

LIGHTING+**SOUND** *International*



A SCENE FROM OLIVER! AT THE LONDON PALLADIUM

PHOTO: MICHAEL LE POER TRENCH

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JANUARY 1995

OLIVER! COMES BACK FOR MORE

Rob Halliday Live at the Palladium

By the time you read this, the show will no longer be 'Cameron Mackintosh's new £3.5m production of *Oliver!*, the show won't be featured in every single Sunday supplement, and the London Palladium will no longer be awash with sub-contractors - though hopefully the ticket-touts and autograph seekers will still be hanging around outside. *Oliver!* will have settled comfortably into the West End, delighting eight audiences a week with its excellent performances and good tunes.

For me, the memories of the production period, the previews, the star-studded first night and, of course, the first night party are still fresh - if slightly hazy in the case of the party! *Oliver!* may be a classic musical, known and loved by a large percentage of the British population, famous for the revolutionary scenic design of its original, 1960 production and immortalised on film. But, as the hype made clear, this was a new production, produced on the largest scale in the style established by a decade of new musicals from the Andrew Lloyd Webber and Cameron Mackintosh stables. The run up to that first night took three months of work in the theatre, and many more in offices and design studios before that. It was a great party on that first night, but all those involved with the show earned it!

If you think this makes it sound like I had more involvement with the show than usual, you'd be right. A phone-call in early August led to a meeting with the show's production manager, Kevin Eld, and I was booked as the show's moving light programmer. I thought about keeping a diary, but didn't. Why? A comment made by a film director in a recent interview sums it up best: "While working on a film, you don't go home and go to bed," he said, "you escape back to your house and collapse". The same applies in theatre. The diary never got written. So, instead, I offer a series of snapshots of the making of a musical . . .

The Show

Oliver! is a legend in musical theatre circles. When it first opened in 1960 it caught a world still dominated by American musicals completely by surprise. The show tried out in Wimbledon before moving into the West End; changes were made and songs added throughout that 10-day run. The show then moved into the New Theatre (now the Albery), where it opened.

Lionel Bart recalls predicting disaster early on in the first night when a piece of scenery didn't move properly, and he left for the duration of the show. He returned to curtain call after curtain call and an audience who refused to leave.

That reaction might not be too much of a surprise given the reputation the show now has, but on that night it was a miracle. Not only was the show new, but the way it was presented was a radical change from the tradition of the American musicals of the time. Designer Sean Kenny came from an architectural background; with *Oliver!* he moved right away from the 'painterly' scenery of the time and refused to hide the mechanics of the show. His set used a central revolve backed with sliding trucks to allow the show to move quickly between the many locations the plot demanded. To help speed things up, scenery was changed in view of the audience, the masking above the stage area was swept away and John Wyckham's lighting design became one of the first 'exposed rigs' in stage lighting history. It is fair to say that this revolutionary stage design ushered in a whole new era of theatrical design, and all of the current musical 'epics' owe their scenic existence to Kenny's work; indeed, *Cats* is performed at the Kenny-designed New London Theatre and was its first hit. Designer John Napier



Jonathan Pryce as Fagin with his gang.

Production photos: Michael le Poer Trench

recalls feeling as if he was being guided by Kenny's spirit when designing the show.

The show became an overnight smash hit. It ran in London until 1966, transferred to Broadway in 1963 and, after the London run ended, became a smash hit film, winning six Oscars.

Having achieved all of that, the show then influenced the future of the British musical in another way, by offering a young Cameron Mackintosh his first theatre job. By 1976 he had moved on to producing shows and launched his own revival of the show, bringing it back into its original home, the Albery, where it ran for a further two-and-a-half years. A further revival, in 1983, was equally successful in London, though wasn't so well received when it moved to New York. Mackintosh then had a busy decade producing *Cats*, *Phantom of the Opera*, *Les Misérables*, and *Miss Saigon*. *Oliver!* moved onto the back burner.

The New Production

Cameron Mackintosh's position in any 'richest people in Britain' list, and the number of shows he has running around the world, are a clear indication that his theatrical instincts are right more often than they are wrong. His instinct told him that, innovative as *Oliver!*'s original design was, it was now hampering the show, preventing anyone from taking a fresh look at it. This, added to the fact that the original set no longer existed despite spending many years in storage, meant that a new production should, and could, start from scratch.

And so the 'youth opportunity scheme' production (as actor Jonathan Pryce christened it) was given life - so nicknamed because few of the production team were born when the show was first created. Director Sam Mendes has made his reputation directing plays and acclaimed musicals (including *Cabaret*, covered in L+SI, January, 1994) at the tiny Donmar Warehouse theatre in London, and larger scale productions at the National and the RSC. Choreographer Matthew Bourne is the driving force behind acclaimed dance company Adventures in Motion Pictures, and choreographed the less-than-successful musical *Children of Eden*. Designer Anthony Ward has produced a huge range of work, usually in the subsidised sector, for companies such as the Manchester Royal Exchange Theatre, Opera North and the Bristol Old Vic. Sound designers Mike Walker and Paul Groothuis have

wide-ranging backgrounds, Walker having worked as production sound engineer for many West End and touring productions and Groothuis having designed the sound for many shows at the National Theatre; they first teamed up on the National Theatre's *Carousel*.

To complete the team, Mackintosh added the steady, experienced hand of lighting designer David Hersey and orchestrator Bill Brohn - both of whom were around at the time of the original production.

Design

In his programme notes about the show, Cameron Mackintosh explains that the production team decided to take a 'laterally moving' approach to the new production because of the use of the revolve in the original, and the use of a revolve in *Les Misérables*. From that basic decision, and the decision to go for realistic scenery, designer Anthony Ward then had to tackle a whole host of other problems. The first of these was the sheer number of locations the show requires - it moves quickly from an open heath in a storm for the prologue sequence, to the workhouse full of children, to an undertaker's shop, to a whole range of locations in and around London, down into Fagin's underground lair, and then, in the end sequence, onto the city's rooftops. All this in just two hours, and the London Palladium, with by no means the largest stage in the world, has limited wing space and, because of its variety-house origins, poor sightlines to the upstage areas from many of its seats.

This led to Ward deciding to keep as much of the action as possible downstage. He claimed the upstage third of the stage exclusively for scenery; this space is filled with a wide variety of realistic, sliding vistas, giving a clear visual location to the show's many scenes. The downstage two-thirds of the stage are covered with a gently raked floor detailed to look like a Dickensian road (though a closer inspection of the manhole covers in that floor reveal some less-than-accurate detailing - the names in the covers are those of members of the production team!). In each corner of this stage is a three-storey high tower, capable of tracking on or off stage to allow the central performance area to be opened up or closed in. Between the downstage towers is a platform which, when the towers are on-stage, can be lifted to the top of them (the operation of which is made very clear by the



To maximise the space available at the Palladium, moving lights were included in the rig, notably VL5s and VL6s, together with DHA's pitching Digital Light Curtains.

them (the operation of which is made very clear by the description of the towers acting like fork-lift trucks), and below that is a fill lift which can rise to fill the gap left by the main lift. Both the loft and fill lift contain tracks to allow trucks to run across them, and tracks also cross further upstage for other scenic elements.

Above all of this is a grid packed with flown scenery - a giant wall with three windows that doubles as the wall of the workhouse and, by opening up the brick arches in its lower half, as the entrance to the Three Cripples pub; a window frame for the inside of the Brownlow house in Bloomsbury; coffins for the Sowerberry funeral parlour; the railings to London Bridge, and another bridge that, by a quick change of handrails in the interval, doubles as two of London's other bridges. Upstage is a huge, cloud-covered cyclorama, and the little space that remains is filled with masking - in another departure from the original, David Hersey's lighting rig is, as far as possible, hidden from view.

Upstage, in the 'scenic' third of the stage, the giant, curved Bloomsbury Crescent flat is flown. Below it are lines of 'railway tracks' across which run a variety of vistas of London, as well as a boat (seen sailing past the Three Cripples bar) and St. Paul's Cathedral, which appears to mark Oliver's real arrival in London. Just downstage of these tracks are flown tracks carrying tall brick sliders, which track across stage to mask off the upstage area at various times.

This is all a very tight fit - in places the clearance between scenic elements and lighting bars is measured in fractions of a centimetre. The wings are even more chaotic, with some scenic elements winched up into the air as they come off stage to allow tracks and truck bases to be re-used for other scenery. Even the short corridor to the dock door is used to store scenery.

Just to round off the complications, the floor contains a series of tunnels to allow the children to pop up through the manholes, and two pop-up chimneys used in the rooftop scene.

The work required to convert this to a working reality was led by production manager Kevin Eld and design co-ordinator Will Bowen, who also decided to make the finished product self-contained, so that the chimneys, tunnels and the like fitted within the show deck with no need to break through the Palladium's own floor. This was done to avoid having to damage the theatre's famous revolve, and to make it possible to tour the show by simply lifting the scenery out of the venue



Moving light control - Arri Imagine 3, Apple Macintosh for the DLCs, Powerbook for keeping track of everything - in the stalls during the production period.

and re-installing it in another suitably sized theatre.

To present the movements the set had to accomplish to the people who would have to make it work, Eld and Bowen used the services of Modelbox to generate both conventional plans and animations of the set in action. From these presentations a whole host of contractors became involved in the show - Terry Murphy Scenery, Victor Mara, Kimpton Walker, Michael Whitely Associates and Ken Creasy Ltd building scenery with Delstar Engineering, Stage Services, Smith & Forbes Engineering, Met Scene Fabrication, and Techfab carrying out the engineering work, along with Mike Barnett who designed the tricky items such as the large St. Paul's Cathedral (which looks like an easy thing to design at first glance, but less so when you realise that it is very heavy, up to 20 feet high, and is running on a very skinny base!).

Because of the complicated nature of the set's movements, the decision was taken to automate most of it and run it from a computerised control system. For this, Eld turned to Stage Technologies and their Acrobat! control desk, now nearing its final form after developing across shows such as *Sunset Boulevard*, *Phantom of the Opera* in Manchester and *Copacabana*. Intended to be a general purpose control desk rather than one specific to a particular show, Acrobat! uses a PC running special software under Windows to store cue information which is then passed to a specialist computer in the desk. This handles running cues, passing information to the control racks in the theatre's basement over an industrial network with guaranteed response times. As Stage Technologies' Mark Ager explained: "It's important because, unlike lighting where if something doesn't respond immediately everyone moans a bit but it doesn't really matter, we have

some enormous pieces of scenery moving near people - in this case children. You have to know exactly what they're going to do." To aid safe working, the desk is now installed on a fly floor, giving the operator a view of the stage backed up by monitors providing a series of other views.

Stage Technologies became involved in the show once the set design, and thoughts about how the set was to be used, were complete. Their work was then split over two areas - to control all of the motion on the show, and to supply 14 of their Big Tow winches to provide some of that movement. But the desk also had to talk to motors supplied by Unusual Rigging, and friction drives and hydraulic systems supplied by Delstar, and also to handle all of the interlocking and safety systems required to make the set as safe as possible.

The final system controls 32 'axes', or movable items, in a system Ager thinks is "one of the biggest" they've worked on, despite not containing anything as huge as the 7.5 tonne house they had to control on *Sunset Boulevard*. The complications arise because "there are so many axes on this show. When you're controlling just one item, it doesn't really matter, in terms of control, whether it's a door or a huge house - the difference is your nerves; with a huge house the stress level goes up! But here we're controlling lots of different types of motors, which is complicated."

The Stage Technologies team of Ager, John Hastie, Ted Moore and operators Mike Sharp and James McKee worked in the theatre from the beginning of September, starting by installing the cabling, then the control racks, then commissioning the individual pieces of scenery. Their equipment follows the set in being designed to move out of the Palladium and into another theatre easily - "everything is connected by plugs and sockets, so it would be easy to move elsewhere," Ager notes.

For the most part, all of the scenery was working by the time the cast arrived in the theatre, and Ager is proud of the fact that the control system has met all of the demands placed on it. "The London vistas in 'Consider Yourself' were originally intended to do absolutely everything. They now do very little, but we had them doing what Sam Mendes wanted and he then changed his mind. Nothing got cut because it couldn't be done - I'm still waiting for a show that really pushes the control to the limit."

Lighting

In the midst of the near-chaos that the *Oliver!* technical period became, there were an assortment of enjoyable, 'happy' moments. One of these was when lighting designer David Hersey started experimenting with lighting on stage and, faced with the Sowerberry funeral parlour with its upstage window and a door set diagonally across the stage, tried using the two bars of pitching Digital Light Curtains. The DLC is a product made by his company, DHA, and the ultimate version of a lighting tool he's been working on for many years, but one which, in its pitching guise, he'd never actually used on a show. One DLC came straight in through the window, perfectly. Another pitched and panned to line up with the diagonal door, giving a highly realistic 'haze' of light through the door, rather than the more usual circular light beam. Immediately new lighting possibilities for other scenes started opening up in his mind.

The incident sums up Hersey's flexible and constantly creative approach to lighting design. While looking at the set design, he develops a number of general concepts for the show. On *Oliver!*, for example, the large windows at the back of the workhouse seemed to demand strong backlighting, but from different directions in different scenes to denote the passing of time. The opening storm sequence called for lightning, the search for which led to the Swiss-made Broncolor strobe, an adapted Cantata with a serious amount of punch even when used with forked-lightning gobos. In an ideal world, the 'textbook' approach would then have been to watch rehearsals,

generate more ideas, note down blocking and design a rig incorporating the lights needed to light each moment as visualised in the LD's head. However, on shows like *Oliver!*, that approach is impossible; the rig was in the air before the cast even started rehearsing, and the organisation required for a rig of this size meant that the original lighting design for the show was generated in the middle of the summer.

As with all shows of this type, space was tight, so to maximise the use of space, moving lights were included in the rig. At around this time Vari-Lite's new VL6 appeared and was selected because it left more room for other lights, and they were quiet - quiet enough even to impress the sound team, who had come to expect moving lights to present them with all sorts of noise problems. With VL6s chosen, VL5s were also added to the rig to provide wash lighting. The pitching Digital Light Curtains were thrown in because of their potential for generating realistic highlights and shadows across Anthony Ward's set, while being able to move those highlights to reflect the changes of location it was hoped the moving scenery would suggest.

The rest of the rig was fairly conventional, and made up largely of Strand gear - Alto 8/16k profiles front of house, a variety of Cantata profiles on the downstage lighting bars and circle fronts, Cantata PCs and Cadenza fresnels providing toplight and backlight, with Parcans topped with Rainbow scrollers, providing the backlight and sidelight washes, and four 5k fresnels and a 4k HMI fresnel giving strong directional backlights. CCT provided the solution to one particular problem with their acclaimed 28-58 degree Silhouette lens tube - these were topped with scrollers and deployed as cyc lighting. In all, the rig is spread across 11 on-stage electric bars, side lighting coming from positions installed around the set, and front-of-house lighting from both circle fronts, side circle positions, an advance bar and two 'Juliet' booms installed for the show. These, again, show how 'accepted' stage lighting now is compared to the original production, since 'advance' lighting positions were only really introduced by Richard Pilbrow in the original production of *Bart's* second major musical, *Blitz!*, some years after *Oliver!* first appeared.

The rig was supplied by White Light, who also supplied eight of their new DMX-controlled VSFx cloud effects units. Given the scale of the show, Hersey decided it was time to move away from the standard cloud disks: "The painted cyc was so wonderful that we decided to do something a little different, so we had some new cloud disks made with artwork based on the cyc artwork."

This initial rig was installed by production electrician Bill Wardroper and his team early in the fit-up period; the lamps were then wrapped in bin bags for the rest of the fit-up period in a desperate attempt to keep them clean!

They were revealed again early in October, allowing the rig to be flashed out prior to the start of focusing, which took place over three days. But here, again, the techniques of focusing for a show of this scale differ from the textbook approach, since although Hersey and assistant Jenny Kagan had seen an early run-through of the show, the cast were still a week away from a final, rehearsal-room run-through and things would certainly change over the four-week technical rehearsal period in the theatre. The focus thus consisted of setting general cover lights, roughing in specials, and experimenting with potentially useful ideas, while actually leaving many lanterns unfocused 'for future expansion'.

Serious lighting work started on a Sunday session set aside specifically for that purpose, and spent largely working out the tricky storm sequence that forms the show's prologue and then the opening cues of 'Food', the first number. There was one further lighting-only Sunday, but apart



Yamaha digital EQs racked beneath the FOH consoles.

from that and some morning sessions during the preview period, all lighting took place over other rehearsals. It often surprises outside observers that, even with many-month long fit up and rehearsal periods there still isn't really time to do everything. One of the advantages of moving lights is that, once a lighting idea is created, they can be moved to position very quickly without having to hold up a rehearsal while someone gets up to a light (and without the difficulty of having to navigate a tallscope through the set). In a number of cases the Vari*Lites didn't provide the ideal solution, with the VL6 beam's being a touch too narrow, but they could demonstrate an idea to the creative team, and that idea could then be improved upon by adding conventional lamps when time was available.

In this respect, David Hersey takes a very 'actorly' approach to lighting - just as a good actor won't be afraid to experiment with their performance during rehearsals, changing or discarding elements of it as time passes, so David never treats his lighting rig as a sacrosanct, unchangeable object. If a scene could be better lit by some lights he doesn't have, he will add them. If a particular light or colour doesn't seem to be working for a scene, he will change if for one that does - one change which caused some amusement being the replacement of an 8-Lite with two birdies! And the change which amused Hersey most was his discovery that the colour which worked best on Jonathan Pryce's Fagin was 136, which "I haven't used in years!" This all places extra work on the production electricians who have to move the lamps and find the circuits

to feed them, and on Jenny Kagan who has to keep track of what every light in the show is doing so that a light that does good work in four scenes isn't replaced because it happens not to work in one other scene (as well as plotting the followspots into the show). However, the reasoning behind the changes are always completely clear, so there are rarely any objections.

Hersey is helped in this 'fluid rig' approach to lighting by technology, in the form of Macintosh computers running PowerDraw (for drawing plans) and FileMaker (for rig and cue databases). His purchase of an A3 laser printer also meant that high quality printed plans could be generated for the crew on a daily basis. All of the lighting computers - two on the production desk, three Powerbooks and the printer were networked, a project that started off being just for amusement, but ended up a great timesaver as cue information could be passed from machine to machine quickly and easily.

It is a measure of how long the production period for *Oliver!* was that, when we started on the show, we were about the first people in the country to have the new Vari-Lite VL6, yet by the time the show opened I'd already read seemingly countless articles in L+SI about their appearances on other shows. Over that time, we saw them develop from compact, attractive, promising, but somewhat wayward children into useful, reliable workhorses.

The selection of the moving light system for the show was influenced by a number of factors. Space was one, and noise was another; the VL5 and VL6 scored highly on both of these counts. The system also had to fit into a tightly defined budget, and the two Vari*Lites fitted this bill as well. What wouldn't have fitted so well would have been an Artisan and operator for the run of the show; ideally, the producers wanted the show run from one controller by one operator. But plotting the show on one desk would have been impractical, so instead it was decided to use the house Galaxy 3 for the conventional rig, a Mac to control the DLCs, and another controller to run the moving lights. These would then be linked so that they could all be triggered from one control position.

Which left the choice of the second controller. In the end the decision was largely between Computite's Animator and Arri's Imagine 3. The Animator has enjoyed success on a variety of moving light shows. The Imagine 3 was billed as



A Jem 1000 mini low-smoke machine, two Skywalkers and the DF50 haze in the air, combined with the effects of the moving lights, recreate a Dickensian London.



James Villiers, Sally Dexter and Carmel McSharry on stage.

first launched, but had never really been used for controlling large moving light rigs. After trials with both, and discussions in and around the PLASA show, we went for the Imagine 3 - though had Strand's LDS430 been finished, with all of the features promised, it might have made an interesting alternative.

Why the Imagine? Mainly because of its graphics tablet. This device has been around for a while, and allows lamps to be selected simply by touching the appropriate symbol on the lighting plan. It's always seemed more trouble than it's worth for conventional rigs, but really comes into its own on large, multi-parameter rigs. The Imagine's twin control wheels work particularly well with the tablet - focusing a lamp is a matter of selecting the unit with the pen, then positioning it using the two wheels. It quickly becomes very intuitive and quick to operate which was important, given that the desk would eventually be handed over to the house crew to run the moving lights on.

DMX from the Imagine was run down a newly installed control multicore to the stage left fly floor and into a complex, split DMX network devised by White Light's Dave Isherwood and implemented using XTBA's smart splitters. This distributed isolated data to five Vari-Lite smart repeaters feeding eight VL5s and 12 VL6s, to the 60-odd Rainbow scrollers also controlled by the Imagine, to the VSFx cloud disks and other assorted effects, and to the extra dimmers installed to feed the VL5s. Despite the system's complexity, it worked first time and has continued to work reliably ever since.

The original moving light layout had two VL5s low on each pros boom and four along the advance bar, then 12 VL6s arranged with five on LX bar one, four on bar 3 and three on bar 6, following the diminishing perspective of the set. The Varis on the upstage bar were rigged on a tracking bar devised by Stage Technologies; this let all three units be repositioned across the stage to allow the workhouse window lighting to arrive from different directions or, potentially, to change direction through the course of a scene.

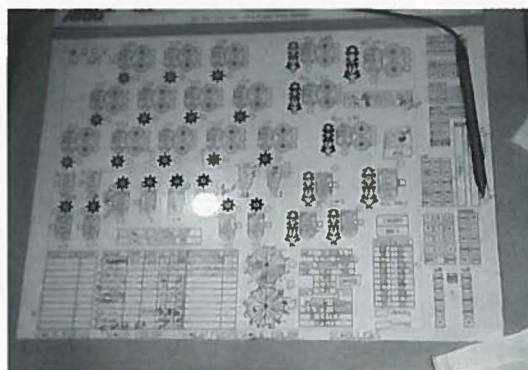
Though the VL6 positions remained constant, some juggling of the VL5s took place in early lighting sessions, with two of the VL5s from the advance bar being dropped down to the top of the booms (from where they can usefully follow the lift as it rises and falls), and four VL5s being added to LX bar one as Hersey found that position increasingly useful. During the same sessions the usual problems with the

VL5s colour system occurred, since they still refused to generate the pale, cool blues that the rest of the show's lighting was based on. They now have 202 over their lenses to solve that problem.

Apart from that, the 5s worked well and reliably, their light quality fitting in well with Hersey's demand for "clean, clear areas of light" and working well with the beamlight followspots - though the extra brightness promised by the forthcoming 1200W version would have been useful on occasion.

The VL6s were more troublesome: 12 were installed and settled in quite nicely. Then Vari-Lite made a series of design modifications and came in and swapped out our 12 for 12 new, modified units, but we continued to experience problems. A second Vari-Lite visit late in the preview period, to fit a new colour wheel (silvered to prevent it melting from the heat of the lamp) and install a software upgrade (as well as to remove six weeks of accumulated filth), was the point when the VL6s grew up.

The new software was a revelation. The dimming action was smoothed out. And the units would immediately find the correct colour or gobo, suddenly making some effects that we'd shied away from possible. Since the show opened we've had one, minor problem when one unit lost its dimmer calibration, but haven't had to swap any out. Niggling problems remain, particularly with the unit's lamp alignment system which isn't completely reliable, but this will no doubt be sorted out with time. It's just a shame that the movement can't be smoother when controlled by DMX. They are great to look at, though - to my mind the nearest moving light equivalent to the classic Pattern 23 - and eye-catching. The crew may have made scathing remarks about the number of times they had to fly the Vari-Lite bars in, but they always stopped to examine the VL6s when they were in!



The Arri Graphics Tablet set up for Oliver.

On this show, though, smooth movement remained the province of the pitching Digital Light Curtains, of which we had five 8-lamp units downstage and five 6-lamp units upstage, the DLCs thus also following the set's perspective. Control was, as always, from an Apple Macintosh. The pitching DLC's ability to place such light anywhere on stage, allowing true directional shafts of light, makes for a wonderful lighting tool.

It's a versatile one too - in *Oliver!* they are used as strong sidelights through doors and windows, as 'specials' for individual actors, as pools of light motivated by practical oil lamps and the like, and in the big ensemble number of act one, 'Consider Yourself', as directional daylight. This scene charts Oliver's progress through the streets of London with the Artful Dodger, and puts the set through a series of movements to indicate changing location and direction. This is lit by the two lines of DLCs pitched to give a strong, angled backlight into the acting area and across the set's towers. In the last, big transition, as St. Pauls Cathedral appears in the background, the DLCs pitch across the stage, their light visible thanks to the DF50 haze in the air, to give a change of light direction to reflect the change of location. The pitching capability does add a new danger, though - immediately after this live move, the DLCs at the end of bar one have to pitch flat so that they don't get hit by the scenic trucks as they move on stage.

The entire rig - moving and fixed lights - are now controlled by one operator. An extra panel with a remote go button has been added to the theatre's Galaxy. Running the show is now a two-fingered affair for the operator; the remote go triggers the Arri and, when required, this triggers the DLC Macintosh. The extra panel on the Galaxy also has forward, back and hold buttons to allow the operator to move through the show without having to reach over to the Arri. And, apart from the Palladium control room now looking like the Starship Enterprise's mission control, with buttons and monitors everywhere, the system works. The slight extra complication is probably more than made up for by the time saved while plotting the show, and the familiar, theatre-based logic of the Arri means that it is fairly easy to learn for the house crew with their Galaxy background.

Sound

The sound design for this production was always going to be a challenge. The show features 25 children, with ages ranging from 15 down to seven. It has a large orchestra, in an old-fashioned open pit. And while the London Palladium's stage isn't the biggest, the 2,500-seater auditorium is more demanding. And then there are sound effects to consider, these ranging from a dramatic series of storms to a cry of kittens.

The challenge was taken up by designers Paul Groothuis and Mike Walker, continuing the collaboration that began when Walker was called in to oversee the system for the National's production of *Carousel* while Groothuis designed the effects and operated the show. As Walker explains, that is largely the way they have continued to work: "On this show, I concentrated on the system design while Paul produced the effects."

As might be expected for a show of this scale, the system is large. At its heart sits a 92-channel Cadac J-type mixer, with computer-controlled routing and VCA assignment. While the J-type is now a fairly standard feature of musicals, this desk is one of the largest of its kind, and is the first to feature Cadac's 'flying fader' system. The eight channels used to bring effects into the desk are fully automated, allowing effects to run themselves and so leaving operator Richard Brooker free to concentrate on mixing the 'live' sound of the show. He is also helped by the computerised VCA routing and other MIDI fired events changing reverb and delay settings; while running the show Brooker generally only has to use a 'go' button and the VCA faders. The

computer routes whichever characters or group of characters are important in that cue to the VCAs, which have LED displays above them to show, but the computer's assistance means that he doesn't spend all evening reaching around the desk manually re-routing channels.

Walker is now generally pleased with the desk, despite some teething problems encountered along the way. "We went for Cadac because they really are the only company producing desks that specifically meet the requirements of live theatre. In particular they are very quiet, and offer a wide range of routing options. On this show sound can be routed to over 25 separate locations - different parts of the vocal and band systems, the surround, the delays, the Meyers used onstage for effects, the various spot effect speakers and so on. The desk allows us to control all of that routing very easily. We did have some problems, especially with the automated faders which didn't perform quite as we expected, but Cadac have worked through several software revisions while we've been in production and things are now getting sorted out."

This sound is collected by 34 Sennheiser SK50 radio microphone transmitters and passed on to the company's EM1046 programmable radio receivers, probably the largest system in the UK. Even with that number, Walker notes, transmitters are shared. "Those 34 packs get swapped around between 54 people; each of the 25 children wear a pack, though not all at the same time."

The new radio receivers have built-in LED displays, allowing them to be named easily and the names to be changed as the packs are swapped around characters. The system also has a monitor output showing the status of each radio, with duplicate screens at the desk and in the stage right wing. Sound assistants Julie Cole and Heather Tomlinson still have to work hard to get every pack to the right person, though - and deal with emergencies such as children trying to chew their microphones!

From the desk, separate vocal and band signals are sent to Yamaha amplifiers (a mixture of PC40002Ms and H5000s) and fed out over two different systems, both based on the boxless Tannoy drivers first introduced to the musical world by sound designer Martin Levan. Walker selected these speakers because he finds that they suit his approach to sound - an approach based on the theory that it is not possible to improve on the original acoustic sound quality. "What we are trying to do is just 'boost' the natural sounds that are occurring on stage without making them sound like they're coming from a loudspeaker. The open Tannoy drivers help with this because they have a more diffuse sound dispersion than many other loudspeakers, though the frequency

response is affected by using them out of their boxes. But we carried out some tests before the show fitted-up, and found that what we lost in frequency response was more than compensated for by the increased 'openness' of the sound. And, in any case, we could always use equalisers to correct the frequency response."

The vocal system thus consists of Tannoy 3836 dual concentric drivers, two located on each pros boom and a further two flown on the sound advance bar. The band system, of Tannoy CPA 10S drivers, sit next to the dual concentrics; these open drivers are backed up by Tannoy CPA 12.3B base units (in boxes!) hidden within the pros boom structure. "The main problem here was the width of the pros arch," Walker notes, "which made achieving a central image quite hard." To help with this a series of JBL Control 1 speakers are hidden along the front edge of the stage to 'fill in' the sound to the front of the stalls.

Further back, the centre area receives coverage from the flown Tannoys, and beyond that, under the overhangs of the circles, delay speakers - EAW JF50 tweeters and Control 1s under the first circle, Control 1s under the second - maintain the coverage. "The theory is that everyone should be receiving coverage from a big speaker and a little speaker. We delay these carefully so that the sound seems to come from the stage area and, because you can see the performer and the sound is diffuse rather than obviously coming from loudspeakers, the illusion seems to work," Walker noted, though he does add that "people don't realise how much seeing the performer helps. Much of this show is performed in the downstage third of the stage, which helps visibility and so audibility.

To help maintain the 'boosted sound' illusion, the show is mic'd throughout. "Every sound that happens on stage should pass through the system," Walker explains, "otherwise you hear a different 'quality' of sound and the illusion is lost - the style of musical where suddenly it's a song and all the levels go up." To enhance the show's overall sound 'atmosphere', a series of Canon V100 speakers were installed at the rear of the stalls, circle and upper circle to act as a surround sound system, though both Groothuis and Walker are wary of that term. "It never gets used as obvious 'surround'; we feed the lighter sections of the orchestra through it at a low level, and it just helps to enhance the acoustic of the theatre - if we turned it off mid-show people would notice something was up, but if we never turned it on they wouldn't feel that anything was missing," Walker explains, before adding that "it also gets used a lot in the storm sequences . . ."

These, and the show's other sound effects,

really are excellent pieces of work. The most telling tribute to Groothuis work is that, after starting off with just a storm-packed prologue, director Sam Mendes increasingly used the thunder as a leitmotif for the whole show. The overall effect was helped by another increasingly common piece of technology - a MIDI link from the sound computer to the Arri Imagine, ensuring that the strobe lightning sequences always timed perfectly with the sound effects.

Groothuis created the effects on a pair of Akai S3200 samplers, which also replayed the effects through the preview period. After this they were transferred to CDs replayed from Denon CD-cart machines, for reliability and ease of operation over the show's perceived long run - though, much to Groothuis' frustration, Mendes requested a change just as the CD-recorder finished its job on the disks!

The sound rig was supplied by Autograph with the samplers coming from MM Productions, and the installation was accomplished by sound engineers Paul Spedding and Tim Lynn, who, in addition to the teething problems of a sometimes temperamental new desk, also had to sort out the large communications and video system for the show (the combination of large radio-mic rig, Motorola radio communications system and radio-controlled dimmers meant that the number of radio frequencies in use in the building reached a worrying level!) as well as, on one occasion, dealing with an Autograph van catching fire mid-delivery! The team also included assistant sound designers Janice Gurr and Brian Beasley, though as well as her sound duties, Janice was kept busy assisting the lighting design team complete various computer card games!

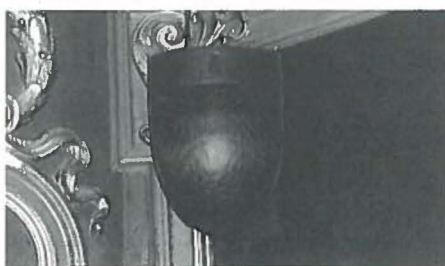
In terms of time available to carry out their work, those people involved with sound had possibly the most bizarre schedule of any department working on the show. Like everyone else, Spedding and his team were on site from the first day of the fit-up installing the system and its cabling and working to make the rig as visually unobtrusive as possible - all of the mains cabling to the desk was permanently installed in sub-floor trunking, and the Canon surround-sound speakers were covered with grilles painted to match the theatre's decor; they now bear an uncanny resemblance to air conditioning vents! There then followed a couple of weeks of careful checking and line up of the delays. Just before the cast arrived in the theatre the radio mic racks were installed and tested. This was followed by two weeks of rehearsals with the cast accompanied by just a piano; Walker and Groothuis didn't hear the full version of the show with orchestra until just a few days before the first preview, which is



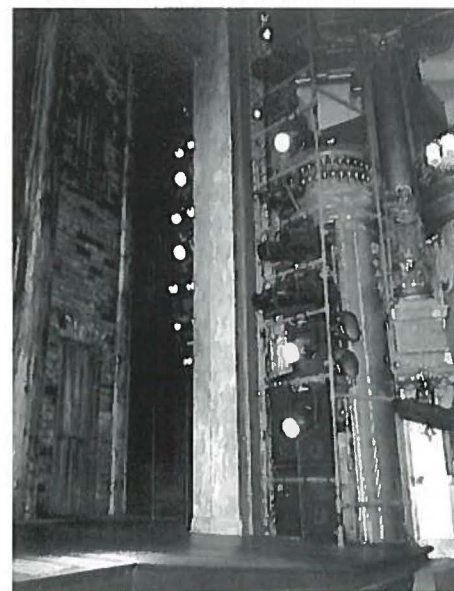
The Soft-Cue computerised prompt desk system supplied by Howard Eaton Lighting.



The author in the control room, with the controllers arranged for one-person operation.



A Canon V100 used around the rear of the auditorium in the surround sound system.



VL5s, boxless Tannoy drivers and Tannoy bass units on the proscenium boom.



The heart of the sound system - a 92-channel Cadac J-type desk, one of the largest of its kind, and the first to feature the 'flying fader' system.

standard practice in musicals because of the high cost of the orchestra. Surprisingly, this didn't cause too many problems. "The rehearsal period was useful for us because we could sort out the radios, work out the blocking of the cast, programme the computer and get the vocals balanced," Walker recalls. The orchestral balance was then roughed in during a day's band call specifically for sound, and the overall balance finalised over the final technical rehearsals and the long preview period.

The Final Countdown

In mid-October, when I reported for work on *Oliver!*, the production was in a curious phase; both the show and the theatre itself were as if half complete. The set stood proudly on the stage, almost all there and looking complete (though constant overnight work calls gave away that a great deal of work was still being carried out to get it all moving), while the auditorium was still in chaos, with the circle fronts covered in scaffolding as plasterers and painters worked to restore the detailing hidden for so long by the bulky, obtrusive lighting bins that were removed during the fit-up. Similarly, work continued on the show in a rehearsal room on the other side of London; it would be a couple of weeks before the cast moved onto their set.

Indeed, they would never get to see some parts of the set. When the set for Fagin's Lair arrived on stage, a meeting was held, some fraught discussion took place and Anthony Ward returned to his studio to design a replacement. A few days later the original set was taken out of the building. Its replacement would not be ready for some weeks. The carefully prepared rehearsal schedule was immediately thrown into chaos since that set is on stage for half of act one and about a quarter of act two.

But there was always something to remind you of the goal. *On Oliver!*, the first of these occasions was the final run through of the show in the rehearsal room at Sadler's Wells. Though by no means yet complete, the run allowed all those present to gauge the style of the show, to get some idea of the movement, to hear the songs, and to start to sample the performances. Back in the theatre, the stage crew were being introduced to the set and the many tricks it could perform by Kevin Eld, Will Bowen and their Modelbox-produced videos showing the computer generated animations of the transformations planned at various points in the show. The crew would watch the video, then discuss how to achieve the transformation for real, then go and do it. Many of these sequences were eventually modified or cut from the show, but the videos at least got the crew

off to a quick start.

Then the cast arrived in the theatre, rehearsals started, and all notion of time passing out in the real world vanished completely in those 9am to 11pm days. With the cast on stage, changes happened. A virtue and vice of director Sam Mendes is his willingness to make changes - a vice because hours or days spent setting up one sequence of events can be swept aside, but a virtue because the replacement version will usually work better.

Over all of this, David Hersey carried on lighting. His ability to deal with so many sources of information while still concentrating on achieving the look he wants to see is incredible, as is his ability to 'give way' if a lighting state he has created doesn't meet with the approval of the director or designer, and to change his approach if changes to the direction or choreography alter the sense of a scene.

A few days before we were due to start previewing the next 'uplift' to the spirits arrived with the arrival of the orchestra. Suddenly we were doing a 'proper' musical again. Then the new Fagin's set arrived; the show almost seemed complete. Two previews were lost while the new set was worked into the show. Jonathan Pryce looked enormously relieved to actually get into his lair for the first time, but for the next two days it seemed like every time he was about to do a song there was a set problem and things ground to a halt again. He started doing impressions of past London Palladium stars, and just playing with his lines. At the end of 'Reviewing the Situation', the set started trucking off and jammed. Pryce, to the tune and without missing a beat: "I think I'll have to sing it all again."

Even as we start previewing, problems remain. The dog, for example: we've been through five or six, and still can't find one that both looks menacing enough to belong to Bill Sikes and is well behaved enough to take the stage. One was great until an orchestra started playing. Then it just started barking along. An appeal goes out on 'Schofield's Quest' on TV. One night, the perfect dog walks past the stage door. No-one manages to catch it.

The whole end sequence also remains a problem. No-one can quite work out how to deal with Nancy's reprise of 'As Long As He Needs Me' as she returns to the East End to rescue Oliver. At one point, out of desperation, we use a 'dot' gobo. As this is discussed, Sally Dexter spends 20 minutes just 'playing' with these dots. Then they are cut, and the lighting changes to moonlight gobos running down the towers.

Then on to the end sequence on the rooftops. Originally this was a perfect advert for pitching

DLCs - the crowds moved out to the corners of the stage and the light curtains followed them. That got cut. Then the light curtains just followed the cast downstage, also lighting smoke and so hiding the chimneys being set upstage. Then a snap to gobos on Sikes. Then Sikes is shot and left 'frozen' in mid air in front of a huge moon. In the end both the flying wire used to suspend him and the moon are cut. The ending now 'flows' much more quickly.

A very late preview. We finally run the four ESP snow machines which have been wrapped in expensive marine soundproofing material and rigged and ready to go for a month. The effect isn't quite worth the effort but, two days later after some tweaking of the machines, it adds enormously to the scene. The smoke also starts to improve as the operators get the hang of the two Skywalkers and the JEM 1000 mini low-smoke machine. Sadly, the audience start to cough as soon as they see the merest hint of smoke, which rather spoils the effect in some scenes.

And so on for two weeks of previews; lighting and technical work in the morning, cast on stage rehearsing in the afternoon, performance in the evening. It is not the best way of working, because any changes made are not seen until that evening's performance, and, apart from minor changes to lighting levels, cannot then be corrected until the next day. Added to which is the fact that every time David Hersey wanted to escape from the circle into the lighting box he had to sneak through the door labelled 'Ladies toilet'!

At some point before the opening night, the show is meant to be 'frozen', to allow a final settling in for the cast and crew before opening night. The date for *Oliver!* being frozen kept changing. Changes finally stopped the day before we opened.

Opening night. A star studded affair, though most of the stars are in the stalls and so we can't see them from the lighting position at the back of the circle. The show is booked solid until next April, yet somehow its future seems to depend on this one night . . .

And the night isn't perfect. For most of the show it goes very well, with MD Martin Koch setting off into 'Food Glorious Food' at a rip-roaring pace. But problems appear in Act II. One of the brick sliders sticks in the middle of the stage, becoming a mysterious monolith parked in front of the Bloomsbury Crescent. Sally Dexter, bless her, works it into her performance. A piece of action gets quicker, so a reset cue doesn't complete, so a VL6 makes a rather-too-dramatic appearance in a scene. The smoke in the Three Cripples pub is a touch heavy, so the boat that sails across in the background (nicknamed Betty Boatways by DSM Camilla Clutterback) looks like a mysterious ghost ship.

But everything else is fine, and the audience seem to like the show and love the performances, especially from the children playing Oliver and Dodger. They start the trend for booing the baddies and cheering the goodies in the curtain call that still happens after every performance. As the cast come back downstage for another call, Cameron Mackintosh dances a little jig at the back of the circle. Sam Mendes cries.

Lionel Bart's *Oliver!* is back in the West End.

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