

# Newcastle Theatre Royal

John Offord takes a look at the newly resurrected Theatre Royal after its £9 million-plus re-build.

The Theatre Royal, Newcastle, one of the finest theatres in the country, re-opened on 11th January after a £9,000,000 restoration and refurbishment programme.

The principal touring theatre in the North East, the Theatre Royal has played host regularly to major companies including Scottish Opera and Ballet, and from 1976 it has been the base of the Royal Shakespeare Company's annual tour to the North East. However, poor facilities both front-of-house and backstage threatened these tours, and in June 1986 the theatre closed ready for major restoration to commence.

Built on the present Grey Street site in 1837, the interior of this magnificent portico theatre was destroyed by fire in the late nineteenth century. Re-designed by the famous theatre architect Frank Matcham in 1901, it was to his designs that architects RHWL turned in their restoration work.

Major improvements carried out include the reorganisation of the foyer to overcome the segregation of audiences and to give easy access to all levels of the theatre, coupled with a substantial increase of the bar

areas. Restoration and refurbishment of the auditorium and foyers has been carried out in the original Matcham colour scheme. The stage has been enlarged to improve get-in and storage facilities for major productions, and dressing rooms have been re-built to accommodate over 100 artists. A new multi-purpose space has been constructed for rehearsals, warm-ups, small scale performances, and functions. To complete the project, the honey-coloured exterior stonework has been restored and cleaned.

The elegant Matcham interior has been faithfully restored by interior designer, Clare Ferraby. Working from original drawings and from paint scrapings taken from the plasterwork, the dark greens, reds, pale greens, pinks and the gilt which once highlighted the detailed plasterwork, on the tier fronts, ceiling and surrounding the proscenium arch have all been carefully matched.

The Theatre Royal was bought by Newcastle City Council in 1972 and the refurbishments have been financed by the City Council in a matching maximum possible grant from the EEC's Regional Development

Fund of £3,422,043; the Arts Council in one of their last housing grants, gave £500,000; English Heritage contributed £250,000; the English Tourist Board £178,000 and before it was abolished, Tyne and Wear County Council contributed £500,000.

I visited the Theatre shortly after its re-opening in the company of Jonathan Allen of Northern Light, a Scottish company with Edinburgh and Glasgow bases who make regular incursions southwards across the border to scoop up major theatre contracts in England. "It's been one of our biggest projects, and I'm pleased the theatre and the technical staff have got what they want," said Jonathan Allen. "From the technical point of view it is good to have worked alongside architects who demand such a high level of finish and standards from all the contractors involved."

Much of the technical equipment supplied has been organised to suit the very wide operational demands of the Royal Shakespeare Company, and Jonathan Allen paid tribute to Simon Boudler of the RSC. "His notes, conceptual ideas, and general



The auditorium of the newly refurbished Theatre Royal pictured from the stage. Standard lighting equipment consists of Strand Harmonys and Cadenzas.



The restored auditorium, Newcastle Theatre Royal. Three Meyer 500 loudspeakers are usually positioned either side of the proscenium arch. When not required, as in the picture above, brackets are also removed leaving only a small fixing stud.



Nicholas Thompson, partner in charge for the RHWL Partnership, with interior consultant Clare Ferraby.

design comments on lighting were passed on to us," he explained. As for sound and communications, Northern Light can justly claim credit for these areas, being specialists of high repute in this field.

They acted as consultants to the Theatre Royal on the supply and installation of sound and communications equipment, and they also acted as advisers with regard to the installation of the lighting control system and supplied the following equipment: socket boxes, working light control system, under fly floor ladders complete with tracks, perch towers and FOH gallery support brackets. Installation of the lighting was undertaken by Strand Lighting.

Locally-based Canford Audio of Washington installed all sound and communications equipment, with Dave Procter in charge as project manager. Hugh Morgan-Williams, a director of the company, told L+S: "We were delighted to have been involved with one of the biggest theatre projects for some time - possibly the theatre project of the eighties."

## The Technical Set-Up

### Lighting

The lighting control system is a Galaxy 2 Premier with two theatre playback panels, a programmable effects panel and the standard group masters, pre-set masters and channel control panels. There is a designer's remote control facility with five infra-red pick up points, two in the auditorium at gallery level, two on the rear of the proscenium arch at fly floor level, and one in the prompt corner allowing for a portable receiver downstage centre or as required.

There are a total of 325 dimmers - 29 x 20A and 296 x 10A - which include the Theatre's original STM dimmers which were re-used to reduce the overall expenditure. There are also 48 independent circuits controlled through the Galaxy.

Circuit distribution allows for 100 circuits FOH, 123 circuits at fly floor level and 72 spread between stage level, perches and the orchestra pit. 16 of the FOH circuits are available on the prompt side fly floor along with a further 30 which are available for use on both the prompt side fly floor and FOH which are specifically there to feed equipment on the temporary FOH bridge which is frequently installed by the RSC. The RSC also frequently add a forestage, and permanent FOH positions have to allow for lanterns rigged at a steeper angle. Both the grand and upper circle front lighting positions are removable and the only permanent positions are the gallery front and



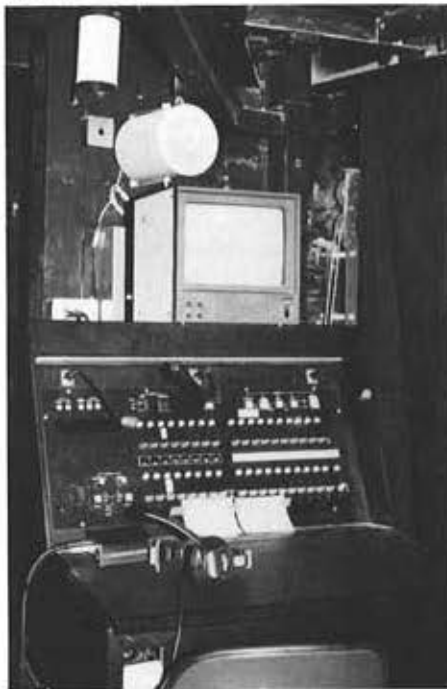
Lighting bars fixed to tier fronts are easily removable - the auditorium can be returned to a totally 'clean' state with a minimum of fuss.



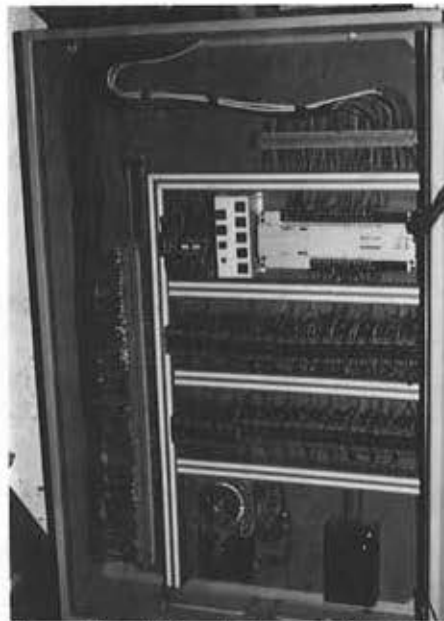
The elegant Matcham interior has been faithfully restored by interior designer Clare Ferraby, who worked from original drawings and paint scrapings.  
Colour photography: Martin Charles



Andy Kent, the Theatre Royal's chief electrician, pictured with Northern Light's Jonathan Allen in the FOH lighting control room. The board is a Strand Galaxy 2 Premier.



The specially designed stage manager's desk.



The working light contactor rack. The system gives stage management total control over all lighting over the stage area during a performance or fit-up.



Jonathan Allen at the DDA 32 channel mixer in the FOH control room.

ceiling. To provide an adaptable front gallery lighting position the old front row of seats has been removed and a double support bar installed on the back of the gallery front along its entire length. Lanterns can be rigged in any position by adding a support tube or a 90° overhang bracket as necessary.

Backstage alloy ladders are suspended on tracks on the underside of either fly floor. The tracks follow the rake of the stage/fly floor and are fitted with a brake which can be released by the rigger or from stage level. When the ladders are not required they can be parked behind each other, adjacent to the proscenium arch. On either perch a vertical Minibeam truss tower provides an ideal rigging position which can be climbed, saving the use of a Tallescope for setting and focussing in this awkward position.

In the prompt corner there is a working lighting control panel which has been designed to give the SM complete control over both performance and fit up lighting. The system has been designed around a programme controller which provides the logic control for the output contactors from the out-stations around the stage areas and the SM control panel. The SM panel allows for individual circuit control for each circuit around the stage selected under either of two modes 'Fit Up' or 'Performance' (Blues) state. The local pushbutton can switch either the Blues/Fit Up lighting off/on in each area but only within the overall state selected by the SM.

A Fit Up state can be selected on some designated circuits which will override the performance state to allow for scene changes etc., but this can only be selected from the SM panel. On final exit the system is turned 'Off' at the SM panel which automatically turns on the prompt side Fit Up circuit allowing for an illuminated Exit of the stage area. In this off mode the prompt side local control is enabled for on/off control with all other access to the system barred. Selection of the Fit Up state on the SM panel will return all circuits to their last used state in that mode. The control panel also houses two take control faders allowing for control of orchestra pit and house light dimmers. This facility is duplicated in a blank panel on the Galaxy.

## Audio and Video Facilities

### Introduction

Backstage facilities include a stage manager's desk incorporating a cue light system, backstage and FOH paging from a number of locations and a show relay system. Video facilities have also been provided. A separate speech reinforcement system is installed in the FOH Function Room, and there is an induction loop facility for the hard of hearing.

As the theatre is primarily a touring venue, every effort was made to provide as many comprehensive facilities as the budget would allow. Some items from the original system which were compatible with the new facilities were incorporated, including Bose 402 and 802 loudspeakers, Yamaha power amplifiers, a Revox B77 tape deck and graphic equalisers.

The RSC carries a substantial amount of sound equipment including a Meyer UPA-1 loudspeaker system which they have successfully used at the Theatre Royal on many occasions in the past. In view of this, it was hoped that a UPA-1 system would be included as part of the installation, but unfortunately the costs were too great, and a Meyer 500 System has been installed instead.

### Sound System

#### Mic, Line and Loudspeaker Circuits:

Connector panels located in the auditorium and backstage areas provide access to a total of 60 microphone and 44 loudspeaker circuits terminated on a jackfield/patchpanel located in the stage left Rack Room. From here, it is possible to patch any of the microphone circuits to any of 32 dedicated circuits associated with the microphone input channels on the mixer located in the FOH Control Room.

Some of 32 tie lines link the various connector panels to a patch panel in the FOH Control Room. A further 20 dedicated tie lines run between the Rack Room and FOH Control Room.

#### Rack Room Equipment:

Three racks accommodate the equipment

associated with the distribution facilities. The first rack houses the microphone jackfield and loudspeaker patchpanel. The jackfield utilises 316 patchcords whilst the loudspeaker patchpanel uses Neutrik connectors for inter-plugging.

The loudspeaker patchpanel enables any power amplifier output to be connected to any loudspeaker with the exception of the Meyer amplifiers and loudspeakers. These circuits have been wired so that they cannot be inter-plugged with other amplifier/loudspeaker circuits. Equalisers associated with the Bose 402 and 802 loudspeakers are installed in the Rack Room along with two eight-way distribution amplifiers. Provision has been made for digital delay units and limiters to be installed in the future if required.

A second rack accommodates the five Meyer power amplifiers which are dedicated to the Meyer 500 Series loudspeakers. A further six HH VX series amplifiers are available for stage effects and foldback purposes. The third rack houses two Yamaha amplifiers along with the induction loop facility for the hard of hearing. Patching facilities enable the loop to be driven from different sources, i.e. show relay output, mixer output, etc.

#### Control Room Equipment:

A DDA 32 channel mixer frame is installed in the FOH Control Room. It is fitted with 27 channels and an adjacent jackfield located in a purpose-built shallow rack provides access to line inputs and outputs, channel and group inserts, auxiliary and foldback sends, returns etc. Along with housing two eight-way distribution amplifiers, the rack contains a further jackfield for the inputs and outputs of ancillary Control Room equipment.

An EMO controller located in the Control Room equipment rack enables the mains to be switched in a pre-arranged sequence to both the Rack Room and Control Room equipment racks. The rack also accommodates ancillary equipment which includes two Luxman cassette decks, a Luxman CD player, two Yamaha SPX 90 effects units, two one-third octave graphic equalisers, a Trident twin-channel compressor/limiter, Quad 520 power amplifier and the mixer power supply. An RIAA pre-amplifier is also installed in the rack.

A mobile trolley accommodates two Revox B77 tape decks which enables them to be positioned adjacent to the operator for ease of access. The mounting arrangement allows the operating angle of the decks to be adjusted.

Control Room monitoring is provided by a pair of KEF R103 loudspeakers mounted from a track which allows them to be positioned anywhere along the length of the console. When not required, they can slide aside to afford the operator a better sightline to the stage.

#### Loudspeakers:

Loudspeaker coverage of the auditorium is provided by the Meyer 500 system, and the Meyer power amplifiers are dedicated to these circuits. In addition to the pair of loudspeakers associated with each of the four auditorium levels, an additional pair are used for side-fill in the stalls level. The rear of the Gallery is covered by a pair of Bose 402 units.

JBL wedge monitors are used for foldback and JBL units are also used for stage effects loudspeakers, all being powered by HH VX series amplifiers.

#### Stage Manager's Desk:

The desk is located on stage left and contains the usual facilities - digital clock switchable to real-time or stop-watch mode, a dimmer-controlled blue and white lighting circuit for the control panel and script area, paging microphone for both the FOH and backstage paging facility along with the associated zone control switches. The desk also incorporates a twin channel ring intercom facility.

The desk and its facilities are connected to the permanently installed cabling by means of multi-way connectors. A second connection position is provided to enable the desk to be operated from stage right.

#### Cue Light System:

Controls for a sixteen-way cue light system are incorporated within the desk. Of the 16 circuits, eight are dedicated to the most used out-stations,



Another view of the sound control room.

i.e. Sound, Elex, Downstage, Upstage PS and OP, Flys, Pit etc. The remaining eight circuits are terminated on a patchpanel in the Rack Room and can be patched to any of two out-stations, these being located on the various connector panels in the stage and backstage areas.

#### Ring Intercom System:

A Technical Projects ring intercom system is installed with the power supply unit located in the Rack Room. Access to the system is available from 64 locations. The out-station incorporated within the Stage Manager's desk is a twin channel unit. The belt-packs associated with the system are single channel units but are switchable to either channel. Single and dual headsets are available for use with the belt-packs.

#### Show Relay:

On the front of the dress circle, two rifle microphones are installed which are associated with the show relay system. The associated amplifiers are located in a fourth rack in the Rack Room. The microphones also provide an input signal to the Induction Loop facility. A switch on the SM desk enables the show relay to be switched off during fit-ups, etc.

Show Relay loudspeakers are installed in Crew Rooms, Dressing Rooms, Corridors, Toilets, Green Room etc. Local stepped volume controls with a graduated scale are fitted to each loudspeaker.

#### Backstage/FOH Paging:

The main paging position is the SM desk, where a gooseneck-mounted microphone is installed along with zone selection. In addition to the controls for the individual zones, a master is also available to enable all zones to be accessed



Lighting connection points are hidden within the top cushion of the tier fronts. Jonathan Allen reveals the secret hiding places.

simultaneously.

Additional paging positions have been provided Downstage PS, Stage Door, Rehearsal Room, Sound and Elex Control Rooms. The associated amplifiers are located in the Rack Room. The SM desk and Downstage PS microphones have access to Stage, Backstage, Crew Rooms and FOH areas. The Rehearsal Room and Stage Door microphones have access to Backstage and Crew Rooms. The Control Room microphones have access to Stage and Crew Rooms.

The loudspeakers associated with the Show Relay system are also used for the paging facility and are connected such that the local volume control does not permit adjustment of the paging reproduction level.

At the FOH Kiosk, a separate Paging position has been provided with the associated power amplifier located in an adjacent store. Paging loudspeakers are installed in the FOH Bars, Staircases and Toilets, along with the Salon and Function Room. In addition to the local paging microphone, the SM desk also has access to the FOH system. Indicators at both locations show when the facility is in use. Facilities have also been provided to enable tape decks to be connected for background music, pre-recorded promotional material etc.



The fly gallery - ring intercom access points are available at no less than 64 different locations. Two can be seen in this picture.

#### Function Room:

A separate speech reinforcement system has been installed in the Function Room. Wall mounted panels each with two microphones and two line level circuits are connected to an amplifier located in the room. Ceiling-mounted loudspeakers provide coverage of the room, and are zoned to permit microphones to be used in a number of positions without the risk of feedback.

Although the SM and FOH paging positions have access to the Function Room loudspeakers, a local switch enables the paging input to be muted whilst the system within the room is being used.

#### Video System:

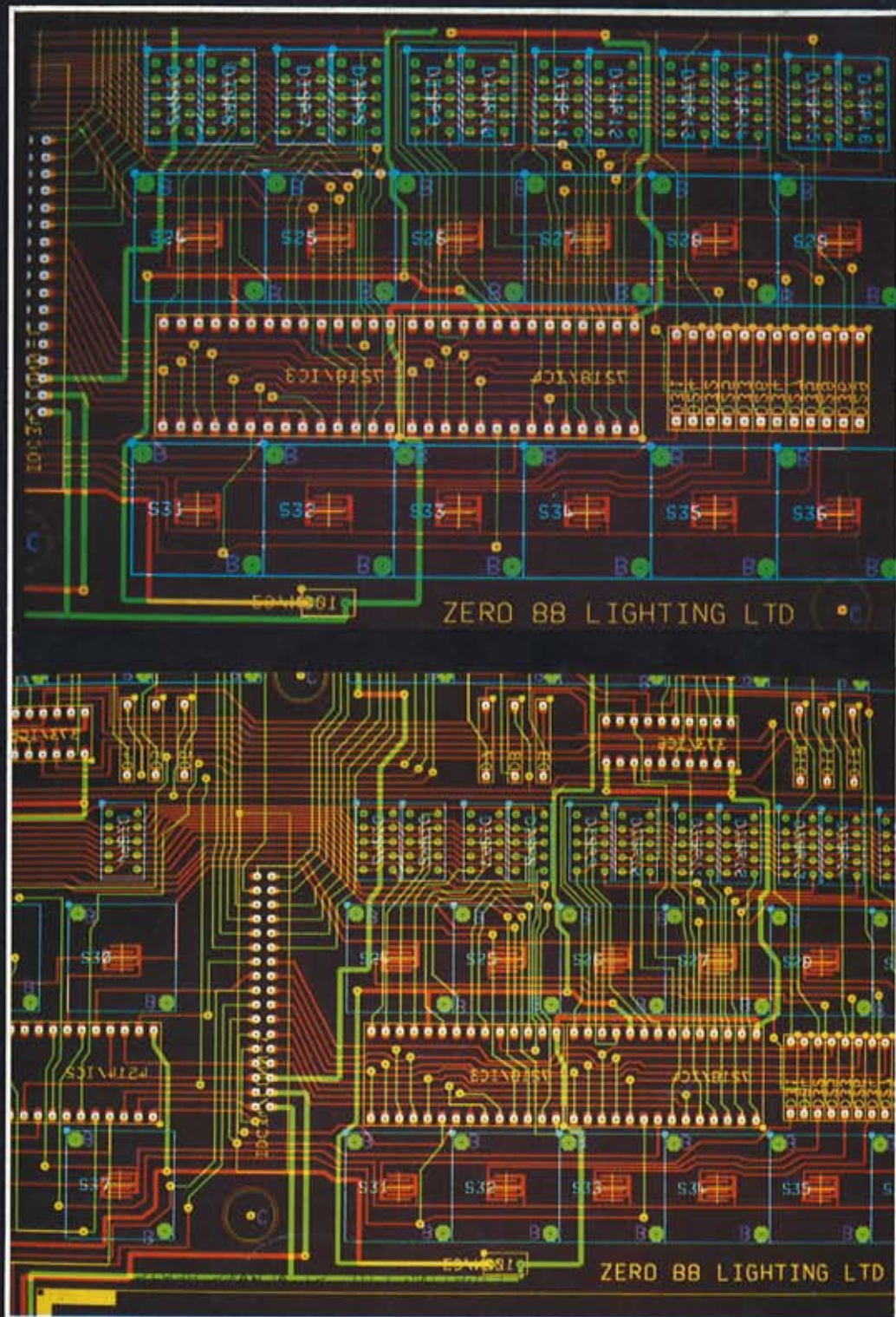
Comprehensive cabling has been installed to enable video and associated audio signals to be sent to and from a number of backstage and FOH areas. In the Rack Room, these circuits are terminated on a patchpanel. A colour camera is mounted on the front of the dress circle and directed at the stage. A monochrome camera is located in the pit and directed at the conductor. The outputs of both cameras are available on the patchpanel. By means of video and audio distribution amplifiers located in the Rack Room, the outputs from the cameras and the associated audio can be routed to the required destinations backstage and FOH.

Colour monitors are available for latecomers in FOH areas with monochrome monitors being used for the backstage facilities. Provision has been made for video cassette recorders, a caption generator and an off-air TV tuner to be connected to the system.

#### Theatre Royal, Newcastle upon Tyne

Architects: Renton Howard Wood Levin Partnership (partner: Nicholas Thompson)  
 Building Engineers: Ove Arup & Partners  
 Contractors: Bovis Construction Limited  
 Consultants on the supply and installation of sound and communications equipment and advisers for lighting control system: Northern Light  
 Electrical Contractors: Crown House Engineering  
 Lighting control and lanterns: Strand Lighting  
 Sound and communications installation: Canford Audio  
 Socket boxes, rigging equipment and working light control system: Northern Light

# LIGHTING+SOUND *International*



'Insider' Design - an up-front view of Zero 88's new Sirius lighting desk.  
(see feature 'Behind the Scenes at the Manufacturers' in this issue)

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