has been constructed to look like a huge grand piano and which, I'm afraid to say, borders on the kitsch. The lid is raised slightly to reflect the contents of the bar, and on one side of the bar runs the keyboard at which people sit.

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Paul Raymond (centre) of Par Opti Projects with Jim Tate, one of the owners of Victoria's on his right and Snowy Sutherland of Night Flight Sound and Lighting on his left.



The Fontainebleu Room: The view from the restaurant to the cabaret stage and its fibre optic backdrop.

One interesting feature of the Piano Bar is its use of fibre optics. A starry sky of mid-urban blues gilds the raised piano lid, whilst carefully placed larger bore fibres are actually used for main lighting to the bar and optics (no pun intended). A further unusual feature is the use of wide bore, side emitting fibres for the lid stay which glide from one colour to another, glowing ethereally all the while. The effect is similar to neon, but has the advantage of changing colour and, as it's waterproof, it has a wider range of applications.

A restaurant and secondary area are furnished and presented to the same high standard as the rest of the venue. A rectangular Trilite frame, again with cross spars, hosts a range of SIS pinspots and spinner units, Optikinetic's scanners and Batmink mini-moonbeams. Two revolving Clay Paky Sputniks add mood, and all are controlled by a programmable touch panel.

The main feature of Victoria's is the Fontainebleu room which combines a cabaret and restaurant, with the intention that it provide both first class cuisine and floor show. According to James Mortimer and Jim Tate, the joint owners of the club, they will be

looking to the cabaret circuit to provide many of the artistes. A budget of up to £15,000 a month has been set aside to get the top cabaret acts in such as The Drifters. A special Scots night is planned for next year to mark the European City of Culture celebrations.

London-based Par Opti Projects, who developed and installed all the fibre optics for the venue have designed a small star ceiling over the stage area which is reflected in the mirrored proscenium. The galactic effect is achieved by the use of new types of star lenses and mounting bezels of varying sizes and the introduction of occasional pinks alongside the various blues. And like the night sky, the constant fluttering and twinkling is captivating.

The stage background has a starfield complementing the ceiling, transversed from time to time by hot comets of fire-deep amber straw. For a climax, a harlequin of colours explodes in segmental array, whilst swagged side emitting fibres form surreal curtains in magenta and deep blue nightclub shades. I spoke to Paul Raymond of Par Opti Projects about the increasingly diverse ap-



The colour-changing fibre optic curtain.

plications of fibre optic lighting: "Fibre optics create a changing background and can be used where there is limited space. The effects are intense and prestigious - just what the nightclub designer wants. It's taken a long time to establish fibre optic lighting as an acceptable form of lighting, but fibre optics are the future of lighting."

Less than six years ago, it was a case of a product looking for a market; now that market is actively choosing fibre optic technology as an alternative to more traditional lighting methods. The centre-piece of the room, featuring fibre optics, is a chandelier surrounded by colour changing neon architrave lighting. The neon strips are concealed in the ceiling voids which crossfade through the spectrum to change the mood of the room as it passes through ice blues to the warmer hues of pink and peach. The colour change is controlled by a Pulsar 4-channel Modulator and Profile spots light the cabaret act when in progress.

Victoria's has come a long way since it was first conceived of on the terraces at Rangers. Football, obviously, is not the game it used to be.



"Mirrored staircases festooned with balloons and glittering, twinkling lights open up what would otherwise be rather dark and uninviting routes of access."

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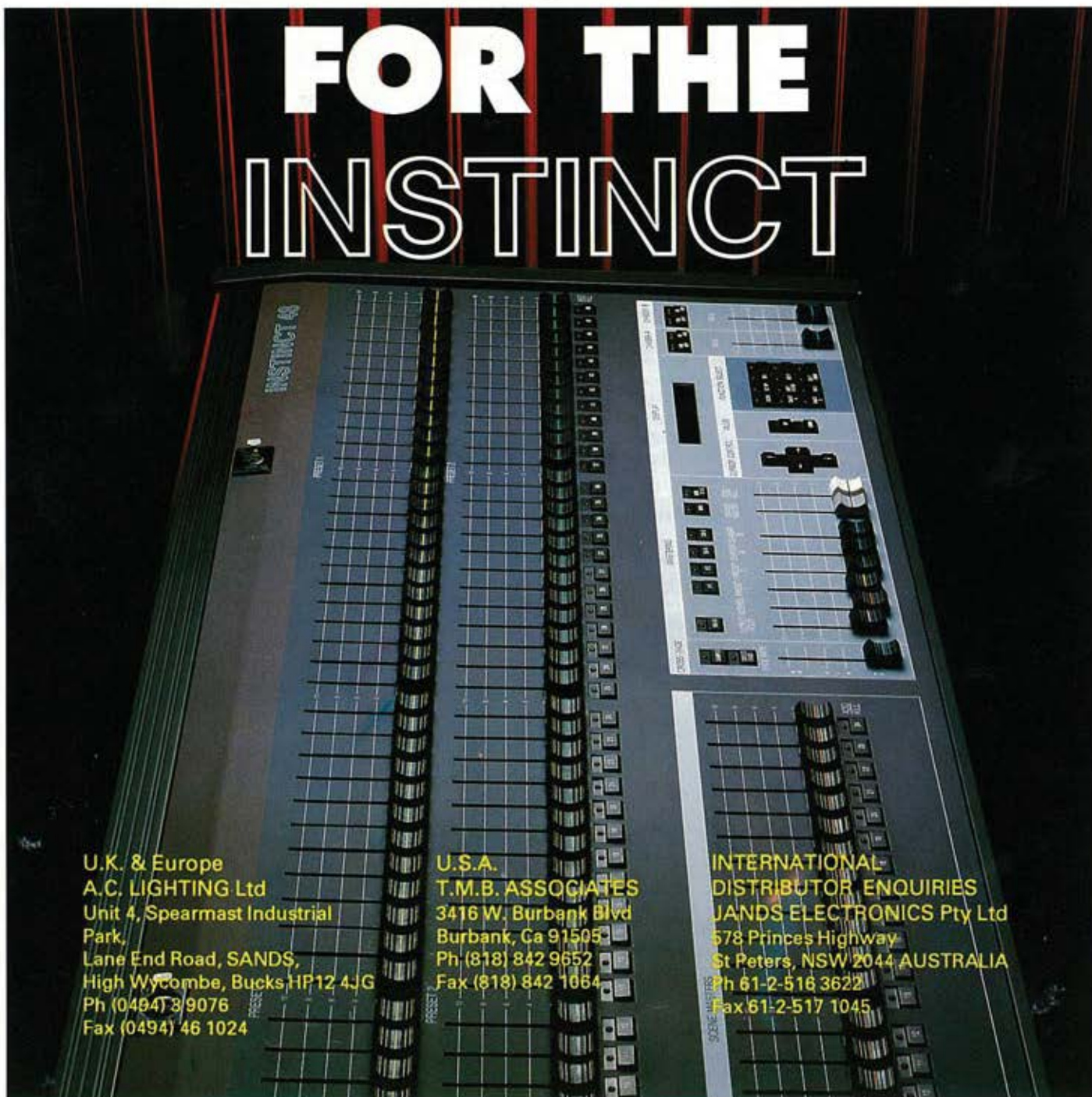
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MYSTERIES OF SOUND

Avitec's Tony Kingsley discusses some unexplained phenomena with Ben Duncan

Sound system installers hope and trust that the behaviour of their systems is predictable, given enough knowledge skill and care. In practice, things don't always work out as planned. Sometimes they even work out better! In this episode, Tony Kingsley relates some of Avitec's experiences, and challenges L+SI's resident audio boffin to provide explanations.

TK: "We've found our demo room to be inconsistent. Some days the sound isn't so good, even though nothing's been changed. It's been suggested to me that this could be psychological, down to mood, and undoubtedly this does have some bearing. But listening at home the sound is consistent, and my mood isn't always good, just because I'm away from work! Incidentally, my home system is pretty good, giving me a reference point for sound set-up, and I attend concerts regularly (including classical ones) to help keep my ears in tune! I'm surprised by the amount of people in sound installation who don't bother with a good hi-fi system at home. Where's their reference?"

BD: "Dennis Bohn (of Rane) has recently published a paper in the AES journal, which charts the effects of humidity and air temperature on sound. Some of the results are unexpected. Treble is attenuated by slightly humid air, but if the air is extremely humid (like Manchester on a rainy day), the high frequencies actually travel better over moderate distances. I expect a centrally-heated home is more likely to have consistent conditions than any demo room.

TK: "The difference we've experienced in this demo room and installations are more than just changes in top-end quality. For example, the bass of the Cerwin Vega system we've just heard seemed to 'harden-up' at a lower level than usual. We've also noticed day-to-day differences are emphasised more by some recordings than by others."

BD: "Are you sure the CD player isn't getting vibrated?"

TK: "It shouldn't be. It's mounted on an Isoplat (a specially designed and highly reputed energy-absorbing platter). The mixing plinth is stood on concrete (points to the floor) and completely rigid (shoves and grunts to prove immobility). We can make this CD player 'jump' if we drive the bass really hard. But these differences are occurring at much lower sound levels, and it's not dependent on which CD player we're using at the time. (There are three different models in Avitec's demo room). I've found a lot of recordings on CD are 'difficult' especially dance music. They're more likely to sound 'hard', as if they're badly produced and engineered. Only once in a while, they sound OK. And I haven't noticed the same degree of variability in classical CDs."

BD: "I know what you mean. The quality of many CDs is dubious, compared to the vinyl counterpart. I found this hard to believe at first. Today, we know it's not the players that are at fault, because the same discrepancies are apparent with 'supertuned' and cost-no-object systems. The automatic assumption

that CD pressings are perfect, or at least better than vinyl, is highly dangerous. Have you checked for pin pricks? If you hold a CD up to the light (even a brand new one) you'll quite often see tiny holes, where the metalisation is missing. If there's a cluster of them, the CD player's error correction will have to work hard to fill the gaps. I'd expect that to harden the sound."

TK: "But that doesn't explain why 'Sledgehammer' (on Peter Gabriel's album 'So') sounds good one day, but not another, when played through the same system."

BD: "Another possibility is a slight film of condensation on the disc surface, I've heard that happening to mobile DJs who've just brought their collection into a warm and steamy venue.

TK: "But not when the CDs are kept next to the player."

BD: "Name some of the CDs that you've found to be consistently good sounding regardless of the system and what day of the week it is."

TK: "Bryan Ferry's 'Avalon'; Carly Simon's 'Coming Around Again'; Dire Straits' 'Brothers in Arms'; Sade's 'Promise'. Slower tracks from these albums are particularly consistent. Faster music seems to stimulate room reverb."

BD: "With just a slight increase in tempo, the sound gets confused. Perhaps someone reading this has an explanation."

TK: "Chris Jacqueman, sales manager of Mission Electronics, visits our showroom monthly, and he's noticed differences in sound quality. He's going to try out one of the controversial 'black art' cures, that a lot of listeners have found effective."

(We hope to report on the results in future issues).

Installation Mysteries

TK: "I've noticed that differences are more likely to occur with complex systems. I haven't encountered many variations with basic set-ups, the kind with full-range speakers and a single stereo power amplifier.

BD: "There's certainly a lot more scope for explicit and hidden errors in multi-amped,

multi-speaker systems. If one drive unit is connected out-of-phase, for example, its effect on sound quality might only be evident over a narrow band of frequencies, which are maybe only excited by particular recordings. If the driver's + and - connections are transposed twice in the line, the fault will probably get missed by physical checking alone. The only sure way is with a phase checker. And then only if you know what to listen for - it would probably pass unnoticed to a more casual listener. Without 100% checking, the presence of a 'bad frequency' could get missed until there's a chance selection of 'difficult' recordings which bring it into prominence. And there's an element of knowing what to listen for; once you hear an effect, it's easier to pick it out when it recurs.

TK: "You're right, but I must confess that I can't readily detect a single out of phase high frequency component. We ourselves make sure before system set up that everything's in-phase with the help of a phase checker set. We've discovered quite a few drive units wrongly phased in new cabinets - and not just from one manufacturer either (holds up two completely shredded HF diaphragms). These are from 2404 bi-radial tweeters (a.k.a. JBL 'baby bum' VHF horn). Our own engineers were playing the system where these had been installed to sweeten up the top end above 7kHz, but hadn't noticed they weren't working. The loss was plain to me within seconds of walking in, but the client hadn't noticed either.

BD: "Then there's the likelihood of some gear changing its characteristics after it's been switched on. Transistors work as soon as the powers applied, but there are some good reasons why sound quality and even measured distortion should improve after a few hours of 'settling time'. Then again, some years back, when I kept a four-way active PA system on permanent standby for listening tests, I found myself adjusting the crossover settings before each session. The exact settings might be subjective, but the need to make changes illustrates variability even when gear isn't being repeatedly switched on and off. Meanwhile, a (simpler) full-range PA speaker that's switched on and off daily in the same workshop sounds consistently balanced, day in, day out."

TK: "At La Parisienne in Folkstone, we installed a system with reputable and well-known components that we're very familiar with. Six months later, the system was checked with pink noise following a mixer change, and we were surprised to find that there was a crossover imbalance between left and right channels, some 4dB on the mids and 6dB on the highs. This was corrected by the crossover output levels which had been equal on both channels on original set up."

BD: "Surely there was a loose component in the crossover, or some other fault which reduced sensitivity in a single step?"

TK: "But the system's been OK ever since. Besides, we've quite often noticed changes in system alignment over a period; presumably these are gradual. It's as if sound system components 'bed-in', with their



Tony Kingsley.

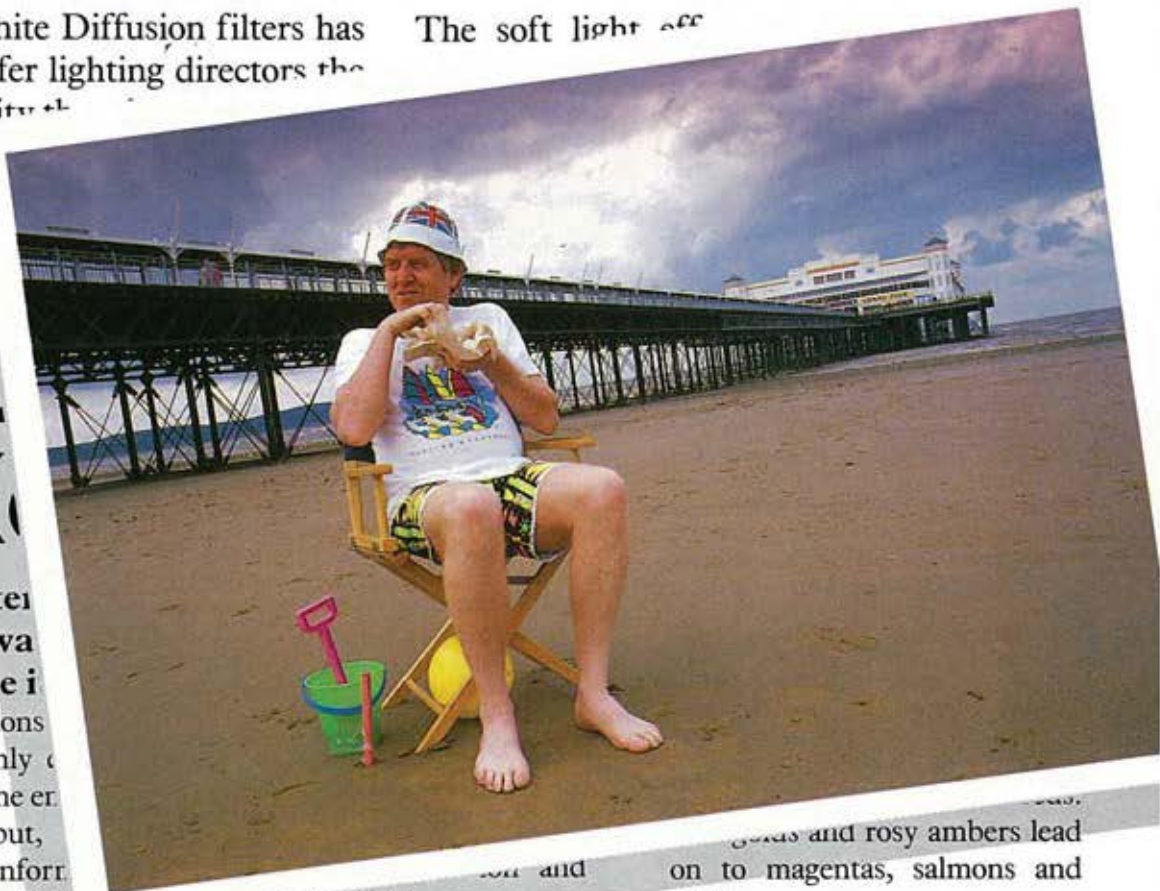
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The Key

The key to Lee Filters is the company's swatchbook, redesigned to make it easier to use. Divided into three sections, the new swatchbook not only contains samples covering the entire scope of the Lee output, but also gives key technical information on each filter's performance characteristics. This enables the lighting director to make his choice based on accurate spectral analysis. The three sections of the book cover the HT polycarbonate



diffusion products. The diffusion selection offers two sets of products: regular grades, and diffusers manufactured to be flame retardant in accordance with BS3944. Polyester and polycarbonate

and rosy ambers lead on to magentas, salmons and pinks. Designed to enable lighting directors to select exactly the product they need, the new Lee swatchbook really is the pocket-sized key which unlocks the door to the world of filters.

Our boss, Eddie Ruffell, said: "They won't want to read all that - just show 'em a nice picture. It's worth a thousand words, you know." So we said: "What about this nice one of Eddie on holiday? It's got everything we need. Travel, glamour, sophistication."

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characteristics changing in time."

BD: "My experience with electronic components suggests that such changes are highly unlikely. It's more likely at sub-assembly level, where there's a bad connection. But if so, it seems almost inconceivable that it wouldn't show up in other ways, as good old noise or intermittent operation. Maturation in mechanical components like speakers again seems much more plausible, but changes in sensitivity are hard to account for when they're not accompanied by changes in tonal quality.

Some kinds of change such as the stiffness of a material undergoing slow polymerisation would be quite sudden. Others are gradual. Plenty of sound engineers and audiophiles have observed that a paper cone speaker sounds better after it's been run-in. Then there's a well known brand of US bass speaker where the surround hardens, goes brittle and tears after a few years use. If the cabinet grille isn't fitted and sunlight falls on it through an open window, the hardening could easily happen almost overnight. Still, it must change the resonant frequency.

TK: "I've used the IVE analyser to check variable crossover points after initial set-up; they've never needed changing. It's usually levels that change. Crossover levels on similar systems vary from venue to venue as well. For instance, we've got identical mid/high components in installations in Folkstone and Ealing. Both have a 3kHz crossover point. The Ealing venue is a little more reverberant, but the distance to the furthest point from the speaker is more. The mids are the same settings in both venues, but the HF in Folkstone, the smaller venue, needed driving much harder to get the system balanced. We were driving the HF horns with over three times the power, even though the distance to cover is less! It's as if the compression driver's impedance was too high or the sensitivity was degraded. I doubt it was the 'reflectivity' of the venue, as you'll know, this is rarely a significant factor at the end."

BD: "A single driver might have poor sensitivity thanks to a dodgy magnet. It could be the result of being dropped before installation. The fact that there are several drivers all exhibiting a similar lack of sensitivity makes this explanation rather doubtful. Or there might be some fiddly sums in the acoustics. Imagine a situation where HF is being strongly absorbed over most of the room at ground level, where the SPL measurements are mostly made. If the reverberation measurements were made in free-space, and so higher up, maybe there's enough reverberation from the upper part of the

room, enough to hide the absorption and make the RT60 seem unexceptional.

The DJ Menace

BD: "To what extent do you think abuse by DJs changes the sound system's characteristics?"

TK: "We can protect sound systems from actual damage by DJs, but we can't be so sure they'll stay sounding good. In some installations, we've set the DJs local monitor for a 'harder' sound, so they'll accept EQ settings that give a softer sound over the main system. The trouble is, their ears accommodate the hardness. So they end wanting it to sound even harder. This they do by injudicious boost of the treble mixer with an internal restriction of EQ on music channels of -4 to -6 or 4dB, without the operator knowing this has been activated.

BD: "A number of installers have found Greystone's Inflexor acts as a psychological volume limiter. At moderate levels, it brings out the bass line. At higher levels, the bass recedes. In fact, there's no actual bass cut, but once the ear has got accustomed to extra bass, it doesn't want to lose any of it. So there's an immediate encouragement not to raise the volume."

TK: "In one of our installations, bass was escaping from the building. So we set a lower threshold on the limiter, giving a maximum of 104dB. When the system was checked later, we found melted solder joints on the HF drivers' protection board. Frustrated at the lack of volume, the DJs had been driving the top-end as hard as they could! I know a DJ who's a cut above the rest, in that he's into Hi-Fi and understands the requirements for clean sound. Yet even he drives the system to its limits, and saturates the room, giving a hard sound by the end of the evening. That's another area that isn't documented anywhere that I can find - what I call room saturation, where there's always an ultimate level beyond which the sound becomes muddled and uncomfortable. Physics says that beyond the critical distance* muddled sound remains constant with SPL. But I think this can't be right.

* (This is the distance from the speaker where the reflected sound SPL is equal to the direct sound SPL, and beyond which is the diffuse sound field, where the listener is hearing more than 50% reflected sound).

BD: "It needs looking into. I expect the conditions of classical acoustics break down when a room is filled with sound energy faster than it's able to dissipate. In these conditions, the mathematics of Chaos take over. With more research, we'll probably discover that day-

to-day sonic variations are 'Strange Attractors', a mathematician's description for one of a number of distinct conditions of 'singularities' that a complex system locks into. Returning to DJs, why not compulsory training?"

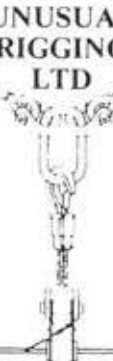
TK: "I spend some time with DJs, particularly when the system is first being used operationally, and explain things like their hearing threshold shift, even showing them the SPL they're playing at with the IVE. But after a few days (maybe we're unlucky here), all the advice seems to go out of the window. I would think that a visual readout of the SPL on the dancefloor in their console would at least help their awareness of the level they were driving, but it wouldn't help their top end boost on the mixer. Compulsory training - would it make a difference, I wonder?"

Sorry to be cynical, but the guys who run their sound systems sensibly seem to be few and far between, and I hear the same story from most sound installers. The club owners or management seem to ignore or accept the situation, which doesn't help matters. If there are any DJs who think they're sympathetic to sound, I'd be pleased to hear from them."

BD: "It seems obvious that the kind of people who are sympathetic to sound don't remain DJs for very long." (like many people involved in sound, Tony Kingsley and Ben Duncan own up to being ex-DJs).

Installers and readers - we'd love to hear your comments or learn of your own 'mysterious' experiences. Tony Kingsley can be contacted on (0462) 58961.

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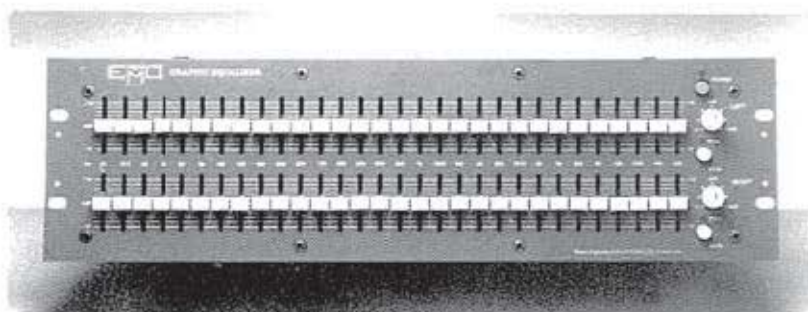
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SMX - A NEW OPEN STANDARD

David Bertenshaw

In last month's issue, Alan McGregor discussed the various problems and ultimate unsuitability of using DMX512 as a control protocol for automated lighting. This month Strand explore similar problems over a broader range of applications and describe their solution to communication protocols in the entertainment industry, with particular capability in automated luminaires control. David Bertenshaw of Strand UK explains the background and gives a technical overview of SMX, with a particularly enticing conclusion.

It is a widely held belief that a free market generates the greatest range of choice for its customers, usually to their benefit. This must surely be true of today's international theatre and television lighting market where the variety of choice is immense. However, this variety generates its own problems, and one such is the proliferation of different standards of signal interfaces on different pieces of electronic equipment. This is such that, even though two items of equipment may represent the ideal choice, that opportunity is denied since often the equipments cannot communicate. Thus the real choice may be limited and manufacturers may quite legitimately use custom interfaces to ensure that compatibility is restricted to only their range.

There have been moves to establish standards to eliminate this problem, such as the two USITT dimmer protocols, but this has not so far stretched to moving lights, console to console, smart dimmer communications, and other such applications. To illustrate the number of interfaces in use in a major entertainment complex, consider the possible installation shown on this page.

Strand Lighting, with its products and companies in Europe, USA and Australasia, concluded that its own internal market for products and systems was being similarly hindered by this problem. For example, Strand Lighting has three varieties of automated lighting control interfaces: the older M2-Bus, PALS-MRL and Showchangers. None of these is compatible, and whilst fully adequate for their products, lack adequate extensibility for future needs. Even this one problem was critical since, for example, there would be clear benefits to being able to mix PALS and Parscan luminaires on the same controlling console. Thus in 1988 Strand's three R&D centres concluded that a fresh approach was needed and a new com-

munications standard should be developed for common use within the Strand group. The goals of the new standard were:

- Economic and simple to implement.
- Covers all current and foreseen needs plus allowance for unforeseen future expansion.
- Based as far as possible on proven electronic industry standards.
- Can be standardised across products.
- Some physical compatibility with existing standards, e.g. DMX512 to aid migration.
- Uni or Bi-directional, secure communication.

Strand is also party to a USITT (United States Institute of Theatre Technology) CCS committee considering future communication protocols, where decisions were reached in 1988 echoing Strand's own conclusions. This was that an all-embracing network in a major studio or theatre connecting every console to every dimmer to every moving light, would require data-rates from 10 to 100 MBaud (millions of data bits per second). Even with today's micro-electronic technology, this is likely to be an expensive and difficult goal to implement for some time. Thus it was concluded that the problem must be sub-divided into affordable components, such that a number of compatible interfaces of modest performance may be used together to achieve a full system. As an example, a dimmer system may be level controlled by a console on one communications link, with a second, perhaps slower link for supervisory and maintenance information. However, both links should use common standards and interfaces.

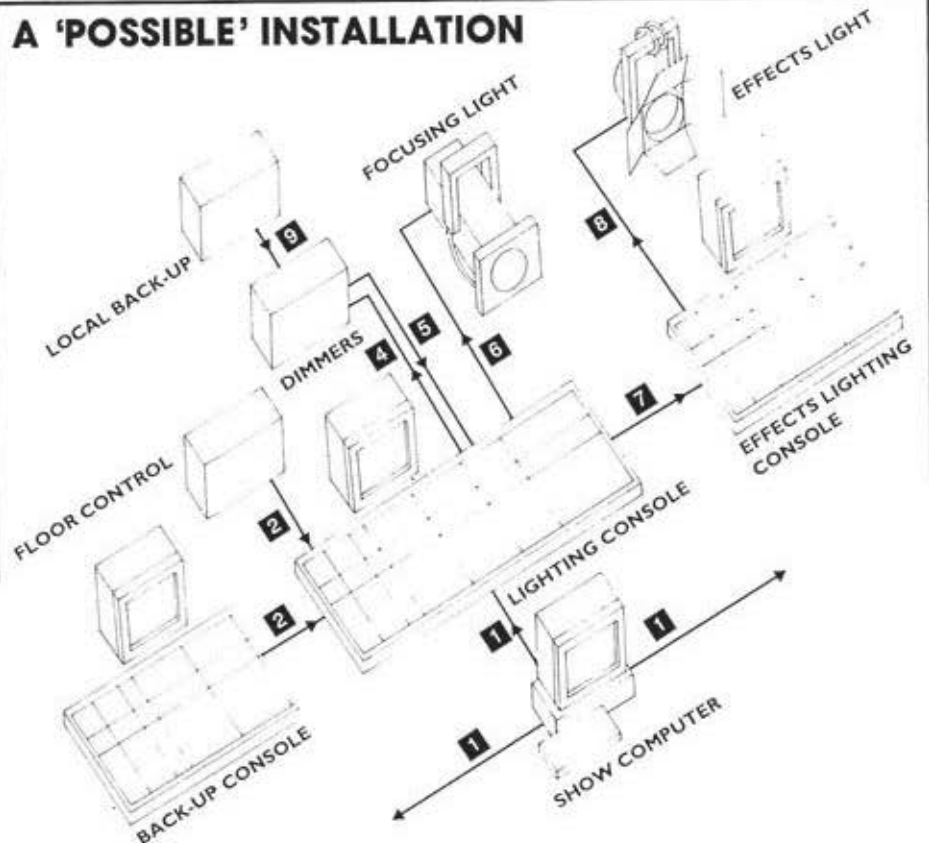
With this requirement, existing lighting and computer industry published standards were

reviewed. From the lighting industry only DMX512 showed any promise and even here, if it had been extended to meet all the goals, it would have been a new standard anyway. In the computer industry however, there are very strong developments to provide common data communications protocols, to bring order to another market also suffering from incompatibility. This is exemplified by the ISO (International Standards Organisation) Open System Interconnection strategy. It describes a seven layer structure to data transmission separating the successful transfer of data from the interpretation of data, and has become an internationally accepted design method. No other industry models matched this clarity nor met the general goals of simplicity and economy of interface, so this became the preferred approach.

Whilst OSI met the structural needs, the detail standards were unfortunately much more complex than desired, still in the process of final definition, and only provided a point-to-point service via a packet network exchange. Therefore, for one station (e.g. console) to talk to several others, it would have to do so by connection through a central switch, like a telephone exchange. There was no provision for a bus structured system (1 transmitter directly to many receivers) except by use of the IEEE 802 series of interfaces, and in turn rather expensive. Thus it was concluded that a special purpose communications protocol had to be designed, based on the proven OSI model, but focused on the particular needs of the lighting industry.

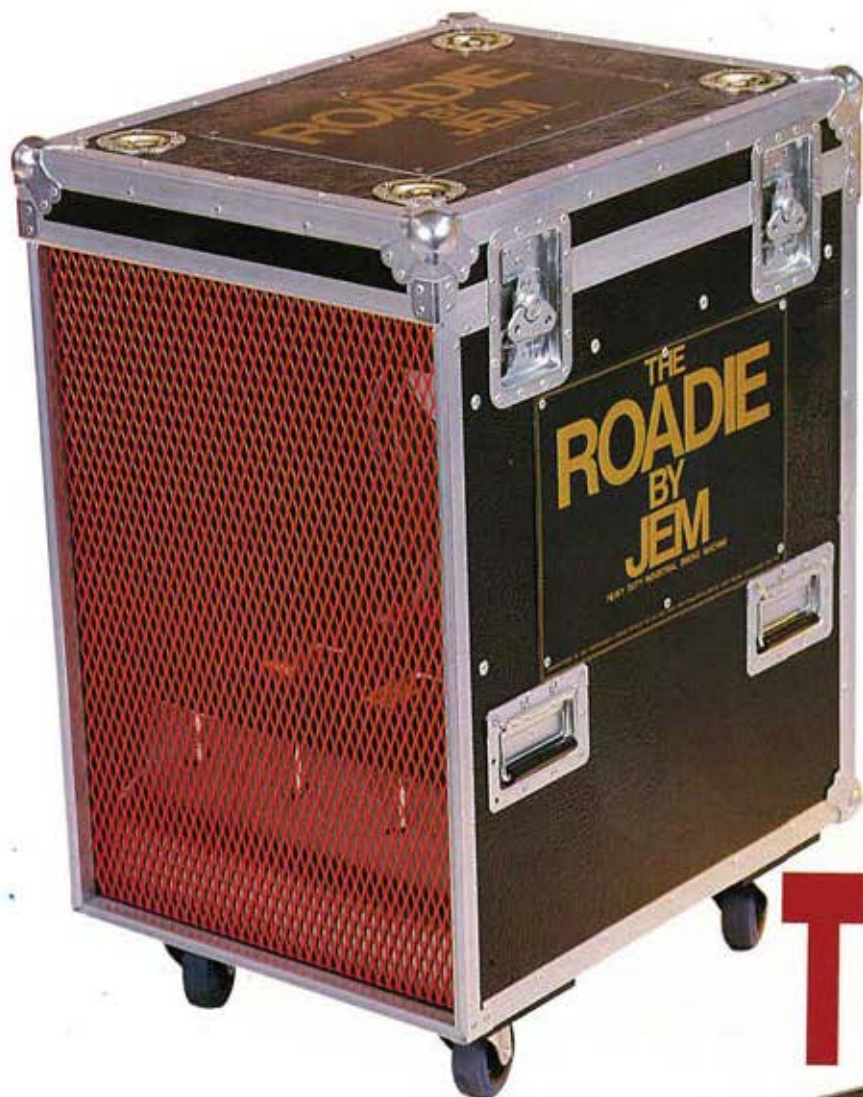
It is perhaps appropriate to give an overview of the OSI model to allow a better

A 'POSSIBLE' INSTALLATION



Purpose of Connection

- (1) Synchronisation of separate show controls
- (2) Transfer of Back-up data
- (3) Commands from Floor control
- (4) Dimmer Levels
- (5) Dimmer Supervisory and Fault Detect
- (6) Position data for precision refocusing lights
- (7) Cue Synchronisation for Auxiliary Console
- (8) Position data for Effects Automated Lighting
- (9) Janitor local lighting control



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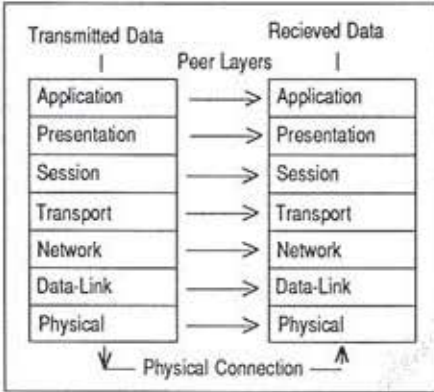
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**JEM'S
 NEXT
 GENERATION**

understanding of what is meant. OSI provides for a pair of communicating computer programmes to exchange data by means of communicating peer functional layers. Each layer provides a facility to its higher layer and in conjunction with its communicating peer layer, provides a particular communications service for the data transaction.



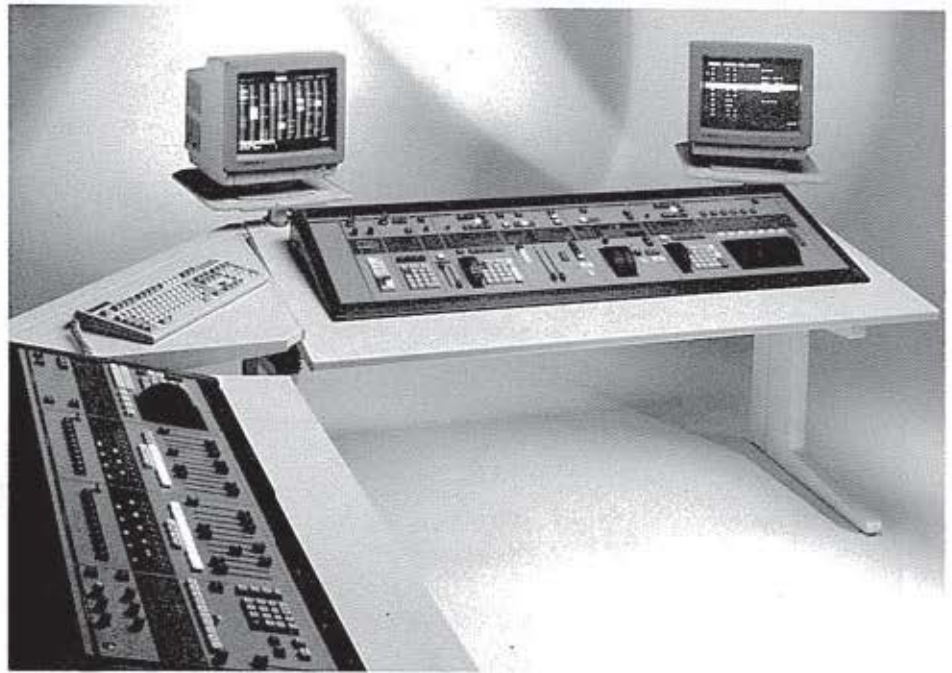
Thus for example, the two Transport layers provide a facility of reliable, error-free transmission of data from one Session layer to the other, utilising the services of the Network layers.

These layers have basic functions as given below:

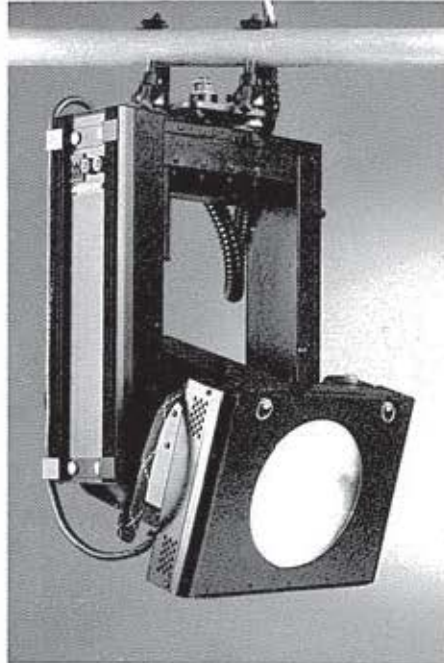
Layer		
7	Application	Final creator/user of data.
6	Presentation	Formats various application data into an appropriate standard format for universal understanding
5	Session	Control of multiple communications between same stations (not used on SMX)
4	Transport	Provides reliable, error free transport of data, recovers from errors and controls flow in case of congestion
3	Network	Provides, recognises and controls message flow to the correct physical addresses in network, and allows for groups
2	Data-Link	Formats all data from above layers into a standard packet structure and controls use of the physical data link
1	Physical	Conversion from logical to physical signals and connectors

Naturally something as complex as this took considerable development effort and had to be prototyped to prove the concepts culminating in the demonstration of full position control of a PALS automated luminaire at USITT in Calgary during April 1989. Using the new bi-directional protocol, SMX, a PALS PC controller was able to refocus and read back the precise position of the luminaire, even when changed by physical manual adjustment of the fixture. In addition, a special software programme showed the actual messages to and from the luminaire on the multiplexed data link, demonstrating the format, efficiency and flow of communications.

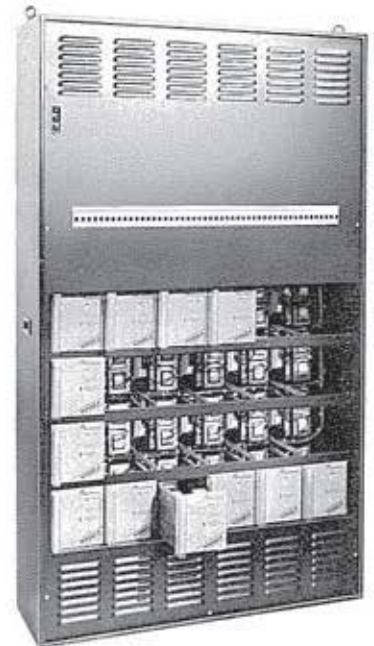
For Strand Lighting there are clear benefits from this approach, giving standardised, extensible interfaces, re-usable software across products and greater ease of equipment inter-connection, hence enabling efforts to be concentrated on providing better systems for its customers. The biggest step forward though was the accompanying announcement at USITT that Strand had removed its copyright notice and was making the SMX standard open for public use. It will take time for the developments to come to fruition,



Strand's memory lighting control board Galaxy 3.



A PALS luminaire as used in Aspects of Love.



Strand's PIP (Plug-in Professional) dimmer bank.



PALS Cadenza 12/22 focusing light.



Strand's Taskmaster effects lighting console.

but the seeds are now sown for a new era of compatible choice available to the whole lighting industry. And yes, it does stand for Strand MultipleX.

I should like to acknowledge the considerable support given by the Vice Presidents of R&D, Jody Good in Strand Electro Controls, Salt Lake City and Joe Kuciera in Strand Lighting Inc., Los Angeles; together with the valuable work contributed by many engineers, particularly Peter Willis, Richard Farthing, Alastair Kitching, Steve Kleinline, Ken Donnell and Otto Leichter.

For the more technically minded a brief review of SMX is given below. The structure is logically a token passing ring, to avoid contention, on a physical bus structure.

Layer

7 Application

The ultimate communicating microprocessor programme, normally the software programme in the processor based product. There is no requirement laid down.

6 Presentation

128 different 'data types' are provided, of which dimmer levels (8+16 bit) and times, file transfer; moving light parameters (64 varieties) and a communications supervisory are defined. In all data types, strict definition of data meanings is maintained.

5 Session

This is not used in SMX.

4 Transport

Data is transferred in numbered packets called I (Information) Frames and the transport layer checks sequencing, recovers from errors in sequence or time-out. It acknowledges I frames end to end, controls data flow, and manages each connection as made.

In addition I frames can be segmented and concatenated to transmit large data entities over the limited packet size.

3 Network

Manages physical addressing. Addressing range 0-127 or 0-32,511 in extended mode. 255 programmable groups are provided for, and an all stations broadcast group.

2 Data-Link

Data is formatted into packets as either an I Frame or Control Frame. I frames are numbered 0 or 1 and carry presentation data. The maximum packet length is 140 bytes, with byte count and longitudinal redundancy check character for error checking.

Data is transmitted as 8 bit asynchronous, with a 9th bit ("parity") used to signal packet start. All data values are valid. A Bus Token bit is circulated by a Bus master to control which station may and must transmit.

1 Physical

The connection is via RS485 on a two wire screened party bus. Transmission can be uni-directional or half-duplex bi-directional. Data rates may be 250/62.5/9.6/2.4K Baud. Connection via XLR 5 pin as per DMX512.

Bona-fide interested parties, requiring a copy of the SMX standard, should make application through their local Strand office to their relevant Head Office R&D Groups; Strand Lighting Ltd., London; Strand Lighting Inc., Los Angeles; or Strand Electro Controls, Salt Lake City.

The Document Reference is 3X32478.



David Bertenshaw B.Sc(Eng), AGGI, MIEE, C.Eng is director of R&D for Strand Lighting Ltd., London.

A graduate from Imperial College, London University in 1970, he completed an apprenticeship with G.E.C. (Telecommunications) and joined Rank Strand Electronics as a development engineer. Progression in Strand through to development engineering manager, encompassed design and management experience in controls, dimmers and luminaire development, he left in 1984 to gain alternate experience in the computer peripherals industry. He rejoined Strand in 1987 as director of international R&D for UK and USA.

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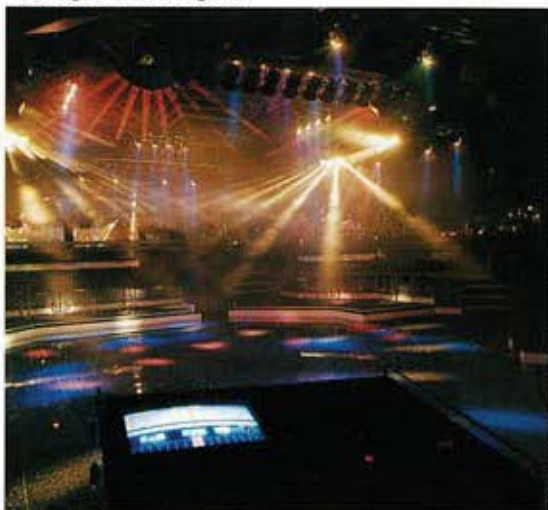
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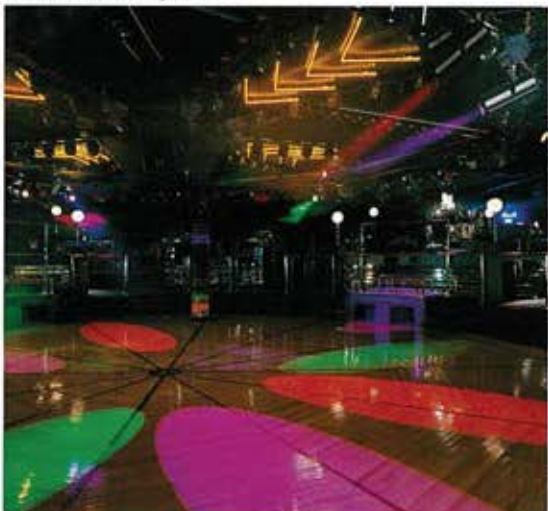
Zhivago's, Darlington



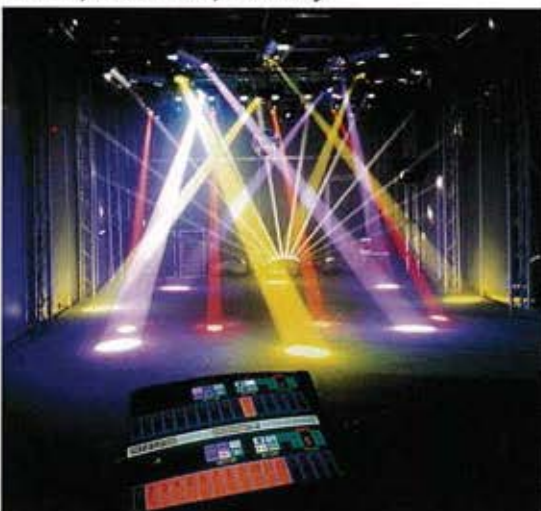
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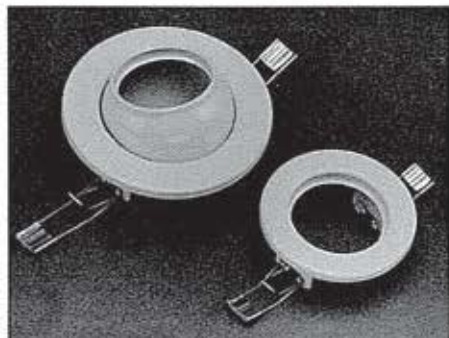
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EQUIPMENT *News*

All this and More!



Low voltage downlighters from Lightfactor Sales.

Lightfactor Sales have introduced a range of competitively priced low voltage downlighters which provide an ideal, and unobtrusive, answer to lighting off dance floor areas within entertainment venues, say the company. They are designed to accept the new technology 12v series lamps widely available in many different beam types.

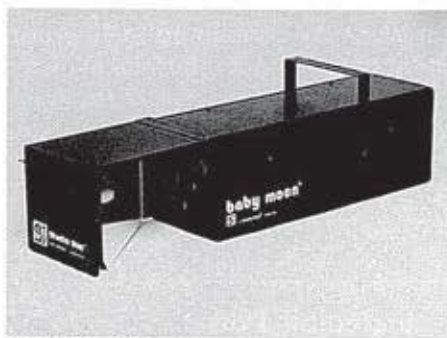
Two types are available - a variable position 'eyeball' and a basic fixed 'downlighter'. Both versions are stocked in white and brass effect, with black to special order.

Integral clips hold the fitting firmly into a hole made in most types of ceiling material. The fittings are supplied complete with lamp retaining ring and lamp holder. An external 12v power source is required.

Manufactured by J Collins, and available through Lightfactor Sales, is the new Superflash 1500 Watt strobe which has both external and internal trigger capability. The current interest for high power output pendant strobes has resulted in J Collins also launching a 1000 Watt scatter strobe for hanging like a pendant. Primarily designed to random trigger, the unit also has low voltage trigger input which can be 'fired' by most strobe controllers.

Lightfactor have extended their portfolio further by recently announcing an agreement with Italian moonflower originator Studio Due for the distribution of their products in the UK. The Baby Moon projects 90 rays in a 30° arc and utilises a 150W 24v halogen lamp, which is fan cooled. There is an internal microphone, with electronic AGC, rotating the rays in time to the music. The Baby Mirror accessory can be fitted to the Baby Moon to sweep the rays across an area horizontally to the music beat.

Other products that will feature in the agreement include the Magic Fly, with 20 concentrated rays of changing coloured light which appear to 'flap' to the music and revolve 45°. Fly Rays is an effect that exploits 90% of the total light output available from a Mercury lamp and produces three, very powerful concentrated beams of light. The unit comes with a dedicated controller which incorporates a non-volatile memory for program retention and is connected to the effect head by a low voltage multicore link. The Crazy Moon is, according to Lightfactor, 'the' Moonflower effect. An extremely bright lamp and quality optical system create 100 very concentrated beams of coloured light in a 30° arc, which are swept around the venue in sync with the music. The huge power of the lamp enables the unit to work well within the television studio and even outdoors. The light



Studio Due's Baby Moon.

source is a 200W high pressure mercury lamp, which is driven by a switch mode power supply providing in excess of 80% efficiency and over 1,000 hours of life. For further details on all the above, contact Lightfactor Sales on 01-575 5566.

GAM Fog Machine



A new fog machine is now available from The Great American Market. The machine can be operated either manually or by auto-cycle. The volume of smoke delivered can be controlled in either mode. The manual mode includes an auto-reverse action which drains excess fog fluid from the heater, eliminating the unpredictable stray puffs of smoke which often plague production personnel. The auto-cycle includes presets for length of delivery and the interval between deliveries.

The unit contains a 2-quart inboard tank and can also be serviced from an external supply. It measures 18" x 8" x 7 1/4" height and weighs 19lbs empty. The hand-held controller is equipped with a 30' cord, extendable up to 250'. Black industrial grade flex hose is available, 4" in diameter, in 10', 15' and 25' lengths.

Joe Tawil, general manager of The Great American Market, told L+S: "It produces a large volume of smoke quickly; the output is variable and completely controllable by the operator, and it is safe, dependable and easy to service."

For further details contact The Great American Market on (213) 461-0200.

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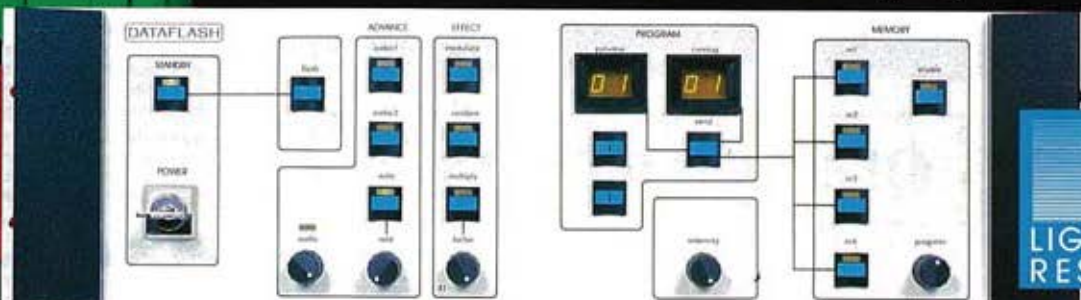
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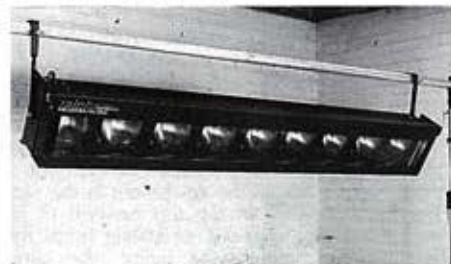


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Two new Scrollers from M & M



Above the Rainbow Light Curtain Scroller and below the Rainbow Follow Spot Scroller.

M & M Lighting have launched two new lighting products, one of which has been designed specifically for the West End production of Miss Saigon by lighting director David Hersey. Both products are developments of the highly successful Rainbow Scroller, which was launched last year.

The Light Curtain Scroller, designed for use by David Hersey, is a 6ft long scroller which scrolls through 11 colours in under 1.5 seconds and, like

the original, is completely silent in operation. 20 Light Curtain Scrollers are being used in Miss Saigon on Thomas light curtains, which have been motorised and rigged in groups of five. All the scrollers are fitted with DMX512 and will be run from the Vari-Lite board which is being used for all the effects in the show.

Also developed for Miss Saigon is the Follow Spot Scroller. Six of these are being used on the Reich & Vogel 1kW low voltage beam light follow spot, but the Scroller can easily be adapted for use on Pani or most other follow spots, say the company. The Rainbow Follow Spot Scroller in Miss Saigon scrolls through seven colours, but is being developed to take 11 colours later in the year. It has its own controller for the spot operator to select colour and travel time. A slightly larger version of the Rainbow, the Follow Spot Scroller has all the advantages of the original - silent operation, speed of scrolling and ease of use.

Both the Light Curtain Scroller and the Follow Spot Scroller are being supplied through White Light of London and in addition to these, 40 original Rainbow Scrollers are also being provided for Miss Saigon. Full information on these products is available from M & M on 01-722 4147.

Soundcraft add to Series 8000 range

In response to growing market demand, Soundcraft have expanded the Series 8000 range to include a dedicated Monitor console designed to complement the Front-of-House Series 8000. The console offers a total of 16 groups, each with 3 band parametric EQ and VU metering. Input channels incorporate a switchable 80Hz high pass filter as well as a 4 band parametric EQ, with 8 dual concentric frequency/gain controls for the 16 sends, each with pre/off/post fade facility.

The communication and monitoring facilities include a dedicated PFL bus with both metering and phones control. Unusually, say Soundcraft, the console incorporates a dedicated 'wedge' output, giving the engineer a single control facility for im-

mediate monitoring of any input or output.

Available in two frame sizes, accommodating either 32 or 40 inputs, the 8000 Monitor offers a two-way link with an 8000 House console, as well as the potential to use the recently launched Extender Unit, giving an additional 16 channels for either frame option.

The console also features Soundcraft's proprietary grounding techniques ensuring a high immunity to ground loop problems, in addition to electronically balanced inputs, insert returns and outputs. The 8000 Monitor is available in the UK exclusively through the London Microphone Centre, and further product information can be obtained from Soundcraft on 01-207 5050.

Crown Microphone



The new mono compatible Crown SASS-P stereo condenser microphone utilising PZM technology has been developed by the company for use where precise production and image positioning are required. The heart of the system is the patented design which combines a pair of premium quality Pressure Zone Microphones mounted on boundaries to make each one directional. Frequency response of the microphone is 20Hz to 18kHz, and an optional phantom power supply is available. For further information contact Shuttlesound on 01-871 0966.

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SPX7-27



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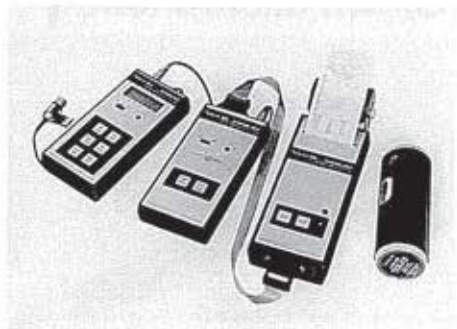
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SUCCESS BREEDING SUCCESS

Sound Measuring

Bach Simpson have launched their new SMS-1 Sound Measuring System with an eye on the proposed new 1990 noise at work legislation. Offering fast, effective measurement the SMS-1 consists of several components which are designed to give a fully integrated and comprehensive system. The model 893 functions as a personal noise dosimeter, an integrating sound level meter and a sound level meter. A built in security lock prevents unauthorised tampering with the selected functions. An LED warns the operator when noise exceeds 140dB.

The models 894 and 895 data storage and printer units are easily connected to give an easy



The new Bach Simpson SMS-1 Sound Measuring System.

way to document noise readings and produce detailed noise profile histograms. To ensure accurate sound level measurement the package includes the 897 calibrator, giving fast, automatic calibration of the 893.

The SMS-1 system comes complete with all connecting cables, batteries and a custom storage/carrying case. Extra 893 units may be bought and added to the system so that a number of locations may be surveyed at one time.

For further details and demonstrations contact Smart Acoustics Ltd., 38 - 42 Westgate Chambers, Commercial Street, Newport, Gwent. Telephone (0633) 252957.

New Beyer Range

The new TG-X range of microphones from Beyer Dynamic is the first full range to combine radical design techniques with the use of em-field rare earth magnets to achieve the highest output levels as well as the fastest and most accurate transient response, say the company.

Already renowned for both durability and superb performance, the Tourgroup range of microphones is continuing to evolve with the



The Beyer TG-X range.

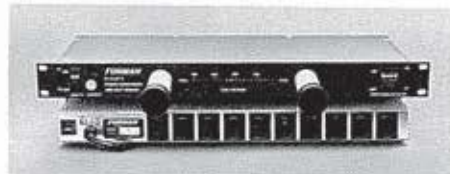
addition of the TG-X microphones designed for specific applications in high decibel, live concert situations. In addition to providing extended output levels with exceptional sensitivity and accuracy, the TG-X line offers more. It does this by combining the type of transient response found in ribbon mics with the durability its Tourgroup microphones have been known for. To achieve this, the use of rare earth magnets were designed into the system to work in harmony with lighter diaphragms providing a free, highly reactive movement.

The design philosophy for TG-X also called for modular, controllable mic elements for consistent high quality execution. These radical elements produced both the highest output and the best transient response, providing accuracy, even at SPL's up to 140db. In addition, all TG-X microphones have the same gain before feedback characteristics. The minimal mass of internal elements optimises shock-mounting while minimising resonance from handling noise.

The full TG-X line presently includes four new models. The TG-X 180 is a small, cost effective high output mic with a macrolon diaphragm for accurate sound at high SPL's. The TG-X 280 is also a small microphone, but incorporates Beyer's road-proven hostaphan diaphragm, producing extremely wide frequency response. The 280 is ideal as a step-up vocal mic from the 180 or for use in instrument mic'ing situations. The TG-X 480 is a large diaphragm (macrolon) mic for rock and roll vocalists providing a pronounced mid-range punch, helping them stand out in a live situation. The mic's ruggedness and balanced feel will also be appreciated by vocalists on tour. Finally, the flagship of the line, the TG-X 580, is a large hostaphan diaphragm mic, offering extended frequency and fast transient response for studio accuracy in a live performance. For the discriminating vocalist, the 580 provides both durability and versatility for use in almost any situation.

Power Conditioner Light Module

Furman Sound has introduced versions of its extremely popular power conditioner light modules especially made for use with 230 VAC power. They were designed to meet a pair of common needs in sound reinforcement and recording racks, to provide illumination in dark places, and to provide clean power with a master switch for all the equipment in the rack. The PL-8-E mounts in the top position of the rack. It has two slide-out, swivelling lamps that use standard low-wattage bulbs. The lamps have a separate power switch, and a dimmer knob is provided to control brightness. The unit also conditions the AC line with spike suppressors and an RFI filter, and routes the power through a circuit breaker to its ten rear panel accessory outlets. These outlets are the internationally-accepted IEC-320 type.



The PL-PLUS-E has all the same features, plus a color-coded bar-graph line voltage monitor that reads from 180 to 256 in 4 volt steps, as well as substantial extra RFI filtering.

For more information contact, Shuttlesound Unit 15, Osiers Estate, Osiers Road, London SW18 1EJ telephone 01-871 0966.

King's Sound Team

Following their recent appointment as sole UK and Northern Ireland distributors for the Italian King's Sound range of lighting effects, Batmink Ltd confirm that the Team mirror-based intelligent luminaires are now available from stock.

Based upon the design of other intelligent projectors, but providing a budget orientated package without compromising reliability, these units represent value for money, say Batmink.

The projectors are available with either SN250 or MSR400 lamp options and functions include five colours, six gobos and optional sound to light animation. Control is provided by the dedicated Octopus controller, and provides preset programmes and manual joystick operation.

Contact Batmink at Glastonbury Warehouse, Silver Street, Glastonbury, BA6 8BT, telephone (0458) 33186.

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Light Mixing

The LCD 1600 is a new light control desk produced by ETR. It is distinguished by a clear and distinct construction which allows fast and safe handling. It has twelve adjustable channels for spotlights as well as four channels for the switching of show-effects, such as stroboskop, UV-lamps, etc.

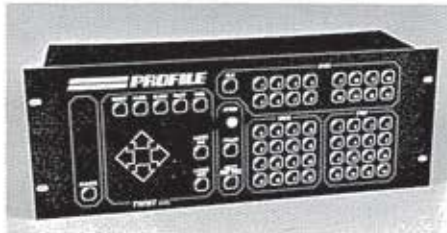
Facilities include six presets, flash buttons, chaser, and sound to light. Additional features provide preheating - for optimal protection of lamps, four control lamps for mains and power-packs, and links for 24 channels.

A footboard is available for bands without a light technician, and brightness can be infinitely variably controlled by a normal guitar-volume-pedal.

Additional information is available from ETR, P.O. Box 35, CH-6000 Lucerne 13, Switzerland.

Nexon's New Twist Controller

Nexon Elektronik have combined all the advantages of a large, computer-linked, free positionable lighting system in one. The Twist Controller is their latest product to be released. The position of each single driver spotlight, and the switching on and off of the lamps involved can be programmed with ease, say the company. The joystick helps to bring the spotlights to the required position and the data can be either automatically or manually recalled and executed. There are 16 freely programmable runs available

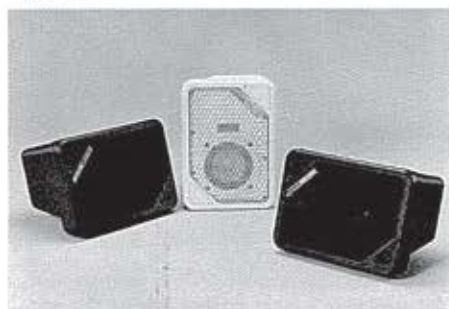


with 16 steps in each case, thereby allowing 256 sceneries with 16 spotlights (a possible total of 4096 positions).

A battery back-up ensures that the data memory is not lost. Six different dichroic colour filters complete the Twist Driver. When the colour filters are not in use, transparent glass protects the lamp from pollution. The filters can be easily exchanged to replace the lamps. The sealed beam of the Halostar Par 36 (50/75/100W) can be used as an effect beam and illumination beam. The Twist Driver works in any position and there is a transformer 120VA/12V in the driver. With the Twist Controller, there is no need for any additional dimmer or switch. The small size of the product allows its use in a variety of places. For further information, contact Nexon Elektronik in Switzerland on 0041-85 2 76 75.

Beautifully Formed

The new Bouyer range of four compact speakers from Planned Equipment Ltd are designed for maximum sound quality with extremely good looks, for use in places where the visual impact is as important as the ability to be clearly heard. Particular features of the range include power ratings of 5W, 10W or 30W, low impedance or 100 volt line inputs, and a cleverly concealed tapping selector switch on the front.



These speakers also offer very high efficiency - up to 92dB at 1W at 1m, dependent on model, and a superb frequency response, the top of the range RB 2060 model offering 80Hz -22kHz. They are available in charcoal grey or white cabinets and are supplied complete with a multi-angled fixing bracket. A swivel bracket or flush mount bezel are also available. The two more powerful speakers in the range are available in fire retardant casing if required.

For more information contact Planned Equipment Ltd, Belvue House, Belvue Road, Northolt, Middlesex UB5 5HP telephone 01-841 6251.



Music Pressure Driver

A high sensitivity pressure driver, designed specifically for the music industry, has been developed by Vitavox. Suitable for use in musical instrument amplification, disco and live sound loudspeaker systems, the S6 driver is aimed at equipment suppliers and hire companies.

With an undistorted power rating of 100W, the efficiency of the pressure driver is such that it can be used with music systems having an overall rating of over 1000W. The units have exceptionally uniform frequency response characteristics within an effective frequency range of 200Hz -15kHz when used with a suitable horn. Its rated impedance is 16 ohms.

The drivers feature new, lightweight, corrosion resistant diaphragm assemblies and high flux barium ferrite magnets. Units are finished in matt black and weigh 3.2kg.

For further details contact Vitavox Division, Secomak Limited, Honeypt Lane, Stanmore, Middlesex HA7 1BE telephone 01-952 5566

Sound Reinforcement

New from SCV Audio, the Model PSD sound reinforcement director provides source assignment metering, filtering, testing and low impedance distribution for professional sound reinforcement systems, all in one unit.

Facilities of the 'Director' include source assignment and internal/external source switching for cluster and sub woofer speakers and outputs, 30 segment bargraph meters with input/output switching, phase correlation indicators, + /- 12dB gain control in cluster and sub-woofer outputs, a switchable 4th order Linkwitz-Riley crossover with limiter, ultra low impedance main outputs, secondary outputs for signal distribution, insert sends, insert returns and a test capability for remote checking of individual sections of a speakers system. For further information contact Shuttle-sound on 01-871 0966.

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Multiform Quattro

Previewed in prototype form at last year's PLASA Light and Sound Show, Multiform Lighting have announced the release of what they consider to be their most sophisticated club controller to date, the Quattro.

Quattro is a microprocessor based 4 channel, 4 zone lighting controller with low voltage outputs to drive Multipac and Switchpac slave packs. The controller has 16 output channels grouped into four dimmable zones of 4 channels. Each zone can run a different chase pattern with audio triggering, auto reverse, auto pattern change, crossfade and speed individually selected for each zone. In addition a number of cross zone chase patterns can be selected on 2, 3 or 4 zones.

There are a total of eight different chase patterns plus all flash and all on. A similar number of zone chase patterns are available including 16 channel chase and a block chase. Once the pattern and modifiers have been programmed into each zone, they will be stored in the memory when the Quattro is switched off. When switched on again, it will start running exactly as at switch off.

Matrix wired lighting can be controlled with facilities for X, Y, Z and auto matrix switching using two Multipacs or an auto matrix pack. A fifth 4 channel output is provided to trigger a strobe system and the controller can be set up so that all four lighting zones are blacked out when the strobes are operated. Input sockets for connection to a Lightfingers touch panel allow for remote enabling of the four zones, zone chase patterns and strobes. A special feature is the autopilot button. If selected it will cause the Quattro to run automatically through all its possible modes of operation without any assistance from the operator.

Eight switched outputs are also provided for the control of motors and switched effects using two separate switchpacs. The Quattro can be powered by the D.C. supplies available from the four multipacs. Alternatively, a separate supply is

available which can be fitted to the rear of the unit to power both the Quattro and Lightfingers. Multiform have also introduced an addition to their range of dimming packs. The Multipac 4 x 2kW is designed to handle the higher loads required by today's installations.

The company has also released updated versions of their Multiphase 420 series of lighting controllers. All models in the range include an integral 4 channel dimmer section of 1kW/Ch or 2kW/Ch combined with an effects section tailored to the requirements of different applications.

Models 420 and 422, which are designed for the control of par lamps, provide sound to light and crossfade effects. Models 421 and 423 include an additional eight chase patterns and are more suitable for controlling pin spots and similar light sources. Model 424 is a 4 x 2kW slave dimmer unit for use with any controller providing 0-10v outputs. Model 425 includes a preset master with autofade, blackout and facilities for remote footswitch control making it suitable for stage lighting in cabaret and live music situations. All units are in a 19" x 3U rack mounting format and are available with Hard Wired, Bulgin Multiway, Schuko or UK 15 amp outputs. For further details contact Multiform on (0825) 3348.



Multiform's new remote control lighting dimmer.

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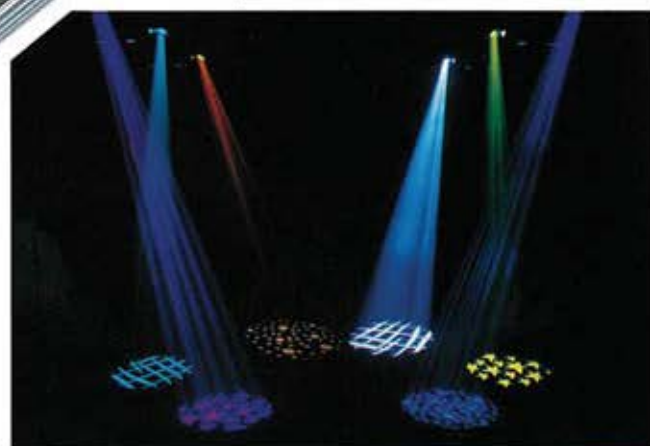
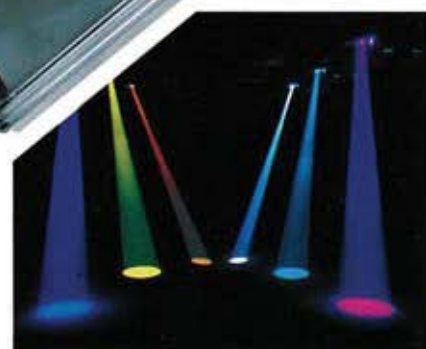
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BOOKS

DESIGNING FOR THE THEATRE



Francis Reid

Designing For The Theatre

Francis Reid

Published by A & C Black
Price £8.95 ISBN 0 7136 3136 8

"It is surprising just how few directors are visual thinkers." This is just one of the many statements in Francis Reid's new book which would qualify for the L+SI 'Understatement of the Year' Award.

It's a statement that I doubt a set designer would have dared to make and herein lies the key to this book's value. Lighting designers are usually excluded from the genesis of the visual style for a show; the director and set designer sit alone whilst others watch from a distance for the tell-tale signs of white or black smoke. The 'concept', often laboured over for weeks, is then presented to (and has to be assimilated by) the lighting designer in a single meeting. As a result, lighting designers become adept at forming an overview of decision making processes and of personalities. But Mr. Reid is no bar-room lawyer, for example his administration book was based on solid (and successful) experience running the Theatre Royal at Bury St. Edmunds, and more recently he was in charge of theatre design at the Central School in Southampton Row.

As befits Francis Reid's skill as a 'theatrical tourist' the book begins with a summary of theatre building styles from the Renaissance to the present day. This is a well written section, compact, concise and yet no cold appraisal of dead history. Reid's own views give it life and the section is well illustrated, notably by reproductions of Richard Leacroft's wonderful isometric drawings. Having laid the architectural foundations the book then discusses the foundations for various visual styles, making the introductory point that today "anything goes" . . . as long as "the consequences of that starting point are followed through". In discussing such matters as "the departure from realism" and "scenic environment style" the author has been admirably objective and rather more so than I would perhaps have been. In my experience it is set designers and not directors who conceive the visual style and frequently they clothe the director with a new suit it later becomes all too apparent doesn't exist, and when the nakedness of the concept is revealed it isn't the designer who is trying to hide his embarrassment.

The next chapter deals with the physical means by which designs can be achieved and it covers flying and stage machinery, lighting and projection. This section is also written with realism but it will still inspire budding designers. Realism is also present in the next chapter, 'Some practicalities', because the first section deals with budgets. Show me another design book that does that! A welcome emphasis is next given to sightlines, and especially to the vertical, often overlooked by set designers but a fact of life to a lighting designer. This section also includes other facets to which many set designers attach little priority, namely masking, fire regulations and touring.

My favourite chapter is 'The design process' and I have had to stop myself from quoting almost the whole chapter here. Phrases like "Brecht's name will almost certainly have been mentioned" are typical. This chapter is a beautifully observed treatise on relationships and how they can affect decisions and is alone worth the price of the book. It progresses to discussing how designers can present their ideas, and experience shines through every word. For example, in discussing the accuracy of models, Reid observes that: "It can be highly irritating if bits keep falling over." I have found that designers whose models fall over usually produce sets that will do so too. Not surprisingly the author sympathises with lighting designers because they all have a particular problem presenting their ideas, and he says that: "there is a justified worry throughout all lighting discussions that members of the production team may be interpreting different visual meanings from a particular wording".

This theme is returned to in the next chapter, 'The design realisation', which covers get-ins, fit ups, focusing, technical and dress rehearsals. He has noted the frustration of the lighting designer in that other members of the team are being seen to continually produce work to which the director can respond, but meanwhile the lighting designer is apparently not working. However, he suggests that the lighting designer circulates a proposed

cue list for comment. "Theatre people tend to be inhibited by the challenge of a blank sheet of paper but will respond to an opportunity to edit a proposal".

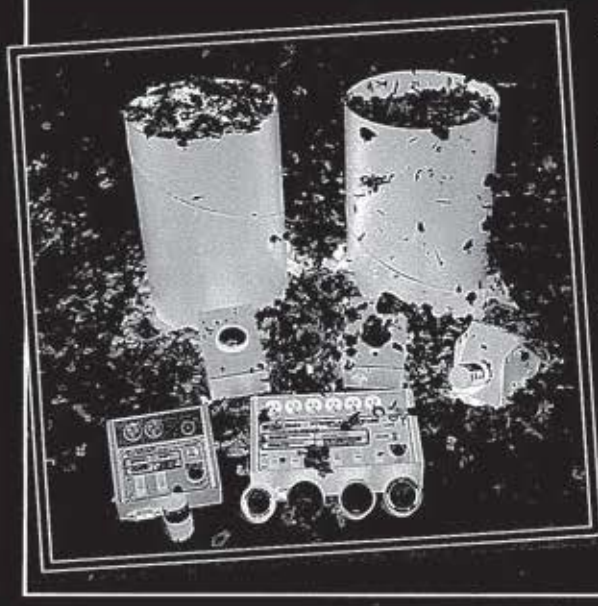
The book's final chapters cover computer aided design, design courses and a useful critical evaluation questionnaire. In his passionate advocacy of CAD, the author again proves himself the 'Renaissance Man'. Contrast this passion with his other faiths which include a similar passion for Handel and original instruments. The section on design courses reflects views which are typical of many people in education at the moment, and well illustrate their sense of frustration at having to face the reality of a system in which "cost-effectiveness is to be measured in terms of deploying minimum resource to produce maximum graduate quantity." I make no comment: I just review the books. These last sections are followed by suggestions for further reading and by a comprehensive glossary.

Given Francis Reid's background, the book is perhaps understandably stronger on lighting and scenery than on props or costumes, but people interested in those subjects should not be put off by that - they can find 'how to do it' books elsewhere. This book is a realistic and valuable overview of the design process that they won't find elsewhere. But it's important to realise that the title is about visual design, so sound is not mentioned. Now this is interesting, especially given that Reid had a distinguished start in this area - he was the first sound operator at the 'Talk of the Town' - so can it be that sound still lacks the cachet of being 'designed'? (Now there's a book for someone.)

The book works well, and on many levels. It is an uncoloured record of the design process and relationships at this point in time. It will be a source of inspiration and information to those planning a career in design, and it is also a reminder to those already employed that design has to take note of many practicalities.

Graham Walne

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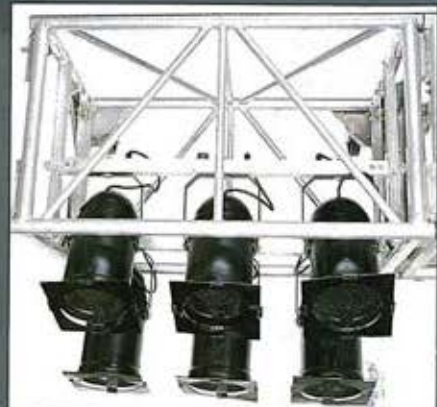
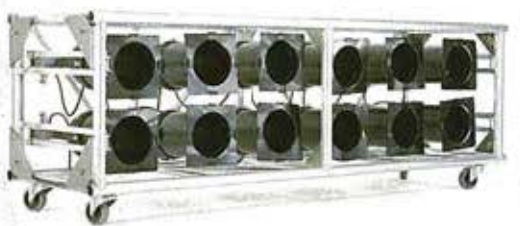
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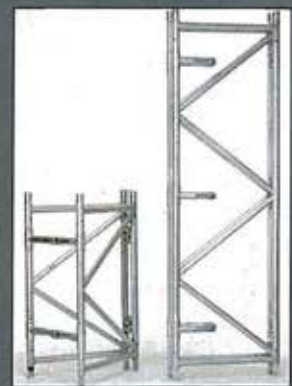
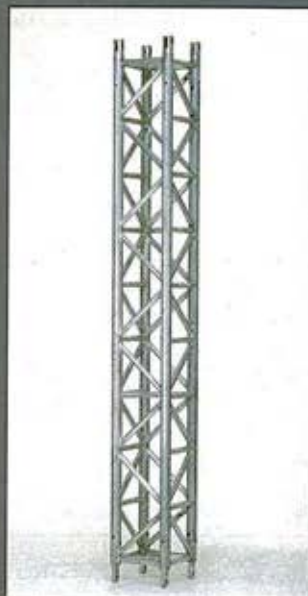
Pre-rigged truss in trucking position (8'). Pre-rigged truss in hung position (4').



A-type general purpose truss.

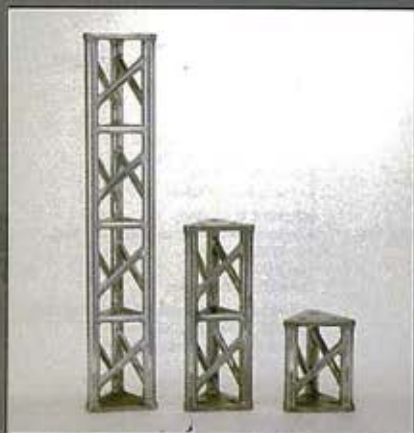


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ON TOUR

Carlona Forcer

I first saw the Simple Minds show in Barcelona where they were playing an outdoor gig. Unfortunately, it was a rather windy day and it threatened rain, so half of the equipment could not be erected. The trellises and roll drops, which were a very important part of the design were missing as was the backdrop. I decided that it wouldn't be a good idea to photograph the show and so I went to see it again at the NEC, Birmingham. Obviously, it looked a totally different show!

I covered Peter Barnes' designs for the last Bros tour and he invited me to see the totally new system that Chameleon had put together for the Bros Wembley Stadium show. This included a spectacular video introduction and many special effects.

Simple Minds Barcelona/Birmingham

**LD: ROY BENNETT/
STEVE POLLARD**

Roy Bennet and Steve Pollard had already worked together before the Simple Minds show was put out to tender so, rather than compete, they decided to collaborate on a design. Jim Kerr of Simple Minds explained to them the overall imagery that he had in mind for the show, incorporating religion and politics. He decided that the concert could be an important forum from which to speak out, in a very positive manner, against the things that he feels to be wrong. The original concept for



Simple Minds in concert.

the show was to have part of it lit in a straight forward rock 'n' roll way, and part of it in a very theatrical style.

The set design was based on everything being at a 45° angle to the front of the stage which gives a slightly false perspective. A ramp runs up the mid-

dle of the set and all levels follow it up to the top where Jim actually starts the show. A main feature of the set are the six genie towers, each with one Vari*Lite on top. These can completely alter the overall form of the set as they can dolly from stage left to right taking on different looks, for ex-

Thomas

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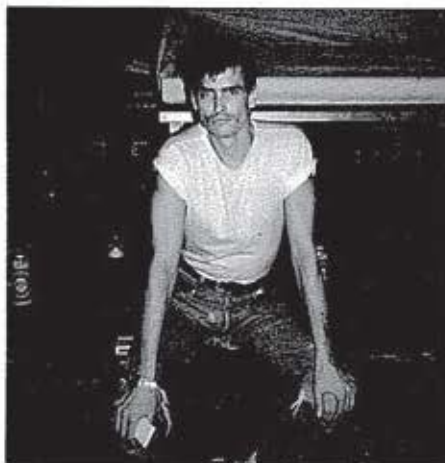
ample that of buildings. It is similar to what Peter Gabriel had on his last tour, although Roy insists that the idea did not come from there. It works on the same concept of tracking Vari*Lites across the stage at different heights, but they are also used as a set piece.

Three trellises are used to create a ceiling effect over the band and, together with the towers, they can create many different looks on stage. The trellises have openings so that roll drops can pass through and vice versa. Originally, there were 11 roll drops which Steve did the artwork for and Roy conceived the construction concept. Each is a different shape and they have cut outs filled with gauze so that light can pass through.

The lighting rig is a lot more open than one normally sees with a Roy Bennet show. There are two box trusses, one main and one upstage. Most of the system consists of Molefays with aircraft lights in them (there are four triangles with six Molefays in each one) and groups of four Raylights dispersed amongst the rig. There are 40 Vari*Lites, all of which are VL2s, and they are on three trusses which can either remain airborne or drop to floor level to be used as a backwash of floor lights.

Steve Pollard studied theatre design and production in Toronto, Canada and moved to New York in 1979 where he met The Psychedelic Furs. He started working for them for very poor wages compared to those of today and then went on to work for U2 who had a little bit more money. Steve then met Simple Minds who had no money at all, but decided to work for them for the love of it. To begin with, he was still doing The Psychedelic Furs and U2 but eventually, because of overlapping tours, he had to choose between them. He decided to go to Simple Minds and he has been with them ever since. Inbetween tours, Steve does a lot of film work and architectural lighting, although he prefers to do rock lighting as it gives him total creative freedom and he doesn't have to deal with what he describes as a 'bunch of bureaucrats'.

"I'm not a selfish person when it comes to creativity - no man's an island" explained Steve. "Even the caterers get a say! When Roy Bennet,



Steve Pollard, who collaborated with Roy Bennet to produce the design for the recent Simple Minds tour.

Andy Gibb, Mary Payne and I were programming the show we all put in ideas. All the programming had to be done at night because the place we were rehearsing in had skylights! Consequently, we never had a full run through with the band and so the tour had a bit of a bum start. Unfortunately, we were a victim of technology on this tour. The Vari*Lites are fine, they work but there's a lot of room for improvement in some of the technology that exists today.

The next show that I design for Simple Minds is going to be dead simple. I see myself going back to using a lot more standard lighting rather than getting tied down with colour changers and things like that because you really are at their mercy. If something goes wrong it is distracting because you are unable to pull up the fader that you want due to it not being right at the other end.

"I'm really working with who I want to work with right now, although I would like to design a show for Depeche Mode. It's not that I'm a massive fan

of their music, but it does lend itself to my style of lighting. The Simple Minds tour lasts for over a year, and when it finishes I don't think that I will want to do another tour for a while. I'd love to do The Psychedelic Furs again if they come up with a good album, but I've no interest in U2 anymore.

"I like the work of both Roy Bennet and Jonathan Smeeton, and that of Brickman is fine. I like what he did for the Pink Floyd concert although it was completely over the top. I don't like people who create a three ring circus with lights. Brickman did it with Floyd, but only because Floyd are non-entities. Too many designers build shows that detract from what is going on. I have very few lights up there, I like black and I like space. I don't like to look at lights flashing on and off, I like to see beams and the results at the other end of the lamp."

Bros Wembley Stadium

LD: PETE BARNES

Chameleon Lighting's concept for the beginning of the Bros Wembley Stadium show came about because of the difficulties of utilising lighting during daylight hours. To give the show a spectacular intro, they decided to use Diamod Vision - something big and impressive which everyone in the arena would be able to see. The band composed some music specially to accompany the video intro which was shot three weeks prior to the show. The set constructed for the video consisted of a tunnel with a 2.5 HMI lamp at the end. When one of the brothers stood in the doorway at the end of the tunnel, they masked off the light. As they were using a CCD camera, the effect was impressive. They had to shoot the boys individually which made getting the dialogue between them correct, quite difficult. When the two Diamod Vision screens show close ups of Matt and

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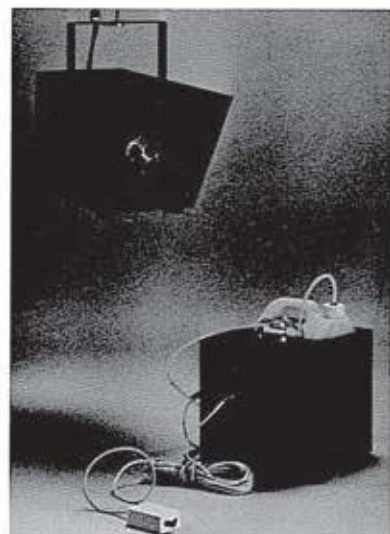
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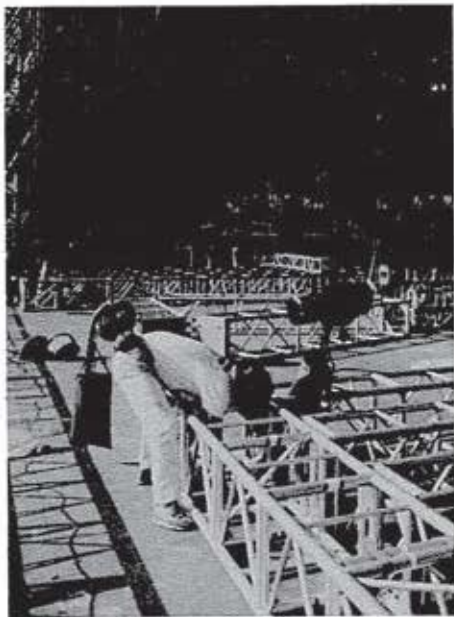
Luke, they turn to face each other across the stage and say:

"Ready Matt?"

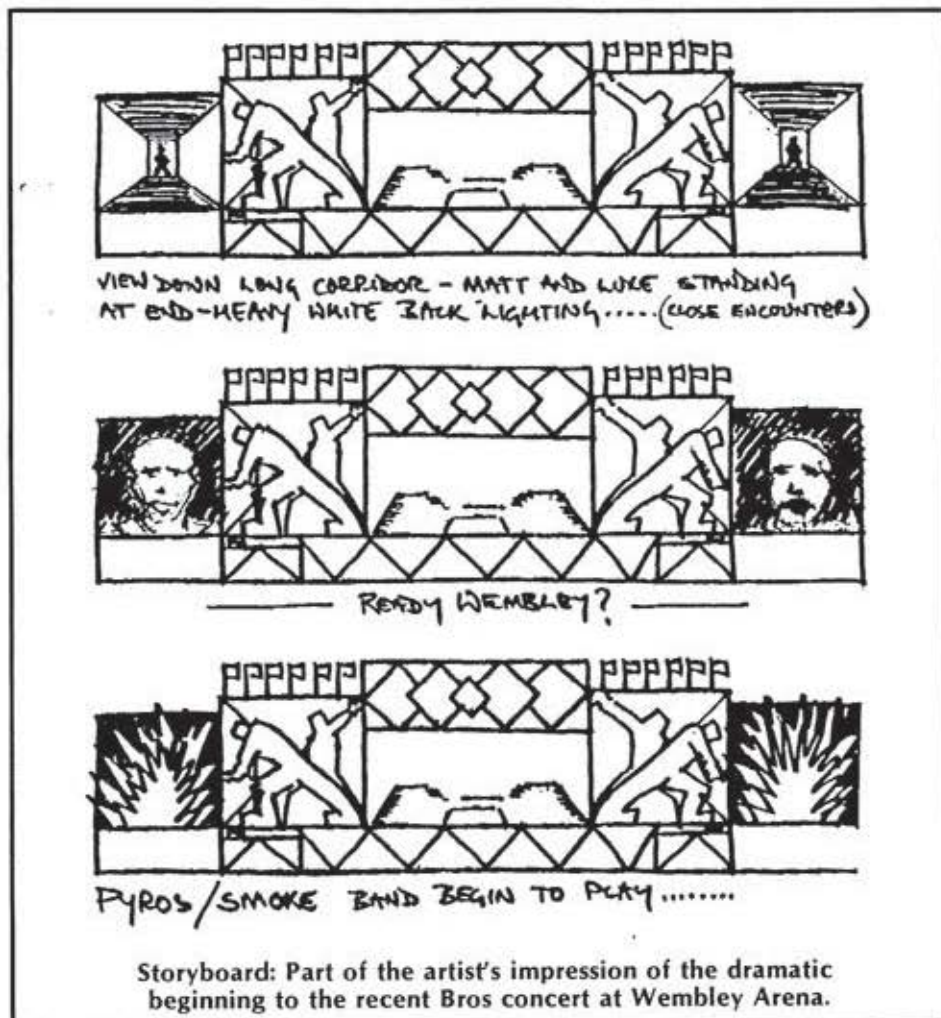
"Ready Luke?"

"Ready Wembley?"

Having turned to face the audience their faces turn green - a video effect, not the result of seeing 60,000 screaming brossettes. They then look down onto the stage where pyros go off and green smoke appears accompanied by loud laser noises. Their eyes turn green, there's an almighty flash and the boys appear in the flesh through the trap doors in front of the screens. Being daylight, something dramatic had to happen to focus the attention of the audience to the right parts of the stage, otherwise, they may have missed the



Preparations for the Wembley Bros Concert.



Storyboard: Part of the artist's impression of the dramatic beginning to the recent Bros concert at Wembley Arena.

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The lighting rig installed at The Marquee club in London.



A brief appearance at The Marquee prior to the Wembley gig.

band's entrance.

The lighting system consists of over 500 Pars and 56 Vari*Lite's, 52 of which are the new VL2b's. These are a 400 HTI version of the normal 250 HTI VL2 and they have an improved optic system to give a more even light, particularly on the gobo projection. This was the first time that they have been used in Europe and there were a few teething problems. Peter Barnes of Chameleon, found that it was very important to line the colour discs inside the VL2bs to correspond to the path of the light because it is slightly wider than on the VL2. If this was not done exactly, then a small amount of colour next to it would bleed through. Also, because the VL2b has a different optic system they found they had a slight problem in the difference of weight. They combatted this by adding weights to the units to stop them 'twitching'. A few VL3s were underneath the drum riser and a lot of the set was designed to focus attention towards the drummer including a revolving drum lift. The stage was designed by Alan Chester of Hangman.

The Vari*Lite operator, Andy Gibbs, was using one of the new baby Vari*Lite consoles, which he told me was good from a playback point of view. Andy found it easier to programme the show on the larger console, due to the fact that on the smaller console, each button has several functions and, from a programming point of view, it is necessary to constantly switch the buttons into different modes.

Fortunately, the day of the concert was fine and everything ran very smoothly. If it had rained, the fireproofing would have washed out of the scrims, so that once they had dried, they would no longer have been flame proof. Wembley authorities would have insisted that they be brought down -and that would have been a waste of £5,000. Wind could have also proved to be a problem for Peter(!) so he used a cyc at the back as a scrim rather than a Rosco screen because wind can go through a scrim to a certain degree, and it shouldn't blow too much. Whereas if it was a screen, it would be like a sail on a boat especially as it's 60 x 25 feet.

The show was to be televised by SKY TV, and the BBC. A video was being shot so the rig was designed with a lot going on at the sides and the back. Peter hates to see close ups of the band with blank scaffolding in the background. There were four Pani follow spots in the trussing and four outfront Xenon Supertroopers. Care was taken not to light Matt too much as Peter has seen a Boy George concert on television where he had so many Supertroopers on him in order to expose the cameras correctly, that whole stage behind him was in total blackness.

On the load-in day, Bros had decided to do a small surprise gig at The Marquee and so when they would normally be focusing, Pete and Andy had to rush there to sort out the lighting arrangements. At the Wembley gig Andy had 56 Vari*Lite's whilst at the Marquee he had only 15. He took exactly the same programme, changed the assign numbers of the 15 lights to ones relative to the 56 lighting rig to get the position, and ran the same show without spending all day programming.

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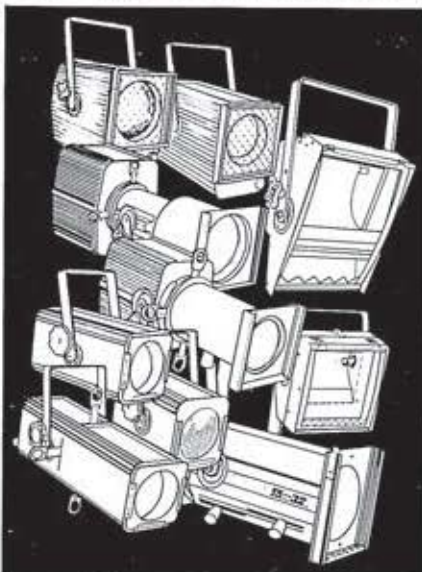
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VIEWPOINT

Tony Oates and 'That ole Black Magic'

Recently, while conducting a verbal 'talk down' with someone who was describing a sound system set up with a view to determining the problems within it, I was presented with one of those gems of misguided knowledge. When our discussion arrived at the equalisers I was informed that "they couldn't be the problem because the standard curve had been used." "Whoa... back up a couple of seconds, what standard curve?" "Why, the one that's like a flattened U of course, because everybody knows power amps aren't flat and you have to compensate for it with the equalisers."

This statement contains so many hidden dangers that to investigate them all is beyond the scope of this article, which is not intended as a technical exposé of the above mythological statement. I have heard many explanations for the old 'U curve' in equalisers but this one has a special place in my heart - the place that hurts the most. For those of you wondering: there is no 'standard' eq curve and only the very worst home-built power amp will struggle to maintain a flat line over the usable range of the human ear. The various vagaries of power amps, and there are many, will not be rectified by slipping an equaliser into the signal path.

The fundamental problem with the above example is that the individual was entrusted to re-design somebody's sound system who is not a P.S.C. (Professional Sound Contractor). To draw a comparison from more mundane daily traumas, this is tantamount to asking a lawn mower repair shop to service your brand new Mercedes. They both have combustion engines and bits that go around, but nobody would consider the skills involved compatible. This is 1989, nearly the end of the 20th-Century, yet we still have hi-fi shops installing systems in commercial venues, lighting contractors dabbling in audio installations, and one-man outfits attempting projects beyond their abilities to design, finance, install and service. There are, thankfully, notable exceptions, but they are few and far between. The country is in desperate need of sound contractors who have a long term dedication towards the industry and customers they serve.

In the United States, Altec Lansing, who have been in the business from the beginning, distribute their product **only** to an elite group of P.S.C.s who number around 200. The criteria they set to determine a suitable client exposes some interesting parameters. A sobering statistic is that in 1982/1983 census of Yellow Pages in the U.S.A. around 35,000 'operations' were listed as 'sound contractors', so when the word elite is used, it is not done so lightly. Altec use four main criteria points to determine suitability and there are tacit subsets to these points. I thought a quick listing might be interesting:

1. *That the company is a bona-fide business, either incorporated or a registered partnership and is licensed to operate.*

2. *That the company is financially sound. This means an ability to purchase (and pay for) the hardware or a project - without having to wait for payment before settling the supplier (sic Altec).*

3. *That the company has a sales department, service department, installation department and suitable management infrastructure.*

4. *That the company actively pursues fixed installation audio projects in identified market segments.*

How did you score? How did the sound contractors you know score? If our experience over the years is indicative, those with full marks will remain few and far between.

This is where the real black magic comes in. If I were a hotel operator, nightclub, theme park, theatre etc., where a sound system is mandatory for operation, before looking at bid values, I would establish whether those offering services met the aforementioned criteria. These are, after all, only points of common sense. It doesn't happen nearly often enough. If it did, some of the incredibly bad installations which one is subjected to wouldn't still be dragging our young industry into disrepute. The bottom line is that if the contractor is sueable, it would be rectified by removal and replacement, corrective surgery or something. Instead, there are a lot of wary, unhappy customers.

There is no voodoo involved in 'doing it right'. A bona fide, correctly run business with technical staff who have a firm grounding in the laws of physics and are prepared to spend time training their ears, is a far better proposition than the guru who converses in quasi mumbo jumbo, and has engineering principles extracted from late night Griff Rhys Jones and Mel Smith style discourse down the local pub.

The cowboy will always exist, but the time is way overdue for the Professional Sound Contractor. I don't believe that trade organisations can police this, it's beyond their brief. What can be done is to recognise that sound contracting above a certain level is a segment on its own. In very large organisations, it may be possible to mix sound contracting with video and lighting but **only** if each department is provided with

resources to execute its specific task. Unfortunately, too often, one becomes the poor cousin of another.

Let those to whom this plea means something ensure that our marketplace is aware of what qualifies a suitable contractor, before launching into why the client should choose ElectroVoice, JBL, Altec, Turbosound or whatever. This way you'll be bidding against somebody who has the same overheads and profit requirements - not a witch doctor operating out of a garden shed!



In 1982, Tony Oates returned to London from overseas where he had been living since 1968. His interest in audio began during an early position in the technical department of a cinema projector distributor. He has been a professional musician, toured extensively in the concert sound business and has designed and/or supplied fixed installations around the world.

Upon his return to the UK, Tony, together with Mark Burgin, formed Shuttlesound to service a large niche in the sound reinforcement market. He had previously been involved in running a large company and Mark possessed the complementary skills from a similar number of years in the business. Today Shuttlesound represents the very best audio products and is regarded as a market leader in the distribution and special project contracting.

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