



LIGHTING & SOUND
International

Eurovision / ADB
June 1987 Volume 2 No.6

PLASA published by the
Professional Lighting and Sound Association

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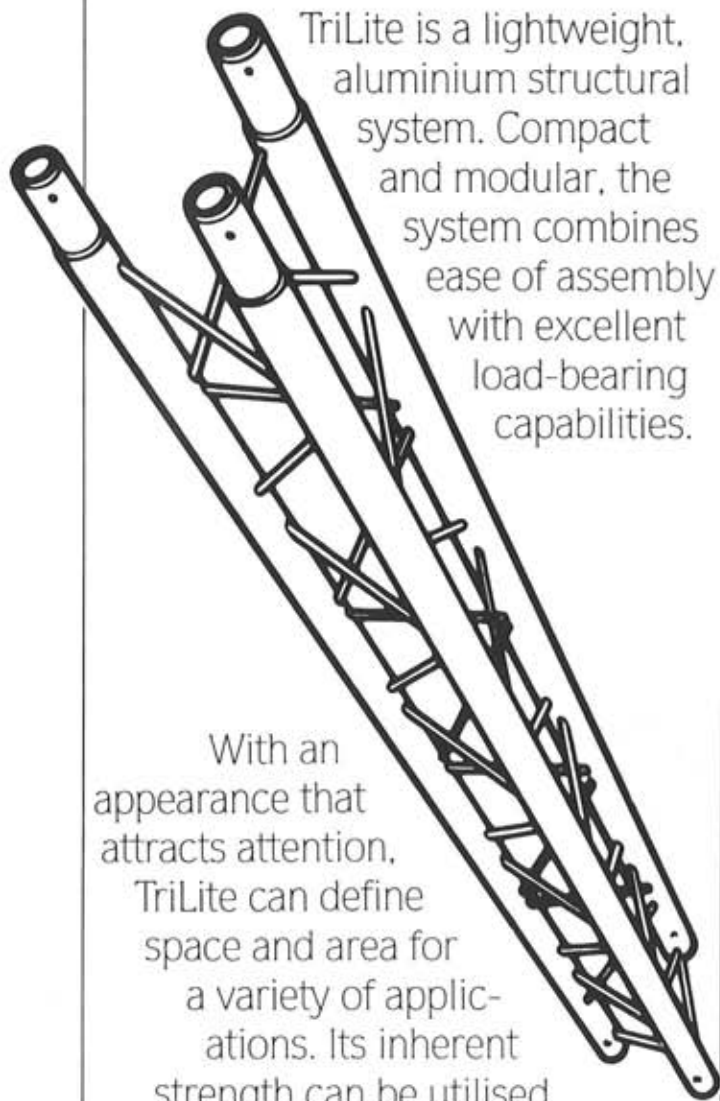
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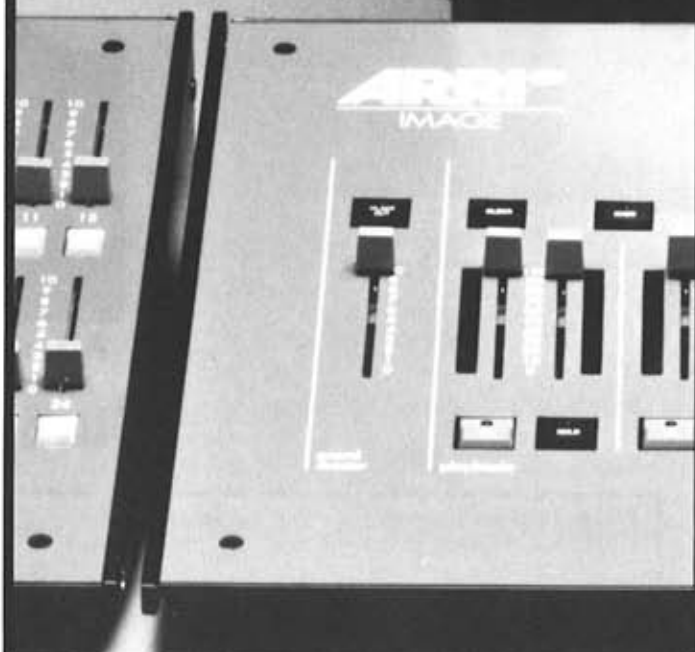
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LIGHTING+SOUND *International*

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Cover picture:
The 1987 Eurovision Song Contest in Brussels
(see special feature commencing on page 13)

SIB/Magis - the Italian Connection (Show feature 41-46)



Pulsar's Ken Sewell (centre) joins forces with Julio Savoldi (left) and Pasquale Quadri of Clay Paky.

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International

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LIGHTS
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Light & Sound Show

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Lighting Originators Combine



Tony Gottelier (left) and Peter Wynne Willson.

Trend-setting lighting designers **Tony Gottelier** and **Peter Wynne Willson**, who individually have been at the forefront of many of the most significant effect lighting developments in the last decade, have teamed up to form a new lighting design group.

The partnership, whose name will be eponymous, will provide a range of design skills across the board to a variety of clients from lighting manufacturers, to architects, rock bands and discotheque operators. They see themselves as lighting architects.

Tony Gottelier told L+S: "Peter and I are both good at spotting the potential of new ideas and concepts and developing them: our skills are complementary as both of us have considerable experience of product development and design. Peter has a specialised knowledge of intelligent lighting, having virtually invented it, and furthermore his early background in theatre and then rock with Pink Floyd dovetails neatly with my own specialisation in discotheque."

Peter and Tony first met 15 years ago when both were instrumental in creating a first generation of effects projection equipment. "Peter was brilliant at conceiving new and even more outrageous effects," explained Tony, "and he engineered them to a high commercial standard. Most of the projection devices around today owe much to Peter's inventiveness." It is intended that the teaming will offer professional design services in all the lighting disciplines including theatre, display and architectural.

Peter Wynne Willson was until recently director of design at Pancan for whom he will remain a consultant. "Working with Tony will free me from the constraints imposed by Pancan's financiers, so you can expect a pent-up torrent of new designs to break upon the market where, it seems to me, innovation has been withering on the vine," he said.

Tony Gottelier is best known for the eclectic Camden Palace lightshow, and recently the award-winning Joe Paparazzi in Glasgow. Years ago, of course, he was the originator of the use of the pinspot in the U.K. and the first to introduce the interior use of neon in night clubs. He is currently the driving force behind an advanced lighting control system project being launched later this year through Pulsar Light of Cambridge. "This is typical of the way Peter and I will work," said Tony. "I shall progress my association with electronic developments within the new practice, offering similar facilities to other clients."

While their short term aim is to work closely with lighting manufacturers on product design, in the longer term they see their future in co-operating with architects and interior designers to produce effective and original lighting schemes. "We realise this area is a bit of a mine-field in view of the large number of manufacturer-related free design services," Gottelier explained. "However, this cannot continue to be acceptable in the market-place once it is recognised that it is simply a method of product promotion and is reflected in the general low standard of commercial lighting schemes. If you want the best you have to seek independent expert advice. Often these days even architects are accepting that lighting is not their forte." And Tony emphasised: "Just look at the average office building, for example!"

The new operation will be based at The Old Mission House, Ide Hill, Kent, telephone (0732) 75204.

Shuttlesound N/D Launch

May 13th was the day Shuttlesound launched the new Electro-Voice N/D series in the UK - although they won't be available just yet. A year on from their introduction in the States, supply is having problems keeping up with demand, and Shuttlesound's Tony Oates was keeping his fingers crossed for delivery of the first batch into the U.K. within a few weeks.

The N/D series is different. EV have employed an exotic new magnet material they call N/DYM - a neodymium-based alloy with extraordinary magnetic potential - and it has defined an entirely new structure and geometry for a microphone element.

Computer optimised to use the power of N/DYM to full advantage, N/D mics contain a smaller magnet than conventional dynamics, and a surrounding magnet structure which is both shorter and wider than most magnetic assemblies. This configuration allows for large-diameter voice coils, oversized diaphragms with typically 50 percent more surface area than other designs and smaller, more precise magnetic circuits - features with distinct performance advantages.

The range includes four vocal and two instrument dynamics, and will be fully detailed in our July issue Equipment News.

Turbosound in Peach

As part of major improvements at Blackpool Winter Gardens by First Leisure, the contract for the installation of a new sound reinforcement system in the Empress Ballroom was recently awarded to J.S.G. of Bingley.

The Empress Ballroom is perfectly rectangular: 160' wide (49 metres), 80' deep (24.5 metres), with a height of 63' (19 metres). The seating is arranged on three levels: the ground-level sprung dance floor can be fitted to seat 2,500 persons, the first-level circle accommodates an average 400 persons and the second tier balconies have room for a further 220. Using occasional portable seats, this overall figure can be increased to 3,500.

Turbosound's TSE Installation Series was selected as being the only auditioned system capable of achieving the management's main criteria of even sound coverage to every seat throughout the highly reverberant hall. The installed system is arranged as a central point-source cluster comprising 22 TSS-111 Mid/high enclosures and 7 TSE-118 Bass enclosures. A further two TSE-111's a side are independently mounted to cover the balcony and circle areas to the rear of the cluster. Power is supplied by 6 C-Audio 606 amplifiers, controlled by a BSS FDS-360 frequency dividing system.

An interesting innovation, for Turbosound at least, was that the venue wanted the enclosures and all flying equipment to be painted peach, in order to blend in with the Ballroom's overall colour scheme!



Tony Oates of Shuttlesound (right) with Manfred Koch of Electro-Voice Europe at the N/D launch in London.

All at Sea

In the 'wake' of recent announcements on prestigious cruise vessel contracts awarded to Bose dealers, Fisher Marine Communications of Halifax has released details of its latest marine installations. The company is currently involved in a technical survey and appraisal of the sound system requirements on board the unique cruise vessel, the 'Explorer Starship', operated by Exploration Cruise Lines, a company owned by the Anheuser-Busch Corporation, already well-known for Budweiser Beers.

Recent projects have included Bose speaker systems throughout the 'Ocean Princess' and 'Ocean Islander', owned by Ocean Cruise Lines UK Ltd., also works for Premier Cruise Lines of Miami on the 'Starship Oceanic' and 'Royale' involvements with Cunard on the 'Queen Elizabeth II', and with Princess Cruises and P & O Lines.

Nisel from SIS

Following discussions in February SIS of Northampton have been appointed as new distributors for Nisel in the U.K.

Following discussions between Francesco Ossana and David Mitchell an agreement was hammered out which means that the two companies' product lines should be distributed side by side to reach a larger section of the market than has previously been achieved. The great advantage to both companies is that the product ranges do not overlap and therefore SIS did not feel restrained to handle only part of the product range. Also, as this would be SIS's only agency for

disco lighting it was felt that a strong marketing strategy could be attained. By the nature of the agreement it is also possible for SIS to supply overseas countries not covered by an exclusive contract with Nisel.

The Nisel product range has been reorganized into a simpler format and it is interesting to note that one of the stars of the show at Rimini was the new moving rail system which is able to transport lighting effects from one part of the venue to another both quietly and efficiently.

For further details on all NISEL and SIS effects contact Phillip Bradley on (0604) 250025.

DTL at the Olympics

Dynamic Technology Limited of Park Royal, London, have completed a multi-million dollar deal with NVC to design and build the International Broadcast Centre for next year's Olympic Games transmissions from Seoul, South Korea.

DTL will install television equipment valued at several millions of dollars at the Centre, a 45,000 sq.ft. 2-studio complex housed in a tower building alongside host broadcasters Korean Broadcasting Service. NBC has exclusive rights for US coverage of the Games, and will be the first to use the new Panasonic M2 VTR's in quantity.

Announced at NAB in Dallas last Saturday, the NBC contract is a decisive win for DTL. This broadcast systems company, a management buy-out from London Weekend Television, merged with the International Generics group in December and is already creating a reputation for technical innovation backed by sound business judgement.

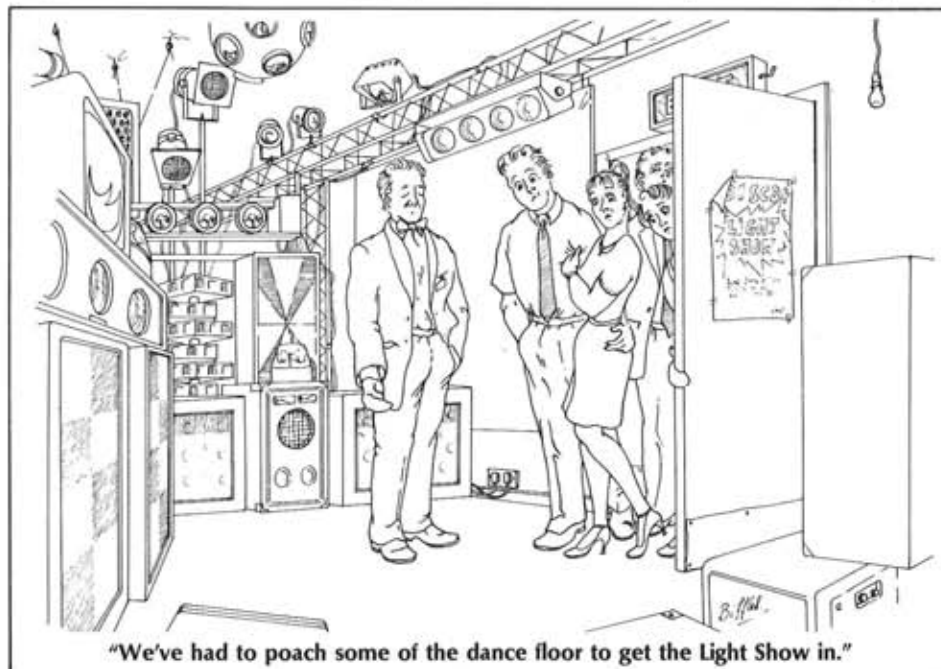


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88

Light & Sound Show

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Olympia 2

The new home of the Light & Sound Show for the 1988 event is one of London's newest, purpose designed exhibition halls. It combines all the comfort a hotel venue gives with the practicality conventional exhibition halls offer. Its size has enabled PLASA to answer demands of the industry by doubling the size of the exhibition without losing the friendliness characteristic of the Light & Sound Show.

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For more information on the 88 Light & Sound Show contact

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DLD trio prepare for launch, left to right: Simon England (partner), Tom Thorne (software development), and Nick Archdale (partner, and hardware development).

Launch for Digital Lighting Desk

The newly-formed Digital Lighting Desk Company launch their memory lighting desk towards the second half of June.

The desk, the DLD 6502, utilises advanced computer control and integral disc storage to provide a very compact 180 channel matrix memory desk. Features include 8 independent and fully programmable sequencers, 5 channel sound-to-light control of matrix masters and sequencers, a remote multiplexed output pack, and very comprehensive matrix and sequencer triggering options.

The machine is programmed in 'pages' of 36 matrix masters of which 8 can be assigned a sequence of up to 255 steps in length. By using real-time editing techniques and automatic 'dual paging', pages can be programmed, stored and recalled from disc during a show without affecting the running of the machine. Discs, pages, sequences and matrices can all be labelled with 8 figure alpha-numeric 'names' which are displayed on the colour monitor to make performing and editing a light-show a 'piece of cake'. There is simply no limit to the number of sequences and pages that can be created and stored as long as you have enough imagination and disks!

Of special interest is the machine's heavily software-based structure which facilitates complex user defined customisation while still allowing the desk to operate in a straightforward way, familiar to all lighting designers.

The desk comes complete with flight-cased construction, monitor, output pack and 50m multicore cable. The expected trade price is £5,000 plus VAT. Enquiries and requests for demonstrations should be referred to Nick Archdale on 01-262 7631. The DLD 6502 will be appearing at the Light and Sound Show on Stand 86.



The Same in Spain

Dear Editorial Sir,

I read your emphatic magazine with unfaith regularity, and you will I sure want to put in your paper this very interested photo picture of this little yellow van I saw recently near where I work place.

I think man 'Ken Sewell' is a very well know to British lighting, and some spain, and am most interested to have made known to me how came he to be - I think you say 'moonlighting' - in this part of Madrid.

To help your reading people it is a business of dog catcher who is humane, efficient, rational and economic

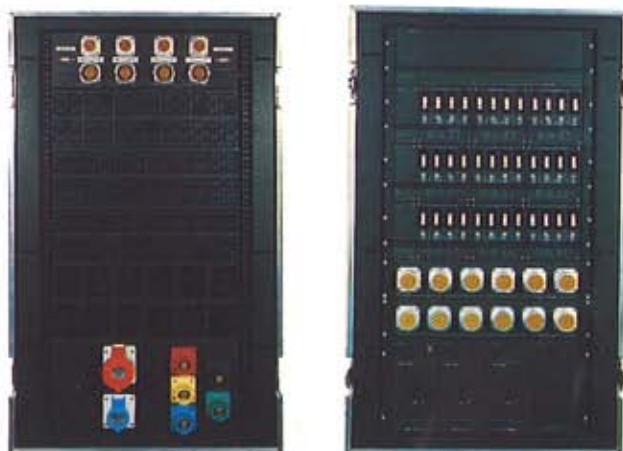
Yours sincerely,

Chien Hombre, Madrid.

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SHOW PAGE *with PLASA News*

Don Hindle at the USITT Conference

This year's United States Institute of Theatre Technology Exhibition took place at the Hyatt Regency Hotel in Minneapolis, and its enormous exhibition hall was fully booked with an extra 37 booths made available in the ballroom. Facilities for the Conference were excellent. Besides the exhibition hall and ballroom on the ground floor, there were a large number of easily located smaller meeting rooms on the first floor in which the actual Conference took place.

The first thing that strikes a visitor to any USITT exhibition is the wide range of exhibiting companies. While lighting control and luminaires seem to dominate, as at ABTT, there were some amazing smaller booths showing fabrics, costumes, paints, power connectors, computer software for the entertainment industry, sound systems, and communication systems. Also in evidence was a company producing authentic looking marble columns, capitals and cornices made from urethane foam, but so well finished it was difficult to tell that they were not the real thing - until you tried to pick them up!

Last year's exhibition was referred to as the year of the "Wiggle" lights, and this year was the year of the "Discharge Wiggle" lights. **Dyna-Might Sound and Lighting** were showing their 'Moto' light servo fixtures again, plus a new 400W discharge remote control fixture which can also be made to strobe electronically. **Strand Lighting** had Show Changers as last year, and a new discharge remote operated luminaire which pans, tilts, changes colour and has an in-built gobo changer whilst **Celco Incorporated** were showing the Posispot moving light system. **Micro Research Incorporated** were demonstrating the Accu Trac moving light system, and **AVAB** had an interesting low voltage MR16 lampholder which panned, tilted, and had a choice of three-colour colour change incorporated. This could be controlled either by a dedicated controller or by any 0-10 volt control system which would then use three channels to control pan, tilt and colour change.

The control system manufacturers were out in force, with Strand showing a new control system and DC dimmers which are claimed to eliminate lamp "sing". **Avolites** were showing their new memory control systems and Celco had the Series 2 range along with their new softpatch system 'Connexions'. **Electro Controls**, now of course owned by Rank, had a new control system, and **Electronics Diversified, Lighting Methods Incorporated, Teatronics Incorporated, Colortran, and Electronic Theatre Controls**, all had new or expanded control systems on view. **Luminance** have developed an electronic transformer which unlike the traditional transformer produces a resistive load for the dimmer rather than an inductive one. These items, while rather expensive and not yet available at 240 volts, allow low voltage lamps to be individually or in small groups, incorporated into any lighting system and be controlled by normal thyristor dimmers. While the light output of these low voltage lamps is not yet high enough for most stage uses, the extremely long life of the bulbs, in some cases over 6,000 hours, will make them very interesting for disco and display lighting.

Theatre Service and Supply Corporation had a handy little gadget called the Panix, for use with any Strand multiplexed control system made in the United States as an emergency back-up system. It will allow control of all the dimmers to be faded in or out as an emergency system in case of the failure of the control desk. Another suggested use for the Panix is to allow control of working lights without opening up the main control board.

The three major followspot manufacturers were well represented with **Strong** showing their complete range including the 3000W Xenon Gladiator III, which must be the largest followspot I have ever seen. **Phoebus** had a new Mighty Arc II, which is a narrow beam, truss mounted model using the Osram HTI 400W lamp. **Lycian** highlighted their Super Arc 400, which at 31°, in-

cluding the length of the 4" rear follow handle, must be one of the shortest followspots, and it is particularly 'aimed' at truss work.

James Thomas Engineering presented their wide range of Par fixtures, aluminium trussing and the 650W Fresnel and Ellipsoidal luminaires which are the same design as TBA's 650 range. **Kliegl** (quite rightly!) were showing a full range of CCT's luminaires along with their latest version of performer, the Performer 4. The unique feature on this board appears to be unlimited sub masters. **Rosco's**, luxurious stand, with the thickest carpets I've come across at an exhibition, was showing their new fog machine, the 1500, which allows non-stop operation as it will operate from any fog fluid container, ranging from the standard 1 litre bottle to a drum. The new range of Aluflex thick platforms allows you to build rostra up to 2 metres high using standard scaffold barrels for the support.

Lighting and Electronics continue to use the MR16 low wattage lamps to good effect. They originated the low voltage groundrow, and their nine lamp 'Mighty-Lite' is finding uses in theatre and film as well as television, for which it was originally designed. Another special from Lighting and Electronics is the groundrow fixture which was chosen to light the base of the Statue of Liberty - in fact all the coloured light around the base came from this aptly named fixture which they have now christened the 'Liberty-Light'.

Universal Stage Lighting, in addition to the full range of **Altmann** luminaires, had "Neon Sticks", which are about 2'6" long and come in red, blue, green, yellow and white. They can be used to make up all sorts of geometrical designs for both stage and display work. They also had an unusual lantern which produces a rainbow by use of a prism. This unit is available in 300 and 750 ranges, and two types of rainbow: one that is shaped like a rainbow seen in the sky, narrow bands of colour in a wide arc, and another which has greater dispersing ability and projects a rainbow which has bands of colour almost twice as wide as the first. However, the second doesn't produce as good a rainbow shape. It was suggested that these could be used with smoke machines, bubble machines, flowing water or fountains of water where the result would be floating rainbow or floating layers of colour.

Overall, I found the exhibition both interesting and informative and it covered a much wider range of exhibits than either our own PLASA or ABTT shows.

Graham Walne at SoundComm

Some years ago I was involved in the lighting of a 'Dickens London' project which was to be the centre of a refurbished Agricultural Hall. The project came to nothing but the Hall recently reopened as a trade centre and so when asked to review this exhibition I had an extra interest.

The new entrance foyer is in the post-modern style with the obligatory (but by no means objectionable) Crystal Palace roof. Exhibitions are held in the Main Hall on a raised island which one reaches rather oddly by attaining the floor above and then descending again, (hopefully not the route for get-ins and get-outs). Overall the centre is airy and light and seemingly well provided with car-parks and restaurants. The main hall is ringed by three galleries which now house permanent showrooms, mostly of furniture and this exhibition thereby provides the only opportunity in London when one can simultaneously choose a loudspeaker and a bathroom.

If you haven't heard of 'SoundComm' before then you're in very good company because it is a new title for the exhibition held for the previous



Selling Shows

Main theme of PLASA's stand at SIB in Rimini was the 1987 and 1988 Light and Sound Shows in London. The 1987 Show, now fully booked and with a waiting list of 10 prospective exhibitors, takes place at Novotel, Hammersmith from September 6-9. In 1988 the event moves to Olympia 2 where double the floor space will be available. In the picture above PLASA's chairman Peter Brooks (right) spreads the message of the 1988 Show with the new promotional literature, versions of which have been produced in five languages. Copies are available from David Street on 01-994 6477.

37 years under the banner of the Association of Sound and Communications Engineers, otherwise known as the ASCE. This year they decided to approach Batiste Exhibitions to organise and promote the show. The advertising world is littered with the history of failed renamings of otherwise proven products and it seems to me that if you are going to embark on this exercise you need to give potential customers plenty of time to get accustomed to the idea, especially when it is simultaneously happening in a new venue. So, if my experience is typical, perhaps the fact that my first public ticket (unlike my press ticket) arrived today with 'Studio Sound', two days after the exhibition closed accounts for the poor attendance.

Exhibitions can be many things to many people but unless they produce revenue for the exhibitors then they die. SoundComm exhibited the main sign of terminal exhibition decay - exhibitors giving brochures to other exhibitors. When I went round (on the morning of the last day) I counted more than half the stands either unmanned or without brochures and so I hope you will forgive an abbreviated review.

Dominating the hall was Turbosound's cluster comprised of their popular TSE series - look out for some new enclosures and off-the-shelf flying hardware. Their portable 'room' in which loudspeakers are demonstrated must surely have proved itself again in this situation, since any other demonstration out in the hall itself was lost in the cavernous roof, a problem of sound exhibitions world-wide. Congratulations too for being one of the few stands to issue a price list with their catalogue, as did Bose. Why do people keep prices so secret? Over on the Bose stand the familiar shape of the 802 was joined by the 402 articulated array and a good range of small music monitors available in a very wide range of colours and finishes. Their computer aided design program (reviewed in L+SI in March) was also on display. Audilec's stand had several new items including the new Jamo speaker range, some new power amplifiers from 3rd Generation Professional Audio and the HS speaker range from Toa. These were also represented on Toa's own stand and it is additionally worth looking at their new range of mixer-power amplifiers fitted with good overload and short circuit protection. Toa also displayed their new 12 station paging system and certainly this year was a good one for anyone looking at communications and paging equipment. SoundComm certainly had more variety this year. Old friends Tannoy showed their integrated fire/bomb/paging system. Other companies displaying similar items were Newman and Mustang. Another old friend Audix, celebrating their 40th anniversary year showed an interesting new range of MOSFET Powerblock amplifiers.

The exhibition was presented with a conference and I was able to catch the last of the five subjects, 'Does PA have to be so bad?'. I have to say that there were more people in the conference room (30 at maximum) than I had seen in the exhibition and they were treated to a good debate



Selling British Expertise

Kathryn Kukasky of Chicago-based Grand Stage Lighting Company Inc. pictured with Pulsar's Derrick Saunders at the USITT exhibition in Minneapolis. Pulsar controls were on the Celco stand, and Derrick told L+SI "it was good to show such fine products as Celco and Pulsar at one go".

(chaired by the redoubtable Chris Taylor of Page One who also wrote one of the excellent catalogue articles).

The debate was not on technical matters, but on the relationships between clients, architects, consultants and suppliers and it was worth the trip for this debate alone, much of which can be summed up by the story from one contractor who was about to fax his client with 11 pages of quotation. 'Fax the price first' came the instruction. I hope that this debate was typical of the other seminars and I genuinely wish SoundComm well for '88. But I'm glad I'm not selling space.

Sub-Committees

PLASA has now almost completed the setting up of various sub-committees to monitor and originate various aspects of the Association's activities. Rob Peck and Martin Prescott will form the membership sub-committee, with a further member to be added from the membership at large. The Standards sub-committee will be chaired by Tony Akers of Citronic, and the Sound sub-committee by Tony Kingsley of Avitec.

Exhibitors Training Course

An Exhibitors Training Course is being set up for PLASA members. Two identical courses will be offered on 16th July or 13th August so that holidaying members have a choice of date. The cost for the day, including lunch, will be £40.00 plus VAT against the usual cost of £105.00 plus VAT. Organised by John Fenton of Structured

Training plc, the course is in the form of a one-day seminar and will be held at Longbridge Manor in Warwickshire.

Full details will be mailed to all members, who should contact the PLASA office for latest details. A few places may be available for non-PLASA members.

PLASA AGM

Date for this year's Annual General Meeting of the Professional Lighting and Sound Association has been fixed for Thursday 2nd July at Novotel, Hammersmith. All members will be notified in due course.

ABTT North

ABTT North's Trade Show will be held at the Grange Arts Centre in Oldham, a live and popular venue when it comes to both production and educationally-linked theatre arts training courses. The organisers are hoping the event will have a "regional flavour and national appeal". Dates are 29, 30 and 31 October, and contacts for information are H.Claber at 29D Cheney Walk, Crewe CW2 6LN, or Geoff Joyce at Manchester Palace Theatre on 061-228 6255.

Disco North

Independent Promotions have announced that they will be promoting the **Disco North Exhibition** at Quaffers Centre, Bredbury, Stockport on Sunday 18th and Monday 19th October this year. The event is being sponsored by Budweiser Lager. Contact number for information is (0942) 861354

Business

● **Soundtracs** have expanded their research and development department. Under the management of John Stadius, the company's technical director, the Department is responsible for designing and developing upto six new products every twelve months. The new facility includes additional CAD design and plotting stations, ATE stations for the evaluation of new circuit designs and a plethora of computer hardware for the development of digital control systems.

● **Crest Audio**, one of America's leading designer/manufacturers of high power, high current audio amplifiers, has established a new European headquarters in Britain. Crest Audio (UK) Ltd is now in place, and Jerry Mead, founder of Rauch Precision, has been retained as general manager. The operation is based at P.O.Box 36, Royston, Herts SG8 7RQ, U.K.

● Loudspeaker and PA manufacturer **McKenzie Acoustics** continues to expand its worldwide operations with the appointment of two new European distributors. Pe-el Sound will handle McKenzie sales in Holland with Finn Musik Oy carrying out the same function in Finland.

● The Central London dealership of **Soundcraft** studio products has been awarded to TSC, a major new entry into the professional keyboard and studio products. Focus of the TSC demonstration facilities will be the TS12, already the best selling recording console in the £12,000 - £20,000 price class. Also available from TSC will be the Series 600 and Series 200B and the Soundcraft SATURN and Series 760 multitracks.

● **L.H.S. Ltd.** has been appointed an official major distributor of theatrical pyrotechnics by Le Maitre Lighting and Effects. As well as holding the full range of Le Maitre devices in stock at their sales outlet in Wandsworth, L.H.S. will also have pyro systems, dry ice machines, bomb tanks and smoke guns available for hire from their expanding rental department. Leslie Hire and Sale (L.H.S. Ltd.) was started by Hugh Leslie in December of last year and is now a distributor/stockist for an impressive list of exclusive U.K. manufacturers

● **Brooke Siren Systems Ltd.**, part of the EdgeTech Group, manufacturers of professional frequency dividing systems and signal processing equipment, have recently changed their name to **BSS Audio Ltd.**

● Increasing demand has made it necessary for **Turbosound** to dual-source all major components. The decision has been taken to form an in-house drive unit manufacturing company because no other speaker manufacturer could be found to fulfil the necessary criteria. Production of the LS-2403 24" sub-bass driver has already commenced, and over the coming months further models will gradually be phased into the programme.

● A specialist entertainment technology interpreting agency, **L'Interprete**, has been set up in Italy by Tiziana De Rosa and Nicoletta Malucelli. They are based in Milan on (02) 6701893.

● The formation of **Immedia Corp** has been announced by Ben Bauer, formerly affiliated with Juliana's Sound Services. Immedia, based in New York City, will offer innovative sound, lighting and video design to create unique environments for hotel nightclubs and restaurants. Contact number is (212) 431 9200.



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Eurovision Song Contest 1987: The Brussels Combination

John Offord met the team behind the production of the 1987 Show - a television event with a difference.

The 1987 Eurovision Song Contest was the first to take place in a specially constructed one-off situation - it was held in a purpose-built venue within Hall 7 of the Brussels Exhibition Centre. There were several advantages in staging the event in this way, such as access and freedom of space. And there were some major problems, too.

The production team had to put the show together from a blank piece of paper, and three main areas of concern were soon listed: the problems of acoustics, logistics, and noise associated with the necessary air-conditioning. Organising the event in this way also meant that many fields of expertise not normally involved with this type of production, had to be drawn together to create the technical and artistic environment in which Eurovision 87 would be successful.

The fact that it worked, and worked extraordinarily well, is really what this article is about. It was an important drawing together of stage and television techniques, and as one of the team put it: "Pulling out for television the best of the live".

After visiting potential venues throughout the country it became an easier political choice to go for a 'neutral' venue when the offer of halls was made by the management of the Exhibition Centre, the 'Parc des Expositions de Bruxelles'. And the wealth of space available, using two large exhibition halls, enabled different areas to be created in one unified scheme.

Hall 6 became a service area for the Contest. It included an information and reception area, restaurant, the VIP Village, and an exclusive area for artistes - a make-up room, hairdressing salon, and a green room. And the overall scheme retained the pink and blue 'colours' of the event. Hall 7 was devoted entirely to the staging of the show itself, providing seating for the audience, the stage and television working area, and behind, the 'decor' area for provision of effects.

Once an outline scheme had been drawn up, a brief was given to the acousticians. Professor Dendal and Vo Than Tien from Liege University were called in to advise and liaise



Venue for the 1987 Eurovision Song Contest was Hall 7 of the Parc des Expositions in Brussels. In the picture above construction is just about to commence.



Computer planning of all sound and video line connections.



The sound and vision laboratory in RTBF one month before the event.



The show area takes shape within Hall 7.



An entertainment atmosphere is achieved ready for rehearsals.



Compere Viktor Lazlo on camera for a rehearsal.



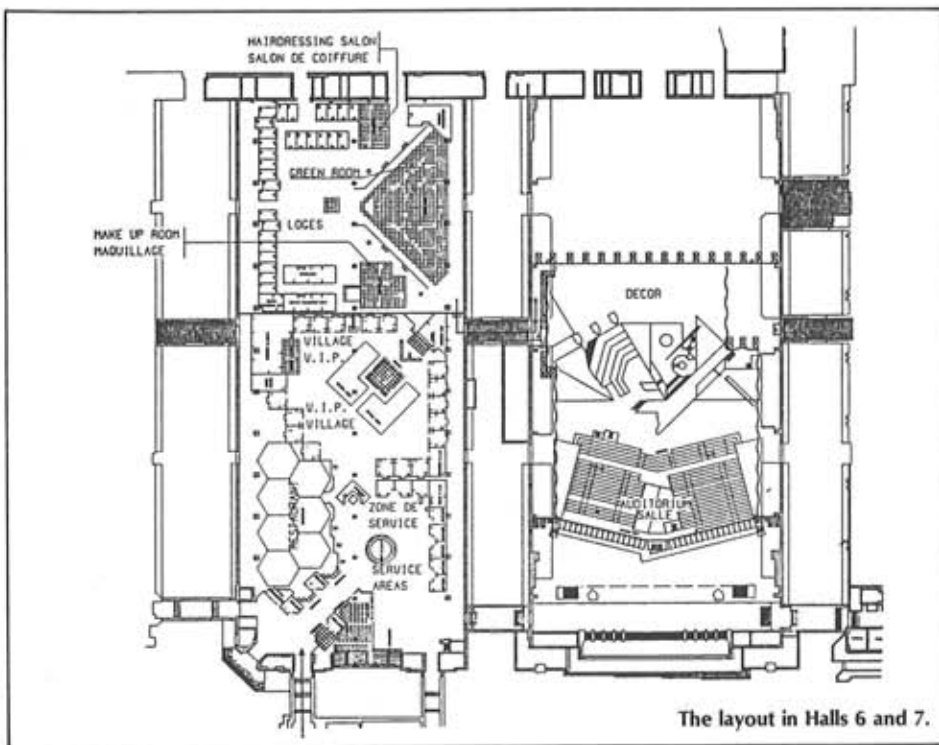
The scene in Hall 6 - 'The Village'.

with Lucien Lambert of RTBF. A few modifications were made to the set, but the main provision was for four-hundred acoustic panels to be attached to the structure. The position of these metal-framed glass-wool panels could be individually modified to obtain the final acoustic requirement.

Architect for the scheme was Marco Kadz and engineer Elie Mas (one of the engineers in charge of construction of the Brussels Atomium). Construction of the main superstructure was commenced on external sites, and taken into the hall for assembly. Main ceiling arches were placed at 14 metre intervals, and these supported 20 x 3 metre-wide beams, spanning from arch to arch. The end result was 32 tonnes of beams supporting 30 tonnes of sound proofing and 24 tonnes of electrical equipment.

The set for the production - 'Le Palais de la Chanson' (The Palace of Songs), designed by Daniel Georges - was a combination of simple volumes and oblique angles and faces. It gave director of photography Julien Clossé, working closely with Sonology who brought in their presentation and technical expertise to provide the lighting design and effects, freedom to make maximum use of shapes and angles.

There was no backdrop or cyc, and effect lighting was used to provide the background you saw on television. It was used to light the set, or parts of it, and provide a colour light curtain through smoke. For the total event over 600 lanterns were used, about



450 employed within the performance area and the remainder in Hall 6 to light the Green Room and Village.

Equipment included ADB 2k and 5k television fresnels; ADB theatre fresnels, profiles and parlights; a mix of ADB and Thomas Par-

cans; 6 new ADB 1200w HMI followspots and 2 Niethammers; and 20 ADB Svoboda HT2251 battens for floor lighting from the rear of the set. A bank of 30 Vari-Lites provided the main effect source.

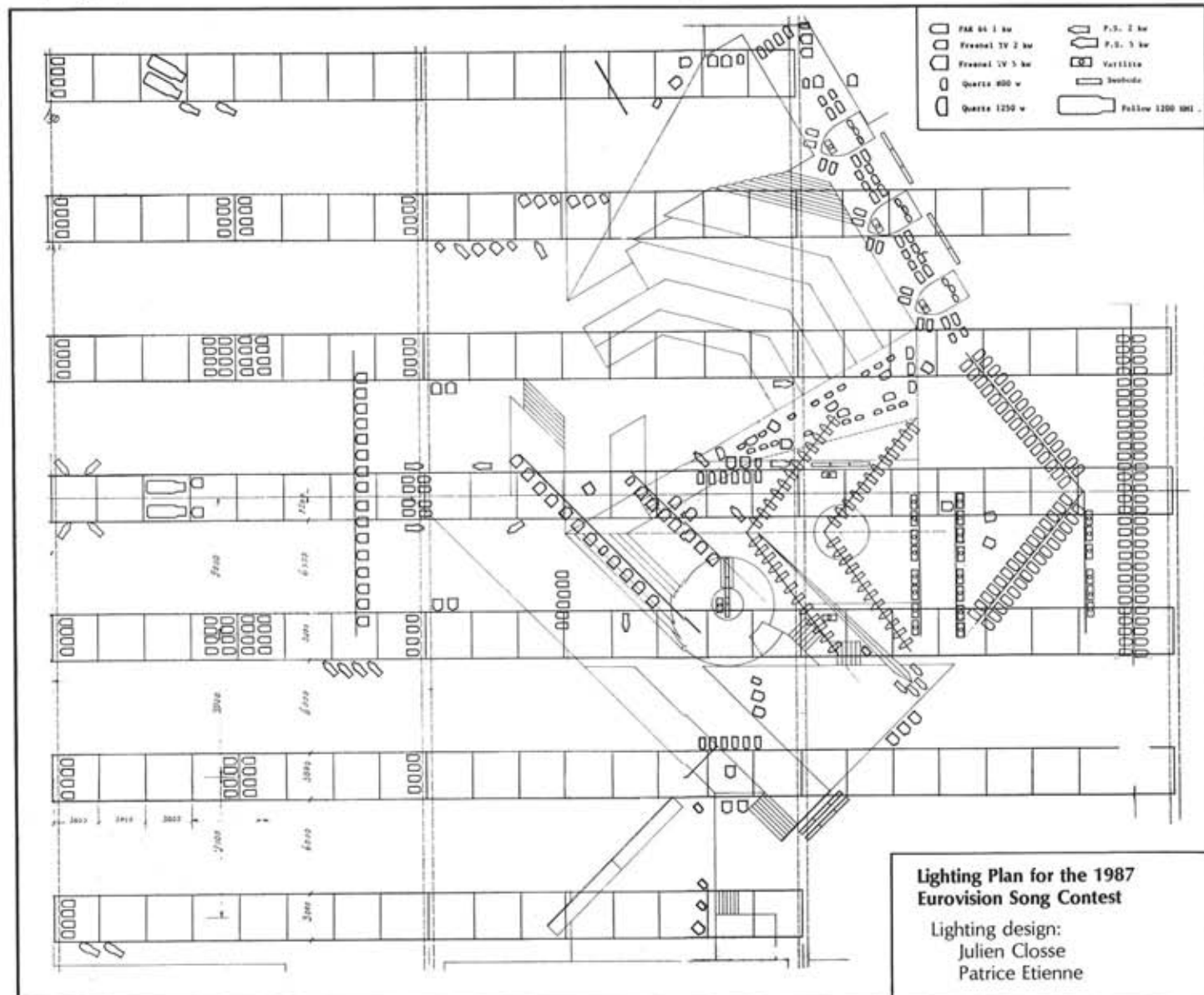
The laser, supplied to Sonology by Laser-



Daniel Georges with the set design.

point, and operated by Paul Green, was a Spectra Physics 171 18 watt Argon. It was sited low backstage, and for most effects was fired up between the stage and the sphere. Neons provided a sharp contrast within the decor, and were supplied by Croes Lighting.

Lighting control equipment was from ADB, and consisted of two S28 desks each with 526 channels available of which 262 channels were used for TV lighting, and two S20



desks providing 120 channels for show lighting. These were linked to ADB D225 dimmer racks. In each case the second lighting desk was synchronised for back-up, and in addition there was a third line of back-up with an ADB manual board.

The front of house PA was a Meyer system with a 32 channel Soundcraft Series 500 and a 32 channel Soundcraft Series 8000 along with two supplementary Midas mixing consoles. The stage monitor mixing system was comprised of a 32 channel Soundcraft Series 8000 and two 24 channel Soundcraft Series 800B's. Tannoy was used for the stage return, and the hall sound was provided by two Meyer clusters of 10 enclosures - six mid/high and four bass.

A total of three vans, two rented from S.F.P. in France (Société Française de Production) provided the final mix and outgoing sound for broadcast and the highly important telephone connections for the voting procedure. Intercom employed was a Drake system and there was a full Siemens back-up telephone system.

The technical co-ordinator for RTBF is Louis Naegels, and along with Jacques Francotte, technical facilities co-ordinator, he had to pull all the strings together to enable the images to be produced ready for the television cameras. Photography director Julien Closse had 12 video cameras, all Sony, at his disposal. Nine were in the venue in Hall 7, two in the green room, and one was a mobile unit.

From his 12-wall bank of Barco digital video monitors, director Jacques Bourton finally decided on the pictures you and I would see at home on our television sets.

As easy as that?

Well this article gives a very scant outline of the background to the production of the 1987 Eurovision Song Contest, and barely touches the surface of the masses of technical work involved in all the various specialist fields that have to be employed on such an occasion.

The situation against which RTBF had chosen to stage the event had by its very nature forced a huge mix of the technical and artistic from many different branches of the entertainment industry. They'd also employed the tactic of sponsorship to help keep down the costs.

People often work rather better together when a common goal is in sight and there is little time in which to achieve it. And quite often the best comes out when the budget is limited.

This is how it worked for the 1987 Contest. One big advantage of the venue was that creativity and reaction between the various elements could come into play because the team didn't have to work in an enclosed space. There was room for the television cameras to manoeuvre, room for an imaginative set, and room to use effects to good advantage. And most of all there was an opportunity for an exchange of information and ideas across many fields.

The RTBF team think they "put the bar very high" with their production of the 1987 Eurovision Song Contest.

You'd have to be very uninspired to argue with that.

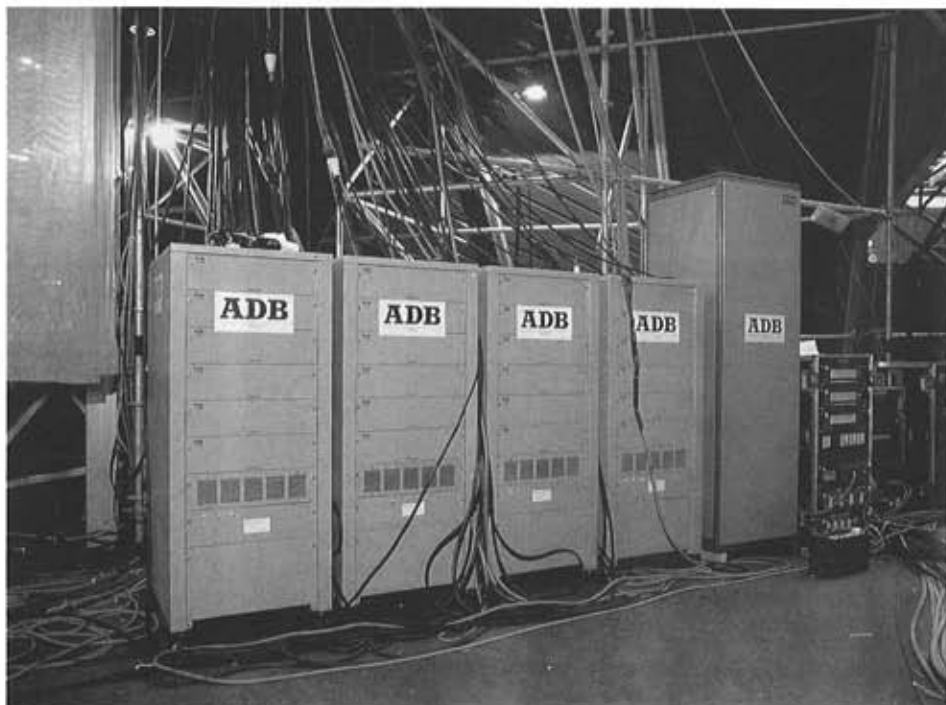
L+SI's Brussels feature continues on page 18 with a report on the development of ADB



Five of the principal figures involved with the creation of the 1987 Eurovision Song Contest pictured at RTBF headquarters in Brussels: (left to right) Jacques Francotte, Jacques Bourton, Daniel Georges, Louis Naegels (standing), and Marco Kadz.



A small staged area was created in 'The Village' in Hall 6.



'Backstage' in Hall 7 - the bank of ADB dimmers.

ADB: Cleared for Take Off

John Offord visited ADB's headquarters at Zaventem, Brussels and talked to theatre division group vice-president Robert Rutten about the company's development plans.

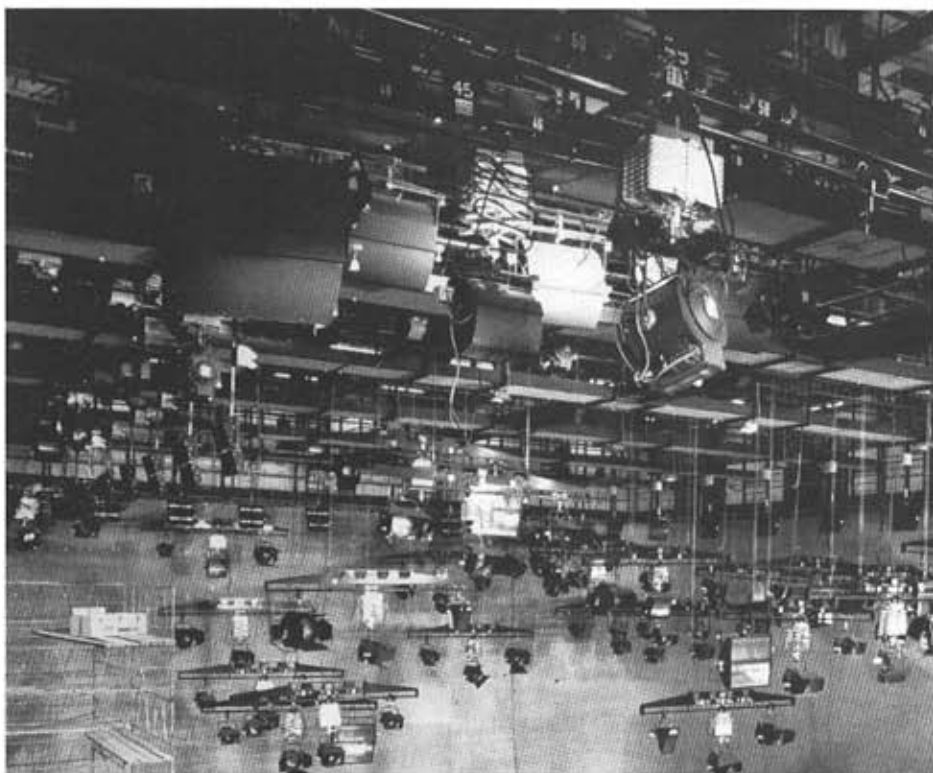
In British theatre lighting circles the 'sleeping giant' of Siemens, the huge West German industrial conglomerate, suddenly awoke when a Sitralux B40 memory lighting control was installed last September at the Royal Opera House in London's Covent Garden. And when Siemens bought the privately owned Belgian company ADB in February this year, it was seen as a sign that the giant was not only well awake, but flexing its muscles too.

Looking at the situation in this way, however, could very easily lead you to under-estimate the inherent strength of ADB in its own right. Long before the Siemens buy-out it had committed finance to upgrading its manufacturing operation and at the same time decided to make a determined attempt to increase its own share of the world market for theatre lighting systems.

What the Siemens involvement will do is dramatically increase the speed of development of ADB, provided of course that the management can produce the right products and come up with the correct marketing packages. As Robert Rutten, group vice-president of the theatre and TV lighting division explained: "There will be financial advantages. We could have had a good idea and not put it on the market. Now we can do it provided we can prove the product is good - and the same can go for marketing. On product development we have access to Siemens technology, and we have already felt the benefit of this. If we need an expert in a particular technique we can call someone in."

The wind of change began blowing down the corridors of ADB's base at Zaventem near Brussels when Philip De Backer took over from his father and became the third generation of his family to lead the company. "A rejuvenation of the management has taken place, and working with Philip has been very good. He has built a team of young managers," said Robert Rutten. The management and structure of the company has remained the same following the involvement of Siemens, with Philip De Backer still heading the operation.

The company was founded in 1920 when Adrien De Backer started manufacturing electrical equipment used by laboratories. It



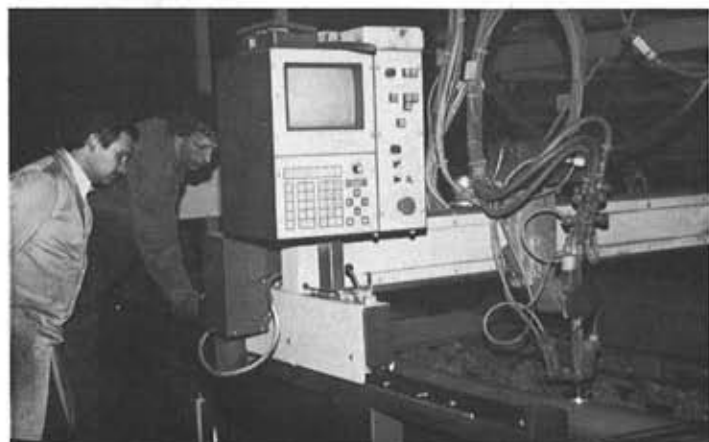
An ADB equipped television studio at RTBF in Brussels.



Robert Rutten.

was the first Belgian company to supply the market with rheostats and wirewound resistors. In 1925 ADB produced their first lighting control desk, to special request from a customer, and it was used for more than forty years before becoming an interesting museum exhibit. In 1932 they commenced the production of variable auto-transformers (trade name Rheotor ADB) and to this day they are still the sole manufacturer of this type of equipment.

By 1938 they had begun to manufacture several types of luminaires, and complete systems were available for specific orders. In 1932 ADB had established a branch in Paris to work round French import quotas and in 1960 it was registered under French law. Their factory in Northern France at Saint Quentin, midway between Brussels and Paris manufactures all luminaires with the exception of television versions which are assembled in Zaventem.



High technology in production - the Zaventem factory.



About to be launched - a MkII version of the S28 control nears completion.

ADB's in-depth strength in electrical technology, built up over three decades, was to branch out into another major area that had an unforeseen growth potential: they became involved with the design and production of airfield landing lights immediately after the Second World War. Now, more than 600 airports in 95 countries have ADB lighting systems installed, and this division of the business now accounts for 60 per cent of the company's turnover. (The remaining 40 per cent is split 35 per cent to theatre and TV lighting, and 5 per cent transformer manufacture.)

Having two strong, although not directly connected divisions, has brought with it some very useful benefits. "We can spread costs of development across two different areas on both electronics and optics," said Robert Rutten. "This division has always been the first to develop micro-processor technology, whereas on the optical side the airfield lighting division takes precedence."

The Zaventem headquarters employs a total of 350 people, the French factory a further 70, and a German subsidiary company another ten. In the USA, ADB has a production unit and sales centre at Columbus in Ohio where airfield equipment is manufactured.

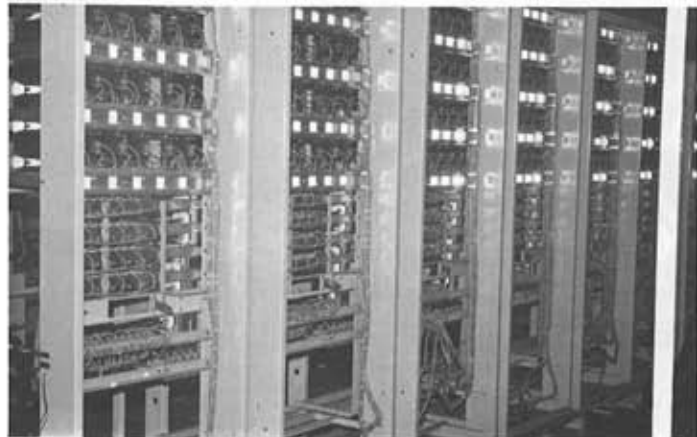
Whether it's with airfield lighting or theatre lighting there is a "systems approach" to each market. In the theatre field it means ADB can offer luminaires, controls and dimmers, and also a range of mechanical equipment and fittings. The company also holds a huge stock of lamps, parts and other general stock such as Rosco colour.



Marketing engineer Alain Collart with the latest Rosco smoke machine.



Wiring rheostats - a long ADB tradition.



A bank of dimmers await final assembly.

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World-wide, 12 per cent of the company's employees are engineers, and 20 per cent are employed in research and development. It is a base strength that allows ADB to offer a total service to the entertainment industry. Turnkey projects and installation work is undertaken, including engineering, and specific designs and layouts can be presented to clients. Technician training on-site is also provided from ADB's own resources.

As a result of coming under the Siemens umbrella, there has been a fresh impetus for the future, now that long-planned projects and ideas can be brought forward, as Robert Rutten explained: "We were very friendly competitors with Siemens for many years, and we have worked with them on projects both jointly and as a sub-contractor. It was something natural - we have always considered them as something of a partner. They respect our individuality, and we are now part of a very strong group. But it has a human face.

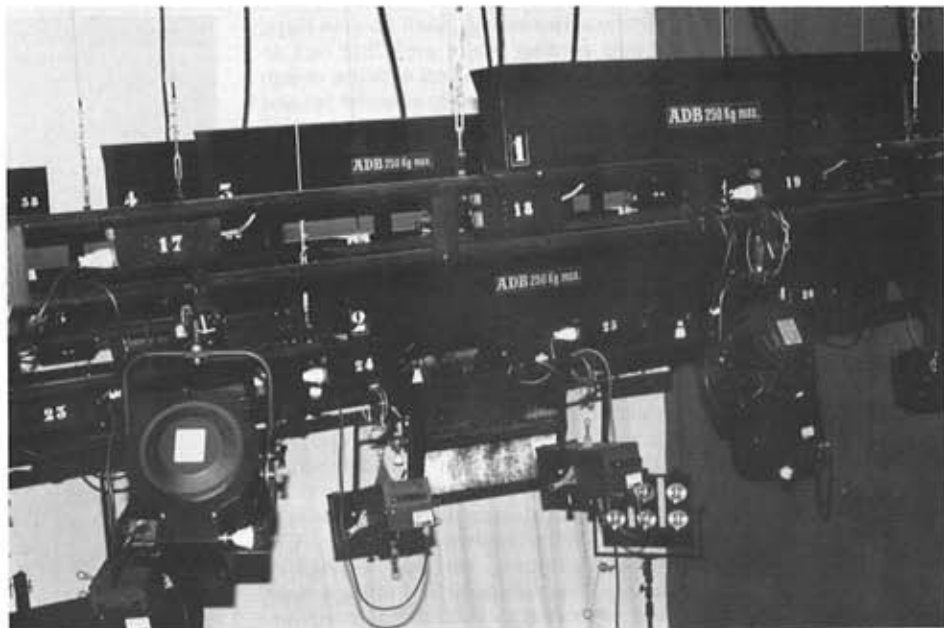
"We have the widest range of approved product for airfield lighting in the world, and we are adopting a more aggressive attitude in the theatre lighting field. We introduced the S28 lighting control two years ago, the S20 last year, and most recently the S25. And now we are already redeveloping the S28. A new range of theatre luminaires is to be launched in September.

"We have a similar philosophy on our marketing, and we plan to modify and brighten our image, and to make our presence felt in some areas where we haven't had much of a presence before - in particular the UK, Spain, the Far East and the United States.

"The UK has always been a tough-nut for us, but it is very important because of the image of British theatre in the world, and to make ourselves known to British theatre consultants. We needed a strong and industrial partner in the UK and that is why we are working with Furse."

In the United States ADB plan to introduce manufacture of luminaires at their Ohio plant. "The US market is the largest market in the world, and we must be present there," said Robert Rutten. "I don't know quite when, but it will be fast. So much innovation is coming out of the United States and we want to participate in that. The policy in this area has been agreed for some time, but because of Siemens we can now act.

"We have very ambitious goals, and we have the resources and people to realise them. Our factories are well equipped and we've made a major investment in com-



Part of the extensive range of equipment in ADB's fully equipped demonstration theatre.

puterised machinery over the past few years. And as a result we've seen a 10-20 per cent growth in our theatre market each year for the past four years."

Looking at ADB ranges in more detail, the three memory lighting controls already mentioned are backed up by the SM22 and SM26 2 pre-set manual lighting control desks. The full range of luminaires is too numerous to list, but suffice it to say that ADB have equipment that covers a complete range in the theatre field to look after anything from the smallest school stage to the largest opera house. And from the smallest photographic studio to the full-blown television studio it is the same situation.

You'll find ADB equipment in the Bolshoi Theatre in Moscow and the Paris Opera, and in television studios as far apart as Lagos and Bangkok. Their links across Europe are an obvious strength. "We have a very European approach to our marketing," said Robert Rutten. "In fact the Belgians have a more European approach than any other country on the Continent."

On their home patch, ADB works very closely with the Belgian television service, both RTBF (French) and BRT (Flemish). It is a highly important link for ADB. "They've assisted us in developing major products," explained Robert Rutten. (It goes without saying that Belgian television studios are full of ADB equipment.)



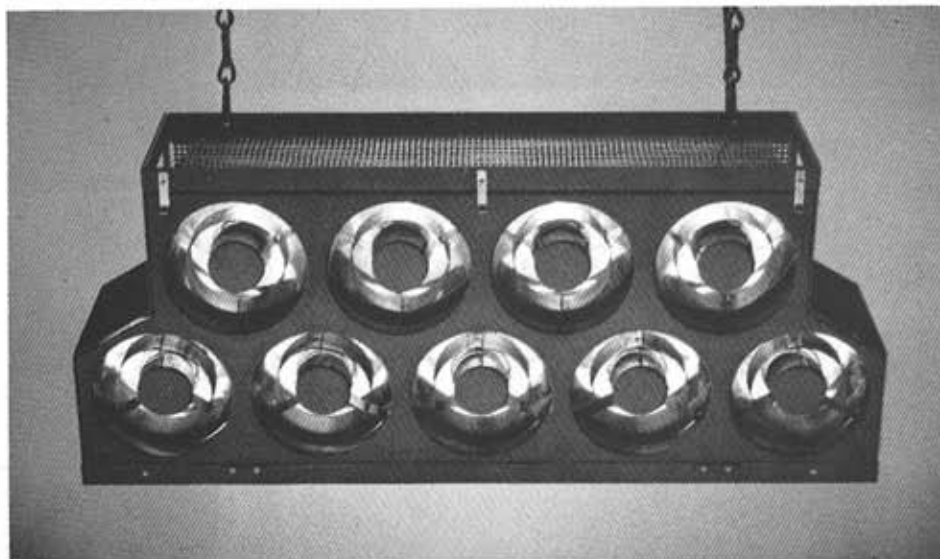
Alain Gillis - sales manager for ADB's theatre and lighting division.

And the link had a natural development when it came to lighting for the 1987 Eurovision Song Contest held in Brussels in May. The vast majority of lighting and control equipment was supplied on a sponsorship basis by ADB.

And that's where we came in . . .



Jean-Pierre Tollenboom, ADB's director of research and development.



ADB's popular and highly effective Svoboda Batten HT2251 - used in the Eurovision Song Contest.

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Southampton Mayflower

David Martin describes the installation of the new Sound System.

The sound reinforcement installation at the Mayflower Theatre required loudspeakers having wide dynamic range with a low visual footprint, appropriate to a 1920's theatre restored to its original splendour.

Sound system contractors are frequently called on to interpret tender document specifications in such a way as to satisfy the often diverse requirements of the architects, consultant, system operator and management. Their ability to interact successfully with all involved parties during the preliminary and on-site negotiations is paramount to the successful completion of a complex installation. Multi-purpose theatres, concert halls, conference centres, sports arenas and discotheques are some examples of installation customers who have specialised and often diverse needs for sound, video and lighting systems. The contractor who understands the artistic and aesthetic needs appropriate to a specific venue will be better prepared to specify and install equipment which will satisfy the customer than one who wishes to pass the buck to the architect or design consultant.

A contractor must wear many different hats: at times he will be called on to be a designer, an electrician, a painter, a negotiator, a bill collector, an acoustician and a co-ordinator. For a complex installation a contracting company must assemble a talented team who collectively have the broad spectrum of knowledge and experience essential to overcoming the many problems that will occur, and who will bring the project to a successful conclusion - on time.

History

The Mayflower Theatre, Southampton, was formerly known as the Gaumont Theatre. It was conceived during the 1920's and the building was completed in 1928. During the first few years of its operation, it was used exclusively for live theatrical performances. In 1935 a projection system was installed and the Gaumont became a venue that could be used both for the screening of movies and for visiting artistes. Extensive use as a movie theatre continued right up and into the 1960's.

In 1950 the Gaumont was purchased by the Rank Organisation. The decline of the large movie theatre coincided with the arrival of rock 'n' roll: the Gaumont, with its large stage, played host to musical groups as diverse as Bill Haley, the Beatles, the Stones, Shirley Bassey and The Who. More recently, groups such as Queen, AC/DC, Status Quo and many others used the venue.

By the mid-80's the Gaumont was shabby but still in its original form. Rather than let it be sold for conversion to a supermarket or, worse, a bingo hall, Southampton City Council negotiated with Rank. The outcome was a plan to sell the building to Southampton City Council after it had been comprehensively restored and upgraded to suit modern



theatrical and multi-media requirements.

Following a public competition, the Gaumont was renamed the Mayflower Theatre in June of 1986. It has a maximum seating capacity of 2,300, which reduces slightly if the orchestra pit is in use.

Preliminary Assessment

In mid-1985 we were approached by Rank Technical Services*. We made an initial site visit to assess possible loudspeaker positions, location of mixing console, control electronics and amplifier locations, and to gain a 'feel' for the acoustic environment. Just prior to Christmas 1985 we made a further site visit to demonstrate the proposed loudspeaker system. Rear reinforcement loudspeakers were temporarily installed forward of the first and second circles (see figure 3). A digital delay line was inserted between the source and these loudspeakers. Comprehensive speech articulation tests were conducted throughout the auditorium to the satisfaction of all assembled people,

and much valuable data was collected: for instance, we proved that additional delayed loudspeakers feeding the second circle upper level were not really needed (reference to the sound control block diagram, fig.1 shows that we have made provision for second circle upper loudspeakers - this for a future enhancement of the system).

The Team

Whilst Martin Audio are primarily manufacturers, close co-operation exists with our dealers and distributors for the purpose of specifying loudspeaker systems used in installations. In addition, we maintain a direct involvement with selected clients. This enables the company to keep in close contact with end-user requirements, thereby acquiring the immediate experience needed to produce a superior product for the future.

Martin Audio has enjoyed a long-standing relationship with Quark Ltd., a specialist company formed in 1982 to handle professional sound installations, custom electronics design and manufacture, and service on all types of professional audio equipment. Peter Holmes, managing director of Quark, was therefore involved on this project from the beginning. The experience gained by the

* The project management team for the restoration and refit was provided by Rank Technical Services, a division of the Rank Organisation, and main contractor was Ernest Ireland. Client was Southampton City Leisure - a subsidiary of Southampton City Council.

two companies whilst working on the complex installation at St. David's Hall in Cardiff was to prove invaluable for this project.

The Tender

In an ideal world, every aspect and component of the sound system would be accurately identified and precisely specified: tenders would be invited, with the lowest bidder being awarded the contract. However, modern sound systems are complex and rapidly becoming even more so. Techniques for signal acquisition and processing are improving and expanding. Digital sound processing technology abounds, and is now finding its way into sound mixing consoles. Microphone technology has expanded to the point where there are over 600 different professional microphones to choose from, including many sophisticated radio microphone systems. An increasing range of loudspeakers and amplifiers makes the consultant's job more difficult: which combination is right? Producers, sound engineers and artistes have, in many cases, been exposed to both the technical complexity of the modern West End show, and have been involved with tour sound systems. In consequence, their expectations have been raised. The consultant who can accurately specify the sound system needs to be an expert and a specialist; such people do not exist, and one therefore must look to specialist companies who earn their living by designing, selling and installing the complete package. And these companies are rare.

The danger of an imprecise tender document is that the lowest bidder may put in a system which is not adequate. If, for instance, the signal cable specification is elaborate, then much of the budget can be spent with little left over for loudspeakers, mixing console and effects. The alternative approach (which we employed at The Mayflower) is to take the tender document as a guide to establishing and negotiating a budget that will ensure a satisfactory end result. This pre-supposes that the contract does not go out to open tender.

The sound and communications section of the schedule of refurbishment did in fact contain many intelligent suggestions; but much careful negotiation was needed to pro-



Proscenium area. Loudspeakers can just be seen - lower columns are under temporary 'No Smoking' signs.

duce a well-balanced end result that would fit the budget.

Feasibility and costing

Following the demonstration at the Gaumont in December, we prepared an in-house feasibility and preliminary costing study which involved preparing a preliminary wiring diagram for the theatre and from which we could estimate the total number of man-hours required on-site. Together with a comprehensive breakdown of the equipment required, this enabled us to put a preliminary quote to Rank Technical Services, which was way over their budget!

In addition, a comprehensive report was prepared and sent to Rank for their comments. This report analysed and elaborated on every single item listed in the tender document. Many points required clarification - for instance, additional sound control positions were specified as being located on the left and right of the auditorium in the standing boxes, and had to be complete with its own jack field connected to the main

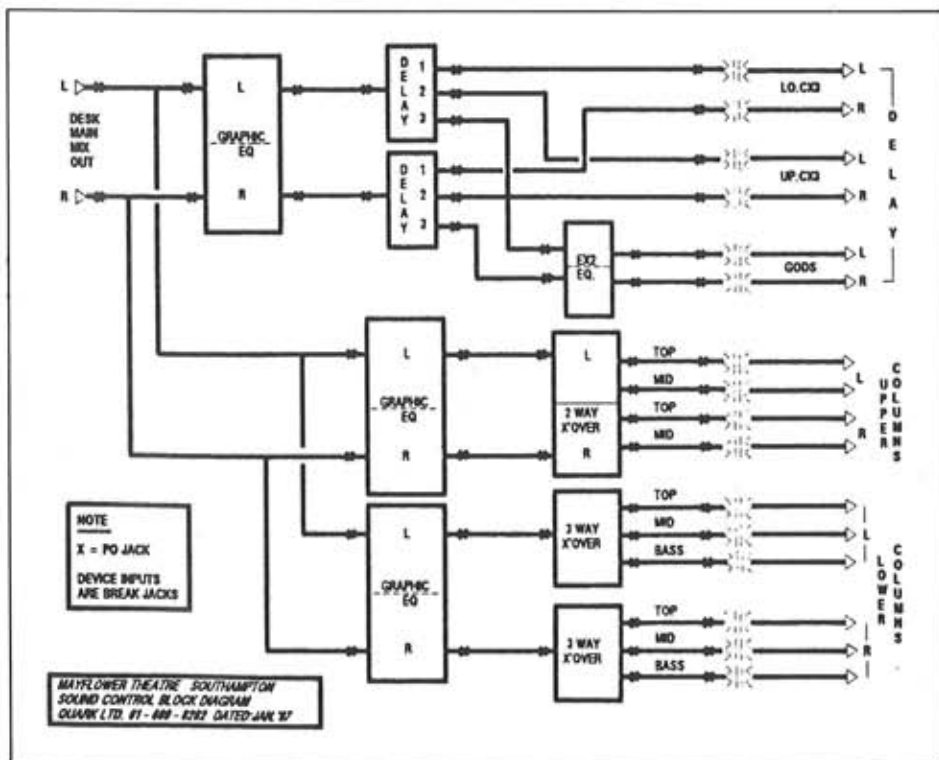
jack field in the 'control room'. A quick analysis indicated that the cost of providing this facility would be prohibitive (later negotiations with the theatre consultant resulted in this requirement being deleted).

The tender document envisaged that the mixer and the associated electronic control equipment would be located at the rear of the first circle in a control room with "fully openable windows". This is an excerpt from our report:

The mixing desk location is critical to the performance of the whole system and to the audience's enjoyment of the performance. Fundamental to the mixer location are the following requirements:

- It should be centrally located for proper control of the stereo image.
- It must be in the direct sound field of the primary loudspeakers, close enough to the stage for the mix engineer to observe every movement of the performers and every performer.
- It must not be in an area where the acoustic of that position in a room is different from the main body of the auditorium.

It therefore follows that an under-balcony location becomes more undesirable the further back under the balcony it is. It is also mandatory that there will be no acoustic obstructions, e.g. walls, either in



Close-up of actors' left CL1000 column and BSX sub bass.

front, to the sides, top or back of the chosen position.

It was eventually agreed that sound and lighting control would locate half-way back in the first circle, where it was originally.

Co-ordination

Our final quote was submitted and accepted. In addition to the system specification, we defined the parts of the installation that we were responsible for, and those of the client. For example, supply and installation of all cables would be done by the main electrical contractor to our specification. This enabled our complex system to fit the client's budget.

Quark would accept responsibility for the wiring, on-site staff management and logistics, pre-testing of all electronics, installation, final testing and system documentation. Martin Audio would handle negotiations with the main contractor and sub-contractors, theatre consultant and architect, and would also be responsible for liaising with all other involved parties. In addition, Martin would handle finances, purchase and construction of all installation equipment.

Site Meetings

From the outset, and well before Quark could commence work on-site, I attended site meetings. These were of great importance because they ensured that the many decisions needed were made quickly, and with the full involvement of all appropriate people. At an early stage we prepared a spread sheet which listed all the stages of our installation, and displayed commencement and completion dates for each stage. As the contract progressed, this proved remarkably accurate - except that every stage commenced approximately one month after we had planned! However, our optimism in setting completion dates had allowed for a 4-week buffer period prior to Christmas 1986, so there were never any problems caused by the inevitable late start.

Signal Distribution System

For all microphone and line level signals, each feed originating from and going to the mix position was terminated at a star distribution point located in the amplifier room under the stage. At the mixer, each feed was terminated at the jack field, thence taken to its appropriate position. The signal distribution system can therefore be thought of as a signal bus system, with each point at the jack field terminating at the star distribution point, thence going to its destination. We built in considerable redundancy: each signal multiway has spare cables. Murphy's law of cable runs states that a problem in a signal cable will always occur in the least accessible part of the building (so far, we have had to swap only one cable).

Stage monitor loudspeakers are connected via a ring main, with multiple outlets. This helps keep cable losses low and enables a lighter gauge of cable to be used for long runs. Heavy gauge cable was used for the main and delayed loudspeakers, a good rule of thumb here being that cable resistance should **never** exceed 10% of the loudspeaker's rated impedance, and should be under 5%. 100-volt line distribution systems are avoided because they need very large, high quality transformers at each end. Wide bandwidth, 500W audio transformers are not a common item and add unnecessary complication and expense. The



View from centre stage showing 1st and 2nd circles. The photograph is deceptive: viewing angle from 2nd circle to stage front is 30° down.

complexity of the wiring may be judged from these facts:

- We estimate that there is over 16kms of twin screened cable installed.
- There are over 1800 individual wire joints in the system.

Phase, Continuity and Testing

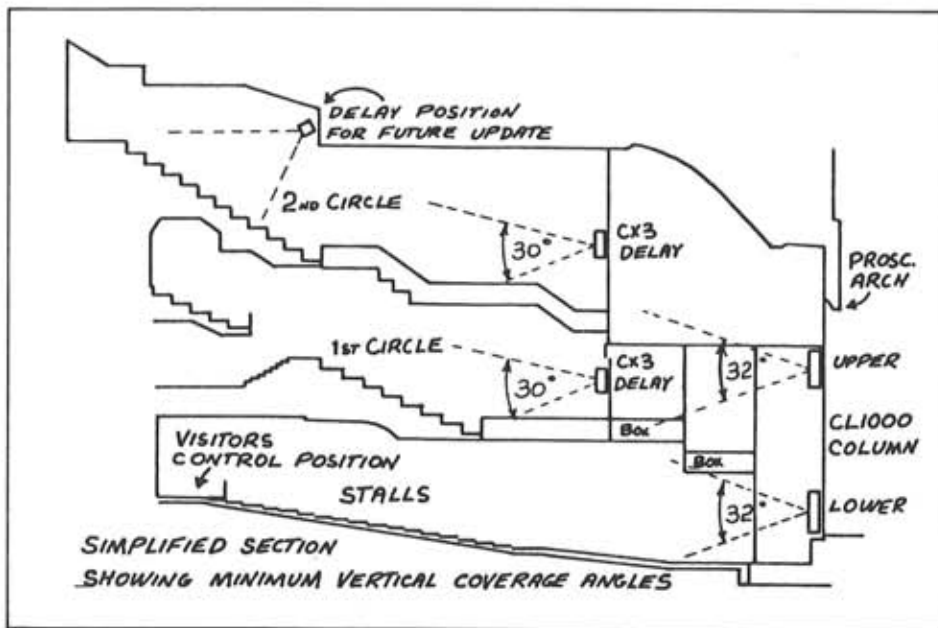
The importance of maintaining correct phase throughout the system cannot be over-emphasized. It is common knowledge that all loudspeakers must be in phase; not so



CX3 co-axial delay loudspeaker and CL1000 columns, midway through painting.



Part-completed mixing console cable form.



well understood is the importance of microphone phase, especially for microphones in the footlights picking up distant performers. As each section of the wiring was completed, connections were verified and phase checks made, using walkie-talkies for communication. When the time came to connect the electronics, we were sure of the routing and phase of the 'wiring loom'.

It is also important to physically separate microphone and line cables from the loudspeaker cables, as otherwise with the very long cable runs which we employed, there would have been a real risk of inductive coupling, which can lead to instability. System instability may not be readily apparent - it can manifest itself only when the system is driven hard, and may take the form of an increase in distortion.

With the wiring loom in place, the system was connected. Working back from the loudspeakers, every step was verified until, at last, the console could be powered up. System verification now commenced in earnest, and the inevitable problems were identified and solved. Amplifier instability was traced to excessive input bandwidth; the addition of a 50KHz low-pass filter at all amplifier inputs effected an immediate cure.

More serious was system hum. Early production HH VX900 amplifiers were rapidly and efficiently modified by their technical staff. The Soundcraft 800 console exhibited low level hum pick-up, again solved efficiently by their technical staff who revised the internal grounding of the console on-site. In fairness, I should point out that we are operating in a low-noise theatre environment, and the hum problems that we experienced would certainly not be noticeable in rock 'n' roll or discotheque installations. Also, a high headroom 8000W sound system has a very wide dynamic range; it will magnify the slightest system hum or noise to a greater extent than will a system of limited acoustic output.

Final Test and Hand-over

Prior to Christmas 1986, we were able to demonstrate the nearly complete system using spoken voice and compact disc source. The system was 'tidied up' and all wiring documented in time for the official hand-over. The testing of a theatre sound system requires complete silence in the auditorium. The final test and de-bugging was therefore conducted late at night, after all other con-

tractors had finished.

The official hand-over took place on January 14, and the theatre opened to the public on February 14.

The System In Use

Ironically, the new sound system was first used for a local rock band contest. It performed admirably at "near heavy metal" levels, and has subsequently been used for Peter Pan, Hans Anderson - The Musical, The Drifters and Des O'Connor.

Future acts booked to use the system include Val Doonican, John Williams, Foster Allen, and the autumn line-up includes Chorus Line, Desert Song, Camelot and Les Dawson's Christmas Pantomime. The Bournemouth Symphony Orchestra is intending to do a trial performance on the enlarged stage: without rear reflectors, will they need to mike up the percussion and horns? This is a tempting thought . . .

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The author is owner of Martin Audio Limited.

CHOICE OF LOUDSPEAKERS

Several choices of loudspeakers presented themselves to us. We would have liked the opportunity to use a fully horn loaded system, recessed in the angled walls flanking each side of the proscenium arch, but the loudspeakers could not be recessed. The other option was to use column loudspeakers (this was the consultant's recommendation), but these needed to be of very slim profile, so as to be visually unobtrusive.

Column loudspeakers were once in widespread use but have declined in popularity. Poor vertical pattern control, limited acoustic output and dull sound caused by cheap transducers have contributed to their demise. However, when well designed, they have many advantages and were the logical choice for the Mayflower installation. Each column (as can be seen from the photograph) consists of a central high frequency horn, which is driven by a 2" exit compression driver. Arranged top and bottom are pairs of 30cm bass/mid drivers. These CL1000 columns may have their vertical coverage angle altered electrically: the medium throw position provides wide vertical coverage with a mid-band sensitivity of 104dB/1w/1m, while set up for long throw use (with narrow vertical coverage) sensitivity increases to 106dB/1w/1m.

The required minimum vertical coverage angles can be seen from fig. 2. It would have been possible to employ 4 CX2 loudspeakers in place of each CL1000 column; but 4 full range loudspeakers arranged vertically are very directional in the vertical plane - the directionality increasing with increase of frequency. For clean mid and high frequency control, an ideal column loudspeaker would vary its height inversely with frequency - as the wavelength decreased, it would shrink. The CL1000 columns (first used in St. David's Hall, Cardiff) approximate this condition through a careful choice of crossover points. At low frequencies, all four low frequency drivers are driven. Above 400Hz, only the inner pair radiate. The column is electronically crossed over at 1KHz, above which a 90° x 40° horn provides accurate pattern control to beyond 15KHz.

Each column can give a continuous output level of 130dB/1w/1m with considerably higher



Compact sound control area provides adequate space with no sightline obstruction.

'peak' sound levels (sensitivity figures on column loudspeakers are obtained by measuring in the far field, and referenced back to 1 metre distance using the inverse square law). The nominal lower limit for these columns is 60Hz: we therefore employed two BSX 2x18" subwoofers crossed over at 80Hz. These extend system response to 30Hz. Space and cost considerations precluded the installation of 4 BSX: this quantity would provide an ideal balance for high level use, e.g. rock 'n' roll. However, solid bass can be felt throughout the theatre, and the system's primary purpose is to provide high headroom - with consequent low distortion - for theatrical performance.

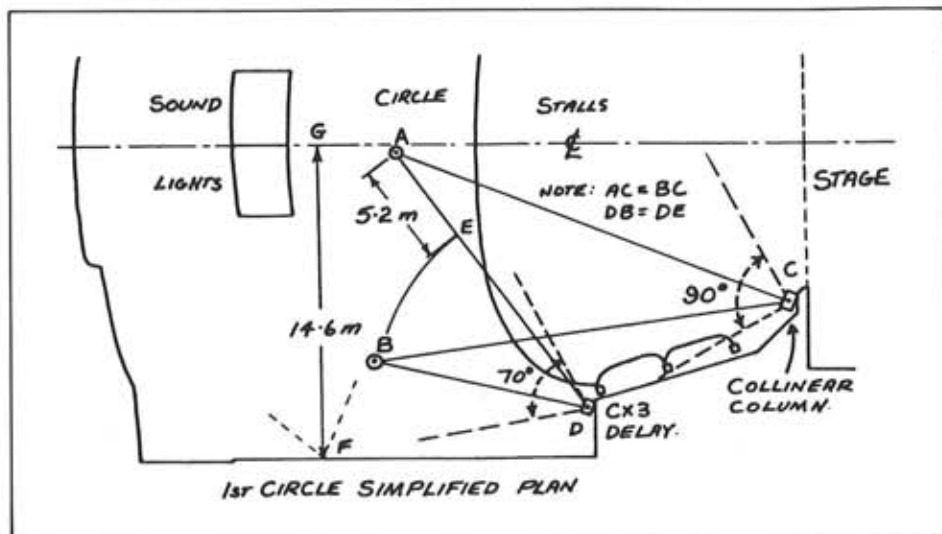
Delay loudspeakers are CX3's, using two 30cm low frequency drivers, one being a coaxial using a 1" exit titanium diaphragm driver for 30° clean vertical coverage. These units are passively crossed over, accept 500 watts of drive, and have a sensitivity of 101dB/1w/1m. Again the required vertical coverage precluded the use of stacked CX2 units with the consequent narrowing of vertical coverage.

For stage monitor loudspeakers we employed a mix of CX2 and CXW coaxials: their high efficiency and compact dimensions enable them to be hidden in a set. The coaxial design provides a true point source, with precise voice localisation, while their high acoustic output enables them to perform ideally for rock 'n' roll or star entertainer monitors.

DIGITALLY DELAYED LOUSPEAKERS

From our initial tests, it was obvious that delayed sound to loudspeakers positioned as in fig. 2 considerably enhanced speech articulation in the first and second circle areas.

A pioneering paper published in Germany by Helmut Haas in 1947 provides guidelines for modern digitally delayed reinforcement loudspeakers. His findings as applied to the



Mayflower Theatre may be summarised as follows:

- An observer at B listening to loudspeakers C and D will perceive the sound as coming from C, provided that a packet of information sent to both arrives from C 5 milliseconds (ms) ahead of D. Under these circumstances D can be as much as 10dB louder than C before the observer perceives D to be equally loud.
- For speech, a packet of information must arrive from D no later than 40ms after it arrives from C, or an echo will begin to be heard (absolute maximum delay 30ms. For music, longer delays are acceptable).

Set up procedure is simple: measuring distance from upper column (see fig. 2) we get:
BC minus BD = 31 feet (9.45m)

Speed of sound at sea level, 20°C = 1130 feet per sec. (344m/s)

Distance travelled in 1ms = 1.13 feet (0.344m)
Delayed arrival time from C is: $31/1.13 = 27.4$ ms
Delay setting for D is $27.4 + 5 = 32.4$ ms.
Check other positions, e.g. A for additional air delay to be sure that no echo will be heard:
 $\frac{5.2m}{0.344} = 15.2$ ms + 5ms (initial delay at B)
 $= 20.12$ ms.
Highly satisfactory!

However, a loudspeaker positioned as at F can cause problems: it would delay sound at G by 44ms and will be worse at all positions forward of G: clearly it is important to position delay loudspeakers carefully.

Klark-Teknik DN716 delay lines were used on the delay loudspeakers: with 3 adjustable output delays, wide dynamic range and low distortion they were the logical choice.

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The Second Coming

Tony Gottelier, whose new design partnership with Peter Wynne Willson is announced in this issue, with the second of L + SI's features on projection - this one discotheque oriented.

It seemed necessary to define projection within the scope of this article before getting started as, essentially, any luminaire which emits a beam of light is factually projecting light. This is obviously too wide a context and not at all what the professionals understand as projection. Therefore, I settled on the following self-penned definition of what constitutes a projector:

Any instrument which emits a hard-edged beam of light capable of generating focussed images with the use of gobos, slides or other image transition materials.

Within this remit I am, therefore, able to include video and lasers as well as the new generation of discharge lamp luminaires, which some might not consider meets their own definition, as well as more conventional projectors.

Of course, as far as discotheque is concerned, the story starts in the late sixties and early seventies with the ubiquitous Tutor II slide projector - now sadly demised but never to be forgotten by those of us who cut our teeth on liquid light shows. Of course, this open-gate slimline 250w slide projector was a gift to someone intent on 'squidging' poly bags full of emissible coloured liquids, to create monstrous globules of heaving, schlurping, amoebic colours while bands did their musical thing. Yet this, in itself, was a step up from glass dishes and massive overhead projectors.

Naturally it wasn't long before some of these individuals started to think of a more coherent, less messy and thus more commercial package for their way-out ideas.

Cue Optikinetics: one of the first, and certainly the most enduring. The company was formed by a bunch of hippies who lived and worked in a rented farmhouse in deepest Hertfordshire. Here the liquid wheel, a triple decker rotating glass sandwich of coloured liquids, if not actually created, was certainly refined and put on the map together with

the numerous bearing-mounted moiré effects and assorted other projection gizmos, too numerous to mention.

Of course all these items were themselves symptomatic of the times, the days of flower power and psychedelia of marijuana and acid. So it was with some curiosity that I revisited the 1980's Optikinetics to see how they have developed their concept over the past fifteen or so years.

Well, I have to report that although the farmhouse commune has long gone and only two of the original partners remain, it was a bit like entering a 1970's time warp. While they now occupy business premises in Luton, the original cottage industry atmosphere still pervades the warren of rooms and production units. The works manager and one of the joint managing directors wear their hair in the original 'biblical' fashion and I felt that at any moment somebody was sure to say "Love and peace man", if not touch me for a donation to the Hare Krishna temple.

Over the years the Tutor II has long since been replaced by a 250w halogen projector of their own making. Various refinements have been made to their range of effects but in terms of projection the world has virtually stood still in Luton as Opti's have concentrated their recent efforts on other lighting products.

So it seemed that to see where the future lies I must look elsewhere and beyond these shores.

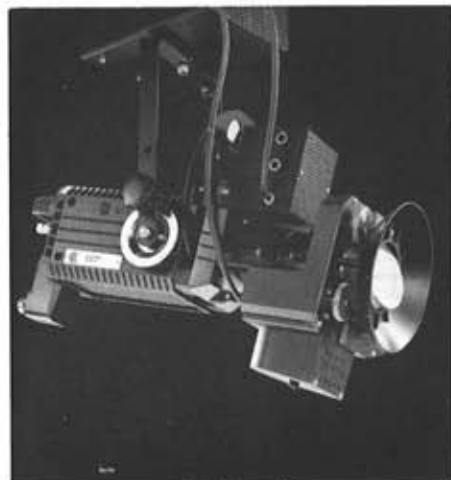
It must be obvious to all that a single most pivotal development in recent years has to be the Vari-Lite, which by harnessing the brilliant white intensity of a tin Halide arc source, and clever use of dichroic colour filters in combination with gobos, has succeeded in out-doing lasers in every department other than graphics, while offering many additional facilities. Chief amongst these is the practicality of harnessing multiple units and the wide range of colour varia-

tion available from each unit.

As forecast at Entertainment 86, there is now an unseemly scramble by several major suppliers to ape the Vari-Lite with the discotheque market in mind. Mind you, Vari-Lite has of course left the door wide open for others by both carrying out its development under the full public gaze over the past three years on tour and by its 'Rolls Royce' rental policy. (The Palladium in New York and The Hippodrome being the only discotheques brave enough to take the plunge.) Indeed, I am amazed that the look-alikes have taken so long to come but I guess the emergence of more practical, longer life tin halide lamps had a lot to do with it. While it is a pity, in a market which is supposed to depend on its originality, that so much product depends on 'Xeroxing' the concepts of others, I suppose there is a certain inevitability about it. Meanwhile, like IBM, Vari-Lite has moved on, leaving all the replicas copying an already outdated unit. (It's much improved Mark II and Mark III versions are reviewed by Francis Reid in this feature.)

Anyway, among the look-alikes from Tasco, Coemar, Avitec and others, Coemar seem to have the most available and viable products in the integral Robot luminaire and the smaller Forte lantern with bolt-on accessories. Also at Rimini last month one was able to see a Clay Paky prototype which is clearly destined for the same market just as soon as the control electronics is available.

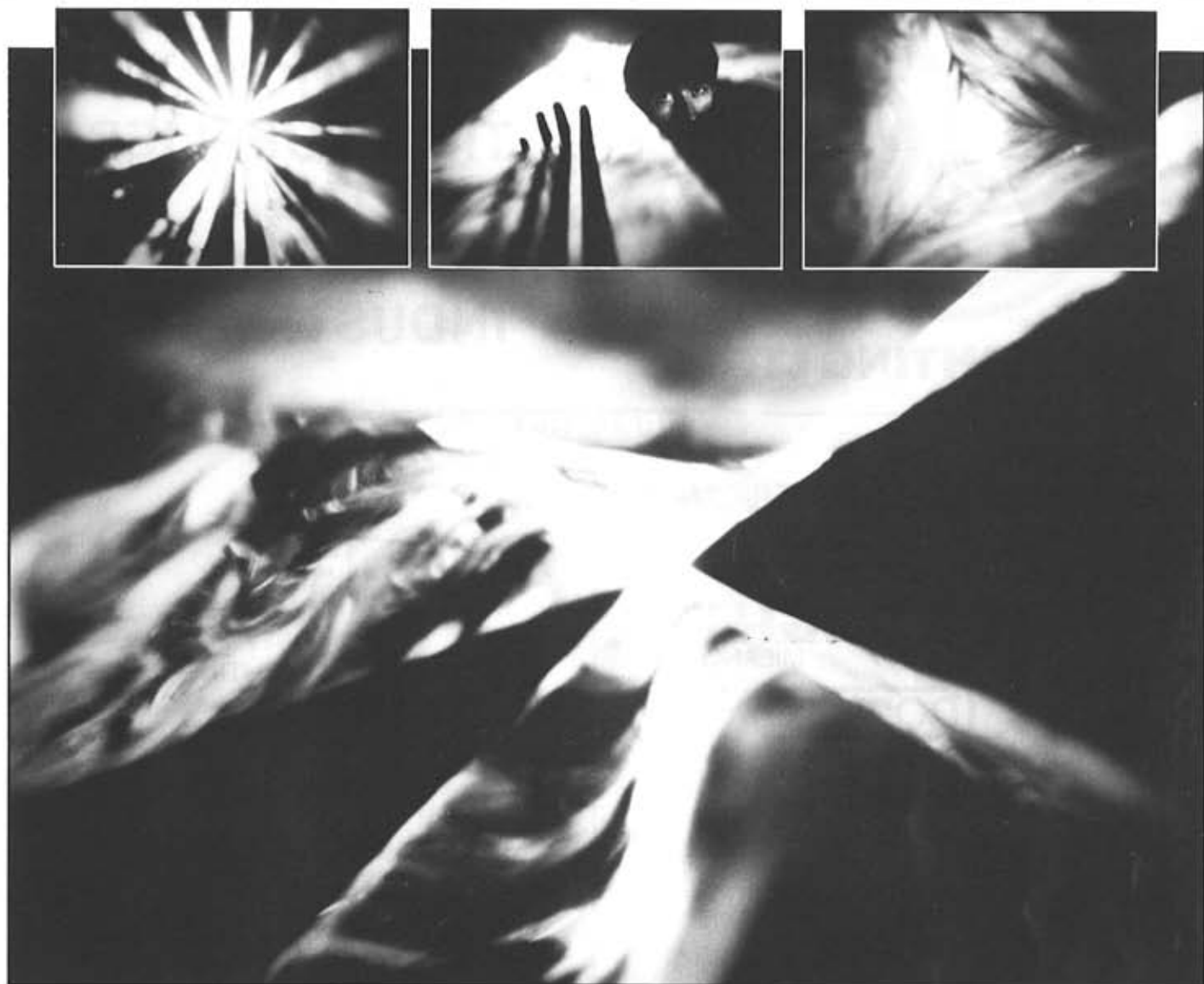
Meanwhile, Coemar's Robot is available either with the Phillips 250w SN tin halide lamp, or the Wotan 400w HTI mercury discharge hot restrike for which Coemar claim to have a reliable power supply although it was not demonstrated. It comes complete with dichroic colour wheel providing five colours and white and a gobo changer with five patterns and blackout. The standard patterns are much as to be expected: slots, dots, apertures etc., but these



Coemar's 'Forte' projection unit.



Right: a bank of Coemar Robots at 'The Escape' discotheque in Amsterdam. 64 were installed in the venue which was featured in our December 1986 issue. A colour picture of the Robot appears on page 33.



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can be varied to order. It gives 175° of Pan and 95° of Tilt - not perfect but probably sufficient for most requirements.

In all the Robot seemed a well-engineered disco alternative to the Vari-Lite with many of its basic features. At around £2,500 for the 220SN and £4,000 for the HTI it didn't seem unreasonable for such a big effect, although the disco market has an unpleasant habit of cheapening everything and so it may appear too rich for many; especially as 8 units would make a minimum installation. But since Le Palais (nee Hammersmith Palais) are installing 16 of these units, supplied by Avitec in preference to their own equivalent for some reason, perhaps this will get the ball rolling since discotheque operators are such notorious plagiarists.

Control is provided either by Coemar's custom programmer which is limited to controlling all the luminaires at once, or by W.B. Lighting's own software written for the Amstrad. This provided individual control of all the functions on each lantern enabling the possibility of complex control sequences and programmes to be stored. To avoid the lighting designer's well-known anathematic response to a Qwerty keyboard, the company is wisely offering either a Mouse or a Rollerball, actually the Marconi RB2 unit, as a handy means of programming. In each case two switches are provided to change colour or pattern.

Based on the 220SN, for 16 lanterns with this computer control, total cost would be not much less than £57,000 - not a fortune by any means for a big installation. However, in the knowledge that many discotheques spend less on their total entertainment package, I voted the Forte with attachments as the SFX unit most likely to . . .

The Forte is a compact, cast bodied lantern which will accept gate attachments in the time-honoured style of a projector, or front-end lens attachments to deploy or manipulate the beam. It is available with either the 250SN or 400w HTI lamps, gobo and colour changers slot in the gate, while an ingenious attachment called Devialux gives up to 30° of beam deflection. This consists of two inverted prisms, back-to-back with independent drives which control beam divergence and convergence dependent on rotation and can be driven sound to light.

Similar attachments are available for Coemar's Pictor which, since it will take the Phillips 1K SN, or the Thorn 2.5K CID hot restrike, could be quite a powerful tool!

Looking at lasers, current development yields less of interest. Controllers have certainly been improved but little attention seems to have been given to increasing the range of effects available. Laser Grafix have certainly made great strides with scanned animation but this seems to have limited appeal in the discotheque environ-

ment although I am sure it will prove popular for promotional use. I suppose the next big push will come when a satisfactory full spectrum colour changer becomes available for a Krypton as it inevitably must, although whether it will present itself as a viable alternative to Vari-Lite and its hybrids is open to question.

In the video field development in projection seems to have taken a back seat to the current fad for video walls, of which Electrosonic have a good and economic hires system on the market while Camerons lo-res version disappointed at the opening of Hollywood in Romford recently. However, if you are in the market for the very latest equipment and-to-hell-with-the-cost, the Dwight Cavendish long-awaited laser video projector will not disappoint on any of these counts. At £140,000, it harnesses the outputs of both a dye laser and an Argon laser to provide the required RGB. These beams are passed through modulating crystals before scanning via a high-speed mirrored polygon to give line free images up to 15m wide at distances as great as 80m.

For those with such expensive tastes the laser projector is available from Laserpoint. The rest of us lesser mortals will be more than satisfied to play with an ever-expanding range of FX projection equipment built around the new generation of brighter than bright discharge lamps.

New Lamps for Old

Peter Wynne Willson examines the pedigree of the lamps which made a new generation of projectors possible.

One West-end theatre in which I worked had in its lamp store some pear-shaped bulbs. They had an evacuation pip at the blunt end and a thin carbon filament describing a single graceful helix. The heavy bayonet cap, extraordinarily, was compatible with modern sockets (if modern is the word for the most dangerous socket in common use) showing an admirable degree of standardisation through the development of the product.

Though low in watts and colour temperature, these early enclosed electric lamps could service those situations where oil, coal, gas, acetylene, lime and carbon arc were unsafe, impractical, or where skilled operators could not be employed.

Clubs and Rock and Roll managed to survive for a long time either choking on a diet of hopelessly large tungsten theatre scenic machines or starved on the weak beams of the modified domestic projectors, while manufacturers worked on new lamps.

The filament made several important steps: carbon to tungsten, plain to coil - then coiled coil and mains to low voltage. Reflectors ran from plated brass to silvered glass, back to metal with bright anodised aluminium and once again to glass now ellipsoidal in shape and dichroic in coating; at a stroke making condenser systems and the dread heat filter redundant.

Envelopes progressed to hard glass, the vacuum had a little gas introduced, then a dramatic jump when quartz arrived and the burning temperature could be increased with the addition of a little iodide, the

halogen cycle was here with its filament regeneration and longevity.

Wotan have gone a step further with their most recent projection lamp range: they have doped the halogens with the rare inert gas, xenon. They claim a 25% increase in performance over standard Q.I. (Actually I have met several people in the business who claim their performance improves when doped with rare gasses.)

There is no filament lamp, however, that can match the lumens per watt or high colour temperatures of the arc of a discharge tube - how sharply the "noon sunlight" whites slice through the incandescent, making the latter look sadly beige.

The earliest discharge lamp FX projector that I can remember was built for Pink Floyd in 1966, using Thorn's compact mercury lamp which had been developed primarily for floodlighting. But the convenient striking cycle and greenish hue prevented wide acceptance.

The H.M.I. family had been serving the film industry well as a powerful light source in studio and on location but their long arcs do not suit the projection of images and the double-ended format hardly suits unskilled relamping in the discotheque.

The arrival of General Electric's Marc/Gemini lamps with integral reflector mounting and extremely short arc, spread some ripples of excitement, soon to evaporate because of unreliable ballast and a lamp life which never quite seemed to approach that of the manufacturer's estimate. However, it was first at the starting gate and

was used in the high power version of the Light Machine Gun projector and later in the first Vari-Lite lanterns.

Next, the Phillips S.M. range with tin halide at over bar pressure in a double-ended discharge tube, which for safety and convenience is enclosed in a single ended envelope, configured as many of the tungsten theatre/studio lamps. Arc length is slightly compromised for a long life and very straightforward ballast.

The H.T.I.'s from Wotan, with an arc almost as short as the G.E., are in a similar but more robust package and have longer life; but this lamp has also been dogged by expensive and flaky starting gear. A number of different approaches to the problem, both high and low frequency, are nearing completion or have started trials. If these are successful I can envisage the H.T.I. taking centre stage for a good run.

One lamp still stands aloof from all the rest, the pure xenon arc. The very high price of the lamps and gear aside, xenon has the best spectral distribution, the shortest electrode gaps, the highest current capacities, the most stable emission; they are D.C. where nearly all others in the field, with the exception of the Gemini, are A.C. Xenon is happy to strike hot or cold, the rise is instantaneous, the life legendary. Finally, xenon lamps look immaculate (use protection, they are pressurised even when cold), they have none of the murky halide deposits and are always brilliantly engineered:

the xenon projector is a case of brilliance in, brilliance out.

Projection Up-Date

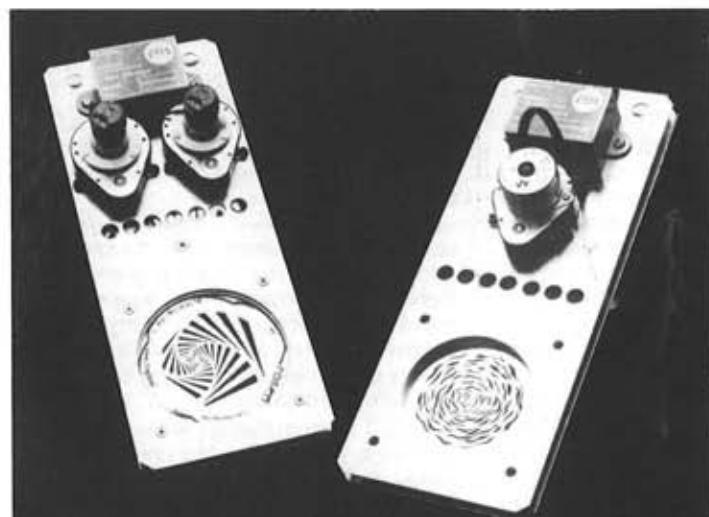
Graham Walne looks at the latest products.

David Hersey Associates' policy of constant improvement has brought some interesting changes to their range of effects. For those who missed my last article on projection (L+SI November 1986) DHA have produced some motorised stainless steel discs (called animation disks) that fit into the colour runners and when used with gobos create a wide variety of moving effects.

All existing disks can now be fitted with a vari-speed option and there is also a DC controller available with operation possible from any 0 to 10 volt control desk. The disks themselves are now available to fit almost every spotlight, in fact anything with up to a 9" lens. Nine different disks are now available, new additions include no. 17 elliptical breakup suitable for snow, no. 18 dot breakup suitable for falling leaves, and no. 19 flicker for that passing train. Because the whole system is modular, different wheels can be used together in a special double unit which disguises the circular motion and produces complex effects. I used one of these recently on a variable beam profile and the possibilities are endless. Whilst these effects are associated with profiles DHA have now also made them to fit fresnels or PC's in Linnebach format (with the lens removed) and the flicker wheel produces a good flame effect in this mode.

The gobo rotator has also acquired the vari-speed option and a new unit offers a double gobo rotator each under individual control. At present these are only available for Sils but will fit Altman 1k lekos soon. Watch this space for news of motorised irises and a new linear motion gobo. (You heard it here first folks!)

Cycscreen is a new screen surface from Rosco, and although originally intended for television cycloramas it will be increasingly useful to the theatre. Principal benefits over many other similar materials are that the light fall-off is slight even at acute angles to the screen surface. The published data states that a back-projected source loses only 7 per cent of its intensity at 15 degrees to the screen plane and a front-projected source loses only 2 per cent at the same position. Another advantage is that light-sources are not visible through the material, and this is also useful when using backlighting



Bring movement to your previously static projections with DHA's single and double gobo rotators (shown above) and animation disks — all now available with VARI-SPEED.

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groundrows since no front bottom masking is required. The screens are available in white seamless inherently flameproofed material and as one has come to expect from Rosco, there is an excellent data pack available.

Whilst the ubiquitous Carousel range is being constantly improved my interest has been drawn by Kodak to a totally different new product. Called the Datashow, the package allows any computer-generated image to be projected by means of a liquid crystal display panel which fits an overhead projector. The images projected are monochrome in the sense that they are dark against a light blue background but this can easily be reversed. The unit interfaces with any IBM or IBM compatible PC and can be remote controlled via infra-red from anywhere in the room. A particularly attractive feature is the built-in pointer.

Of course, an overhead projector has a set limit on acceptable size and picture quality and in this video age the need for large high definition pictures becomes greater and greater. Whilst there are some excellent projectors, of which more in a moment, the concept of the video wall not only solves this problem but also offers other options which standard projection cannot. Sports fans are already familiar with this device in which a large number of colour television monitors are combined to make up one vast modular screen, fresnel lenses reducing the impact of the join. The control system offers a choice of different pictures on each individual monitor or a repeat across each or one vast picture. In disco format the opportunities of showing commercials between pop-videos ensures a high return on the initial investment.

Perhaps the most famous theatre installation is that used in the production of 'Chess'. This production uses Philips Vidiwalls, designed, installed and programmed by MediaTech. There are in fact three walls, the largest comprising 64 x 26" monitors in a frame which enables the wall to fly out, and at each side of the proscenium there are two other walls each using 32 monitors.

Electrosonic, no strangers to the concept of controlling multi-images, have also launched a videowall control system, PICBLOC. Their system uses 28" monitors in three configurations, 9 screen (3x3), 16 screen (4x4) and 25 screen (5x5), and due to this modularity it is possible to assemble walls with up to 256 monitors.

In terms of TV projection my previous article mentioned the Barco and Talaria range, and more information on this area has now been provided by AV Displays. In addition to the Talaria (pictures up to 24' wide) their range includes the Imager system which comprises 3 versions, the 100 for up to 8' wide pictures, the 200 for up to 10' wide pictures and the 500 which will project up to 15' wide. As one might expect, the larger pictures are accompanied by higher resolution (more than 800 lines). None of the above machines are significantly large but the biggest and best pictures still come from an old favourite, the Eidophor, a man-sized machine producing pictures up to 55' wide. AV Displays offer both the Talaria and the Eidophor for hire, a point worth remembering.

As we go to press there are rumours of several Japanese high definition TV projectors being available here soon. We'll keep you posted!

Animation Disks

David Hersey Associates
7 Bishops Terrace, London SE11 4UE.
Tel: 01-582 3600

Cycscreen

Roscolab Limited
69/71 Upper Ground, London SE1 9PQ.
Tel: 01-633 9220

Datashow

Kodak
P.O.Box 66, Station Road, Hemel Hempstead, Herts HP1 1JU.
Tel: (0442) 62331 (call for nearest agent)

Vidiwall

MediaTech
16 Northfield Way, Beresford Avenue, Wembley, Middlesex HA0 1YH.
Tel: 01-903 4372

Picbloc

Electrosonic Limited
815 Woolwich Road, London SE7 8LT.
Tel: 01-855 1101

AV Displays

1 Edison Gate, West Portway, Andover, Hants SP10 3LF.
Tel:(0264) 56581

Launching the new Vari-Lites

(see story following page)



The Coemar Robot 250SN is discussed by Tony Gottelier in 'The Second Coming' on page 29/30.



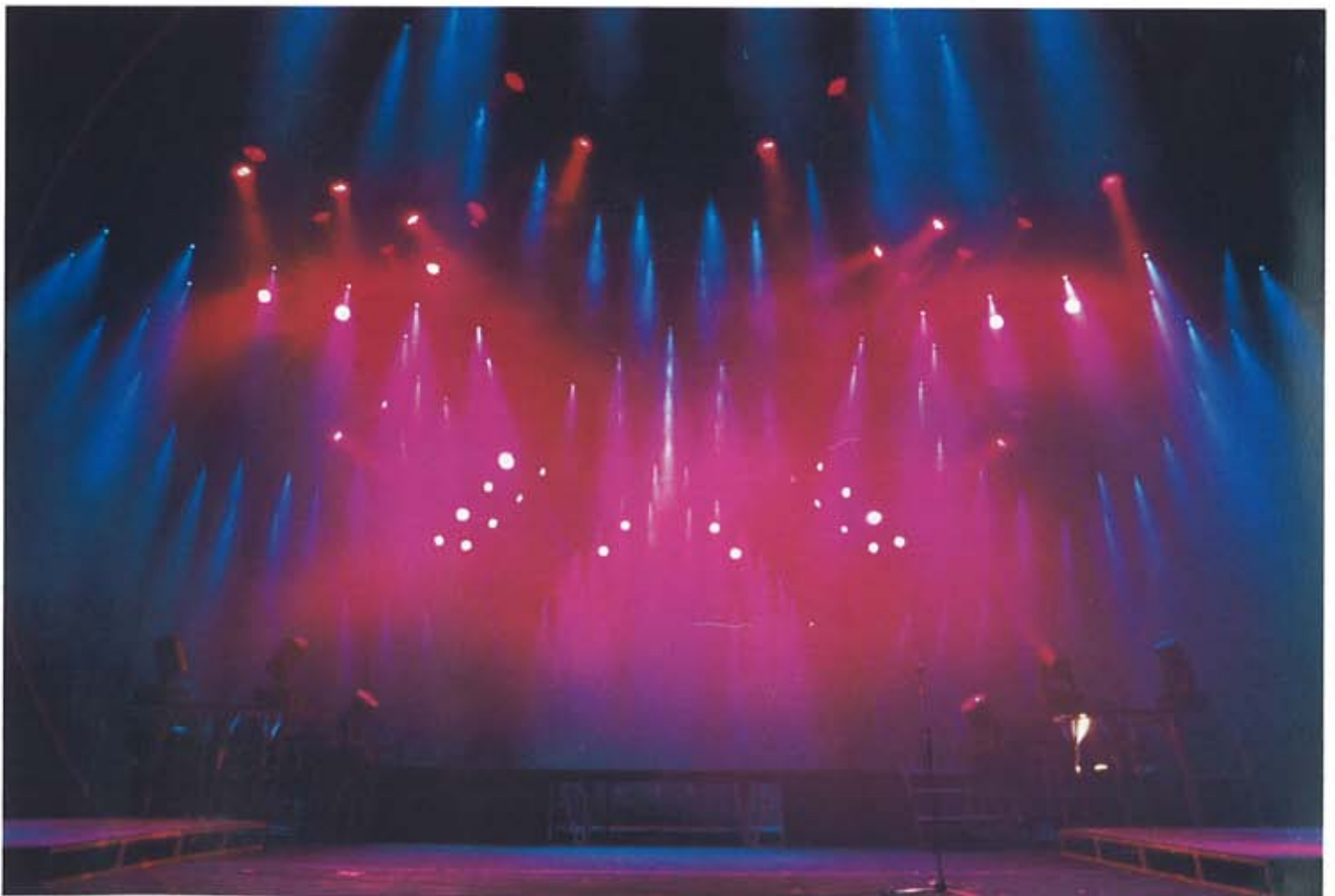
Jimmy Barnett (right) of Samuelson Concert Productions gets the show under way, with Daryl Vaughan (left).



David Alley, Tom Littrell, John Watt and Daryl Vaughan with Jimmy Barnett (seated).



The industry gets to know the latest on Vari-Lite.



Vari-Lites in action.

Into the Future with Vari-Lite

Francis Reid witnesses the launch of the latest Vari-Lites.

The Genesis date list omitted one of the most important gigs of their May tour - Bray Film Studios. However this was neither a performance for the fans nor a shoot for a promo video. The sounds of the band shook Samuelson's hangar studio but this was Hamlet without the Prince. The speaker stacks, the rostra and the lighting rig were all there but Genesis were on tape. We had come to see the lights. The Vari-Lites.

Or more precisely, the VL2 and the VL3 which have been developed out of the original Mk.I. 'Development' and 'Mk.II' are words used rather loosely in many industries including our own. But these new Vari-Lites are in no way related to the badge engineering which hopes to extend the brand life of many cars, washing machines and, yes, even profile spots. The new Vari-Lites demonstrably do more things and do them better; and I am prepared to believe that they do them more reliably. (As a down-market lighting designer, I only wish there was a way of doing it all more cheaply!)

At the initial UK launch in 1985 I enthused about Vari-Lite - both in terms of what had been achieved and (even more so) the future potential. I am happy to report that the Bray demonstration did not dampen but positively fuelled my enthusiasm.

The demonstration took the form of letting Vari-Lite do its Genesis cues. So in essence we saw it act as a scenery substitute. In rock lighting the visual patterns made by the coloured fronts of the lighting instruments are almost just as important as the light that is emitted. And since that light has to create an environment rather than merely reveal one, the beam passing through the air is considerably more important than what happens when it actually hits something. The Vari-Lite's capacity for all this was fully proven. The rig was always dramatic to look

at and sometimes even quite poetic, particularly when truss movements worked in harmony with lighting movements. In rock, the essential lighting requirement is the ability to catalyse the emotional contact between band and audience by hyping the rhythm and by making dramatic crosscuts. Vari-Lite is king in this respect. But it also enjoys the potential for a lighting designer to explore subtleties with the kind of flexibility that can be severely eroded by the customary need to rely on ladders for each and every adjustment except intensity.

This potential of Vari-Lite as a design tool was, alas, not fully demonstrated at Bray. In fact the Samuelson team rather let their product down by not offering a properly rehearsed performance of a single Vari-Lite showing the full range of its possibilities, function by function, limit to limit. The afternoon demo of a single instrument was so ad lib that they may perhaps have decided to get their act together for the evening session - but by then I was studying the brochure to discover the new parameters of Vari-Lite technology.

It is a good brochure and particularly interesting in its cut-away diagrams which give some insight into the technology. The Mk.I was a mysterious box whose contents were a matter for speculation, fanned by an apocrypha built up in saloon bar nudges, nods and winks from those who knew someone who knew the technician who had taken one apart while the Vari-Lite operator was locked in the loo during an all-nighter.

The new Vari-Lite comes in two models, the VL2 Spot and the VL3 Wash. The spot version is essentially an update (a quite considerable update) of the original Mk.I. Its dichronic wheel colour changing system produces over 120 colours from tints to saturates, although the actual range of these

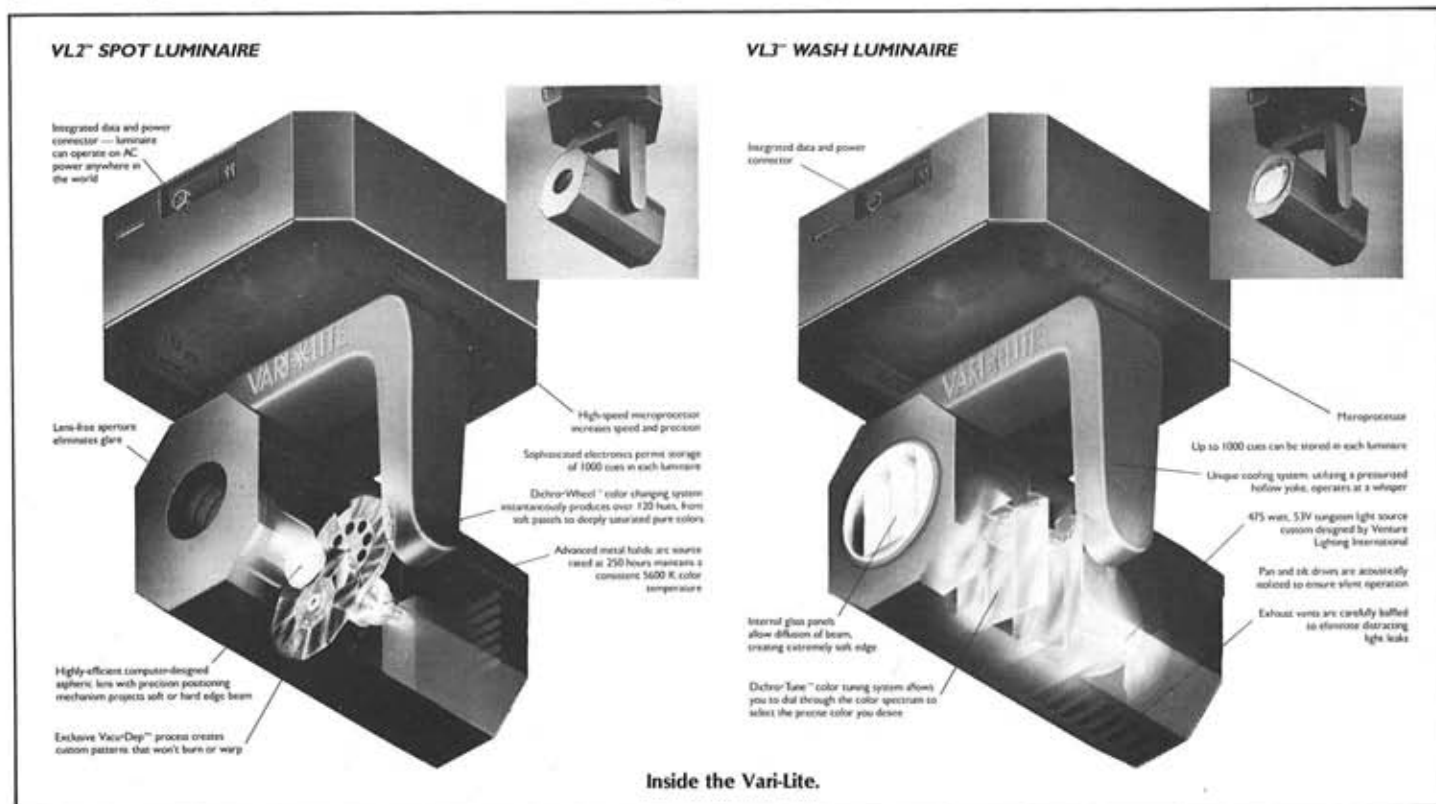
is biased towards more variations in the saturates than in the tints. A pattern disc offers nine standard or customised options. These are not etched metal gobos but are made by placing a thin reflective layer on glass. Thus there are no supporting breaks in the pattern - one of the standard patterns for example, is a perfect unbroken circle projection.

Beam size is by iris, and focus is by positioning of the aspheric lens for hardening and softening of the beam. Since the lens is inside, the instrument's lens-free aperture is said to "eliminate glare". I am not quite sure what they mean by this but I have a hunch that if hung close to scenery, this light might well turn out to be relatively free from glare. Certainly the effect of this recessed lens, together with the heat convection currents, gives the impression that light and smoke are pouring forth in a torrent from the front of the instrument.

The source remains a metal halide arc. Panning (360 degrees) and tilting (270 degrees) are, like every other function, programmable via each unit's personal microprocessor and the new 'Artisan' desk which can control up to 1,000 instruments. Comprehensive control facilities offer, for example, the capacity to store 1,000 cues per instrument.

The VL3 Wash has a tungsten source (475 watts, 53 volt). Internal glass panels allow diffusion of the beam to a quasi-fresnel soft edge or to a simulation of an MFL par. The colour change system, called Dichro-Tune, claims a virtually unlimited palette. The chromacity diagram suggests a considerably more even balance between tints and saturates than in the VL2 disc system. Comparison of the drawings of the two dichronic systems indicates the reasons for the greater flexibility in the newer system.

How much of all this is the shape of the



Inside the Vari-Lite.

future? As a lighting designer, I regard the colour selection as the most significant development. As a lighting manager, I particularly welcome the remotes. I am sure we are going to see more and more low voltage and arc sources, and I believe that digital instructions will increasingly be separated from power distribution as more and more functions in addition to dimming are taken over by a centralised control desk.

And what do I worry about? Strangely enough, not the cost! I think that can and will be budgeted in due course. No, my prime worry is noise. Despite phrases like "pan and tilt drives are acoustically isolated to ensure silent operation" and "engineering advances in cooling and mechanical systems have created an automated luminaire which can operate even in demanding low-noise theatrical situations", I remain unconvinced

that we are close to accepted levels for the straighter forms of theatre. But I hope I am wrong!

For Vari-Lite Mk.II I am as enthusiastic, envious and adoring as I was for Mk.I. Forward to Mk.III!

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People . . .



Bill Crisp.

● Very occasionally an editor has the opportunity to pay an open, direct and personal tribute to someone in the industry without any fear of comment from others of 'favouritism'. And I welcome this chance to print a few words of appreciation upon the occasion of the retirement of **Bill Crisp**, publicity manager of Strand Lighting.

A long time employee of Rank, Bill commenced his working life with G.B. Equipments in the summer of 1949, selling 16mm educational films, and concurrently Bell & Howell 16mm sound projectors. The latter, together with 8mm and 16mm cameras were manufactured under licence from Bell & Howell, Chicago at a factory in Mitcheldean in Gloucestershire. Formerly the site of a brewery, it was to become better known as the main manufacturing plant in the U.K. of Rank Xerox copying equipment, and Bill readily recalls the time when Rank Xerox was formed, with premises in Mortimer Street, London W1 and when the staff consisted of just two men and a girl.

In the fifties, and with a change of name, there was a merger with another Rank company G.B. Kalee, specialising in 35mm sound and projection equipment. The 'in-thing' at the time was Cinemascope and 3-D film formats - all very exciting developments to attract greater audiences to the cinemas.

Over the years the product range was enlarged and diversified, and at different times included tape recorders, dictating machines, language laboratories, physics tubes, microscopes, 8mm loop projectors and electronic organs.

By the early sixties Rank Audio Visual was the favoured name, and the company was relocated to Shepherd's Bush, to a site close by Lime Grove Studios. The Studio Division of Rank also operated from the same site, and with various changes of name eventually became part of Strand Lighting.

At the end of the sixties Bill Crisp transferred to Strand at King Street, Covent Garden, and then to Brentford, where Strand Lighting is today.

Most of Bill's career was involved with publicity, and that is how I will remember him. I feel sure I speak for all of those involved over the years in magazine and book publishing and many areas of wider research, when I say you couldn't find a more efficient, accurate and helpful person to deal with, whether it was with editorial, advertising or more general industry 'information' from the Strand archives. But the greatest thing of all

was his great courtesy - even under pressure. And you never ever had to make a reminder telephone call to Bill Crisp.

Having taken early retirement he promised me he's "looking to the future" - and certainly not ready to don carpet slippers. I have the feeling we'll be keeping in touch, and that he will retain a communication with the industry, and L+SI in particular.

John Offord

● Lighting Design Partnership, now relocated in new offices in London and Edinburgh, has announced its third partner, **Barry Hannaford**, who has joined Andre Tammes and Jonathan Speirs after an initial 18 month period as LDP's London based Associate. The Partnership employs 18 people and claims to be the largest specialist lighting design practice within the UK.

● Star Hire, major suppliers of Turbosound/Soundcraft based PA systems, have appointed **Kevin Draper** as senior technician, a newly created post. Kevin was with Quad Electroacoustics for the last 15 years, holding the position of production supervisor before leaving.

● **John Walters**, a director of James Thomas Engineering, joined the Lighting Industry Golfing Society in the early Spring and within two weeks had lifted their major prize. "Now I'm sorry I got him in," said Zero 88's Freddy Lloyd.

● **Bruce Tompsett** joined Donmar on May 5th as service and installation manager to run this expanding department. He has been the service manager for Horam Electrical, Strand service agents, of Heathfield, East Sussex for over ten years and during that time has gained a high reputation for service and installation work in the counties south of London. Bruce's skills will now be applied at Donmar not just to Strand equipment, but to the ARRI range of Image Imagine 250/500 controls as well as Green Ginger, Pulsar, CCT, Electrosonic and Le Maitre equipment.

● Soundtracs Plc, has announced the appointment of **John Carroll** as sales and marketing director. He has been associated with the company for the past 12 years, both in the United Kingdom and overseas as international marketing manager, and his appointment is coincidental with just having received their second Queen's Award for Exports. Married with one child, John lives in Cobham, Surrey.

● Tannoy Limited has appointed **Barry Carter** as marketing manager for their Systems Division at High Wycombe. He will be co-ordinating the High Wycombe and Scottish operations (Tannoy's



Barry Carter.

Head Office is in Strathclyde) in expanding the company's specialist systems design service which combines Fire, Security and Evacuation systems with the famous Tannoy Public Address systems.

● An ex-keyboard player with 'Time Out' has joined the Pro-Sound division sales team of Toa Electronics Limited. **Martin Sweeting** was previously a full-time musician working abroad.

Martin, who hails from Knaresborough in North Yorkshire is responsible for the company's retail dealer network in the North of England and Scotland.

● Samuelson Lighting Ltd., has strengthened its administrative team by two new appointments in preparation for an exceptionally busy year ahead. **John Wilson**, formerly personal assistant to the managing director, becomes general manager, while **Mark Whitfield** joins the company as client contact.

John Wilson has worked within the Samuelson Group since leaving school in June 1967, when he joined Samuelson Film Service as a trainee film administrator. In September 1978 he moved to Samuelson Lighting, where he handled customer calls and bookings, until becoming PA to managing director Graham Anderson two years ago. In his new role as general manager he will provide an administrative support service for his colleagues in client liaison.

Mark Whitfield began his career in the industry at Moviecam, where he became sales assistant at their Wardour Street shop in March 1980. He subsequently joined Cinebuild - now LTM UK - initially handling sales of their special effects accessories and later moving into their film lighting division.

● As part of its recent strengthening of its Management team, CCT has appointed **Jack Watling** as sales manager responsible for entertainment sales. Jack has had a long and successful career at Strand Electric, which he joined in 1953. Working in various parts of the UK, he moved to London in 1978 as export sales manager for Northern Europe and Scandinavia.

In 1983 he took over responsibility for all export marketing of architectural dimming and control, to which he added the UK 1985. He joined Playlight as national sales manager in 1986.

With the arrival of Jack, **Ken Rickman**, who joined the company in 1986 from Marlin Lighting, where he was general sales manager, will be able to concentrate on managing the growing non-entertainment markets for CCT's products and expertise. **Nigel Pashley** will also be joining the sales team as export sales administrator. Nigel has re-joined CCT after an absence of thirteen years, and during this absence has gained wide experience in theatre and stage lighting, his most recent job being deputy chief electrician at Sadler's Wells.



John Carroll.

ON TOUR

Keith Dale

With so many of the major acts presently on tour, or just about to start, there is a wealth of lighting technique to cover in L+S throughout the coming months.

Already on tour, and soon to reach England, is 'Prince' with lighting design by Roy Bennett and equipment from Light and Sound Design of Birmingham. It is understood that the equipment for Prince features around one hundred motors alone, along with control boards from AVO, Celco and Vari-Lite.

David Bowie, presently rehearsing in Rotterdam, is soon to start on his Glass Spider Tour with two lighting rigs, supplied by Showlites of California, leap-frogging around Europe. Lighting designer Allen Branton, who previously worked on Bowie's Serious Moonlight Tour, is again utilising his talents on what promises to be a very theatrical event.

Lionel Richie recently completed his European Tour in England, with a very slick lighting design by Peter Morse and equipment from Morpheus of San Francisco. The system featured many of Morpheus' moving lighting units and colour changers and a set design that included hydraulic staging.

Lionel Richie

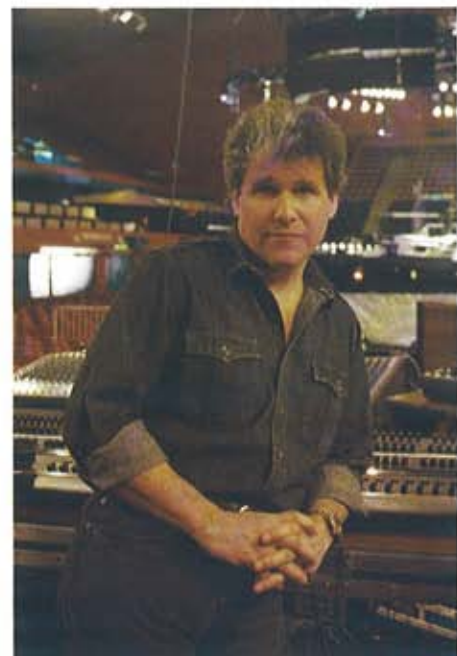
Wembley Arena

Catriona Forcer talks to lighting designer

Peter Morse

How did you become a Lighting Designer?

I used to be a singer myself, but out of the need to eat I became a road manager! I managed acts back in the late sixties such as Brooklyn Bridge, Friends of Distinction and lots of country bands. I became road manager for a man named Mac Davies who I toured with for several years and,



Peter Morse.



Lionel Richie at the Wembley Arena - lighting design Peter Morse.

out of necessity, I did the lights for him as well. Gradually my interest in lighting grew as did the demand for better lighting. I finally quit his services and went on to form my own production company - Peter Morse Productions. I produced and staged acts for a number of years, including Tina Turner, as well as looking after the lights. Over the last few years we have become more specialised doing strictly lighting, pyro and special effects.

Tell me about the Lionel Richie Tour

This tour started September 10th 1986 in the USA and in the New Year we went to Australia, New Zealand and Hawaii for a couple of months. The European tour started in February and finishes here in London before going on to Japan.

What special effects does the show have?

The set that was designed is a monster - the apron alone is 100ft from end to end and the ramp for the front apron goes clear into the seats in most arenas. The stage is usually 8ft higher than tonight and we have hydraulics, elevated pianos and talking pianos. It's a very intricate stage, and combined with the fact that they also wanted to sell seats behind the stage, it made my job difficult. I went back to the old fashioned truss method instead of walls of light which is now contemporary. I've used lots of trussing creating a 'roof' over the stage.

When Lionel sings 'Say You, Say Me' they wanted to create the same atmosphere as in the video. To do this the nose of the stage goes up 15-20ft and portions of the truss lower in right on to his head so that we get very intimate. It's very spectacular and it's a turning point of the show. For the last number, 'Dancing on the Ceiling', we are rigged to fly three band members, and we actually brought in Peter Pan's original rigger for the purpose.

But I created my own nightmare because I decided to use well over 40 Panaspots, over 60 Panabeams, and well over 80-90 colour changers. All of which are computerised and programmed, along with computerised followspots. Putting it together took weeks of rehearsals!

What are your plans when this tour finishes?

I have other acts touring all the time - Pointer Sisters, Dolly Parton, Kenny Rogers and a few others. In between them I need to get home and clean things up, and hopefully I'll be at home this summer and then maybe I'll go out again in the fall. I don't want to tour so much in the future. I'd rather go out for 2-4 weeks and then bail out - which is what I do on all my shows other than Lionel. I had open heart surgery last June and Lionel postponed the tour for a month, not necessarily because of me, but it just worked out that way. So I was able to start the tour on schedule. But I haven't had any time off since the surgery so I'm going to take this summer pretty easy.

Is there any act which you would like to work with?

I would love to work with Toto, Jagger and with Tina Turner. I did work for Tina over a period of 10 years but due to scheduling conflicts three years ago (mainly Lionel and The Pointer Sisters) I couldn't work with her again.

Is there any Lighting Designer whose work you admire?

Whenever I see something on camera that I like it usually turns out to be Allen Branton's work. Although Allen is a good friend I've yet to see anything live except for Diana Ross which was in a Vegas form and, good as it was, I'd love to see some of his concert work. We've had the pleasure of working together and we have a really good working relationship.

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Is there anything which you hate to see in a lighting design?

Although it is only personal taste and I wouldn't ever say what is right and what is wrong, I don't like lots of repetition through lack of imagination or, what's even worse, the use of something that was once considered great and is used time and time again. In my book the best look is the one that stands on its own and stands just once. I think that colour combination bothers me the most. As for cueing, everybody has a different idea and when I turn my show over to a lighting director I'll work with him so he is as close to my cues as possible. But I can't expect him to do it the same way as we're all different.

There's never been a show which has turned me off. It's just that there have been a lot of shows that haven't turned me on! Every time I go to a show I go with an open mind because there isn't a designer out there who hasn't got something worthwhile seeing.

Do you have a personal trademark in your designs which you are known for?

I didn't know that I was known at all! I'm known more for the direction of my shows rather than the design. Certainly the people I work with frequently know one of my shows when they see the plan because of the use of colour. I am very consistent about the colours that I use as there is a bank of them which I like working with and know how to employ them. Other than that I have a way of physically running a show which people whom I have worked with say is very unique. But I'm not sure what they are talking about!

What plans do you have for your company?

This summer I will be talking to some other first rate designers (I can't name names yet) about going into an affiliation whereby we would share the load and responsibility of each other's designs, and also the direction. We want to branch out into other fields, not so much theatre as industrial and video work. I've worked on some video but have also turned down a lot because of my schedule, and I don't want to do that again

because video is the future. Although I also love the live concert I want to be able to cover it all - and the only way to do that is to share the load.

Equipment On-Tour

Lionel Richie

Lighting Designer **Peter Morse**
Lighting Equipment **Morpheus Lights Inc**
Tel: (USA) 408-295 4866
Lights: 400 fixed lights, various Pars, Lekos etc
Trussing: 450' custom design
Effects: 34 Panaspots, 76 Panabeams, 132 Colorangers
Desk (control board): 1 x Celco Series 2 Ninety c/w SoftOption, 1 x Celco Series 2 Sixty c/w SoftOption, 2 x Kliegl Performer TV's
Dimmers: 4 x Avab 48 Channel Racks, 4kw per channel

Duran Duran

Lighting Design **Roy Bennett**
Lighting Equipment **Samuelsons Concert Productions**
Tel: 01-450 8955
Lights: 18 x 6 lamp bars c/w Par 64's no. 1, 20 x 6 lamp bars c/w Par 64's no. 2, 8 x 6 lamp bars c/w Par 64's 28V, 250W ACL's, 4 x 4 lamp frames c/w Par 64's, 1 x 3 lamp frame c/w Par 64's, 2 x Redheads c/w stands, 7 x 8 lamp frames c/w Par 36 ACL's and 16 x 8 Lites
Trussing: 34 x 8' Section TTR folding truss, 4 x 4' Section TTR folding truss, 3 x 3' Section TTR folding truss, 2 x 2' Section TTR folding truss, 12 x TTR folding corners, 2 x 15' ladder beam section, 5 x 2.4M Telestage, 4 x 1.5M Telestage, 20 sets rigging, rigging for Video Wall, 20 x 1 ton Verlindes, 5 x 2 ton CM Loadstars, 6 x 1 ton CM Loadstars, 4 x 6 way motor controllers, 12 Manfrotto stands
Effects: 20 LSD Colormags c/w 32 way controller, 4 Le Maitre smoke processors, 2 Rosco smoke machines, 2 wind machines, 2 16" pedestal fans, Star strobes, Custom fabricated strip lights for stage set, 49 Television screens for video wall
Desk (control board): AVO QM500 (90 channels)
Dimming: 3 x 72 ch AVO Dimming systems (4 kw per channel)
Followspots: 4 Short throw Pani's, 2 Xenon Supertrouper

Genesis

Lighting Design **Alan Owen**
Lighting Equipment **Samuelsons Concert Productions**
Tel: 01-450 8955

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The Boys Backstage

Behind the scenes at the Mayflower Theatre, Southampton.

The major refurbishment of the Mayflower Theatre at Southampton, featured in both this and our May issues, involved an interesting and complex mix of work for Hall Stage of Borehamwood, no strangers to sorting out the mechanical bits and pieces backstage in theatres all around the world.

The £60,000 project involved the total refurbishment of the safety curtain and drencher system and releases, and also the lantern light and releases. The counterweight flying system operating rail was dismantled, as were the rope locks from the stage floor, actors left. All old equipment was removed from the original operating area, and Hall Stage then had to rebuild the first level bridge to provide increased floor

area and access from the first floor corridor behind the stage.

A total rebuild of all equipment removed from stage level was undertaken, and the counterweighting operating rail and rope locks were refitted to the new position on the first level bridge, actors left. This involved fabrication of all new steel work and also the installation of full height, full length guards to the counterweight system at stage level.

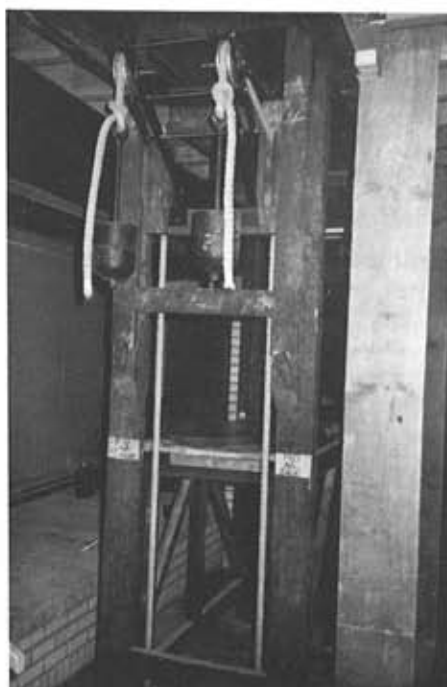
Chris Hitchens, general manager of Hall Stage, told L+SI that the galleries - "real solid" - were originally built in a Southampton shipyard, and were rivetted in on a one-piece basis - not the easiest of structures to adapt to a new layout.

New scenery pack rails were fitted along the actors left stage area, and there was a total rebuild and overhaul of the safety curtain hoist. All rope locks were overhauled as was the complete counterweight system. Six totally new counterweights designed by Hall Stage were provided as part of the general enlargement and up-dating of the system, as was a flying beam track with an integral motor unit.

To retain the theatricality of the venue, two star traps and a coffin trap (circa 1926) were taken out for refurbishment and then refitted into a revised position. A nice idea, providing no very ancient pantomime performer thinks they are still in the same place!



The new counterweight sets.



The original coffin trap has been preserved.



The re-positioned and re-surfaced screen.



The new operator gallery with re-positioned rope locks - originally at stage level.



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Computers for Sound Systems

Ben Duncan looks into the new generation of computer design/installation aids, beginning this month with MicroAudio.

Until the late 70's, the design of speaker enclosures, and complete sound systems largely revolved around cut and try techniques. Behind the scenes, this is fine, provided the designer has a well grounded 'feel' for the direction that will lead to a good sounding result. But in the field, countless hours have been spent re-aiming horns and changing loudspeaker components after the system has been installed, and it doesn't look so good in public. Altogether, empirical techniques are sorely time consuming, and liable to be **expensive**. So anyone involved in regular sound systems design is bound to ask, "Can't we use our computer?"

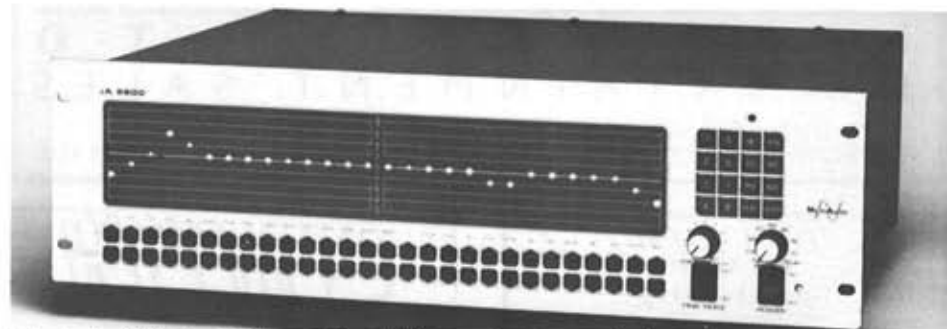
The answer is broadly 'Yes'. But ultimately, all computers work by crunching numbers, and this in turn presumes having a set of mathematical models, formulae and figures for the business at hand. Since the physical behaviour of sound waves is highly complex, and the bottom line is ultimately subjective, resting on the vagaries of human perception, it should come as no surprise that the recipe for a perfect sounding system (let alone the constituent parts!) is still a long way off being described by numbers alone. The first systematic modelling of loudspeaker enclosure and room acoustics was undertaken in the USA by Harry Olson and Leo Baranek respectively, as long ago as the 1940's. But the design of vented ('reflex') speaker enclosures wasn't turned into a universal set of formulae until 1961 - by Neville Thiele. Meanwhile, accurate acoustic equations capable of reliably predicting reverberation times, intelligibility and the free field SPL (Sound Pressure Level) had to wait until the dawn of the 1980's, before they were welded into a cogent, proven package.

Today, more than 60 years after the inception of electronic sound systems, the detailed behaviour of sound still involves unknown factors. Even so, what's been charted so far is enough, when turned into computer software, to enable any reasonably skilled audio installer to score high sound quality with confidence - and over a period (click, clickety click, beep!) measured in tens of minutes, rather than hundreds of hours.

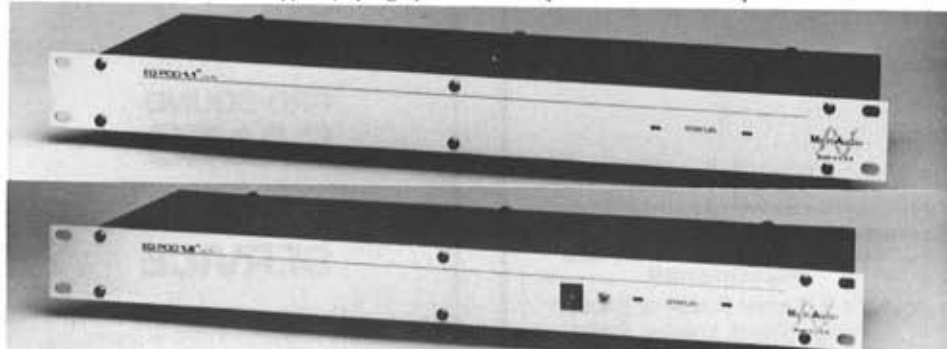
Computer aided Room EQ & Analysis

The cheapest entry into acoustics computing is bound to be via something sold en masse, to perform the kind of work that's broadly required by every kind of sound installation. First and foremost in this class is Room Analysis (i.e. discovering the venue's frequency response), coupled with $\frac{1}{2}$ octave House Equalisation (EQ). Of course, we can do this without computers, but with their aid, we can store measurements and then go on to quickly manipulate, merge or compare the data.

An example of this genre is a package from an innovative US manufacturer, MicroAudio. Their **uA 2800** (u is shorthand for 'micro') combines 28 bands of $\frac{1}{2}$ octave EQ, a matching (frequency response) analyser, and a pink noise generator, together with a master computer - all in a 3U enclosure. By itself, the uA 2800 does many things. Though a graphic equaliser, it has no faders - instead, LED bars



MicroAudio 2800. The STR keypad (top right) stores the EQ curve in the memory.



The slave comes in two varieties, the 1.1 (top) and 1.2 - both are 1U enclosures containing the same 28 band EQ as the 2800.

indicate dB's of cut and boost in their place, and a pair of 'nudge buttons' are used to inch the LEDs up and down, in 1 dB steps. Continuous engagement causes the LED to move to maximum boost or cut, and once set up, the EQ curve can be stored using the keypad marked 'STR'.

But what EQ should we use? With a measuring mic of line plugged in, the 2800 performs a real time room analysis: it measures the sound level over the same 28 bands as the EQ, the LED display changing at the touch of a button from graphic EQ into a read-out of real time signals. As with conventional room analysers, an internal pink (or random) noise generator provides the necessary 'all frequencies at once' signal for room analysis. Once set up for acoustic measurement, the 2800 can equalise the room response to a nominally flat response (at least at the microphone's position) within 30 seconds of pressing another keypad, aptly marked 'FLAT'. Alternatively, we can press a different set of buttons to EQ against any other response curves we've previously stored in one of 8 memories.

How is this useful? Well, if you're touring with a sound system, and remembered to store the 'House curve' of last night's venue (where you got a good sound), then pressing 'AUTO' will tell the computer to equalise against the house curve in today's venue **for the same sound**; it only takes 40 seconds! The auto-EQ has other uses too. One argument against the rigid adherence to what 'real time' Room Analysers tell us derives from the continuous nature of the pink noise signal. It simulates powerful, reverberant standing wave patterns which exhibit enormous variations across the room. Not only is one particular mic position liable to give us a false picture of the building's average frequency response, but potent standing waves also mask the room's effect on our percep-

tion of the leading edges in music and speech. To overcome this, and bring out the underlying acoustic 'flavour' of the room, the 2800 can be used to inspect and store a series of measurements taken with the mic at different positions, ending up with 8, the ones we judge to best represent the variations across the floor. Then using the keypad marked 'AVG', we can tell the computer to average out the results. If all goes well, we arrive at a good compromise EQ, not one that's fiercely biased in favour of one floor position, like the soundman's own!

Tamper Proof EQ

So far, the uA 2800 does things we could very well do manually. But averaging lots of EQ curves by hand is tedious, and presumes copious supplies of pencils and tracing paper. But let's now move on into the realms of pure computer control: the 2800 can be used to set up a venue, and then be taken away, leaving it's instructions in the care of a slave EQ called the 'POD', the slave comes in two varieties, named **1.1** and **1.2**. Both are 1U enclosures containing the same 28 band EQ as the 2800. Once an EQ curve is arrived at, it's simply 'down loaded' into the POD's 'non-volatile' memory, either from the 2800 master unit, or from a low cost, hand-held 'POD Programmer'. **Non-volatile** means the pod's memory won't be lost if power is removed, but it can be reprogrammed at any time from the 2800 master computer. The 1.1 is visually special in that it omits panel controls altogether; the front panel is blank, aside from a pair of status LEDs. So a particular, perennial hassle to installers is dealt a fatal blow: no more unauthorised 'tweaking' - and no more threatening calls in the middle of the night: "That sound system you sold us soundsing terrible . . ."

Slave POD 1.2 sports a single 8 way switch, allowing us to select 1 of 8 predetermined

EQ settings, again down loaded from the 2800 master computer. However, it's only accessible by means of a 3 digit access code.

So while preventing random tweaking, authorised users privy to the code set by the installer can quickly change the EQ in a way

that's useful. Like re-setting the EQ in a club P.A., for stage vocals or extra large crowds. Any facility for quickly implementing a fresh 1/3 octave EQ curve in a safe and predictable fashion is especially valuable to engineers in live sound, not to mention house D.J.s, and for theatre scene changes.

EQ Storage on discs

Another accessory is the **PC 280**, a card that plugs into an IBM P.C. (or any compatible computer). It enables us to view Room Analysis and EQ curves on the P.C.'s own screen, store the information on floppy disc, and even print it out as 'hard copy'. With this hook-up we can also readout the information from up to 17 PODs, either individually, or simultaneously, and then go on to change any or all of the EQ settings from the P.C., down to POD control outputs. Derived from a standard **RS232** output, these are able to drive cables in excess of 100' (33m). Altogether, this is valuable in large and complex P.A. installations, e.g. hotels and airports.

As in any field, once the mathematics are in position, the scope for computers is endless. In coming issues, we'll be exploring more advanced acoustic design aids, from **Techron** and **JBL**.

MicroAudio uA 2800, Programmers and Pods

Manufacturer:
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UK Distributor:
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Tel: 01-871 0966.

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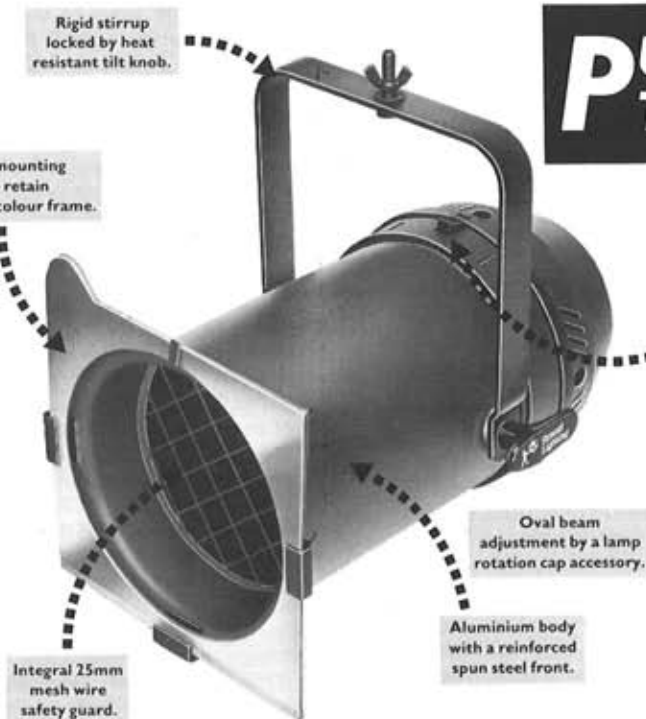
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Sights + Sounds at SIB/Magis

John Offord and Brian Davies

Half-way through this year's successful SIB/Magis show at Rimini in Italy, the main talking point amongst the British contingent was the date of the 1988 event. May is too late in the year for Italian companies, who believe they miss out on pre-season purchasing as a result. When the announcement was made that the shows will move to March and overlap with the Frankfurt Music Fair it wasn't taken too kindly, but after strong representations it is now likely that the date will be moved a few days on and avoid a direct overlap. Still, the annual trip to the Adriatic with less chance of a few days in the sun will not be as enticing to many visitors and exhibitors, and it will be interesting to see whether it affects the international standing of the Rimini shows, particularly with the UK coming up fast in 1988 with PLASA's Light and Sound Show booked to double its size into Olympia 2 in London.

Back to this year, I can confirm that the event is alive and well, give or take a few hiccups that the organisers will have already seen for themselves. The extension to a fifth day was I am sure a mistake, and I have the feeling that the dramatic expansion into Hall E coupled with a growth in Hall F with Magis far outstripped the space to visitor ratio that gives the 'feel' of a busy exhibition. There just aren't that many trade visitors around, and getting theatre and discotheque to join forces to present an all-round entertainment technology package for broad visitor interest is not a short-term process. The loyalty of some major theatrical exhibitors in particular will be paramount if the Rimini event is to establish itself in this way.

One of the 'oldest' British hands at Rimini is **Optikinetics**, once again sharing a stand with **Mode Electronics** - this time with a double-decker Trilite construction. And whilst on the subject of Trilite, Neil Rice and sales manager Julie Garton had a new development to show - a recessed version that allows for neat insertion of cable and power sockets.

Mode had their Unit Sixteen System, first launched at the 1986 PLASA Show, and have now added an eight scene programmable effects selector and on view for the first time at Rimini. It is designed for the control of motor circuits in installations incorporating the Unit Sixteen Touch Sequencer. It can be quickly and simply programmed using the sixteen channel push buttons, and each channel may be manually overridden at any time without affecting the memory.



Bruno Dedoro of Coemar (left) and Mike Lowe launched 'Teatro'.

Further exciting developments for Unit Sixteen are promised for the PLASA Show in September. Also launched by Mode was a range of wall mounting power units: the 4 channel WU4P and WU4HP, the 4 channel extra power unit WU4XP, and 8 channel WU8P and WU8HP. All units are dimmable.

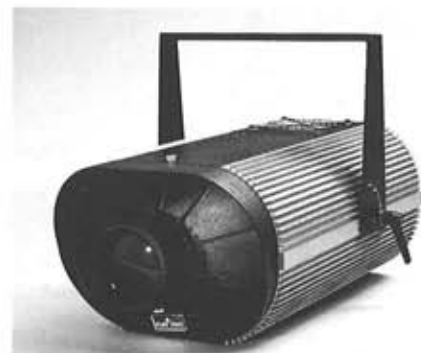
There are usually a clutch of new bits and pieces from **Anytronics**, and this show proved no exception. Star was their Megastar Strobe with a 1500W linear tube. This unit is fitted with two independent 'Flip-Flash' outputs which can give either a 100mS delayed pulse or simultaneous pulse, a useful feature that can be taken advantage of to create a wide variety of effects when several units are coupled in a chain by different arrangement of interconnecting leads. Also on show for the first time was the SP12 low voltage 12 channel switch panel, the FS4 low voltage 4 channel foot switch, and PP410DAP black box power pack 4 x 10A dimming/switching plus low voltage DC output and analogue and digital inputs.

It was a first time at Rimini for Nottingham-based **NJD Electronics**, who were joined by their distributors SIS, Starlight Design, Leamington Sight and Sound and Ki-Kon Distribution (Eire) who were based on the stand and assisting with the promotion of NJD product. New for the event was the MC4 - Micro Chaser 4 - a four channel sound chaser with internal microphone pick-up. It will provide either manual chase or sound chasing facilities, and will handle both resistive and inductive loads - a perfect answer where budget lighting is required. At the point I talked to Kevin Hopcroft, he had already tied up distributorships with companies in Germany, Switzerland, Denmark and Italy, and hoped to

have concluded a few more similar deals before the show closed.

JEM's new Smoke Detector was puffing lots of atmosphere into the Rimini airspace. It is a high power auto-sensing smoke system which comes complete with smoke head, service module, smoke sensor, a 19" rack controller, and 8 way dispersal cone, U bracket for mounting the smoke head, and all the necessary interconnecting leads and fluid line. Once you have adjusted the density control and time control cycle you can walk away and leave the system to maintain the same level of smoke throughout the whole evening. It also has an auto time cycle control.

Another first-timer at Rimini was **Cerebrum Lighting**, fresh from a drive along the Riviera from Expo-Musica in Madrid. The Cerebrum/Celco roadshow, this time with Colin Whittaker and Mark Tonks in sole charge, was once again spreading the message of the Celco Connexion



Clay Paky's new Number One - the 'Numero Uno'.



Laserpoint arrived at Rimini in a big way.



Andrea Molinari, general manager of Quartzcolor, Rome, with one of the new Orion/Pallas groundrow units.



Part of the Coemar show in the company's massive Magis emporium.



Teatro - the new name at Magis.



Clay Paky's Numero Uno produces its first light show.

System - the stand-alone bank of tricks that can be connected to any dimmer or control board and handle up to 450 desk channels and 512 dimmer channels. Also on view was Amptown's Posi-Spot system, and for take-away, Powerdrive's five language colour brochure.

Two new ranges from Pulsar had already been launched at the SIEL Show in Paris in April. The Flexiflash system comprises a controller together with a range of Flexiflash tubes. The tubes are 10 metres long by 5cm in diameter and are available in clear, orange, yellow and blue. Each tube contains 20 strobe circuits linked by three core cable to the controller. The microcomputer-based controller will control 3 separate zones with up to 50 metres of tube on each zone. Pulses are generated by the controller and fed to the appropriate tube, passing up or down the tube firing the strobe circuits in sequence. The controller can fire sequences forward and backward simultaneously and at different speeds. The direction can be selected manually or the Auto button will change the direction of the pulse automatically. Maximum speed is 1000 flashes per second which would traverse 50 metres of tube in one tenth of a second. The speed at which pulses are generated is governed by the BPM speed control. The enabled zones can be individually fired in an automatically generated sequence, or can be fired manually or by the bass beat of the music.

The new Pulsar 'S' range comprises six controllers, three of three channels and three of four channels. Each controller handles 5 amps per channel resistive or inductive load. You can supply any of the units from one low-voltage transformer if required, which makes them ideal for running tube lights. Each unit is free-standing or they can be neatly stacked. Output is via one Bulgin 8 pin multiway plug.

The bigger news from Pulsar, however, is the link with Clay Paky, announced in our May issue. Anglo-Italian two-handers are the in thing at the moment, and Clay Paky's new range of lighting effects - the 'Number One' - will have a top of the range enhancement courtesy of Pulsar. 'Number One' is available with three lamp types: halogen 36v 400w, TIN Halide 500w, or HMI 575w, and there are three basic models. At the start-end it is an effects projector with accessories, in the middle range it becomes an effects projector with a moving lens, and at the finest point of development a controllable spotlight with control over colour, iris and direction using a mirror-based system.

The range will be on the market in the UK during the summer, and for the autumn, hopefully for a grand launch at the PLASA Show, Pulsar are designing a circuit board for a control system for the top of the range unit.

Also on view on the Clay Paky stand was their new Marte (Mars) unit, looking identical to their highly popular Saturno, but with a different method of operation, allowing sound to light or fixed, and can be used for an interesting light curtain effect - or a "new frontier" as they say in the advertisements.

Le Maître launched their new Power Mist Turbo smoke machine, a compact outfit that has one of the highest outputs currently available. It is a highly flexible system, and a new feature is the choice of remote high power on/off or total control of smoke output and electronically adjustable output control. Also on stand was the new Pyroflash 1000CD modular high power professional capacitor discharge firing system for which the master firing modules are available in either mains or battery powered versions. The 10-way selector panel units, or 'Q' switch modules, as they will be known, are connected to the master module via a 3-wire lead.

Light Processor will soon be claiming the word Program as their very own. Their new Program Sensor is a 16 channel programmable touch panel, Program Four and Program Eight are two new low voltage four and eight channel sequence lighting control panels which include full dimming and cross-fade facilities, Program Power is a four channel control system with its own internal power pack and therefore self-contained, and finally Program Scenefade is a control system that has been specifically produced for the display lighting industry as well as for general



Richard Thornton-Brown of Zero 88 with the new Rackmaster 260.



Lighting Leisure Marketing - a simple but highly effective lighting and structure display.



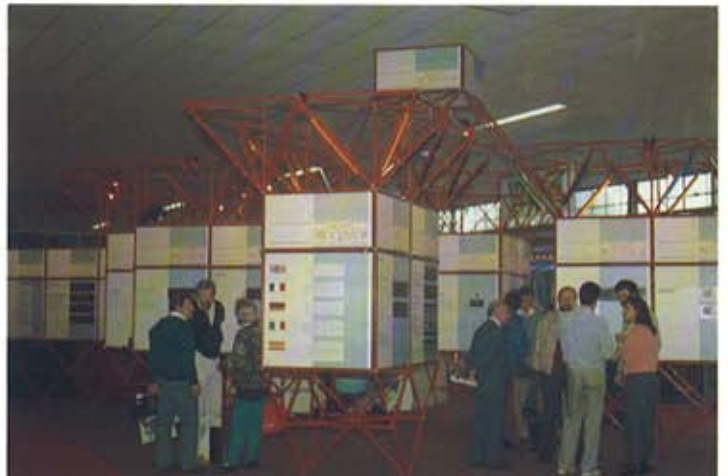
Barry Widdington (right) of Mode Electronics explains Unit Sixteen.



Bob Kelly (right) of Martin Audio with Ivo Cabrini of Ital Cida, the company's Italian agent.



The Magis stand of Quartzcolor and Strand Lighting.



Light Processor introduced a multitude of new products at Rimini including the new Program Sensor.



Sandra Cockell (left) of Formula Sound with Angela Montagnini of Audio Engineering of Cesena, the company's Italian distributors. Highlight was the addition of crossfade and voice-over ducking for the PM-80.



Neil Rice of Optikinetics gets to grips with the new power cable and fitting system for Trilite.

lighting control in 'off dance floor areas' within discotheques. In addition, Light Processor were showing their new SPU strobe pulse unit and new versions of their Lightprocessor dimming packs with a built-in cross-fade controller.

New from **Sound Creations** was their Trizone Four - a rack mounting low voltage controller featuring four channels, three zones for effects each with 16 programmes, sound to light, and a cross-fade dimming facility.

Icelectrics launched six new products at SIB (sound products are dealt with later). Two new dimmer panels are now available, both 12 channel units with master fader and one button blackout. The SD1202 has facilities for switching 3 zones of four channels through to external signal input so that, for example, a touch panel or lighting controller giving a 12 volt output can be routed through the dimmer panel for individual channel brightness control. Flash buttons are also provided on the 1202 as is a pre-heat adjustment. The SD1200 is a simplified version, and can be used to add scenes for pre-setting for an expandable stage or band situation.

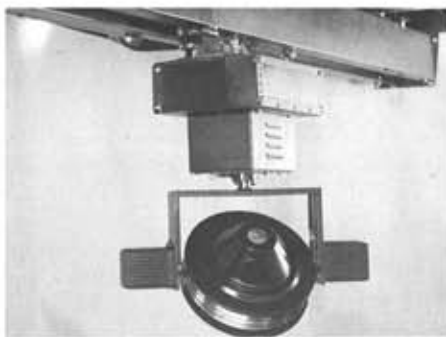
The LV1200 from Ice is a low voltage single unit rack mounting switch panel designed to work with most zero voltage switch packs. It has a one button 'go' or 'blackout' switch and will work with the new model 512 12 channel zero volt switch pack.

Ice's Rob Peck claims that the new model 512 is probably the most cost effective high-tech pack on the market. It features high impedance input, full cycle conduction, disable facility, DC return for controllers, test facility, low voltage operation and conduit or rack mounting convertible. Special attention has been paid to the cross-over (on-off) points so that the 512 may be used with controllers giving an analogue (0-10 volt) output where only switching is required, and the unit will give clean switching under these conditions.

Laser displays need a spacious element and both **Laserpoint** and **Laser Systems** took advantage of the room available at Rimini. On stand with their Italian distributors Asco Italia, Laser Systems' regular show featuring all their new products including Minilight and Gyrolight coupled with an outstanding laser demonstration, was into a 'house full' situation on an hourly basis.

Laserpoint's spherical Meroform construction had a 'what's new?' look about it, and in addition to their laser range, the company was emphasizing its development into the video wall field with a 16-wall unit on display. In fact, expansion has been so dramatic for Laserpoint that they've now taken the decision to operate as two divisions within one multi-media company: lasers on one hand, and audio visual on the other.

Featured in our May issue, System Freestyle was the method by which **Zero 88 Lighting** promoted a clutch of exciting new products, and Freestyle Marketing is a new operation set up by Zero 88 to market the new system for the world market. Colin Freeman was on hand to cover all the angles. On the lighting front, in addition to their full range including stalwarts Eclipse and Mercury, Zero had their new baby, the Orion club lighting controller. Totally new for Rimini was the Rackmaster 660, a dimmer with a unique diagnostic capability built-in. The 660 series are professional six channel power controllers capable of driving up to 10 amps of lighting loads per channel which can be resistive or inductive and include tungsten, neon, transformer



Nisel's new moving rail system.

driven low voltage (e.g. pinspots) or quartz halogen. It is available in several versions each with six outlets conforming to various national requirements.

Also new from Zero are the FX3 and FX4 low cost 3 or 4 channel lighting controllers. A 'Super Auto' function gives a one-button light show, generating a constantly changing variety of effects including sound to light, sound chase and auto chase. Completing the range on show was the popular line-up of Cartridge Effects where changing lighting effects is as easy as changing a music cassette.

Mike Lowe (ex Strand Lighting) promised L+SI that his new collaboration with Bruno Dedoro of Coemar - Teatro - would be making a big impact at Magis, and they'd certainly picked a site you couldn't miss. Another reason for not missing the stand was the appearance of an all-smiling Andy Collier, who recently left Strand Lighting in London to join Teatro and Coemar as product manager on electronics.

Between them, Lowe and Dedoro have launched a complete range of theatre luminaires in the space of a few months. It includes fresnels, prism convex, profiles, flood and cyc lights, followspots, beam and par lights. Working in a hotel - appropriately called 'Il Pionere' (the Pioneer) - Mike Lowe took his Amstrad out from England. "It allowed me to manipulate the data," he said, "and come up with the range required according to marketing information."

Working from a general specification and the marketing information provided by Mike Lowe, Bruno Dedoro and his team of four design and production experts came up with the range on display at Rimini.

"The speed with which we get service here is amazing," Mike Lowe told me. "And everyone is so responsive. There is plenty of energy, but a lack of the aggressive attitude that is present in the UK. The Italians are arm waving and friendly, and everybody helps."

The Teatro range is being distributed in Italy by DeSisti and Arri Italia, and a world-wide network of dealers will be phased in as production expands. I don't think we'll see Teatro in the UK just yet, but once Mike Lowe has got his act together and found the necessary organising space, battle is sure to commence in a big way.

Linking Italy and Britain on a totally different basis, **Strand Lighting** was present in the shape of the **Quartzcolor** banner, part of Strand Lighting world-wide. New products from the group can now evolve from Rome, the UK, or the United States. On stand at Rimini were the new Rome-produced ladi fill and cyc floods and the Orion/Pallas "bendy" studio ground row that can curve with the cyc. Andrea Molinari, general

manager of Quartzcolor Ianiro Trading explained the new equipment to me, and I managed to catch a fleeting glimpse of Russell Dunsire, Strand Lighting's general sales manager, hot foot between world-wide destinations.

Other lighting majors displaying at Magis included **DeSisti**, **ADB**, **Spotlight**, **Coemar**, and **Arri Italia** (see special feature on ADB in this issue). On the control side FLY were showing an interesting development in modular light desks on one of the most attractive stand displays at the show.

For this year's event many of Italy and Europe's major effects lighting manufacturers had moved into Hall E, and took major display areas to beam out their latest gadgetry. They included **King's Sound** with their new Zeus computerised control, **Ampilux** with the punchiest laser display of the event, **Lampo**, **LED**, **ProgramSistem**, **TAS** with over two dozen new products, **Music and Light** and **Sapro France**, whilst **Clay Paky**, **Avitec/Kremesa** and **Satel** stayed put in halls B and C.

If not listed in this review, you can reasonably safely assume that most major names in the manufacture of equipment for the live entertainment industry were represented somewhere in the halls at Rimini - if not on their own stand, at least by their Italian distributors and agents.

The overall 'effect' of this year's show was that the emphasis in discotheque lighting had moved to a considerably more subtle use of beam and ray effects and use of colour, and away from spinning lights and mechanical centrepieces. And that the general trend was towards the development and refinement of existing ideas rather than anything radically new.

Many varied sound systems were to be seen at SIB in Rimini featuring those suited to the smallest pub or restaurant up to the largest concert and theatre venues. Probably the single item to provoke the writer was that the theory of horn operation is clearly misunderstood. In general terms if a horn has a circular throat and is not multicellular then the horn should be mounted vertically. Conversely if the throat is rectangular then the rectangle should be vertical which usually means the mouth being horizontal. Far too many systems had the horn incorrectly mounted which will seriously limit the dispersion in the horizontal plane. One of the main reasons for this occurrence, is that vertical horns just look wrong!

In terms of amplifiers and general sound electronics, nothing was seen that was startlingly new. The MOSFET has taken over as the main amplifying element with all the usual DC offset protection, loudspeaker lead short circuit protection et al. Mixers for the discotheque industry proliferated and are becoming much more complex giving the DJ greater control over the sound environment. Electronic cross-overs were much in evidence, but again there was nothing new.

Several British companies were exhibiting their range of amps, cross-overs, consoles, graphics and mixers, amongst those spoken to was Rob peck of **Icelectrics** who have several new products, and were also showing their range of mixers and consoles. Sharing the Icelectric stand was Paul McCallum of the **Wembley Loudspeaker**



Wembley Loudspeaker's new 'Deuce' dual-position lens loudspeaker system.

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Window shopping for Fane.

Company displaying their new loudspeaker units. The standard with its 250W capacity is physically small enough for use in pubs and restaurants whilst the Hi Power units also the same size handle 600W and could therefore be used in small clubs where louder sounds are necessary.

Also sharing a stand was **Scott Sound Systems** who were displaying several versions of their loudspeakers including the SE Series which are intended for most PA and sound reinforcement applications. Opposite the Scott stand was **Cloud Electronics** with Roy Millington showing a good range of electronics from the 900 series mixer to the powerful CV1000 amplifier. Your scribe can testify to this amp which has been in constant use on his roadshow for many months trouble-free use.

Loudspeaker components were also a feature at Rimini. **Celestion** were represented by their Italian agents and on display were the hi-fi range of cabinets in addition to the professional series. **Fane** had a presence on their agent's stand with a



Icelectrics - six new products launched at Rimini.



The new 'Aura' from Wired for Sound Pty.

long window type display. Of particular note was their new coaxial range of drivers, the CX12, CX12PA, CX15 and CX15PA. The specification of these units is excellent and although I was unable to have a demonstration I have had very good reports from those who have.

In addition to their wide range of lighting controllers **NJD** were also displaying a pair of loudspeakers which I believe to be a recent innovation. **McKenzie Acoustic's** drivers were shown on their Italian agent's stand and most prominent were the C15 range.

Red Acoustics were on show, with both the double and the single driver unit. These self-employed very small loudspeakers are ideal where space is limited and additionally they can pack considerable punch for such a small unit. On this same agent's stand were a whole range of cabinets fitted with various examples of the world-famous **Renkus Heinz** drivers, both cone and compression. The sound demonstrations from the theatre-sized installations was outstanding and the construction demonstrated that

the designer did understand the principles of horn systems!

Always worth listening to are the units available from **JBL**, now probably the world's most used driver. Again, the sound demonstration was impressive. From a similar stable were the samples from **Altec Lansing** with a range capable of satisfying any requirement. **Sonart Acoustics** of Italy were showing a range of flight cased loudspeakers suited to the largest of roadshows plus a small unit comprising a 15 inch woofer and full range horn. The combination gave an excellent sound and would be ideal for the small touring group.

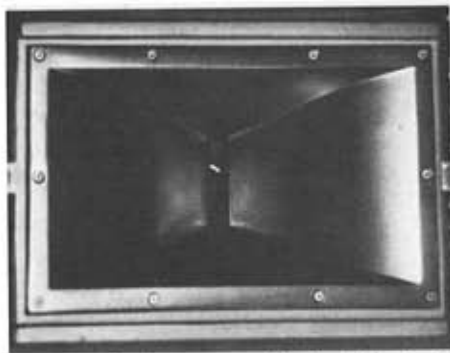
For theatre use the inimitable **Klipschorn** were a delight, unfortunately not demonstrable when I visited the stand. Also offering a wide range of both large and small loudspeakers was **Acoustic Systems** with both horn and reflex units suitable for any application. One of the neatest systems of the show, intended for PA applications, was shown by **Fostex** which consisted of two very small mid-range and HF units mounted on stands plus a single centrally mounted bass bin - small in size but big in performance. Other systems by **Fostex** were also shown.

A new range of stand or floor mounted units are being offered by **Wired For Sound Pty** of Australia under the 'Aura' banner. This company will shortly have sales facilities in the UK and amongst the range available are systems both self-powered and unpowered. Reliability is the keyword and serviceability has been at the front of the design. All printed circuit boards are easily changed and could be accomplished by group or management personnel in the middle of a set should the unthinkable happen.

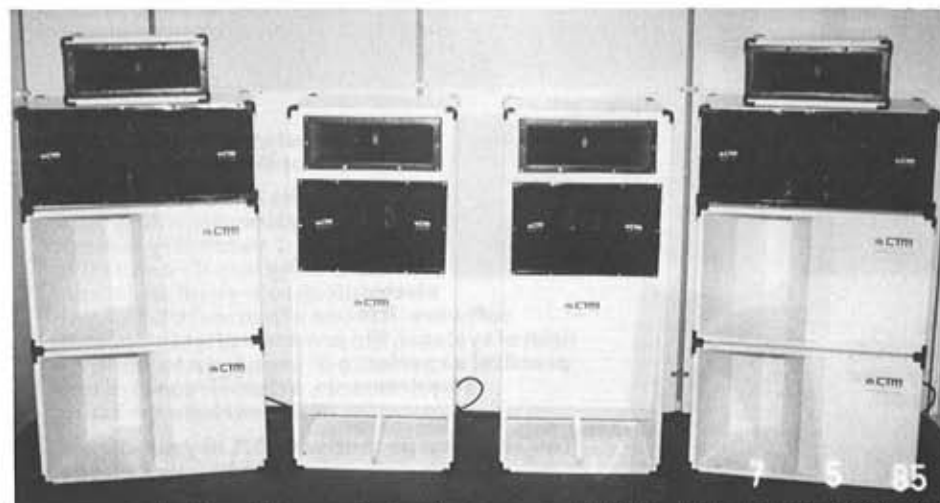
One of the largest displays was by **LEM** of Italy. They displayed a range of electronics including mixers, amps, cross-overs and graphics plus a long line of quality loudspeakers. The most impressive was a bank of ten gantry-mounted units which include bass bins, mid-range and HF systems, all of which are horn driven in one form or another, these being based on the CX700 version.

Also seen on agent's stands were loudspeakers by **Vitavox**, **Turbosound** and **Martin Audio** plus a whole range of **Toa** systems designed for PA use. **Electrovoice** also had a presence as had **RCF** who had a large stand and listening room. Of specific interest were the cutaway models of the RCF coaxial driver clearly showing the twin voice coils and magnets. The perspex cabinet with cutaway driver also excited comment as it was the only unit where the punter could see what they were paying for. Another excellent range of loudspeakers and drivers were shown by **D.A.S.** of Spain. The demonstrations were most impressive, making the range worth careful consideration.

Finally, for me the single most impressive loudspeaker system demonstrated was by an Italian company **CTM** their Sistema Acustico "Supersonic" which was quite superb. It comprised three cabinets per channel: one each for bass, mid-range and HF. All three were based on horn loading, and being comparatively efficient were both loud and clean. At no time was there any hint of harshness or headache-inspiring sounds. Certainly it is a system to be reckoned with, and I look forward to the time when an importer brings these units into the UK.



A rectangular horn mounted horizontally, clearly showing the vertical rectangular throat which ensures that maximum dispersion will be in the horizontal plane.



The CTM Professional Sound 'Supersonic' Acoustic System, showing bottom left and right the BS400 with a response from 45Hz to 300Hz at a power rating of 400W. Second from top left and right is the MT250 with a power rating of 300W and a response from 300Hz to 1K5Hz. Top left and right is the 100W TB100 which covers the frequencies from 1K5Hz to 16KHz. In the centre is the one-piece combo system which is ideal for the small touring group.

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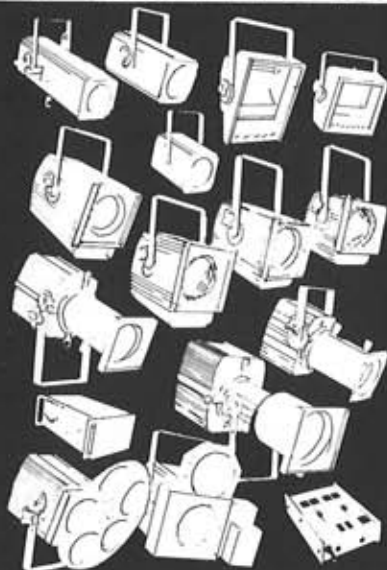
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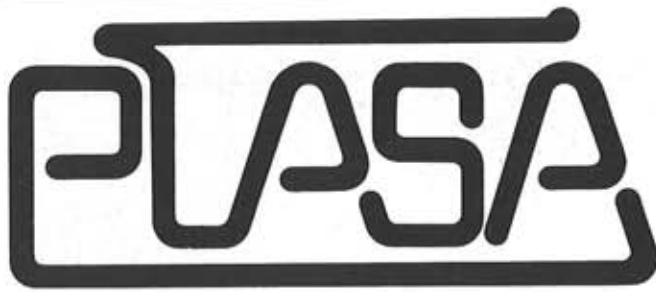
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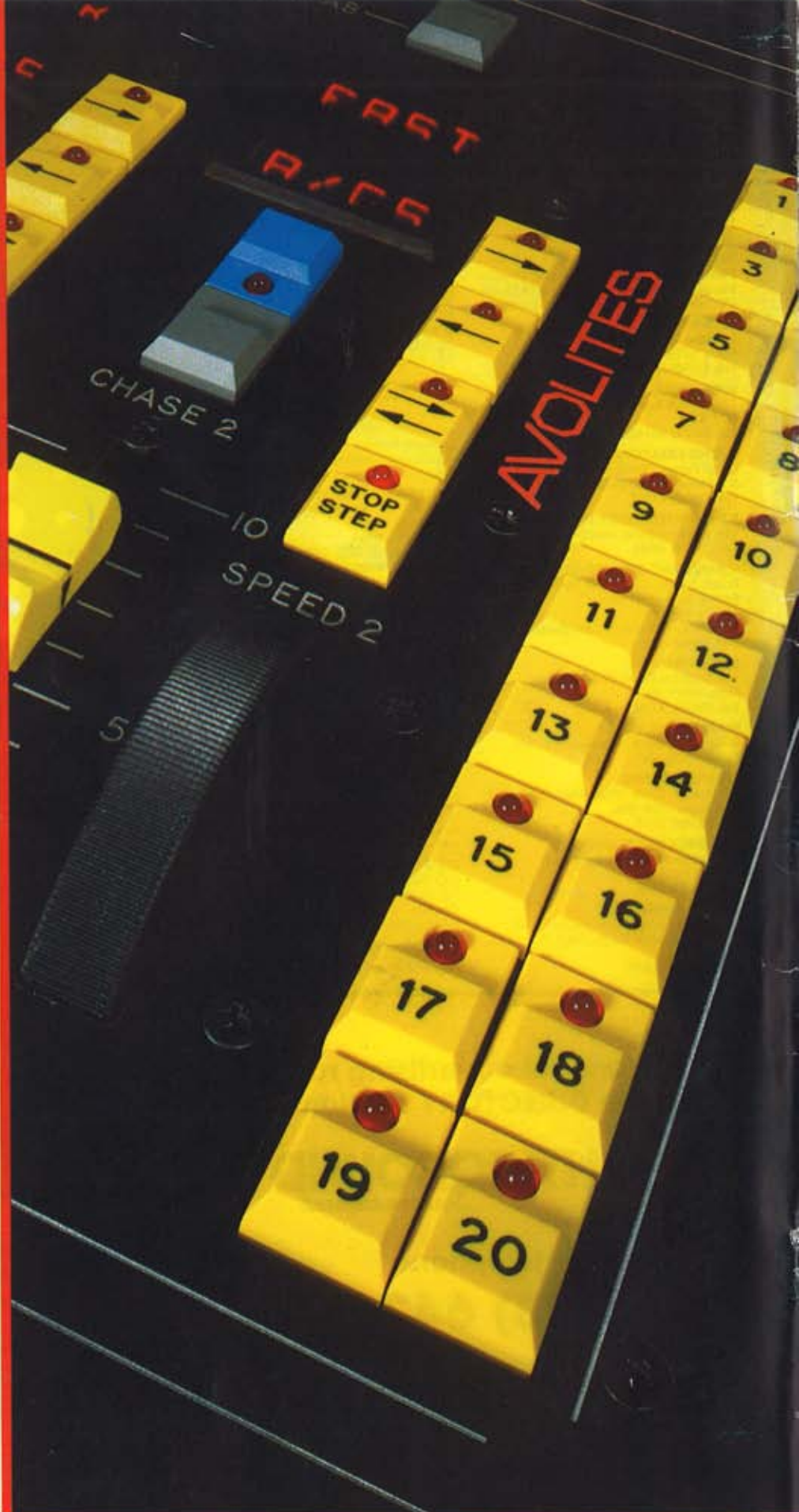
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