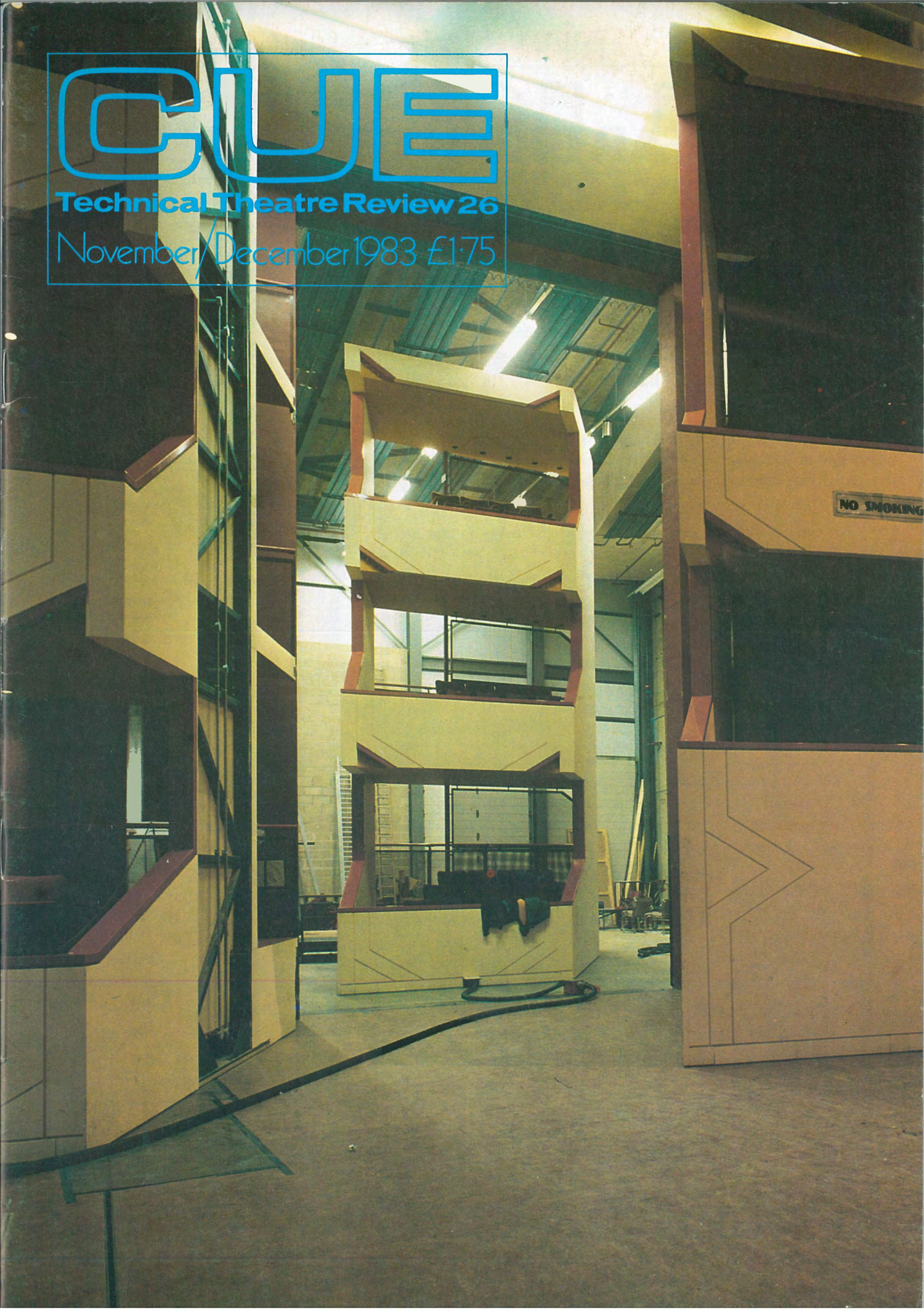


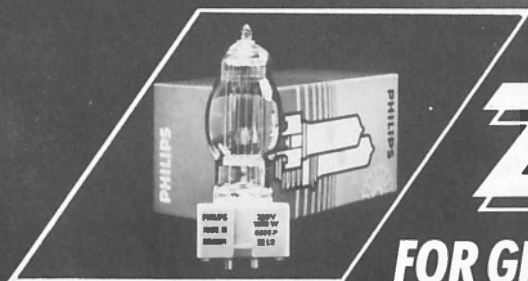
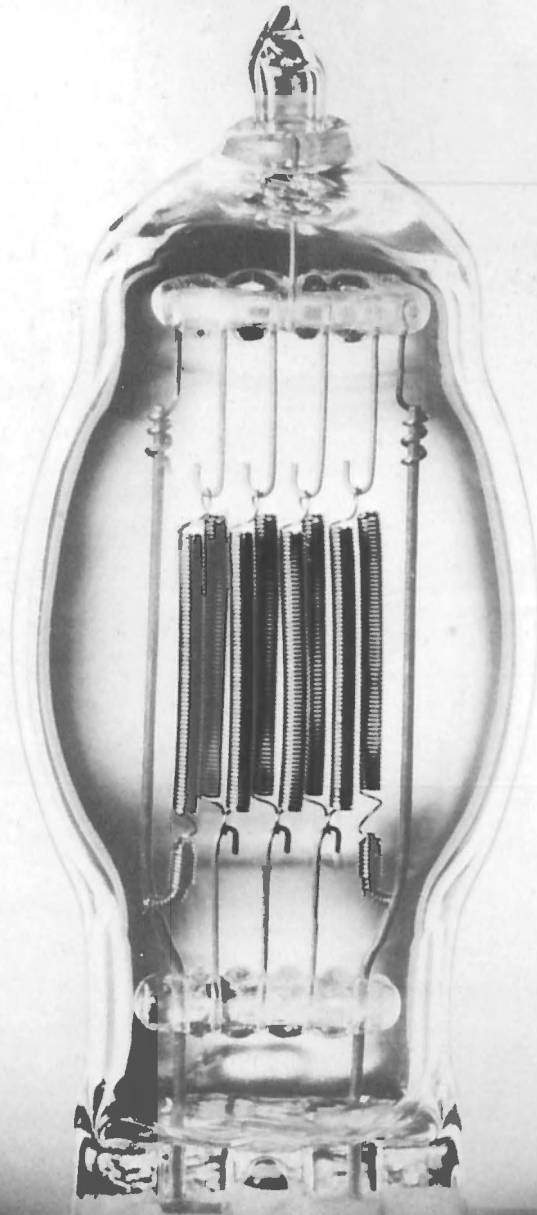
CUE

Technical Theatre Review 26

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The problem in any large-scale multi-form auditorium is organising audiences in the right ambience for all the different events which take place there. As Nicholas Thompson relates on page 4 this was resolved at Derngate Northampton by resting nearly half the seating, including box arrangements, on air castors. Our cover picture shows one of the seating towers in the scene dock ready to be airlifted into position to complete the run of the seating around the orchestra platform for a concert arrangement.



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Crying Out For Visual Satisfaction

Our eye was gladdened by a sighting in the Sunday Times of 6th November. Their drama review column was headlined **A Sight for Sore Eyes** and bylined **James Fenton on the importance of design.**

Now James Fenton is a poet of some considerable distinction. So perhaps we could have expected him to belong to that dramaturgical school of visual minimalism where the scenographer's function is to expose the text rather than support it. But no. He describes a play production relying on minimal design which *does not make its story instantly available. It demands an extra sophistication in the audience. It also seems to be designed to appeal to a jaded palate, whereas I believe that the palate of the modern theatregoer is not jaded at all. It is crying out for visual satisfaction.*

Then he looks at an opera where *painted settings are allowed to make a heroic contribution to the success of the evening.* This production he declares to be a *confutation of the dominant (but perhaps now declining) theatrical idea that design should put itself at the service of the director, rather than be prepared, when appropriate, to astonish and delight.*

It is interesting to note that some of the most satisfying 'total concept' productions of recent years have been the work of the designer-directors lead by Ponnelle, Pizzi and Prowse. And the mood in the art schools is certainly towards a more decorative style than the 'elegant meaningful selected object in a significant masking box' that has dominated so much recent design philosophy.

And so we are happy to applaud Fenton when, reviewing another opera, he finds that *every resource of the theatre was deployed towards the same end.*

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Designedly Multi-purpose

NICHOLAS THOMPSON

Over the past 20 years there has been considerable emphasis in this country upon the design of larger-scale auditoria for drama and lyric productions, culminating in the opening of the National Theatre, the auditorium at the Barbican for the RSC and the Theatre Royal at Plymouth, all of which were designed in an era which used concrete as an expressed form in its architectural treatment. All too had a certain similarity of concept with a broad fan of audience swooping down towards the stage. At the smaller end of the drama field, considerable ingenuity and skill has been applied in designing auditoria around the 400-seat level. These tend to be based upon the courtyard form, employing a quite considerable degree of flexibility in the arrangements available for staging within, or at the end, of the courtyard. However, the elements themselves, if need to be moved, are quite small and can generally be manhandled without excessive use of additional staff and therefore avoid an expensive operation. When the considerable number of refurbished spaces are also taken into account, it appears that the needs of both repertory and touring drama companies are well looked after in this country.

However, very little seems to have been done for other forms of entertainment and this is surprising in view of the enormous success of the entertainment industry. How many decent spaces are there for the performance of classical music? Are there reasonable venues for the pop concerts that are an essential part of peoples lives? And where does the star entertainer's show appear after the London Palladium? All of these types of events need performance areas with a seating capacity at the lowest level of around 1200 and rising to 2500. Orchestras

have therefore struggled on around the country in a range of old city halls, often with appalling facilities, and a glance through the advertisements of forthcoming pop tours in the Sunday papers would show that there is a very limited range of halls available.

The old concept of the multi-purpose hall has become a hoary chestnut and there is a strong body of opinion which feels that it is better to build separate elements for widely diverse uses. The argument runs along the lines that it is probably as cheap to build two separate spaces, each for a specific use, than to try to combine them into one. This argument not only leaves out the cost of land and the cost of running two spaces but, more critically, where would you find two audiences to fill those two spaces on the same night, particularly when a concert hall, primarily for classical music, must be supported by a catchment area well in excess of 1m people.

One would certainly agree that spaces are not going to be able to work equally successfully for all forms of event and this problem becomes severe when sport starts being combined with entertainment. RHWL have been involved in this problem for a number of years, perhaps ever since snooker became successful in Tyrone Guthrie's very fixed format for the Crucible Theatre! It is necessary to examine most carefully the users or the uses intended for the space and their detailed requirements. This entails a layout which is properly focused upon the event, good staging facilities with proper technical equipment adjacent to that specific location, excellent access for both the public and performers together with their ever increasing scale of equipment & flexibility of acoustics to suit particular functions. In the past these

spaces have failed because their solution is a compromise to each of the various conflicting demands placed upon them, whereas a successful space must appear to have been designed primarily for that specific function. From these a number of groupings will then emerge of functions which are compatible and will operate together at a technical level. That is probably about as far as the multi-purpose hall went in the past. However, little regard was paid to the problem of ambience and yet this needs to be as carefully considered as any of the other items so that it can be modified to suit the event. Is a pop music hall the best place for a civic dinner and how does one hold an antiques fair in a hall designed for classical music? It is therefore necessary to assess the prime functions that are going to take place and to build up a priority of uses. The degree of flexibility that one is attempting to achieve has to be carefully assessed for it is critical to the whole design process and leads to determining whether the space should be a multi-function space, where seats are generally fixed and the event takes place in a reasonably defined location, or whether one is going to go for a multi-form auditoria where a wide range of performer/audience relationships are possible.

Precise brief at Nottingham

The brief to RHWL for the Nottingham Concert Hall was quite precise; the hall had to be excellent for classical music, yet the prime use of the space was to be for pop and entertainment. This led to an immediate conflict in that classical music is acoustically best in an auditorium of 1600 seats, yet commercially a capacity around 2500 is not only



Simon Rattle and the CBSO at the Nottingham Concert Hall



The acoustic banners are fully extended for Elton John's opening of the Nottingham Concert Hall

necessary to relieve the subsidy but is essential in order to attract major pop groups. The auditorium envelope, therefore, had to be carefully designed in that it had a lot of work to do to achieve the right strength of reflections to this large capacity auditorium and this led to a format of fixed seating, in tiers with audience/choir continuing round the rear of the performance area. The demands for pop are somewhat different, with its considerable emphasis upon the stage lighting, a heavily dampened acoustic and a very different ambience in the auditorium. These were achieved by the use of a large stage canopy, acoustic banners which are extended fully in order to absorb sound and the ability to radically change the character of the auditorium by coloured lighting. Pop and stage shows also demand considerably better access onto the stage than is often provided for orchestras. Therefore, at Nottingham the side walls of the stage zone are highly flexible with drive-in access from the street. This then opens up the opportunity for trade events such as the launching of a new motorcar, which is of considerable commercial importance to the management. A wide cinema screen slots into the floor and the large orchestra pit extends further the range of uses. The platform is positively related to the fixed seating in the auditorium and thus excludes a whole range of flat floor events.

Acoustical Standards at Warwick

Over the past few years, RHWL have been investigating and building a number of multi-form spaces. The first experiment in this type of hall was for the University of Warwick where the requirements were not only for the full range of student events, including the not so popular exams, but also to forge a link with the local community by the staging of such widely diverse events as crafts fairs to classical concerts. The octagonal form has a balcony on five sides with mitred bleacher seating raked down to the flat floor below, facing onto a platform. As at Nottingham, the requirements for classical music affected the configuration and con-

struction necessitating hard materials and the introduction of various reflective panels and surfaces. The building was opened a couple of years ago and worked out at a cost of about £1000 per seat at that time for the hall alone which must be remarkable value. Certainly Simon Rattle and the CBSO thoroughly enjoyed playing at Warwick and have now not only broadcast their Sibelius series but are making records and a new television series from there in preference to their Birmingham elderly hall. Concert halls are rather like hi-fi, you pay proportionately more money for decreasingly smaller improvements in standards after a certain level and thus the acoustical standards required form a critical part of the brief and cost plan.

A Seasonal Problem at Skegness

On the lighter side, Skegness recently decided that it needed to boost its image as a holiday centre and to put fresh life into the bouncing man on their posters. The holiday season, certainly in this country, is very short and considerable income has to be gathered in a limited harvest time when the population is 10 times that of the rest of the year. There was thus a real need to provide a place for entertaining 1200 people on the Summer evenings not only in traditional end-form staging arrangement but also as a cabaret format with people eating at tables on the flat floor. During the Winter, however, obviously the scale of operation was to be considerably smaller and therefore income was to be derived from such diverse flat-floored events as local badminton clubs to trade shows for the local caravan industry in order for them to be equipped for the flood of visitors the following Summer all with a budget of only £1m, which was to include considerable upgrading of the existing building including restaurants, bars, reconstruction of the foyer and new dressing rooms. Coupled with ones neighbours of a car park, fairground and a huge outdoor swimming pool, the events were related to the use of amplified sound which enabled a lighter form of construction to be used than would have been necessary to achieve a level

of PNC 20 in the surroundings. Needless to say, the first event to be put on on a Saturday afternoon in mid-summer was a concert by the Halle Orchestra. The acoustics might not have been perfect for that event but how else could 1200 people in Skegness have enjoyed such a concert?

Five star accommodation at Derngate

The design of Derngate, which opened earlier this year, posed RHWL a far greater range of problems and has led to probably one of the most sophisticated solutions yet developed. The lack of facilities in the Northampton catchment area for any form of entertainment, apart from repertory theatre, led to the need for five different formats: a Lyric staging with a conventional proscenium arch and a stage suitable for opera, dance, large-scale drama, films and civic meetings; the Concert arrangement for orchestral visits, pop shows and conferences; an Arena setting in the round suitable for indoor spectator sports, such as boxing, and fashion shows, and the Flat Floor setting with much of the seating removed to facilitate dinner dances, exhibitions and indoor markets and, finally, the Reduced Format which gave a more intimate flat floor area for such events as trade presentations, cabaret and poetry recitals. The stage requirements obviously created considerable conflicts, sometimes the need for an orchestra pit coupled with a fly tower, whereas on other occasions a flat ceiling would be required for orchestral work. Various solutions to individual aspects of the technical problems had been tried and tested in the UK and abroad previously. Of far greater concern to the whole design team was how to overcome the problems of organising an audience in the right ambience for each different event. For proscenium productions of lyric and drama no one has improved upon the Victorian, multi-tiered auditorium with boxes coming right up the proscenium wall, with the audience grouped as tightly as possible, whereas concerts require a greater sense of space, with increased volume for acoustic purposes. Different widths of pro-



University of Warwick Art Centre Hall.
Opening concert by Philharmonia Orchestra.

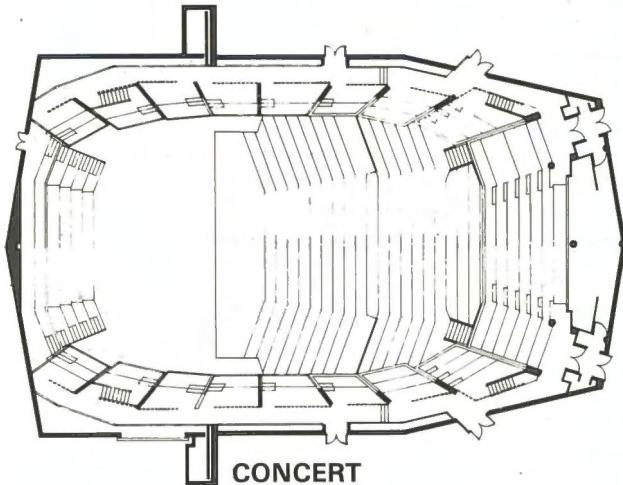


University of Warwick Arts Centre Hall.
View from gallery of extended bleacher seating and quartet in rehearsal.

scenium openings are required for lyric, dance and drama and this must be achieved without divorcing the boxes from the action. An examination of these problems, by making card models of the preferred layout for each format, showed that, although some elements of tiered seating, walls and ceilings could remain fixed, others needed to move in order to modify the space and to ensure that each format looked and felt right in its own context. This has been achieved by resting nearly half the seating units, in-

cluding raked stalls rows and three-storied box towers, on special, relatively inexpensive air pads. When the pads are inflated with compressed air the units can be moved from one side of the auditorium to the other by a few stage hands, overcoming the problem of tracking and castors. This enables box arrangements to be altered and additional units to be introduced to complete the orchestral format when the audience continue right round the platform. When not required, the stalls seating waggons can be

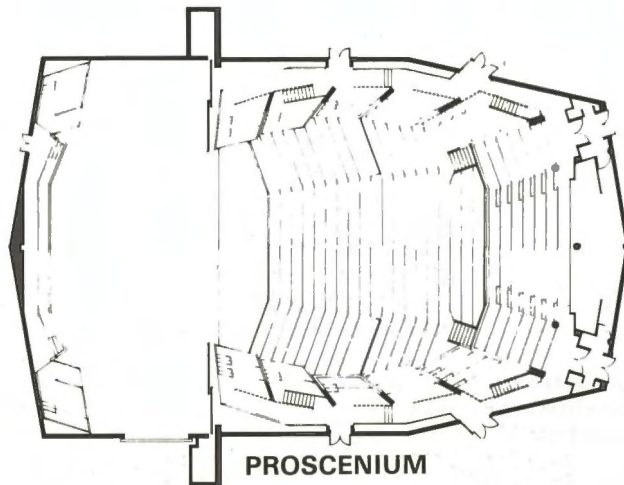
stored in the basement using the two element lift, the smaller part of which forms an orchestra pit elevator. In its raised position this lift provides a single flat floor from rear stalls to the back of the stage. The system was fully put to the test a few weeks back when on 5 consecutive nights the format changed dramatically from a small-scale proscenium setting for "Chas & Dave With Friends" on one night to a larger staging for a fashion show the next. The following evening the false proscenium was retracted, extra seating



CONCERT

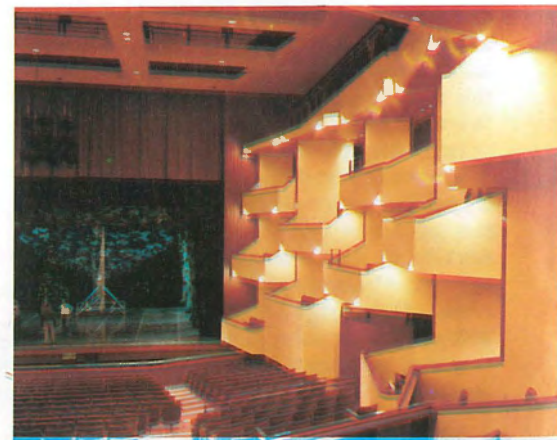


(Above) Deragate Northampton in its concert configuration the five seating towers on each side of the platform are positioned to link up with the gallery at the rear of the stage.

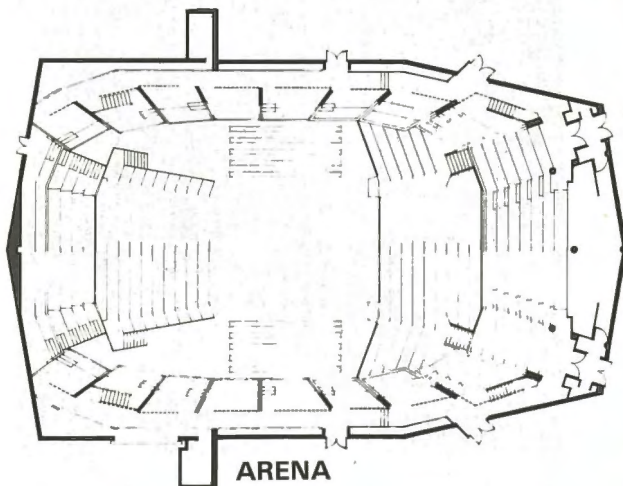


PROSCENIUM

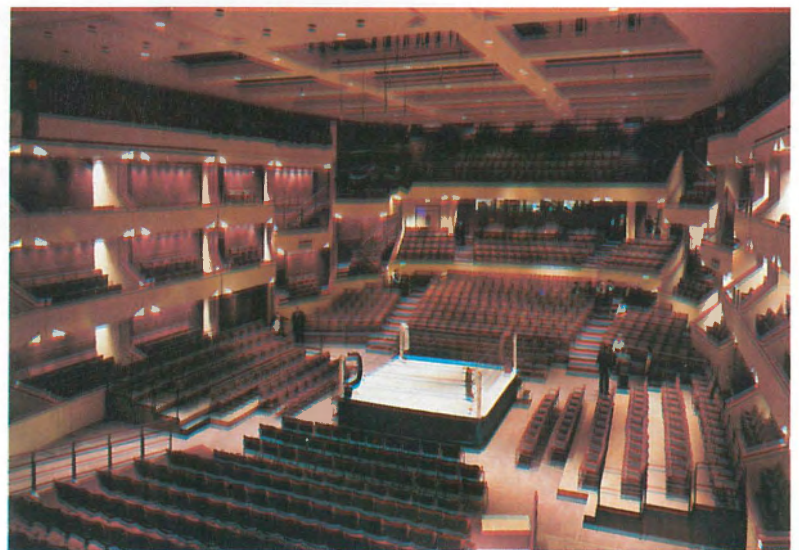
(Right) Hall in lyric format with proscenium wall extended, orchestra pit in use and seating towers positioned in close proximity to the stage.



(Below) For arena events, such as wrestling, the elevator is in its flat floor position and one seating waggon swung round to face the other.



ARENA

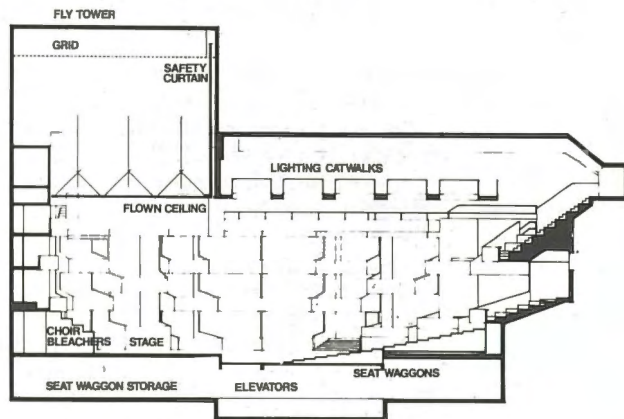
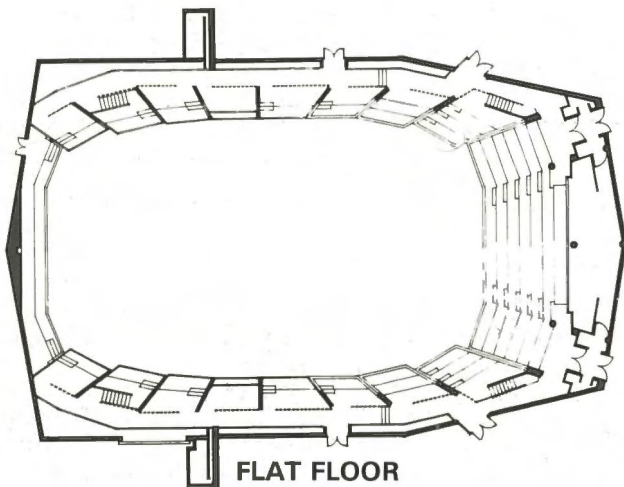


towers slid in from the scene dock and retractable seating tiers extended from the back of the stage to encircle the platform for a concert by the Royal Liverpool Philharmonic Orchestra. The fly tower volume was closed off by lowering and rotating acoustic reflectors to the line of the auditorium ceiling and to provide orchestral lighting. The next night's presentation was professional wrestling in an arena format. This required the stalls seating waggons to be brought up from their 'hull down' position on the elevator

and swung round in front of the extended stage bleachers to form a continuous bank of seating. The raked seating on the sides of the ring was set up with stacking chairs on rostra. The auditorium reverted to proscenium format for the following night's programme!

In a recent lunch to award the prizes for a theatre competition, Sir William Rees-Mogg in reviewing the facilities for the arts, suggested that the next priority must be in providing flexible spaces for the medium-sized cities and, in doing so, careful thought must

be given to minimising running costs even if this means bearing some initial capital expenditure. The initiative, therefore, now lies in the hands of local authorities. The provision of large-scale entertainment buildings can be expensive but, equally, the effect upon the town is enormous. Who in Nottingham 10 years ago would have believed that they would now be selling 3500 seats a night for their new complex, which has upgraded a previous run-down area of the City with new restaurants and a hotel?



Derngate, Northampton. One of the seating waggons being brought up on the two element elevator from the basement. Other seating is stored under the stage on the left.



Nottingham Concert Hall

- Architects* Renton Howard Wood Levin Partnership
- Structural & Services Engineers* Ove Arup & Partners
- Theatre Consultants* Theatre Projects Consultants Ltd
- Acoustician* Russell Johnson (Artec)
- Quantity Surveyors* Gleeds
- Main Contractor* Bovis Construction Limited

University of Warwick

- Architects* Renton Howard Wood Levin Partnership
- Structural Engineers* Ove Arup & Partners
- Electrical Consultants* Pinto Moody & Partners
- Quantity Surveyors* Northcroft, Neighbour & Nicholson
- Main Contractor* John Laing Construction

Embassy Centre, Skegness

- Architects* Renton Howard Wood Levin Partnership
- Structural & Mechanical Engineers* Ove Arup & Partners
- Main Contractor* Bowmer & Kirkland

Derngate, Northampton

- Architects* Renton Howard Wood Levin Partnership
- Structural & Services Engineers* Ove Arup & Partners
- Theatre Consultants* Theatre Projects Consultants Ltd
- Acoustician* Russell Johnson (Artec)
- Quantity Surveyors* Gardiner & Theobald
- Main Contractor* Taylor Woodrow (Midlands) Construction

Derngate, Northampton. The two towers in the foreground contain seating at three levels and can be readily moved on air castors to give different performance formats.



Ellen Terry's House

FRANCIS REID visits the National Trust's museum of nineteenth-century theatre at Smallhythe.

Smallhythe Place, built in the first half of the sixteenth century, was known, originally as the Port House but became The Farm when the sea receded and agriculture replaced navigation. Smallhythe as a sixteenth-century port built vessels, and by early this century goods were still being brought by barge from Rye to Smallhythe quay, but the waterway has now shrunk to a drainage ditch.

The house was bought by Ellen Terry in 1899 and, within the nomadic context of an acting life, was her true home until she died there in 1928. Now in the care of the National Trust, it houses an Ellen Terry Memorial Museum. While the emphasis is certainly on the life of that great actress whom Shaw declared the whole age to be in love with, her associations with so many other major acting

figures, together with the width of her own collections of theatrical ephemera, make the house into something of a general museum of the stage of the second half of the nineteenth century. A width that also springs inevitably from her family tree which encapsulates the Gielguids, the Hawtreys and her son Edward Gordon Craig, the visionary who, with Appia, looked forward to the production styles of today.

Despite the large quantity of displayed theatre material, the house manages to retain a considerable air of domesticity in all its rooms. With the exception of the **Bedroom**, each room has a theatrical theme. Her bedroom, however, remains as she left it, furnished with personal items of which only one is a part intrusion from the world of the stage — her annotated copy of the Globe Shakespeare.

The **Terry Room** is devoted to memories of the actress plus some material of her family background. In addition to drawings, paintings and photographs, both in and out of character, there is her make-up box, insignia as a Dame of the British Empire, and death mask. Particularly enchanting is a photograph of the 16-year-old Ellen Terry by the great pioneer artist photographer Julia Margaret Cameron. The **Dining Room** displays portraits and possessions of the great actors including Garrick, Siddons, Kean, Bernhardt, Woffington, Vestris, Macready, Kemble, Matthews, Toole, Rachel, Duse and many others. Items include Garrick's recorder, Phelps's cigar case, Bernhardt's handkerchief and Sir Arthur Sullivan's monocle. And from E.T.'s own performances are Olivia's corals, Cordelia's cloak clasp, Titania's shoes and Juliet's Nurse's rosary. A little cash book lies open at a week showing the results of touring Shakespeare to the Theatre Royal in Bath:

Gross takings	£730-11- 6
Share	547-18- 7
Expenses	252-13-11
Profit	295- 4- 8

An American corner includes a travelling candlestick presented by the 'School of Expression' in Boston, Mass in 1888.

The **Costume Room** displays some of her costumes from productions over the half century between 1875 and 1925 including the Lady Macbeth of 1888 worn in the much reproduced Sargent portrait in the National Gallery. Irving had his costumes made in quality silks and satins and so, despite continual repertoire use, they still retain much of their original flavour. The **Lyceum Room** records the partnership of Ellen Terry and Henry Irving from 1878 until 1902. All the expected sort of items are here plus a special one for theatre architecture collectors: an inscribed silver trowel presented to Irving by Frank Matcham on the occasion of laying a stone in commemoration of the re-building of the Theatre Royal, Bolton in 1888. The library contains Ellen Terry's own collection of theatre books and, peering through the glass one notes a very wide range, rather strong in local stage histories. This collection may be consulted by arrangement outside the midsummer tourist season. The corridors are rich in originals of the standard prints that are familiar as reproductions in theatre history books — and, again particularly for the architecture lovers, there is a photograph of the interior of the old Lyceum, taken from the stage.

All in all this house is a delightful encapsulation of a particular era, seen through the eyes of its leading lady, and given an authenticity through the personal atmosphere inevitably left behind by her presence.



Smallhythe (built c.1500), Ellen Terry's home from 1900–1928.
National Trust photograph by Jeremy Whitaker



Lyceum Room, Smallhythe. Photo National Trust Properties

Instrument Selection by Field Angle

ROBERT A. SHAKESPEARE

The accurate selection and focusing of a lighting instrument to fulfill a specific lighting requirement for the stage is fundamental to the lighting designer's art. Out of the contemporary lighting texts that I have perused, Pilbrow's *Stage Lighting* (revised edition 1979, Drama Book Specialists) is the only one containing a systematic approach to instrument selection. None of these texts provide a practical technique for focusing. As a teacher, I'm discouraged by the lack of options that this scarcity of published material presents. The system described in Pilbrow's text involves butting together the beam angles from the light beams of instruments that light adjoining areas. The method that I will describe incorporates the use of beam angle, but is initially concerned with instrument selection on the basis of field angle.

Suppose a single instrument from 60° above the horizontal is required to illuminate a face brightly, the body decreasing in brightness and all contained in a hard-edged pool of light. How would we go about selecting the proper instrument to fulfill these requirements? Or, what if a performer needs to be evenly illuminated by a 45° angle while pacing in a sharply defined six-foot diameter acting area? What brightness profile characteristics are best suited to this situation? What is the ideal instrument needed?

I recently lit a production with equipment that I had never used before and with very limited access to the actual theatre space prior to the time of focusing. This is not an uncommon event! After watching rehearsals and conferring with the rest of the production team, I was able to determine what I wanted the lighting for the production to look like. Then, armed with an equipment list and the photometric data (from the appendix of Pilbrow's *Stage Lighting*) I was able to very adequately design the light plot for the production with the aid of an accurate section and plan of the theatre and set, having only experienced the actual theatre space for a few minutes. There was no need for guesswork in the instrument selection.

Photometric data appears as a compilation of graphs and numbers which can cause confusion. In addressing the mystique of how these measurements and graphs can be simply and effectively employed by the lighting designer I noticed how few lighting texts incorporate their use. To paraphrase what appears to be the general approach to instrument selection, "Experience is the best and perhaps only teacher." Though experience always helps, it is not the only criteria by which to select an instrument. Most manufacturers will supply a photometric data sheet upon request that

provides information about the optical train, light beam characteristics, brightness output measurements (normally in candlepower) and suitable light sources for a given instrument. The key to accurate instrument selection is provided in these measurements, and of particular importance is the brightness profile of the light beam (generally termed the distribution curve). This graph (candlepower vs. degrees from optical axis) shows how the brightness decreases from the center of a light beam to its edge.

BEAM ANGLE and FIELD ANGLE are standardized measurements defined by the Illuminating Engineering Society and are determined from the brightness profile:

"Those points of the candlepower distribution curve where the candlepower is 10% of the maximum candlepower defines the field of the lighting unit. The included angle is the FIELD ANGLE . . . Where the candlepower is 50% of the maximum candlepower defines the beam of the lighting unit. The included angle is the BEAM ANGLE."

These terms are also referred to as 1/10th PEAK ANGLE and 1/2 PEAK ANGLE respectively (Fig. 1). Notice that there is no specific measurement given for the very edge of the light beam that borders darkness. Frederick Bentham, in *The Art of Stage Lighting*, defines this measurement as the CUT-OFF ANGLE, but because this is almost impossible to measure on a soft-edged fresnel, and the edge of the field of an ellipsoidal reflector spotlight (ERS) usually defines the edge of useful light, it is rarely included in photometric data (if you need to accurately know the dimension of a circle of light projected onto a cyclorama by an ERS you will probably need to measure the cut-off angle yourself).

If no photometric data is available, the field angle of an ERS can be approximated. Sharp focus the instrument and point it at right angles to a wall at least 25' away and measure the distance from the center of the pool of light to the instrument. The other measurement required is the width of the pool of light through its center. Draft this cone of light in an appropriate scale (1/2" is suggested) and measure the angle of divergence of the light beam (cut-off angle) with a protractor. To allow for variations and to approximate the field angle subtract 10%. A measurement of 30° becomes 27°. A measurement of 40° becomes 36°. A fresnel is very difficult to measure because the edge of its light beam is not clearly defined, but because of its variable focus it is not so crucial. Most fresnels have a field angle that is adjustable from about 18° to 45°. The

beam angle of an instrument cannot be approximated without sophisticated test procedures.

By dividing the beam angle of a given instrument by its field angle, a distribution comparator is produced. This number is very useful to quickly compare the brightness profile of different instruments. A lower number indicates a more significant amount of brightness concentrated in a smaller area of the light beam. If this number becomes very small, the hot spot becomes brighter

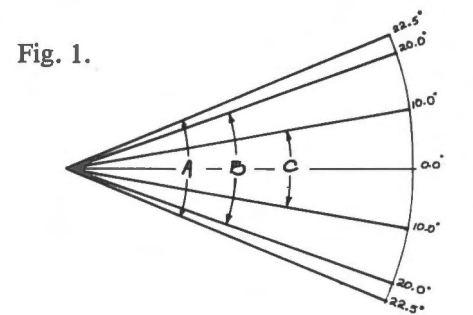
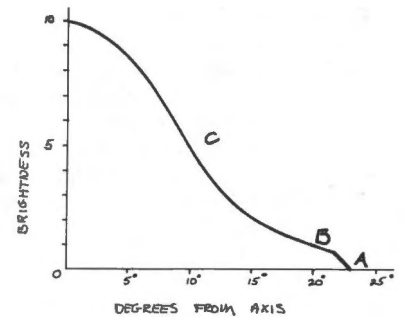


Fig. 1.

- A - CUT-OFF ANGLE (EDGE OF LIGHT BEAM)
- B - FIELD ANGLE (10% OF 0.0° BRIGHTNESS)
- C - BEAM ANGLE (50% OF 0.0° BRIGHTNESS)



TYPICAL BRIGHTNESS PROFILE (PHOTOMETRIC CURVE)

and the instrument is less suited to general coverage and more useful in specific applications like in the special effect mentioned earlier. My own experience in using this method favours a distribution comparator of between .5 and .6 when selecting instruments to provide an even coverage. However, in cases where an instrument with a significantly wider field angle than needed must be used, an instrument with a lower distribution comparator might help the situation.

Some photometric information can be presented in the form of a graph which expresses the width of a beam and its brightness as a function of throw distance. I have always found this beam spread/throw distance ratio to be a difficult piece of information to use except in cases of downlight or

Fig. 2.

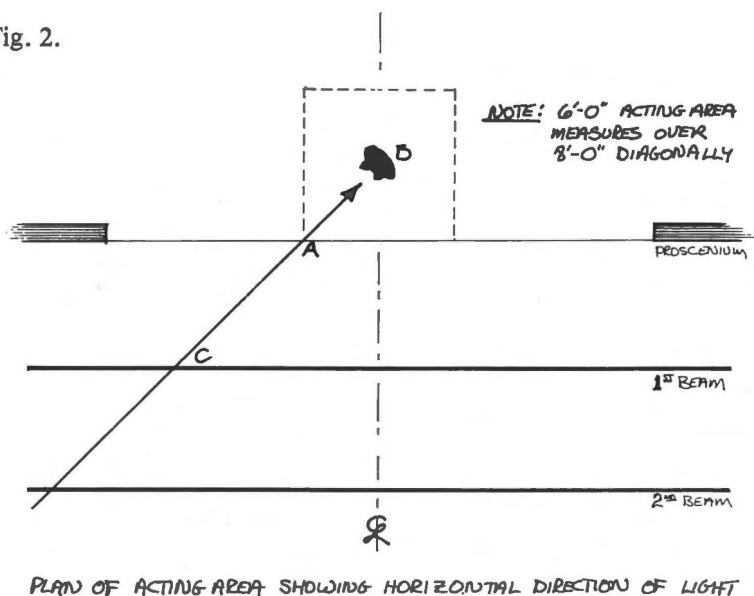
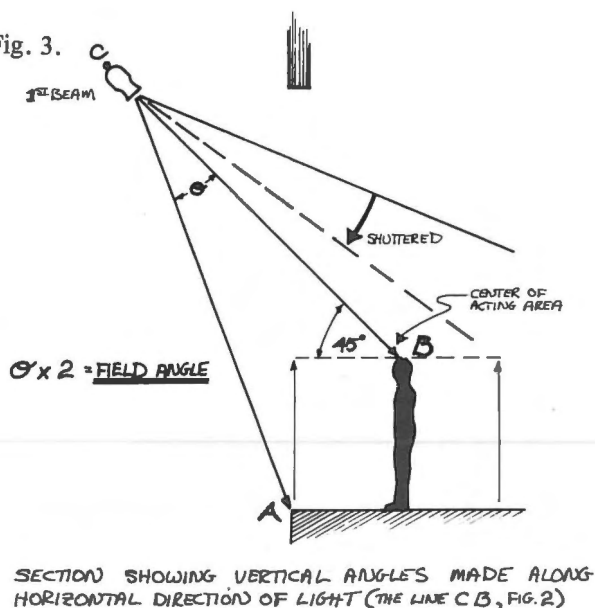


Fig. 3.



in some other instance where the surface being lit is perpendicular to the axis of the light beam. Perhaps more manufacturers would provide photometric curves if more designers knew how to use them.

The guidelines which I have successfully employed for a number of years establish what minimum field angle will satisfy the need of a fairly symmetrical acting area of special effect and what instruments (providing there is some degree of choice available) are best suited for a specific application within a given field angle requirement. At this point in the selection process I am not considering relative brightness from a given throw, but only the minimum requirements for adequate coverage and the optimal brightness distribution.

The first step in my approach to instrument selection is to determine the location and size of the acting areas. Though this could be done simply by examining the groundplan of the set, I have had greater success by discussing the actor's use of the stage with the director and, if possible, seeing an early rehearsal on a taped-out groundplan. Allowing the production's use of the stage, basic traffic patterns and places of dramatic importance to determine the centers of acting areas has worked more effectively for me than simply breaking the stage into a grid similar to a bowling pin arrangement. These areas may vary in size but tend to be between six and ten feet in diameter. If downstage center is of key importance during the production and requires selective treatment, then downstage center should be the center of an acting area. One of the best ways of selectively lighting a performer on the stage is to have the actor naturally in the center of an acting area rather than at a point between two areas where the lighting for both areas, or additional equipment or control, needs to be employed.

General or acting area lighting usually needs to meet two criteria: fairly selective and even illumination centered over the acting area when it is lit on its own and the ability for each area to blend with those adjacent

to it with no noticeable hot spots or holes. Having determined the most effective horizontal and vertical angles by which to light the areas and knowing the positions available to you, the choice of location and the beam angle requirements can take place. Figure 2 shows a desired horizontal direction of light.

Make a section along the horizontal direction of light needed for an area and include the lighting positions that this vertical plane intersects (Fig. 3).

Mark on the section the front edge of the acting area at stage level (point A) and the center of the acting area at head height (point B). Notice that a diagonal section through an acting area tends to show a deeper acting area than does a center line section. From the same throw distance, a narrower beam of light is needed if lighting directly from the front than from the angle we are using. Initially, a section needs to be made along each horizontal direction of light desired.

Draw a line from point B to an instrument location (point C). The angle measured between a horizontal line at head height (for a play with adult actors I tend to use a height of six feet) and the BC line determines the approximate vertical angle that the area will be lit by. Of course, this angle becomes steeper as the actor walks downstage and shallower as the upstage direction is explored (an argument for smaller acting areas and longer throws could be made here!), but we will consider the area to be generally lit by the angle of the light beam at its center. This is also where the hot spot or axis of the beam of light needs to be focused. As we walk in the direction of the instrument we are in fact walking closer to the light source and this, in most cases, helps to compensate for the decrease of brightness as we move away from the axis of the light beam.

We must not only light the area at head height, but also allow the feet of the actor to be lit when he is standing at the front edge of the acting area. Draw a line from this point (A) to where the lens of the instrument will be

at the hanging location. Measure the degrees of divergence between lines AC and BC at the instrument and multiply this angle by two. The resulting number is the minimum field angle required to adequately light the area. Note that a shutter cut is necessary upstage, but in most cases the light eliminated is significantly less bright than the center of the acting area and is therefore fairly ineffective. When the next upstage area is focused, there will be a natural overlap providing for a relatively smooth transition of brightness from area to area.

Knowing the field angle of the instruments available to you makes it very easy to determine the minimum instrument requirement necessary to satisfactorily cover an area. Using an instrument with a field angle smaller than the one determined will result in inadequate coverage, and if a number of areas need to blend together, poor overlap and uneven brightness will result. An instrument of greater field angle can always be used by shuttering down the excessive spill, but if this is taken to too great an extreme and not done consistently, brightness and blending problems will occur from area to area.

After having selected the appropriate range of instruments by field angle and distribution comparator for each effect on the stage, the lamp wattage and relative brightness factors need to be considered to complete the whole process.

No matter how profound an instrument choice appears on paper, the whole process can become futile if the actual instrument is not focused to the stage with the same degree of precision. In preparation for focusing, transfer the center of each acting area from the groundplan to the stage by marking each center on the stage floor with chalk or masking tape. Then stand on the mark with your back to the instrument being focused. The hot spot will be centered on the back of your head when the brightest part of the beam halos the shadow on your head. The instrument is now aligned to the acting area as in the original section, and it can be locked in

position. If the hot spot of an instrument is slightly off-axis and realignment of the lamp is impractical, look directly into the light source and have the instrument moved until the lamp is seen to be in the center of the lens. The instrument does not need to be raised to full intensity when employing this last technique, but if your eyes are slow in recovering from the afterimage, try supplementing your diet with vitamin A or a B complex.

If you are a five foot tall designer and the plane of illumination is six feet above the stage, stand one foot back from the center of the acting area when a 45° vertical angle is being focused. If you are six-foot-six, step forward six inches and continue with the outlined technique.

Having appropriately adjusted the focus of the light beam (medium soft for general coverage) walk away from the light source until your feet are on the upstage edge of the acting area. Use a shutter cut slightly above the shadow of your head. Shutter to your feet at the front of the acting area and adjust the sides of the beam. By following a consistent method, your focusing will reflect what you discovered on the drafting page.

The graphs that I have produced illustrate the differences in brightness profile between my system (Fig. 4), Pilbrow's system (Fig. 5) and a hypothetical system (Fig. 6). In this third system, one edge of the field angle is placed at the front, stage level of the acting area and the other edge of the field cuts the upstage edge of the acting area at head height.

In creating these graphs, I used the same ellipsoidal reflector spotlight (an Altman 6" x 12" 360Q) and the same acting area size for each example. The distance of the instrument from the acting area was made variable to create the optimum relationship between maintaining a vertical angle of 45° and the method under scrutiny. The scale of each resulting photometric curve was then adjusted to compare light distribution as opposed to the relative brightness of each approach. Original Altman 6" x 12" candlepower measurements were made by Electrical Testing Laboratories Inc. for Altman Stage Lighting Co. Inc. (a candlepower versus degrees from mechanical axis curve taken at 25'). Knowing the new distance from an instrument to the plane of illumination discovered in each of the three approaches provided me with the data necessary for the brightness calculations by using the inverse square law. For example, at 3° angle from the mechanical axis and at 25' from the light source, 60720 CP was measured. To calculate the brightness at a different distance from the light source, for example, at 30', the formula would look like this:

$$\begin{aligned} \text{At } 30' \text{ (d2) Intensity} &= \frac{1}{(d1/d2)^2} \times (\text{CP at } d1) \\ &= \frac{1}{(30'/25')^2} \times 60720 \\ &= 42167 \text{ CP} \end{aligned}$$

Fig. 4.

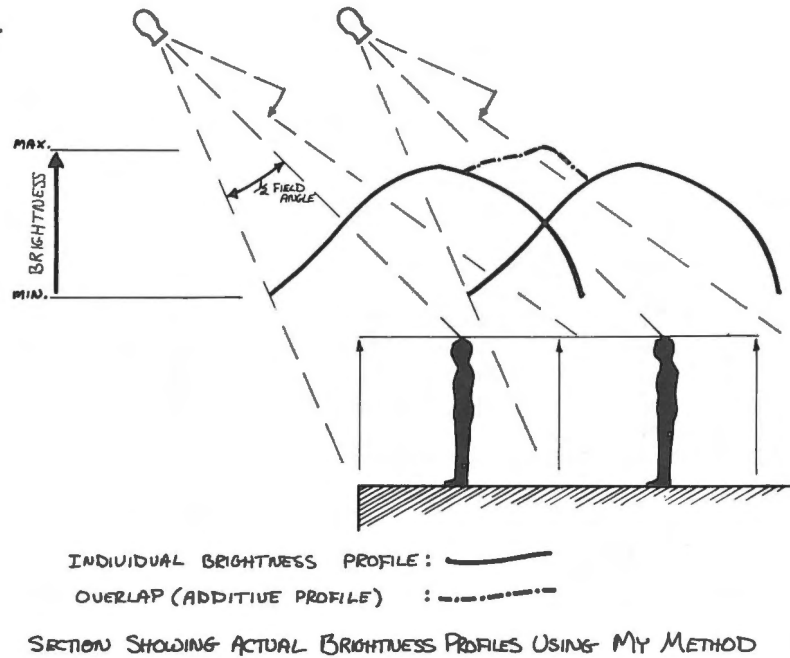


Fig. 5.

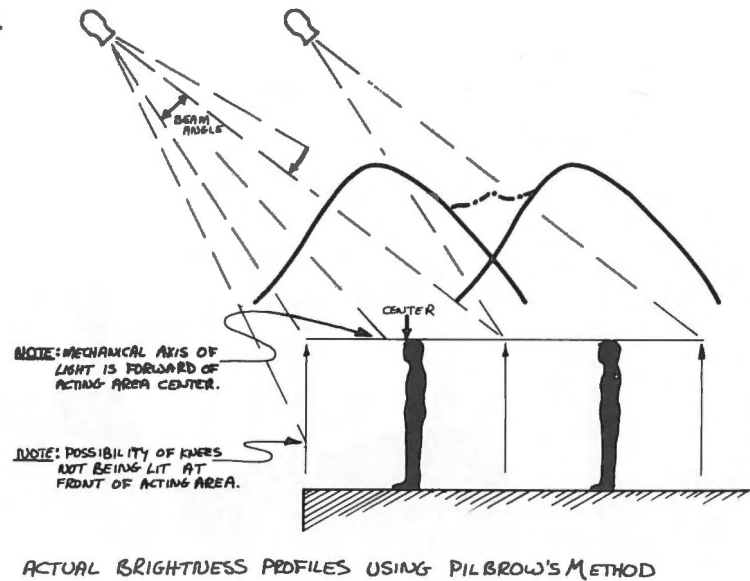


Fig. 6.

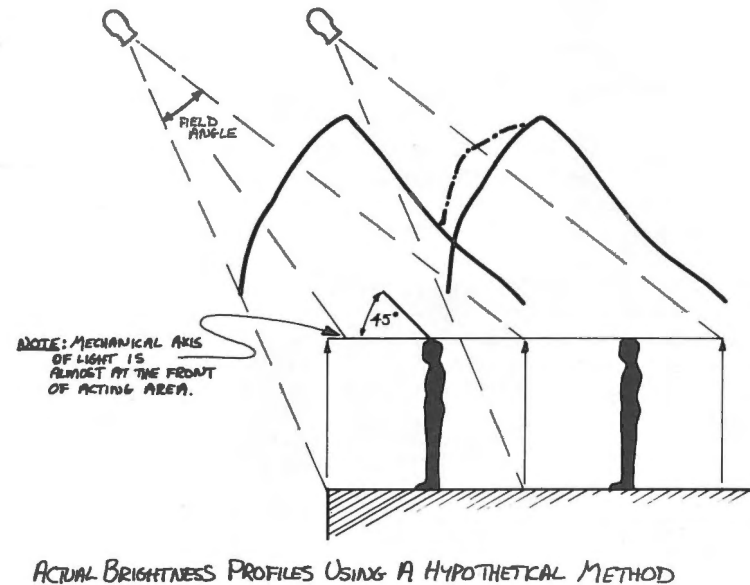
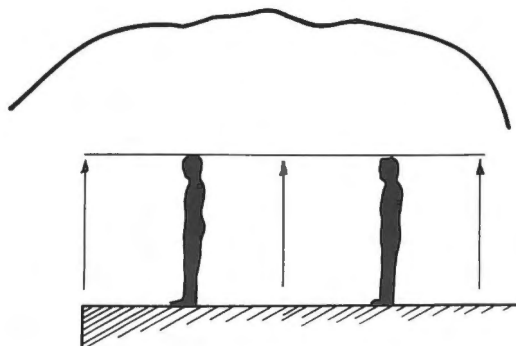


Fig. 7.



AN APPROXIMATION OF HOW THE EYE WOULD PERCEIVE THE BRIGHTNESS OF FIGURE 4.

In Figure 5, one edge of the beam angle is placed at head height at the front edge of the acting area and the other beam edge cuts the back of the acting area at head height. This method can result in a very smooth transition from area to area, but note the more forward hot spot when compared with my method. There is also the possibility of not lighting the actor's knees at the front edge of the area when the distribution factor is high. The vertical angle to the stage is not measured from

the mechanical axis of the light beam but from the angle of light at the center of the acting area at head height. The center of the beam and the center of the acting area are not aligned and this may cause some confusion as to where to stand in the acting area when focusing.

In looking at Figure 6, note how significantly more bright the front third of the acting area is and the difficulty of blending areas. When overlapped, the center of

the acting area has a significant lack of brightness.

There are two basic ways to think about brightness. If we were considering actually measured photometric data, then 5,000 CP would be considered twice the brightness of 2,500 CP. But theatre lighting designers are more concerned with how bright something appears to the eye. Studies suggest that if one side of the face is to be seen as twice as bright as the other side, the key side needs to be four times brighter when measured in candlepower. The general rule implies that the square root of the key light brightness when directly compared to the square root of the fill light brightness gives the relative brightness difference that we see. (e.g.: $5000 : 1250 = 70.7 : 35.35 = 2:1$) The final graph Fig. 7 shows the brightness profile that we would actually see using my method of instrument selection, based on the square root rule.

The field angle method is a viable alternative to the beam angle approach to instrument selection, but both of the other methods can be used if the characteristics of each approach better suit a specific lighting need.

Professor Robert A. Shakespeare teaches stage lighting design at the University of Massachusetts, Amherst.

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REIDing Shelf

If pressed to recommend a *Cue Book of the Year* for 1983, I would have little hesitation in nominating **HOCKNEY PAINTS THE STAGE**. It also happens to be the cheapest book of the year – or rather, at £20(UK), the quality and quantity of its printing make most recent theatre books seem relatively poor value. The 250 images (150 of them in colour), whether of designs or of performance moments, will stimulate anyone with an eye for the visual components of a theatre experience. And the text is intriguing reading for those wishing to probe the nature of the design process.

For each of his designs, David Hockney has provided a photographic storyboard, pithily captioned with a perceptive clarity that shames the average operatic programme synopsis. Martin Friedman looks at Hockney's stage designs within the context of his paintings and finds theatrical allusions in much of his work as a Fine Artist. Both here and in his interviews with Hockney's collaborators (principally the directors John Cox and John Dexter) Friedman skates dangerously close to a degree of sycophancy that nearly undermines the strength of his argument. But Hockney's work – particularly his definitive response to Stravinsky's 'Rake's Progress' – needs no such intense advocacy.

Do I detect a welcome trend in our theatre? Painters replacing engineers? And sensuality replacing logic? I hope so!

I have never met Peter Hall and, despite an abundance of tales in bars and profiles in papers, he has remained a shadowy figure. Has reading his diaries clarified my idea of his persona? Not a lot. The overall impression is of a highly organised worker with a prodigiously high productivity. It would be easy to use the label workaholic but people

with Hall's capacity for activity are not unknown in the theatre world where it is not a simple desire to work that is the driving force, but a knowledge that if the curtain is to go up then a certain amount of work just has to be done. Few industries have the inflexible deadlines of theatre.

PETER HALL'S DIARIES are subtitled *The Story of a Dramatic Battle*. The battle was to create the National Theatre as a national institution by developing it from the Olivier/Tynan National Theatre Company which was the final product of the drama strand of Lilian Bayliss's work. One of the purposes of any institution is to provide an established order for innovative forces to react against. On this field of the battle, Hall had to fend off many attacks from within the theatre profession. Despite the highly altruistic nature of the artistic motives of these critics, their activities provided the media with an abundance of entertainingly slingable mud. What probably increased the fury within the theatre, both established and alternative, was that throughout the N.T.'s battle for acceptance, Hall's Institution produced a stream of innovative work. Inevitably there was a battle for money: there always will be. And a battle for the building – first to occupy it and then to make it function.

All this took its toll on Peter Hall. As the diary entries progress, he becomes so increasingly tired and battered that his threshold of vulnerability sinks dangerously low. But he survived and our National Theatre is an established institution. I find myself quite unable to name any other theatreperson who could have matched Peter Hall's achievement in this task.

Although these diaries do not reveal much about their author's chemistry, they stand with Noel Coward's diaries as a most compelling, readable and valuable source of the day-to-day history of the London stage of our age.

Then a key part of the stage machinery, the turntable, broke down under the accumulation of passengers. (Later investigation revealed that a zero had been left off the specifications for the weight it would have to carry.) This is not a quote from Peter Hall's diaries. Nor is *the unions arrived at the bargaining table with a laundry list of demands*. They come from **THE MET. ONE HUNDRED YEARS OF GRAND OPERA**. The processes of institutionalisation are universal! It is not an easy transition from the inconveniences of a simple old theatre with minimum ancillary accommodation for audience, actors and supporting staff, to

the integrated facilities of a planned performance complex complete with workshops, storage, rehearsal rooms, restaurants plus enough offices and photocopiers to allow the art of administration to flourish.

This transition is just one of the traumas recorded in this book's celebration of the Met's centenary. As the ultimate mix of the performing and visual arts, opera is a precarious business. Performances tend to happen despite a sequence of crises, artistic and financial, resulting from the logistics of the number of creative talents employed. Opera at the Met has always been Grand – by demand of a subscription audience who have always had to dig deeper into their pockets than have their European cousins. New Yorkers demand stars and are prepared to pay. So this is a record not just of one major theatre, but of a century of top operatic people. Plump and sumptuously illustrated: a Grand Book about Grand Opera.

When thinking of **THE IRISH THEATRE**, our first thoughts (well certainly my first thoughts) are inevitably of the playwrights who, from the turn of the present century, made such a positive contribution to the emergence of Ireland as an independent nation – Yeats, Synge, O'Casey and all the others who contributed to the creation of the Abbey as a national theatre with an international reputation and influence. An influence continuing to the present day with a group of international dramatists headed by Brian Friel and Samuel Beckett. But Ireland has been an exporter of dramatic talent since the seventeenth century. Going backwards towards the restoration, we find giants of the order of Shaw, Oscar Wilde, Don Boucicault, Sheridan, Oliver Goldsmith, Charles Macklin, Peg Woffington and Thomas Southerne. English theatre is very indebted to Ireland: all this in exchange for Hilton Edwards who, with Michael MacLiammoir, founded Dublin's Gate Theatre which acted as a point of interchange, bringing major international classics to Dublin as well as producing Irish plays and touring overseas. (Younger readers of *Cue* may not know that Hilton Edwards was also one of the pioneers of modern lighting design.) Christopher Fitz-Simmon's book has brought all the threads together. He has written it in English, but had it been in Irish I would still have wanted it on my shelf for its two hundred illustrations.

In an earlier *Cue*, I enthused about the insight into the actor's craft given by Peter Barkworth in *About Acting*. Now, within the autobiographical framework of **FIRST HOUSES**, he has not only given further glimpses of the chemistry of an actors' persona, but has captured the flavour of the British playhouse in the immediate post-war years. The period in our dramatic history that Royal Court thinking reacted against and eventually supplanted. From RADA (where the students stood up when the Principal entered the room) via weekly rep at



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Folkestone (where resignation to develop one's career was regarded by the management as treachery) to fortnightly rep at Sheffield where London talent scouts (management and agent jointly offering contracts over supper) opened the door to the West End. I can vouch for the reality of it all: in 1957 an impresario's General Manager told me that I could never hope to be a West End ASM unless I shaved my beard. This is a valuable source book of theatre history – and I found it a compulsive read.

From the Macmillan Modern Dramatists Series comes another four volumes. Two of the playwrights are accepted masters with a secure place in the classical repertoire: **OSCAR WILDE** and **GEORGE BERNARD SHAW**. The other pair are contemporary: the active **TOM STOPPARD** and the prolifically active **ALAN AYCKBOURN**. Both seem on course for a classical future. Stoppard crystallising much of our generations view of itself in the theatrical looking glass; while Ayckbourn provides a record of how we really are. Ayckbourn's characters are painfully and humanly alive: we need the laughter to make the pain bearable. In every Ayckbourn play I see barely heightened versions of people of my acquaintance and observation. I see my friends but I do not see myself, although I am

sure my friends see me. This volume is contributed by Michael Billington and the addition of a journalist critic to a writing team that is sometimes a bit too ploddingly academic in its analysis is to be welcomed.

Macmillan have launched a new series called **TEXT & PERFORMANCE**. Each play has a paperback of eighty pages, half of them devoted to an analytical essay while the remainder discuss the approach of a number of key stage and film productions. Good stuff for anyone forced by life's circumstances to have to sit an examination on Shakespeare. Those who only wish to experience the play will go to the performance or watch its video, while those who wish to act, direct or design will go straight to the text.

There is no more positive evidence that the theatre has not only changed but is continuing to thrive than the contents of the **BRITISH ALTERNATIVE THEATRE DIRECTORY**. There are really rather a lot of companies doing exciting work (the directory lists about 400 human and 100 puppet groups) and most of it is performed in a much wider range of venues than would have been thought possible as little as ten years ago. This is obviously an essential reference book for venues who need companies and for companies who need venues. But it is also something more: the entries, especially the

policy statements, are essential study for anyone wishing to understand the philosophy of today's alternative (and therefore probably tomorrow's mainstream) theatre.

And, finally, a Christmas stocking filler for anyone who enjoys theatre chat. Mostly light-hearted trivia, although that surface lightheartedness often conceals a fundamental truth. Derek Salberg's latest book is exactly what its title claims: **A MIXED BAG Mostly about the Theatre**. The bag includes an impression of the state of the theatre in 1885, 1906, 1927, 1948 and 1969 as recorded in newspapers, mostly theatre ones. There is gossip (kindly) about actors, anecdote on the banana skins upon which he and his friends have (metaphorically) slipped, and he recalls some of his encounters with such diversities as rotarians, magistrates, cricketers and pantomimers. Its full of assorted unrelated titbits of stage history – just right for a good Boxing day read.

Francis Reid's **THEATRE ADMINISTRATION**, recently published by A & C Black at £7.95 will be reviewed in the next Cue.

HOCKNEY PAINTS THE STAGE. By Martin Friedman. With contributions by John Cox, John Dexter, David Hockney, and Stephen Spender. (First published in the USA by Walker Art Centre and Abbeville Press). Thames and Hudson £20 (UK).

PETER HALL'S DIARIES. The Story of a Dramatic Battle. Edited by John Goodwin Hamish Hamilton. £12.95 (UK).

THE MET. ONE HUNDRED YEARS OF GRAND OPERA. Martin Mayer. Thames and Hudson £20 (UK).

THE IRISH THEATRE. Christopher Fitz-Simon. Thames and Hudson. £12.50 (UK).

FIRST HOUSES. Peter Barkworth. Secker & Warburg. £8.95 (UK).

TOM STOPPARD. Thomas R. Whittaker. **GEORGE BERNARD SHAW**. Arthur Ganz.

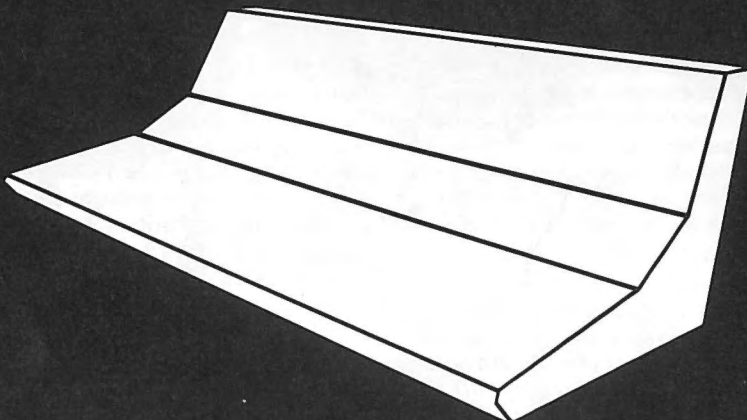
OSCAR WILDE. Katharine Worth. **ALAN AYCKBOURN**. Michael Billington. All in Macmillan Modern Dramatists Series. £11. £3.95 (Paperback) (UK).

BRITISH ALTERNATIVE THEATRE DIRECTORY 1983/84. Edited by Catherine Itzin. John Offord (Publications) Ltd. £6 (UK) (Paperback).

A MIXED BAG (Mostly about the Theatre). Derek Salberg. Cortney Publications. £5.25 (Paperback) (UK).

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STAGE DESIGN

Some good housekeeping at Covent Garden and the Coliseum

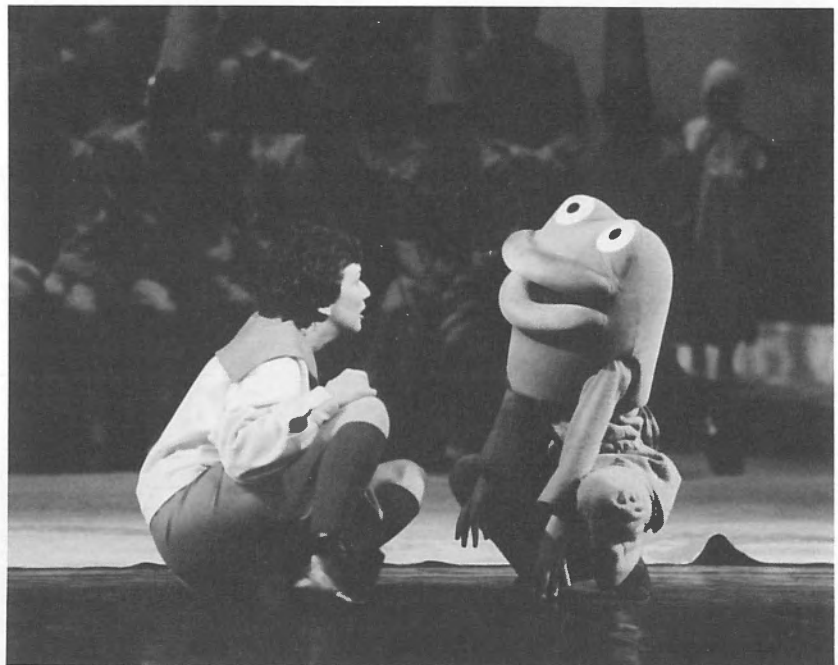
DAVID FINGLETON

Whatever the current severe financial restraints on our two major opera companies, they seem this autumn to have responded magnificently to the challenge. Already there have been two major new productions from the Royal Opera at Covent Garden, and down the road at the Coliseum English National Opera have mounted no fewer than three new productions so far. Moreover within the same week both English National and Welsh National Operas embarked on fresh stagings of Wagner's Ring, which will be completed over the course of the next two or three seasons. Such activity would tend to suggest that initiatives are most strongly forthcoming when times are hard.

For their opening new production the Royal Opera had the happy idea of acquiring a David Hockney-designed double bill from the New York Metropolitan Opera. This consisted of Stravinsky's *Le Rossignol* and Ravel's *L'Enfant et les Sortilèges*, both directed by John Dexter. Both works were presented as something closer to sung ballets than to straight operas, and both rejoiced in the quality of Hockney's draftsmanship and his wonderfully positive approach to colour. *Le Rossignol* was drawn in oriental terms, with masks and painted lanterns and the Emperor's court clothed in richly primary colours. By contrast the Nightingale herself, magnificently danced and portrayed by Natalia Makarova, was exquisitely dressed in translucent silver. Hockney's approach to *L'Enfant* had more fantasy: bright primary colours once again, and the idiom of children's fairytales, with the book itself stage left allowing characters to emerge as through a pop-up drawing. Where he succeeded less fully was in combining these

nursery images, furniture and household effects, with the singers who were grouped on either side of the stage to accompany the movement. The problem is probably insoluble, and certainly the stage, impeccably lit by Robert Bryan, abounded in colour and magic.

The Royal Opera's other new production to date has been of Mussorgsky's vast opera *Boris Godunov*, thus replacing a staging of some antiquity. Here Covent Garden had the inspired idea of inviting the eminent Russian film director Andrei Tarkovsky to make his operatic debut, and for his designer Tarkov-



Ravel's *L'ENFANT ET LES SORTILÈGES*: first production at Covent Garden. Design by David Hockney. Photo Clive Barda.



Stravinsky's *THE NIGHTINGALE* — design by David Hockney



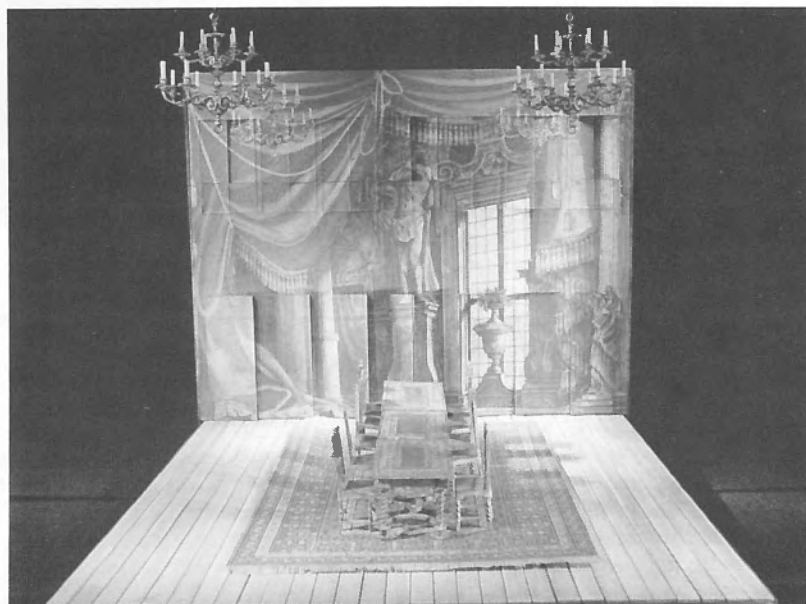
sky chose his compatriot Nicolas Dvigoub-sky, also working in the opera house for the first time. By working to a single omni-purpose set they achieved most powerful theatre as well as good housekeeping, and by so doing enabled the opera to be played with instant, curtain-up scene changes and just a single central interval, so that enormous dramatic tension and momentum were generated. The set itself was a huge, rather crumbling gateway or portico with a steeply raked ramp descending centre stage from it. By careful use of props and draperies this served equally well for both large public exteriors and for intimate interiors: the wonderful 'clock' scene for Boris and his children was magnificently realised with the pendulum swinging in the archway. Tarkovsky's production achieved an almost cinematic, Eisenstein-like effect, abounding in close-ups and 'freezes'. Here he was immeasurably helped by Robert Bryan's wonderfully precise 'white' lighting which remorselessly enclosed us in the action. This production cannot have cost a great deal in terms of the Royal Opera's usual expenditure on a new staging, and yet it realised a dramatic effect that I have seldom experienced in the opera house, and never previously in this opera.

The first of ENO's new productions demonstrated even tighter budgeting. Producer Graham Vick and designer Russell Craig, whose work for Opera North has already been much praised, undertook to stage both Richard Strauss's *Ariadne on Naxos* and Britten's *Rape of Lucretia* to the same basic scheme for no more than £30,000 in all. By the time this article appears we will have seen Lucretia as well, and if it maintains the standard of *Ariadne* my joy will be doubled. In *Ariadne* they succeeded in both placing an intimate opera on a large stage and in achieving great elegance and style at minimal cost. Their solution was to use a small, raised thrust stage placed in the centre of the Coliseum's normal playing area. This showed courage, for it meant that entrances and exits could only be made from the back — there were no wings. There were glorious trompe l'oeil backcloths, wonderfully precise use of stage furniture and props, gorgeous costumes, especially in the Prologue, properly set in the period of Molière, and thrillingly inventive and extraordinarily subtle lighting by Nick Chelton. This was stage design at its most impressively imaginative.

Sadly ENO's other new 'economy package' production was not as successful. For Wagner's early opera *Rienzi* producer Nicholas Hytner and designer David Fielding made the mistake of trying to achieve grandeur on the cheap. Instead of going for a simple, stylised staging they moved the story of 14th century Rome to Mussolini's period and presented a series of heavy sets in marble and silver, cluttered with military impedimenta and crudely search-lit by Pat Collins. The effect was tawdry and it looked cheap: their concept was not necessarily wrong, but the execution, as was perhaps inevitable on a limited budget, was decidedly inept.



Russell Craig's costume designs for *ARIADNE ON NAXOS* by Richard Strauss



Model of Russell Craig's set for English National Opera production of Richard Strauss's *ARIADNE ON NAXOS*
Photo Donald Southern

ENO's new Ring Cycle at the Coliseum replaces the fine abstract 'lunar landscape' staging designed by Ralph Koltai for Glen Byam Shaw and John Blatchley's production which gave such pleasure for over a decade. The new team has David Pountney as producer and Maria Bjornson as designer, with lighting by Nick Chelton. While visually highly impressive, theirs is a highly idiosyncratic view, as is seen in the opening production of *The Valkyrie* at any rate. Here the first act is set not in Hunding's hut, but in a huge baronial hall with an ash tree growing up the central staircase, the second act leaves Wotan's rocky crag for a vast, circular library, surrounded by a ring with heroes' names engraved upon it, and enclosing a central pit through which Wotan can view the world through a telescope, and which in due course rises and revolves for the annuncia-

tion of Siegmund's death. The final 'Valkyrie' act is more traditional with a central rock surrounded by two rings which can both revolve, in different directions and at different levels if need be, and backed by tall black columns with hundreds more heroic names upon them. Costumes tend towards the turn of the century, with Sieglinde in a long Forsyte Saga frock, Wotan in quilted dressing-gown, and Hunding in full-length fur coat resembling a Russian Grand Duke.

The execution is admirable: technically brilliant, dramatically exciting, and often extremely beautiful, with Nick Chelton's magnificent lighting once again worthy of the highest praise. But I was left rather wondering whether such an approach is really what is required from our principal English language opera company. After all many of those who see this Ring will very



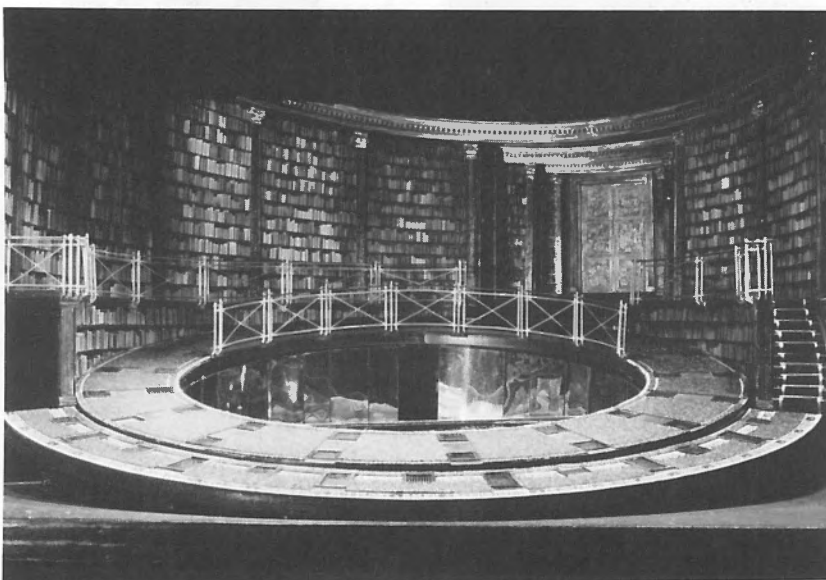
Costume design by Carl Friedrich Oberle for Fasolt. Welsh National Opera's production THE RHINEGOLD



Models of Maria Bjornson's set design for Acts 1, 2 and 3 of Richard Wagner's THE VALKYRIE, English National Opera
Photo Clive Barda



Set design THE RHINEGOLD by Carl Friedrich Oberle.
Photo Catherine Ashmore



probably be doing so for the first time. Do they really benefit from receiving so very personal, untraditional, at times mystifying a view of Wagner's great epic?

At least this ENO production worked well on stage and achieved dramatic impact. Welsh National Opera's new Rhinegold, produced by the Swedish Goran Jarvefelt and designed by German Carl Friedrich Oberle, both plumped for a sub-Chereau industrial revolution approach, and, no doubt hindered by a low budget, presented a staging of the utmost tattiness. When the curtain rises on three ladies in grubby cocktail dresses in a derelict railway station cavorting amongst some expanded-metal boxes with a battered golden lump in the middle of them, the only thing really to do is to close one's eyes and listen to the music. But that's hardly the object of stage design!



Museo Teatrale alla Scala

FRANCIS REID

What more appropriate setting for an opera museum than Milan's **La Scala**? The collection's rooms are normally approached by independent stairs, but they are also linked to the theatre's foyers at the level of the third tier. So museum visitors – subject to rehearsals – are allowed access to a group of six boxes in this great cream, gold and red theatre which has become synonymous with both *opera* and *opera house*. This is an important feature of a visit to the Scala Museum since so many of the exhibits are linked to the theatre's own history. To move between auditorium and museum helps one's sense of context, both rationally and emotionally.

However this is to be regarded primarily as a museum of music theatre, substantially operatic but with a healthy look at dance and *commedia dell'arte* – and enough of a sidelong glance at some of the great dramatic actors to relate the musical stage to the playhouse.

The Scala Museum opened in 1913. The rooms have a relaxed antiquarian air with their marbled doorways and faded wall drapes. Only the deceased appear to qualify for possible recognition as historically important. And there seems to be no haste to admit anyone whose reputation has not yet withstood the scrutiny of almost a century's perspective, unless their greatness has been totally unquestioned in their lifetime. From the post-war era there is not much more than a portrait of Callas, ephemera of Toscanini and de Sabata, and the costumes worn by Guiletta Simionata as Cenerentola and Mariano Stabile as Falstaff.



A 19th century print of La Scala. The Museum occupies the floors above the colonnade to the left of the main theatre building



A corner of the Verdi room.

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But from earlier periods there are riches indeed. The great singers are naturally to the fore, in portraits and busts, as are the composers. The composers and conductors, perhaps rather surprisingly, seem to generate more ephemera than the singers. A Verdi room includes the 16/17th century spinet upon which the eight year old learned to play; and there is a grand piano from his maturity. Showcases contain the kind of items that recreate the man: notes and bills including that for the funeral of his first wife, passport, gifts and a photograph from the first night of 'Falstaff', the royal telegram for his eightieth birthday and the autograph score of the Requiem. For Rossini, there is the commissioning contract for 'The Barber of Seville', his eyeglass and the tuning key for his piano.

The collection is particularly strong in ceramics. A range of figures, including a lot of Capodimonte, represents every kind of entertainer – actors, dancers and musicians – in every style from the elegant through the merely postural to the grotesque. The characteristics of the Commedia dell'Arte people lend themselves particularly well to interpretation in porcelain. In addition to many figures of the various characters, there are masks, an eighteenth century Arlecchino costume and a beautiful inlaid slapstick. Pottery of an earlier age is to be found in the archaeological section with its terracotta vessels decorated with performing figures. The material on the theatres of Greek and Roman antiquity also has masks, bronze figures, tickets, medallions and musical instruments such as the *tintinabulo strumento*.

Later, but still historic, instruments include psalter, hurdy gurdy, ivory recorders

and a pocket sized violin as used by dancing masters. In the dancing room there are portraits and busts of such ballerinas as Taglioni, Grisi and Fanny Elssler. Ephemera includes Elssler's dancing shoe – a soft one, and lithographs show Elssler standing on her toes whereas Taglioni is on blocked shoes. Two eighteenth century venetian paintings document dancing lessons, but history seems to stop at a sculpture of Nijinsky as Debussy's faun, and a set of fifteen ply cut-outs 'Con I Personaggi Dei Ballet Russes Forse Colorate da P Picasso'.

The small drama section does not even reach the beginning of the present century – Duse, Rachel, Bernhard, Schiller, Goldoni, Kean and Garrick. A room of *Teatro Extraeuropeo* looks east with masks, figures and a group of jointed two dimensional puppets.

A model of the La Scala stage on a scale of 6:100 is set-up with designs for 'La Clemenza di Tito' on 26th December 1819. The model shows the technology of the stage prior to modernisation: that is, it is complete with understage carriages for changing painted flats. The 'Clemenza' set however is hanging cloths. The displays are rather thin on scenography, although there is a lot in the archives.

Architectural print lovers (like me) have several joys including paintings of the Ring Theatre in Vienna, both exterior and interior, during the most influential theatre fire of all time: the 1881 conflagration that caused changes in building regulations and many rebuilds throughout Europe. And a visit to the museum would be worthwhile alone for a pair of eighteenth century paint-

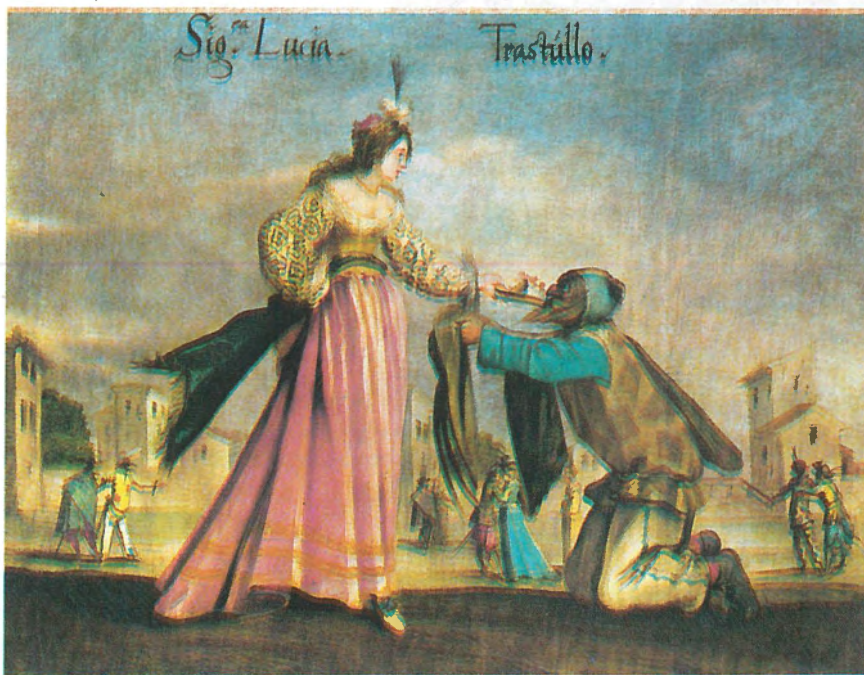
ings (school of Longhi) of an intermezzo and an opera seria. Both the actors on the stage and the audience, whether sitting in boxes or standing in pit, convey the respective styles with an accuracy that made me feel confident that I was receiving an accurate 'feel' of the period's performance conditions.

The library is naturally large and comprehensive on a wide international scale that is obvious from casting a quick eye over the rows of book spines. And archives include some 12,000 prints plus 10,000 photographs and letters.

All in all, an excellent browse for any opera lover – especially of the nineteenth century.



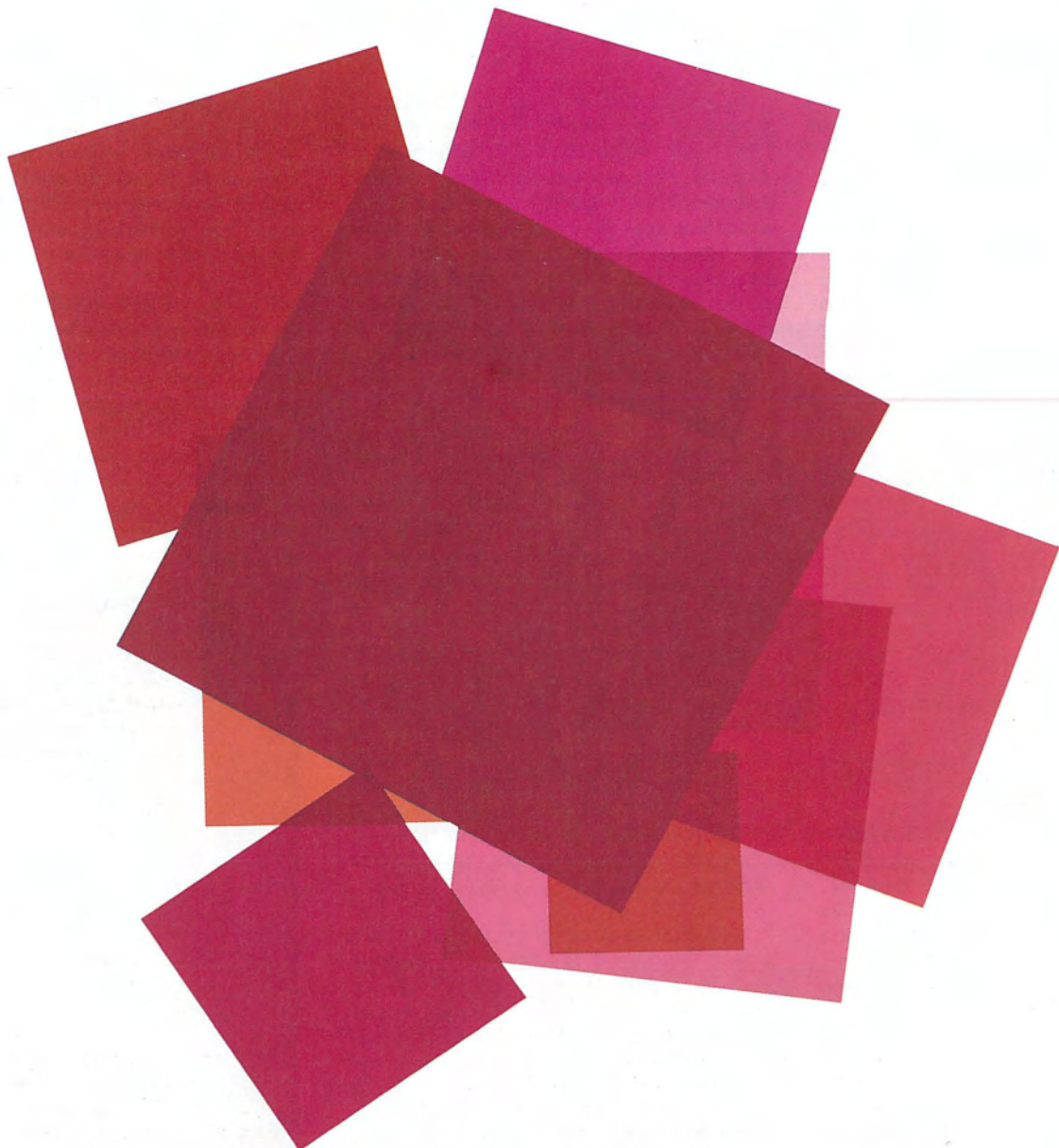
Eleonora Duse (painting by Kaulbach)



Commedia dell'Arte (17th century painting)



Maria Callas (painting by Ulisse Sartini)



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SOUND (?) DESIGN

CUE wishes to thank the ABTT News and Editor Ken Smalley for permission to reprint this transcript of a recent members' meeting and debate on Theatre Sound

In opening the October members' meeting, **Bruce Elliott**, Chairman of the Sound Committee, presumed that members had come to hear a slanging match between the consultants and the users of the equipment they specify. He hoped they would not be disappointed and introduced the protagonists: Bill Graham, Technical Manager of the Harrogate Conference Centre, John Leonard of the RSC Sound Department at the Barbican, Peter Mapp, acoustic consultant, and Martin Carr, theatre consultant, who was asked to open the contest.

Martin Carr explained that the idea of a meeting on sound had been suggested following a "Sightline" article he had written which had been critical of the demands and performance of the theatre sound department. The article was said by some to be reminiscent of Fred Bentham's reaction to the demands of the lighting designers of twenty years ago. Martin had taken the remark as a compliment and regretted that FPB was not present. He suggested we had come full circle in the field of lighting and were back to plano-convex lenses and far fewer lanterns than twenty years ago. It was acknowledged that this may also happen in the field of sound but at the moment we are at a very different point of the circle.

The consultant's dilemma is how far to go: either you provide an installation which you think will just cope with the theatre's needs and face the criticism that times ten has to be spent at a later date, or you provide what you believe to be the latest trend in equipment only to have it thrown out and replaced at equal expense because the sound operator or whoever doesn't happen to like your choice. In contrast with the lighting department, where people tend to get on with it, the sound department doesn't seem to have that sort of discipline. People who work in sound tend to have strong personal ideas about the sort of equipment they want to play with and the sort of sound they want to produce.

Martin confessed that "to my relatively untutored ears most of the noises produced are absolutely hideous and no matter how much equipment is installed I can't honestly say that I have ever heard anything where I have said that is a marvellous sound". When the additional equipment is installed at the St Davids Hall, Cardiff, the management will have control over the noise that the artistes and groups produce and it will not be left in the hands of the touring operators. He acknowledged this to be a contentious issue but pointed out that in no other aspects of theatre is the audience exposed to the whims, tastes, abilities and incompetence of one man. Even a conductor cannot exercise quite that amount of control over what goes on on stage. He cited the example of a first night

audience sitting with their hands over their ears because they couldn't stand the level of sound being produced.

Bill Graham pinpointed one of the problems which makes the planning of equipment difficult as the time between the idea of the theatre being conceived and the final commissioning of the building and the installation of the equipment. He had first hand experience of this particular problem when working on the sound installation for the Barbican Theatre. In spite of delays in the building schedule, equipment was delivered according to the original schedule and had to be modified to conform with current practice before being installed.

John Leonard of the RSC, who now operates this equipment, explained how some of the Barbican's architectural features create problems for the sound department. Although the theatres at Stratford and the Barbican have orchestra pits to accommodate their resident 13 piece orchestras, neither of the pits are in current use. The pit at Stratford is not in use as it is covered by a forestage for eleven months of the year and, as the pit at the Barbican requires the removal of 300 seats, this is never used. This means that the orchestras must either be accommodated on stage with, at the Barbican, problems of leakage on the vocal mics and feedback, or in a band room. Major problems have been encountered in the use of this room due to the unsatisfactory acoustics of the room and the underprovision of lines or the means of running them between the room and the stage/auditorium.

The sound control room at the Barbican has similar problems with lack of lines and holes through which to feed them, which led to a discussion on what provision the consultant should make for the control of sound in a new theatre. The control room with a fixed window was likened to the lighting control position with no view of the stage, but with an open control room the audience could be disturbed by the switching of tape recorders. There was a rumble of disagreement when a member suggested that remote switching could be a solution. The sound proof window which could be silently opened during performance had been achieved at the Barbican and was said to be reasonably successful.

It was agreed that there was no ideal position for a sound control room but the rear of the stalls was probably the most suitable place, although a deep circle overhang could present problems. The sound for most West End musicals is controlled from a position in the auditorium but this practice is by no means universal even when provision is made for the siting of the control. It was suggested that there were some ulterior motives for a

sound operator wanting to be sound separated from the auditorium and such unprofessional activities as drinking, chatting and watching TV were mentioned and condemned.

The multiple use of buildings as an economic fact of life brought the discussion to the subject of acoustics. **Bruce Elliott** explained how it was now possible to provide an auditorium with assisted resonance. You take a hall that is acoustically dead and add "acoustic wallpaper" electronically to vary the reverberation time. **Peter Mapp**, a specialist in this field, cited the concert hall at the Barbican as an example of an architect/planner's dilemma. As a concert hall, it was designed to have a reverberation time of two seconds plus but was also to be used as a venue for a 2000 seat conference, which ideally needs a reverberation time of about one second. The two uses "have totally different acoustic requirements and it will be necessary to compromise either one grossly or both to a lesser extent". Assisted resonance cannot work wonders; it is a microphone, an amplifier and a loudspeaker in feedback or just below feedback. It is deliberately feeding back at certain frequencies giving some gain.

The system will provide about 100% to 150% increase in the RT but acousticians have been learning lately that it is not just the reverberation time which is important. It is more complicated than was first thought. Things like power lift and the time that it is happening also seem to be important. A typical system comprises 90 channels amplifying a narrow band of frequencies with a resultant lengthening of the RT, at a cost of approximately £100,000. The planner's dilemma is to decide how far he can compromise the theatre use by making a 'lively' auditorium as a base form which enables the RT to be increased to a reasonable concert hall level. Someone has to decide on the principal use of the building, that, for example, it is going to be used mainly for drama with just the occasional concert. Of course when it is opened they may decide to go the other way, as the latest trend in making money seems to be to do musicals, which require quite different conditions from speech.

Theatre architect **Roderick Ham** pointed out that no subjective tests had been done on assisted resonance systems and such tests should be undertaken with a whole audience being asked to respond to the switching on and off of the system while listening to various sounds. Although acoustic tests had been carried out at Plymouth before the theatre opened, the system had not been working at that time. He was surprised that a £100,000 system had only been mechanically tested and was sceptical about whether it worked.

An article which had recently appeared in "Cue" describing the sound system at the Bavarian State Opera prompted Martin Carr to ask what such an elaborate system was doing in an opera house. Although the question may have been rhetorical, it was promptly fielded by **Eric Pressley**, in charge of sound at the Royal Opera House, who

described the pressures placed upon an opera house on the international circuit to provide the facilities required by world famous conductors and directors. Directors in all fields have seen rock shows, have listened to albums, have seen what is possible on TV and want to create their fantasies in the auditorium. Eric confessed that he spent a lot of his time at the Opera House trying to persuade conductors that they don't need amplification but he was usually unsuccessful. There is always the odd bar somewhere where they really fancy playing the orchestra loud and that one bar covers the vocal line. In a studio it is a simple matter and they have got the dynamics they want, they can have the excitement of the orchestra and you still hear the vocal line, and of course they want to do that in real life. It may be a fact that the audience doesn't go to the opera to hear a record perfect performance but "you try telling that to a conductor of international standing".

The problem sound people are up against, Eric said, is not whether or not they should be doing it, as that is out of their hands. They are being asked to do it and it is logical that this should be so. In ten years' time, after a period of chaos, it is to be hoped that directors and conductors will have learned what they can do with electronic aids but meanwhile if we resist the challenge we are being "Luddites".

The theatre as a whole, aided by consultants and its inherent parsimony, believes it can use a high level of sophistication for about a quarter of the expenditure of the rest of the audio industry. There are a lot of acoustic problems which can be solved, but not at the level of investment that the theatre has been used to. The theatre should aim to do things properly or not at all. If the broadcasters spend a certain sum on a piece of equipment, why should the theatre assume it can get away with spending a quarter of that amount?

A questioner from the floor suggested that Martin Carr, in playing devil's advocate for the consultant, was in danger of making them seem too cynical and divorced. "You say that operators chuck out the gear after six months, they don't know what they really want and it sounds horrible

anyway. My question to you is that, as a consultant, you have to get your product and operational information from somewhere. Have you ultimately lost faith in the ability of the operator to tell you what he wants long term and, if so, where does your information come from?" Martin Carr pointed out that at the planning stage there was often no operator, just as there was no management structure. "I suppose we get our information from sessions like today's and we usually have a good relationship with technicians at previous theatre jobs."

Another contributor from the floor believed that the reluctance of consultants to specify equipment by name, a practice imposed upon them by some clients, worked against the interests of the user. A spec is written which embroiders and encompasses what they want without quoting names. This leads the supplier to opt for the equipment which just meets the spec. If another specification method could be found, sound systems could be evolved with the manufacturers' co-operation. It was generally agreed that the design (i.e. the putting together of pieces of equipment) is not being done by the client, the user or the consultant but by the contractor, who has his own commercial pressures to meet.

The discussion returned to the role of the consultant, about which there was some misunderstanding. He is not, as some people believed, employed by the architect, although often the architect would recommend a consultant. He is responsible to the client and works to the client's brief for the future use of the building, which, as has been remarked, could be radically changed by the first occupant. Martin Carr gave examples of how on some occasions one could have an ideal situation of specifying the minimum of sound equipment prior to the building being occupied and the main use established. The additional equipment can then be specified, having been agreed by all concerned. An extreme example of being allowed second thoughts was the rebuilding of the Maltings at Snape, which was burned down soon after opening. The use of the building prior to the fire had confirmed the need for an orchestra pit which was therefore included in the new building.

Harrogate Conference Centre has three separate sound systems, which were described by Bill Graham. There is a ceiling mounted delay line synchronised conference system, a 2kW JBL system for small recitals and a 4kW JBL which is used, as he put it, when you want to blow their ears off. This doesn't deter groups from bringing their own equipment; in the case of Shaking Stephen they contrived to put in 15kW by a combination of speaker stacks 15 feet high and flown equipment. He explained that groups like this need this sort of power when playing Hall 7 at Birmingham or the Brighton Arena, where they may be getting near to running out. When they are at Harrogate or Plymouth they don't need all that power but will tend to use it if not deterred and "we have experienced 100 dB".

PRODUCT NEWS

High-efficiency Biplane Lamps for Studio and Theatre Lighting

Philips Lighting have developed a comprehensive range of 'biplane' halogen lamps which significantly improve spotlight efficiency in studio and theatre lighting.

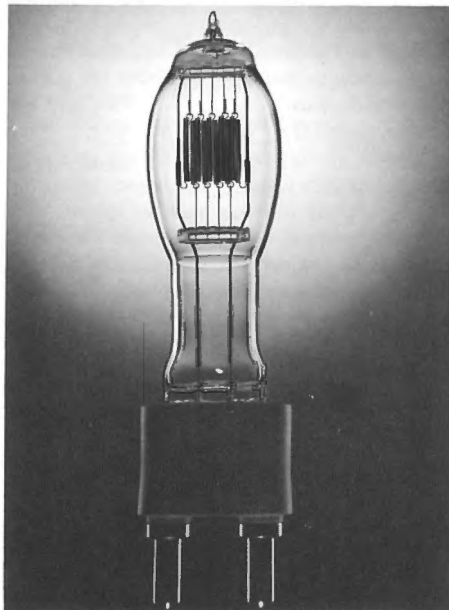
The compact filament construction of special tungsten wire within the lamps is designed to provide a higher light output per square centimetre at the focus of the optical system resulting in a high intensity beam, particularly when used with a narrow angle spotlight luminaire where increases in beam intensity of 50% or more are possible.

The quartz halogen lamps are well known for their long life and for maintaining virtually constant lumen output and colour temperature.

In addition to the existing types, Philips have now announced the availability of the CP/85 5000W equivalent to the conventional monoplane CP/29 and the T/27 500W equivalent to the conventional T/26. So now available is a wide range of CP and T versions which replace existing conventional monoplane types with a wattage range covering 500W up to 5000W.

Also now gaining in popularity, are the new proximity mirror reflector lamps designed to replace standard CP types and eliminate tarnish and dust problems associated with the normal spherical reflectors.

The range of CP and T versions is supplemented also by a wide range of T class double-ended 3200°K linear lamps for studio, film and theatre floodlighting purposes.



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All the biplane lamps are comparable with existing halogen and conventional lamp types in respect of light centre length and overall dimensions, and with the modern robust construction they can be used as replacements for existing lamps at no extra cost.

To obtain a copy of 'Philips Studio & Theatre Lamps Replacement Guide', please contact: John Otton, Philips Lighting Division, City House, 420-430 London Road, Croydon, Surrey.

Extending the Lito range

As new models follow each other regularly Tulla Lighting would appear to be getting thoroughly into their stride with a more extended range of lighting equipment. The latest addition being the Lito 650 watt Focus Profile. Twin lenses and ellipsoidal reflector give zoom angles of 18° to 38° with a hard edge focus. Optical performance tests indicate excellent light gains. Styling and construction in finned aluminium extrusions preserve the family likeness with existing Fresnel and P C models providing at the same time an extremely cool and comfortable lantern to operate.



Simultaneously Tulla Lighting announce the LITO Cue Eighteen Memory Desk. A portable control which will interface with most makes of dimmers and well within the price range of schools and drama clubs.

The three output sockets are standard 'D' type connectors with 6 channels on each. The desk has its own mains supply and a trickle charged battery memory support system which allows information stored to be retained for more than 1000 hours, without plugging the mains back in.

The 18 Channels are moved up or down by a pair of push buttons mounted below a mimic LED indicator, which also fades. The digital readout shows the dimmer level from 0-96 whilst the buttons are pressed. The top button increases, the bottom one decreases, and whilst both buttons are depressed this holds the level which displays on the LED readout panel.

The desk can have up to 99 different cues retained in its memory which are called up on the digital pad below the control buttons. This pad also serves as a timer for the Cue Fade rate, i.e. Cue of 99 at 1 would call in



Cue 99 at a rate of about 2 seconds, and so on.

Having set a scene and given it a cue number, it is always possible to change the level on any channel *during* its operation without resorting to the memory. The Swap button is used by calling up a cue and pressing Swap to keep calling from the new cue back to the previous one, very effective for lightning flashes etc.

The desk also has a Dead Black-Out switch and a Grand Master Fader, neither of which affects the memory bank. The Clear button is used for wiping out a cue but will only operate after 5 seconds to prevent accidental operation.

A bonus on this desk is the programmable chase function which is normally an extra. An attractive price tag (under £1,000) suggests that a request for more details to Anthony Milne at Tulla Lighting, 5 Beckett Road, Andover, Hampshire would be a useful exercise.

Simple small-stage dimmer from Rank Strand

ACT 2 is an economical, easy-to-use portable dimmer which will control up to four 650W spotlights or alternatively two 1300W lighting loads. Designed specially for small scale productions, the compact, lightweight unit incorporates a mains on/off switch with neon indicator, two faders and four socket outlets each with a 3-position switch, mains, dimmer and off.

Sockets may be individually switched for direct connection to the mains, to a fader for dimmed lighting, or off. Each fader controls two lights or loads and provides smooth dimming by simple hand control.

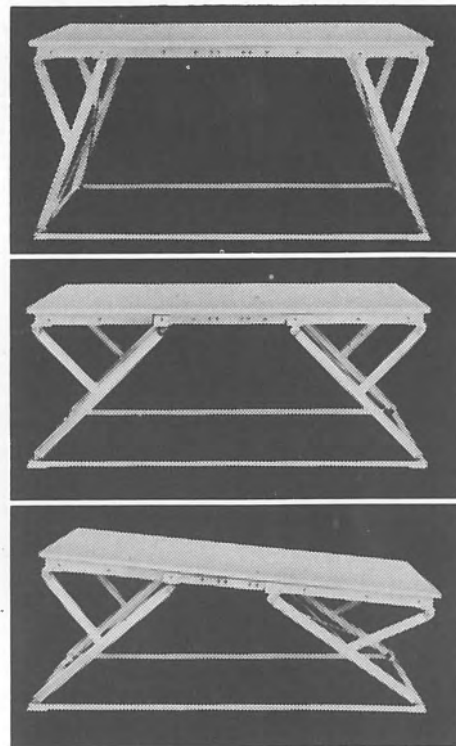
A variety of lighting changes can be achieved with ACT 2 using combinations of switch positions and fader settings. Units



may be conveniently used side by side to form an expanded system, to enable eight, twelve or even sixteen spotlights to be easily controlled by one person.

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