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NOVEMBER 1991

THE HUNTING OF THE SNARK

Julian Williams at the West End's latest mega musical

I started at the technical 'heart' of the show and asked chief electrician Kevin Burgess what he thought about this massive new production at the Prince Edward Theatre in London. "Brilliant", he said. And technically this show is.

'Hunting of the Snark' which opened on 24th October, has a precise mix of quality sound and colourful lighting. It also uses what is claimed to be - for the first time in a live theatrical situation - the biggest-ever installation of AV slide projectors - a unique combination!

What is a Snark? Nobody seems to know, but the tale is based on Lewis Carroll's epic nonsense poem of 'An Agony in Eight Fits'. They are: The Landing, The Bellman's Speech, The Baker's Tale, The Hunting, The Beaver's Lesson, The Barrister's Dream, The Banker's Fate, and The Vanishing. The production has no less than 12 scenes in the first act and 14 scenes in the second act and to fully appreciate the racy presentation style of this work, it's best to be familiar with the piece, and to have heard the music. Having the libretto to hand would also be an advantage.

A true 'multi-media' musical, it commences with a clever introduction of the characters: their names are projected onto a front gauze with the characters themselves in various stage positions in profile behind. The fast pace is set as the projection media instantly changes the 'set', and the character of Lewis Carroll narrates through each scene. The characters are already on the boat at sea when we join them, and they arrive at an island, where they try to find the mysterious Snark.

Mike Batt has designed, directed and conceived this unusual production, apparently wishing to control all aspects himself. He demanded his team of technicians adapt at a moment's notice to keep up with his 'changes' as they built this highly technical production, right up to opening night.

The combination of different disciplines demands enormous attention to detail, in both light levels and illumination control, in conjunction with acutely angled visual projection techniques. Coupled with that were the logistical difficulties involved in the sound balancing of a 52 piece orchestra on a stage and the essential clarity of diction for numerous artistes.

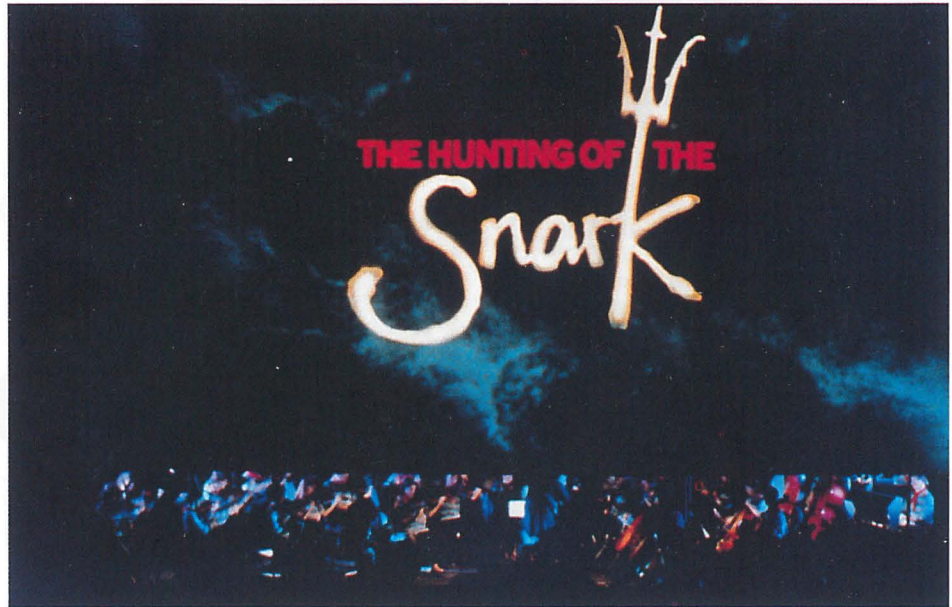
Each department was pushing the limits to reach the required effect.

One of the early sequences is one of the most spectacular moments in the show when, by projection on the front gauze, there are animated images of waves, creating a sea scape, with birds fluttering by, fish jumping out of the water and the crew lined up on the bridge with the ship's wheel, while the bridge is 'yo-yo-ing' up and down.

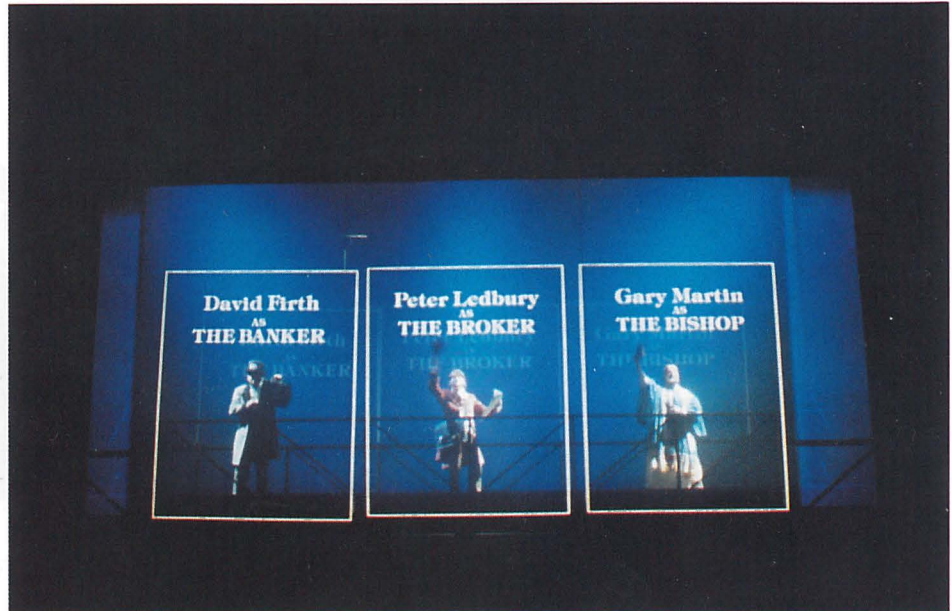
A feature of the iron-clad structural set, which was built by Delstar Engineering Ltd, is the tracking Bridge. It can move vertically and horizontally to any of the five entrances and exits on three levels of the stage.

The stage drive control for the bridge, by Pinpoint Control Ltd, is from manual joy sticks, and is located in an onstage position where the operator has graphic status information displayed on a monitor. The stairs and handrails are pneumatically controlled from positions just upstage of the pros on either side of the stage.

For safety, there is a gate at every potential bridge position. These gates are interlocked so that they can only operate when the bridge is in the correct position. All the interlocks are operated via Pinpoint's Computer.



The opening titles projected onto the lowered gauze.



The main characters are introduced by means of a very effective projection sequence.



Veronica Hart as The Beaver performing 'As Long As The Moon Can Shine'.

The stage acting area is only 20ft deep as the remainder of the space is taken up by the orchestra. Because of the nature of the set it does not allow for a tallscope. Provision is made to access the LX bars alongside the lighting bars. Production electrician Alistair Grant made the point: "This allows us particularly easy access for checking focuses during rehearsal."

The lighting rig is a simple one, controlled from a Light Palette 2 with two advance bars and on-stage electric bars. The luminaire content consists of a combination of Strand Cantata and Altman Lekos, with some Silhouette 30s and Par 64s, the lighting is predominantly from cross light and is complemented with Vari*Lites, as well as a motorised light curtain in five sections. There are 'Howie' Mini-Strip battens in use for backlighting the orchestra on two levels. The principal luminaires are 14 Vari*Lites, four follow spots (2 x 2kW Strand Solo's on either side of the FOH, and two R&V 500W tracking beamlamps along the sides of the stage at 'fly rail level', and a Front-of-house followspot traditional front light.

All the equipment was supplied by London-based Theatre Projects Services Ltd.

White Light's new optical effects were used, one of the most interesting being a smoke effect projected on to the auditorium walls.

I talked with associate Vari*Lite programmer Richard Knight who commented: "We've got the smallest rig I've ever worked with - 11 VL2Bs and three VL4s. The 4s are upstage and they tend to deal with the top platform and the stairs. We can get them down onto the orchestra so we can roll the colours to do a few orchestra changes, and the rest down-stage, mid-stage and up-stage.

"Their main function is to slide between the screens. There's a lot of very accurate focusing

required where you're trying to miss the back projection screen and the gauze, sneaking in behind the screen to hit a particular target! It's quite refreshing to do something that is very detailed and have quite a lot of time to play with it.

"Lighting designer Andrew Bridge decided that we'd do the first half of the first act with realistic lighting - to show people the faces of the characters and so on, and to set the production up. It was decided that 'Snarkland', would in effect be 'Goboland'. So much of the work the 2Bs do is gobo work, to make broken forest looks and a wavy sea for the travel bits. It's an attempt to create a kind of magical ever-changing forest."

Speaking with Andrew Bridge between rehearsals, he told me: "This production is unique in several areas in the sense that there is no scenery at all. There's a black box on stage which we affectionately call the 'Black Car Park', and there's a moving bridge - other than that there's no scenery at all!

"Having 52 musicians on the stage produces a potential light leak problem from their music stands. Then there are numerous white screens from back projection screens, to front projection screens, and gauzes. These are used in many configurations with the projectors; all the scenery is projected. The fact that it is a black box in a 'black carpet' (there is black wool serge on all of the surfaces, other than the stage itself), with shrouded music stands, means we have to be very careful.

"Then there are actors who get in the way of all this - and I have to light them without hitting the screens or creating any excessive spill, be it from bounce of a white T-shirt or from just physically hitting the screens. The configuration changes quite often and with some of them it's

very difficult.

"In this sense Mike Batt wanted to create a particular style of production; he wanted a very two-dimensional, proscenium and projection image, and even though the images are two-dimensional, it's made up of three-dimensional formations of screens.

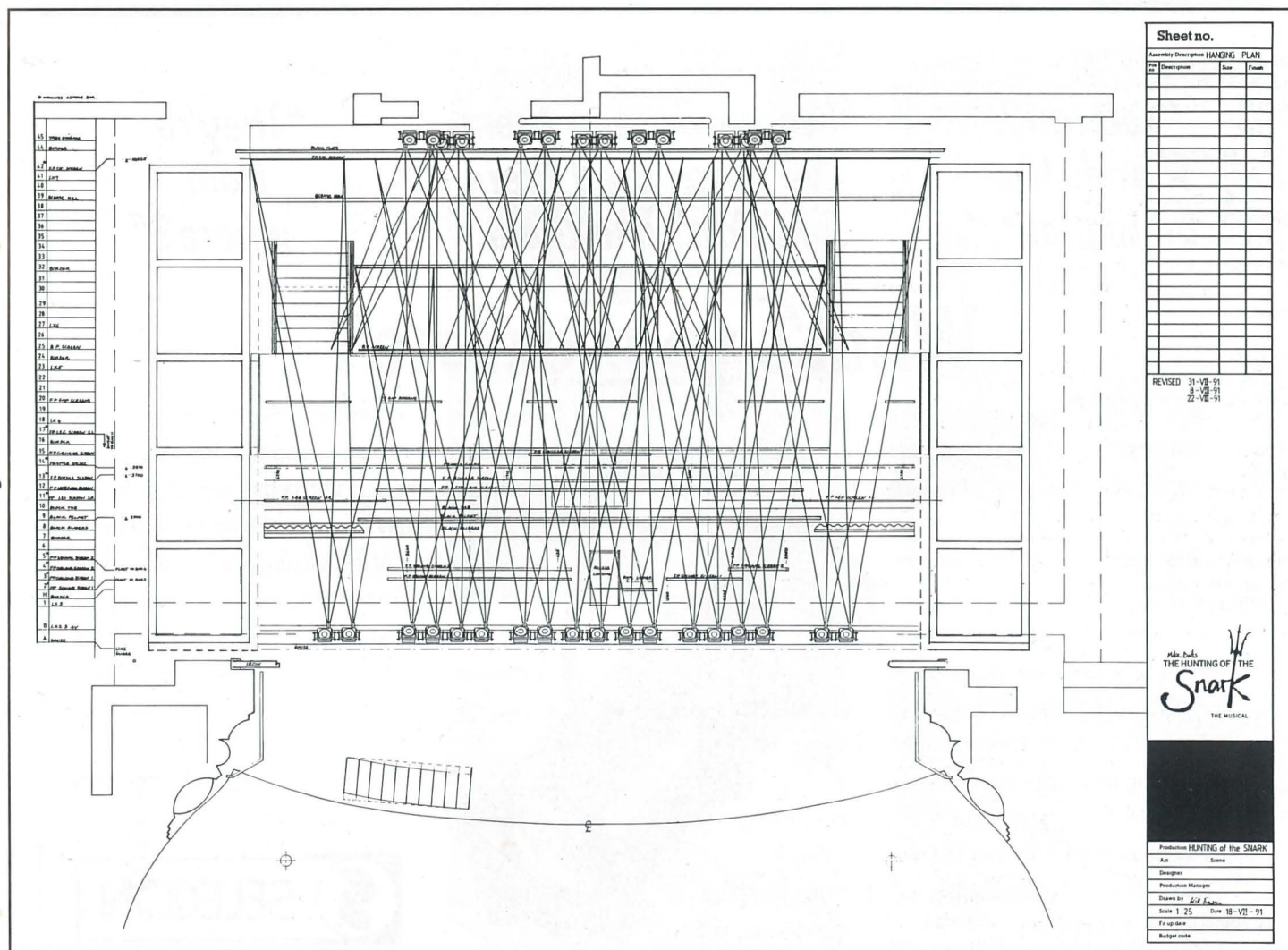
"So you can have a cyclorama picture on the back BP screen; you can then have front projection - windows, and a pub sign - and then a gauze to bleed through which has a 'forest' round it. It appears that you're in a forest looking at a pub with sky behind. It has been extremely difficult. Both Vari*Lites and follow-spotting has been extremely useful in achieving this.

"The other things we're using are the usual 'toys' of colour scrollers. Its a small rig, but most of the lamps have a scroller on them.

"The whole stage is sectioned off into bays. We've got five bays going up and down stage, and in any bay we can drop a screen and trap the actors. Therefore we've got two side followspots and the operator doesn't have to worry about changing the colour, as we can slide colours within cues which works quite well. As the followspot is on a track, when the actor is trapped in, say, Bay 3 with a gauze up-stage and down-stage of it, we can track the followspot up to that bay and cross-light it.

"It's been extremely difficult to get a bright level on the company without ruining the AV. The AV is actually quite bright and everybody has been helping to get it that bright. It works very well. We get quite a lot of light up there without realising we are 'blowing' the screens away!"

Howard Eaton, whose company have supplied production electrical, and lighting services, explained some of the practical



Plan of the onstage projector layout (rear projection at top, pros. bar at bottom).

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 **SELECON**



Chris Slingsby, Imagination's creative director of visual communications at work on the projection plan.

problems he has had to deal with. "The problem with the atmospherics was that Andrew Bridge didn't want a cracked oil because you can't get rid of it - he didn't want just smoke. He finally selected fan assisted Skywalker fog generators from German company The Smoke Factory. The main advantage of the Skywalker is its variability. They are 0-10 volt which means they can be operated from sub-masters on the board. A big advantage is that they are able to trickle and not clog-up and overheat.

"We are using one of our Bytcraft Sage protocol convertor units to take the AMX 192 multiplex signal from the Light Palette, and produce DMX 512 directly to drive the 60 scrollers and other such toys. Other similar installations such as in 'Five Guys Names Mo' and 'Joseph' are using this now to convert the D54 signal from the Galaxy board. It actually produces two parallel DMX outputs.

"We also have our standard motorised light curtain which is used in five sections with the Rainbow scroller's at mid-stage LX Bar 5 position. It flies to various positions during the show.

"We supply the team of production technicians, for continuity, and to get the same group of people who are all used to working in the same way together; hopefully to a high standard. This takes the problem away from management who don't have to hire individuals.

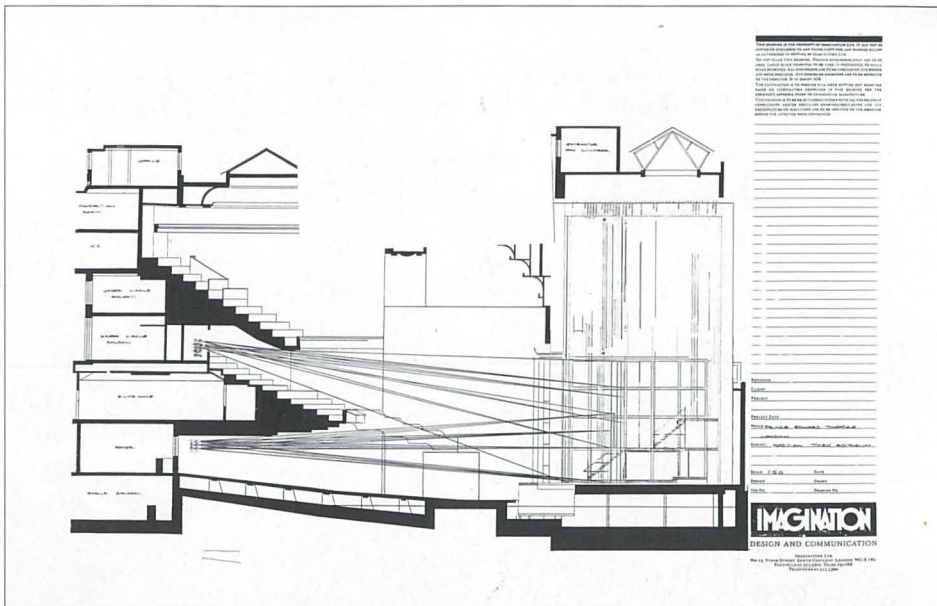
"A remote page button and colour monitor for the Light Palette 2, which Andrew Bridge has always wanted, is not normally available. We provided this and it allows the lighting designer to select his own pages on the monitor at the production desk without having to have an expensive full designer's remote system. It is a simple thing that's essential for this type of production.

"Our tracking followspot consists of a R&V 500W Beamlight with a scroller on the front and it's modified to move into any of the five bay positions at both sides of the stage."

I then talked to Imagination's creative director of visual communications Chris Slingsby.

"One of the particularly nice things about this production was that many of the people involved had our company's background and had come together on our show rather than a commercial show," he said.

London's Imagination, a team who consist of leading practitioners in the art of presentation, cover trade shows, product launches, business television, and privatisation road shows among



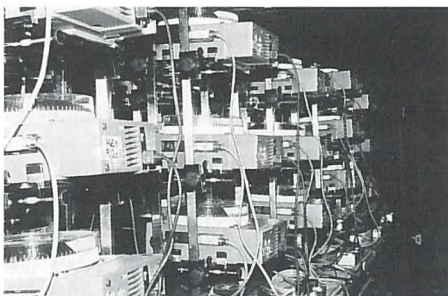
Theatre section showing tightness of projection beams to the theatre structure from both stalls and dress circle.

other things.

"We are first and foremost designers of all this, and secondly we are the technical producers of it," continued Slingsby. "On 'The Hunting of the Snark', our responsibility is the technical production - on most of our projects we are the designers as well; we do a lot of commercial audio visual production and also have a reputation for doing unusual audio visual projection, commercial and entertainment shows. This was a logical extension of that, but more complicated technically than the jobs we are normally likely to do on an everyday basis. It's so large and complex.

"Mike Batt and Imagination's chairman Gary Withers spent a lot of time developing how the screens should be and in what shape, how many there would be, and what they would do, and so on. Mike Batt wanted to create the whole of the scenic elements with projection and there is obviously much scope for depth on a stage. With the orchestra on the stage, he wanted to have the images in amongst the set with the artistes, as a total visual piece.

"He actually does the drawings himself. The visuals are based on his outline drawings which our studio people then take over and turn them into slides. We already knew how he wanted the



Stalls projection room: part of the line-up of 96 Kodak 2060 Carousels.



Howard Eaton (right) discusses his tracking follow-spots with production electrician Alistair Grant.



View from the stage to the projection rooms with the banks of projectors. To the left is the room housing the Genesis computers.



Sound designer John Del'Nero (right) with assistant Mike Furness at the Cadac console.



Richard Knight at the Vari*Lite desk.



Control is provided by six Genesis computers with the operator's 'go' button just visible centre.



By projection on the front gauze, animated images of waves, birds, fish combine to create a real 'yo-yo-ing' sea scape.

techniques of creating the images, and this required the use of many lith slides with colour gels, instead of colour film and colour stock, and the use of many projectors.

"Using gels, you can maintain a brightness of image more effectively than you can using colour film. He builds up complete scenes using many small elements, with soft edge grads and so on inserted into each slide individually. Many of the slides are hand-made and built up to make enormous images using many projectors to achieve the result and this is why there are so many projectors involved.

"One image might use between 50 and 60 projectors to create it. This style is a unique way of working on such a large scale. However, it does maintain purity of colour and brightness which is critical in this situation.

"Also, this quantity of projectors gives the opportunity for animation. We have a full time studio of artwork people and our own in-house rostrum camera. Apart from processing the colour film we do everything in-house.

"This is a real development story based on multi-vision techniques that we have developed over the years for the conference industry and which has now been taken a stage further.

"The fundamental problem was in making all the projection work in a theatre that wasn't designed to ever take it in that form. So just arriving at the right number of projectors and to hit the screens in the right places without the projector beams catching the ceiling of the dress circle above the stalls, or getting on top of people's heads when they walk through the auditorium, and so on, was a very tight technical job! A lot of careful work went into making sure that it would all just about fit into the adapted projection rooms at the back of the stalls and the circle, to enable engineers to line up and maintain the equipment.

"The reason the projection rooms are on different levels is because they need to reach the different parts of the screens with the beams. There is no way you can project from any one of those places and get the beams to all of the required places. You can break the projection down into two halves; the first half of the show

is all front projection which comes from the stalls and dress circle and that basically uses the same sort of projectors and projections.

"There are many screen overlaps and we have pushed the limits of soft-edging slides together. The bigger you the dimmer it gets, - the smaller you can keep the image the better. It's a case of how wide you're spreading the light which is a fundamental problem with AV. We got over this problem by taking the image and splitting it on the rostrum camera in perfect registration. Without these fundamental things this job would not have been possible.

"These images and projectors are then lined up using special line-up slides which, when you put all the slides back with the right relationship to each other, you can blend them together to make a perfectly seamless picture. We use special soft graded pieces of film that are sandwiched in with them all. It's a very specialised business. Mike Batt insisted on a 12ft x 8ft picture (from the front projection) for consistency of brightness. These images are then built with soft edging both horizontally and vertically, into images that are nearly 40ft wide by 30ft high.

"We've had to programme the whole of what you see in the theatre, in one-third scale. It was completely created and set up at Imagination's purpose-made studio, with all the projectors, and all the screens and took six weeks. We had six weeks pre-production before that, to prepare the slides.

"The job started for my team in May this year and the first month was spent working out the technical details for the projection. We started the artwork in July which went on until September. It was then an on-going process right up to opening night.

"It was an on-going situation because of the way Mike works, as he creates everything with the pressure of time. As he was also doing other things, you were creating along the way. He would do the drawings and we would turn those into slides while we were still programming the last scene. We had a production team of seven people and a rostrum camera operator. Two people did all the slide mounting, specialising

with the collation of the slides, and three people worked in the studio full time, together with a studio manager.

"On the stage itself there is some quite tricky projection coupled with back projection. Installed in the back wall are 26 projectors for the back projection; all boosted 2055 400W Kodak Carousel projectors. From the LX bar 2 position, 18 carousels were used. The projection throw is so short that we had to develop a method of shooting those images to keep the projectors running parallel to each other, rather than keystoneing in together, which, because of the distortions involved, would have been totally unacceptable.

"The other thing on that screen is that there is a bottom strip which is projected from above the other projectors down at an angle of 30 degrees. The keystoneing on that was severe, and like everything else they would soft edge together. The slides all had to be created, and techniques had to be developed, to keystone-compensate all those slides so they would be a perfect match, which is much more difficult than it sounds.

"In addition there is the Horizon screen, which is right at the very back, and which comes down in front of the back projectors, behind the orchestra, and above the rhythm section. There are also some blinds in front of the section and we project on all of these screen areas as well. Both screens also had to be keystone-corrected.

"From the dress circle projection room, we have two Pani 4kW BP4 HMI projectors to cover the whole of the front pros gauze with one slide image or through combinations to create multi-layered imagery.

"On the Horizon screen we only had a pair of projectors on each screen area. The basic technique was to shoot those images from a screen and then by using a number of stages of re-copying them, to end up with them distorted to exactly the right degree. So again when they are projected back together you will get a seamless picture. In fact the whole picture at the back of the set is actually five separate slides every time blended together, and I must say that I am pleased with it, because I know what we've

been through to achieve that. You don't realise that it's not just straight on front projection.

"We were working right to the limit of the recommended safe angles with the beams just missing handrails, and the way all those beams work is really tight in every direction, we just miss the borders."

The control for all this work is by the American AVL company Genesis who manufactured the purpose built Genesis computers. The operator has one 'go' control, called with the corner cues. He has to keep his eye on each of the monitor screens displaying the 142 projector's data. Any running problems can be relayed to a resident engineer in each of the projection rooms.

There are 98 projectors from the stalls and dress circle; all standard 2060 Kodak Carousel projectors with auto-change lamp facility and a 250W Halogen lamp. It takes three full-time engineers from production company Martyn Hayes Associates to look after the maintenance of the system.

I asked Chris Slingsby where this is likely to take Imagination, having gained some new expertise and experience. Will other producers think of this as a wonderful new concept for the setting of a show?

"We have already had some enquiries from people who have seen the show, and personally I would like to do some more theatre work. Although it's been a long job and technically demanding. I've enjoyed it very much."

Sound

Contradicting various recommendations in the profession that the actors should use handheld or boom microphones, both of which were unacceptable, Imagination's sound designer John Del'Nero broke the barriers of sound technology in a theatre environment to achieve

the quality of sound that Mike Batt required. He had to ensure that the actors could be heard above the sound produced by the 50 piece orchestra in its predominant position on the stage.

John Del'Nero said: "We've spent a lot of time in Imagination's studio with the artistes working out proper mic positions on their heads. The biggest problem is that the artistes are not necessarily aware of the importance of the placement of microphones. So we took them to the studios and placed a mic at various places over their head, and made recordings to play back to them, so that they could hear the difference, thus they realised why we needed the mic in a particular place. We then photographed that particular position for reference. In that way every artiste has the optimum mic position on their face. As everybody has different shaped heads the positioning of the microphones had to be analysed individually. A difference of just 1/2cm was so important."

Possibly the biggest sound desk installed for theatre production a Cadac 80 channel 'E' type mixer console, with a computer programme written by Mat McKenzie of Autograph, along with a Cadac 22 channel 'B' type 3, are used to mix the show. The Cadac automation system allows the Sony RS DAT machines, along with changes of fader ganging, and processing, including delay units, to be stored and operated during the show cue sequence.

Sound Equipment List

Microphones

- 20 x Sennheiser MKE2 diversity radio mics
- 6 x Neumann U87 mics with boom stand
- 1 x AKG C535 mic with boom stand
- 20 x Sennheiser MKE2 in-line mics

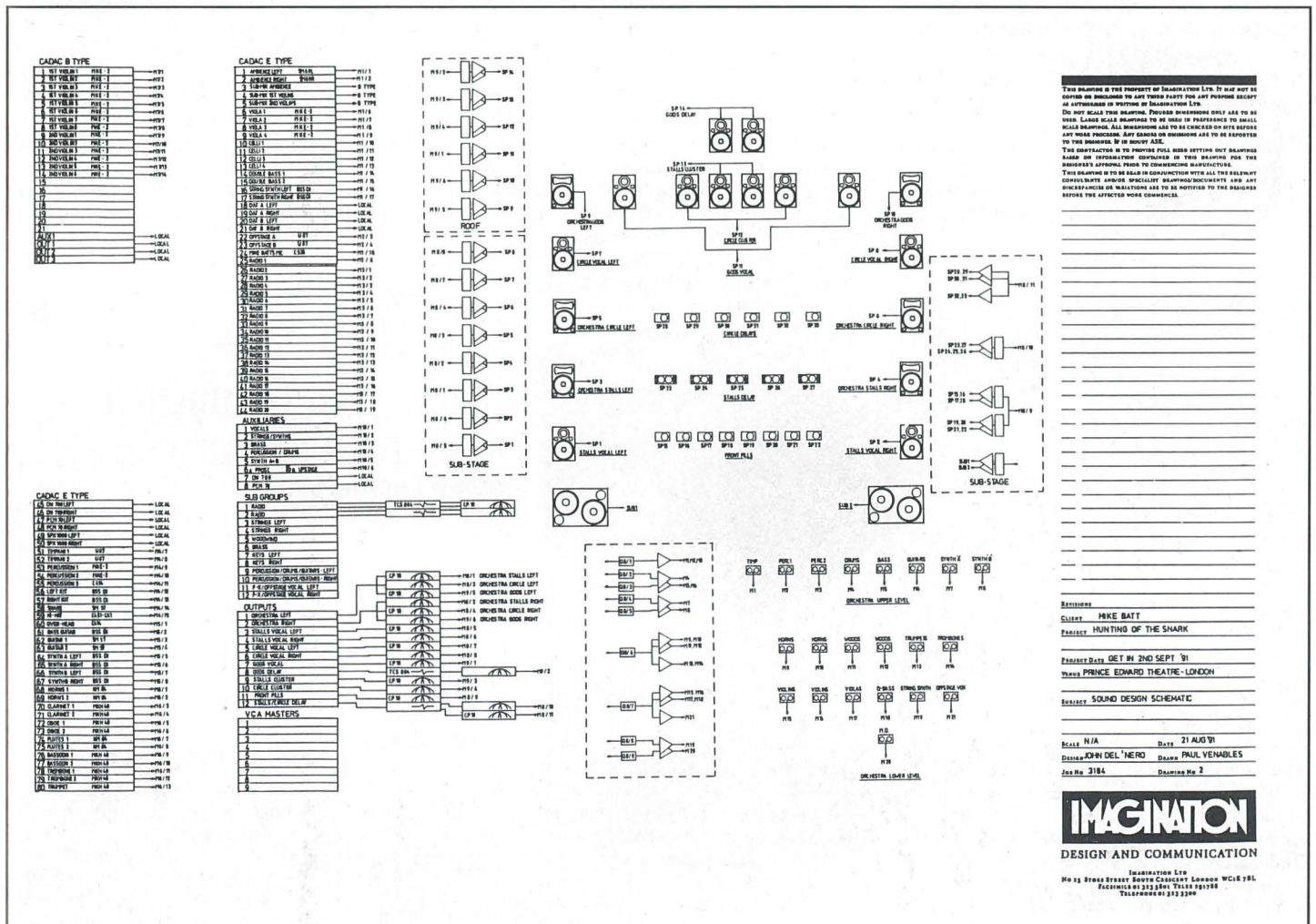
- 1 x AKG C414 mic with boom stand
- 9 x BSS DI boxes
- 1 x Shure SM57 mic with boom stand
- 1 x AKG C451 + CK1 mic with boom stand
- 3 x AKG C414 mic with boom stand
- 2 x Shure SM57 mics
- 4 x Neumann KM84 mics
- 9 x Sennheiser MKH40 mics
- 1 x Ambience stereo mic
- 2 x RS Dat machines

Mixing and processing

- 1 x 80 channel E-type Cadac with computer
- 3 x Brooke Siren delay units
- 10 x Meyer parametric equalisers
- 2 x Klark Teknik DN360 graphic equalisers
- 1 x Klark Teknik DN 780 reverb unit
- 1 x PCM70 digital reverb units
- 1 x SPX1000 digital reverb units
- 7 x Formula Q4 mini mixers
- 4 x Formula Q8 mini mixers

Loudspeakers and amplifiers

- 18 x Meyer UM1 ultra monitors
- 12 x M1 controllers
- 12 x amplifiers
- 6 x Meyer UPA1a loudspeakers
- 6 x M1 controllers
- 6 x amplifiers
- 2 x Meyer USW subwoofers
- 1 x B2 controller
- 2 x amplifiers
- 10 x Meyer UPM1/Apogee SM1 loudspeakers
- 3 x controllers
- 3 x amplifiers
- 18 x Bose 101 loudspeakers
- 5 x Macrotech 600 amplifiers
- 21 x Galaxy hot spots
- 11 x amplifiers



John Del'Nero's sound design schematic.