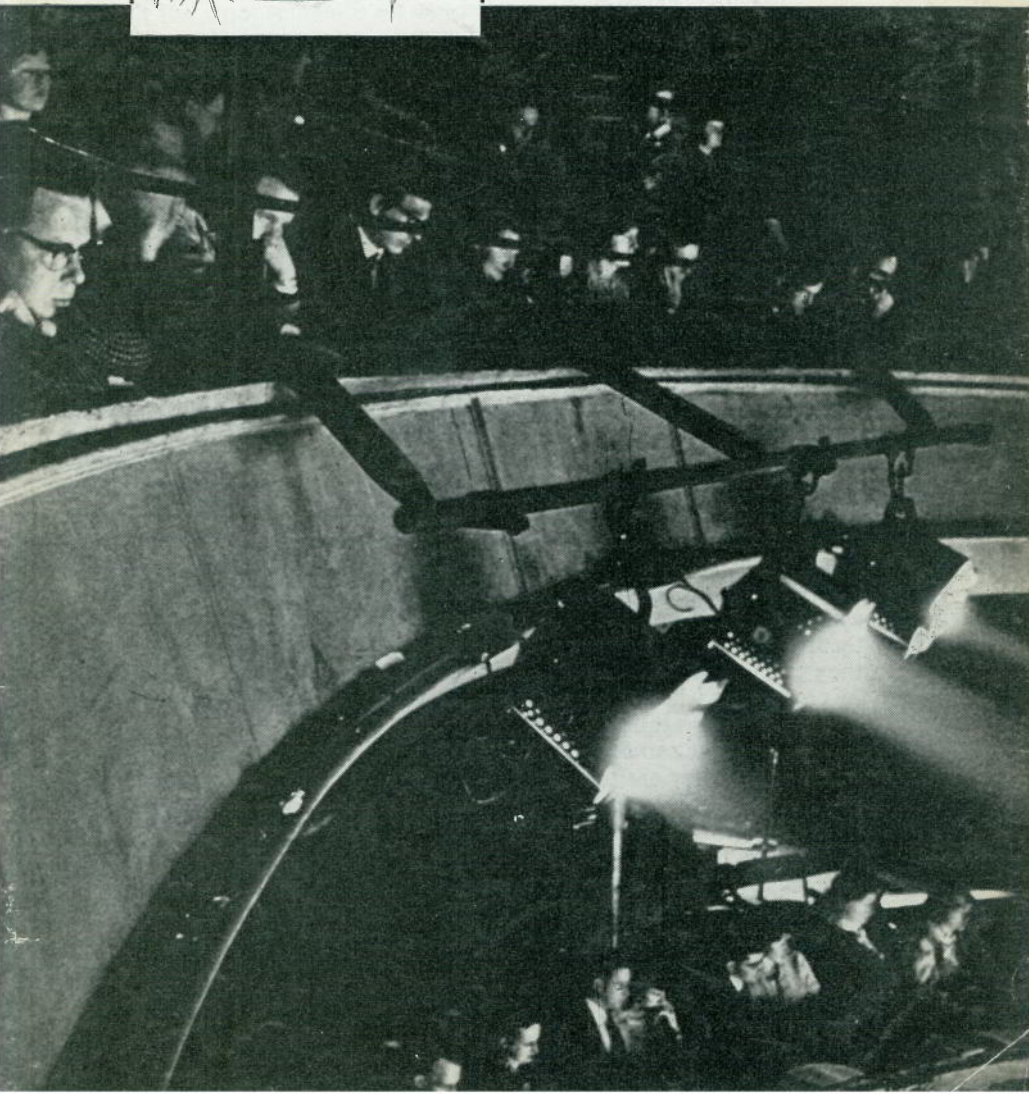


TABS

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Cover picture: *The Abbey in its temporary home at the Queen's Theatre, Dublin.* (Photo courtesy Aer Lingus.)

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How Large ? Can it be Too Big?

It is curious that while it is generally held that the number of seats in a theatre should be strictly limited in the cause of intimate theatre, no limits seem to hold as to the size of stage and backstage. It has been stated with emphasis by Stephen Joseph in the pages of TABS that there is an optimum size for the "stage" of a theatre-in-the-round; may it not be that similar limits exist for the orthodox proscenium theatre? In our opinion the answer is that such limits do exist, but too few schemes recognise them. It by no means always follows that the larger the stage the better. If this applies to professional theatre, it applies with even greater force to the amateur theatre. For these latter a cosy stage on which for all its limitations they can feel at home will, to judge from some projects, be replaced by vast spaces where sheer size provides an obstacle to be surmounted. It will all be too much like hard work.

Almost the same could be said to apply to some of our "reps" when at last they are translated from the realm of poky make-do to their new Civic Theatre. Is the effect on running and staffing costs, together with production budgets, always taken into account? The alternative to a "little theatre" is a big theatre. There may be degrees of bigness, but once the essential divide is crossed these are of lesser importance—the theatre, whatever its size beyond the little, becomes professional in all departments and requires trained men.

What seems to happen is that the building committee, in drawing up its brief, adds a bit on here and a bit on there. The proscenium opening needs to be wider and the stage deeper. A modest increase in width, depth and height would in each case be one-third perhaps. However these modest demands mean an increase in the cube of well over double. An increase of 50 per cent means a cube over three times as large. When the new stage involves a fly-tower where none existed before, the effect will be further stressed.

The above explains how an ideal stage suddenly appears on the plans as so large and costing so much. What started as a modest improvement becomes something needing scenery on an opera house scale! As the scenery goes up in scale, so do the workshops and stores to make, paint and store it. A journey is now involved instead of a few steps to get from one place to another. Modern communications will get over the problem; but will only work, of course, when there is staff in the various locales to communicate with! Anyone who has tried to get something done in an off-duty period in a theatre, will realise the difference between flying from stage floor level, and the normally recommended fly gallery.

What kind of theatre are you trying to build? If it is for fun, to spend happy hours in your spare time putting on shows for your own benefit and your enthusiastic club members, then err on the small side. If the building is to be a professional theatre then keep front and backstage in balance. To state an extreme case, it is no good providing stage facilities and orchestra pit for fifty-seven to take the Sadlers Wells touring opera or a NODA musical, if the number of seats is such that they will not come there. Beware also of making your new theatre "big enough in case", for this may ruin it for its proper purpose. These words, incidentally, come from one who believes that theatres can be really big when circumstances require; but what do your circumstances require?

Workshops Must be Workshops

One of the saddest things to see in some new theatres, is the money wasted on workshops. Not, we hasten to add, on providing the workshops themselves, and as far as storage space is concerned one can never have enough of that. No; the sad sight is the actual equipment. One cannot help comparing the unplanned but practical apparent chaos of a working theatre with the stilted show areas of the brand new. The bench is so beautiful that each time a hammer is put to rest there, it must be lowered as gently as a stylus on a gramophone record. Virgin walls repel the many bits and pieces which might either rest against or hang therefrom. Such shelving as is provided is too glamorous and in the wrong place. Sometimes these temples, planned for the orderly work rites, deceive the planners themselves. Thus a paint frame is housed on the stage itself; or the workshop itself may be envisaged as a useful addition to the acting area of an experimental theatre, making it thereby more adaptable.

This is nonsense—workshops are by their nature dirty, unruly areas. Even if they did not contain heavy obstructions in the shape of benches and machines, how does one clean the place up to form an acting area and where is the stuff with which the place is all too likely to be cluttered, to be put meanwhile?

Workshops are, first and last, places to be made handy to work in. The only people really qualified to do this are the actual people who are going to work therein. Why not cover this equipment for the new theatre with a P.C. sum, and leave the practical men to get on with it when they arrive, as they should, early on the scene. At least one of them will know all about wood construction and another will be an electrician. Staff for these areas are of their nature handy men, and “Dexion” and the rest make improvisation easy.

A Course on Stage Lighting

This course of four lectures held at the Head Office Demonstration this Autumn received over 800 applications for the 200 places. In consequence the course will be repeated this Spring and it is hoped to make it a regular feature of the annual programme. Announcements of these and other lectures are included in the Tabs issues distributed in Britain only.

“Back to Methuselah”

by the Editor

By the time this issue is published, a stalwart of TABS will have retired though not as a contributor to these pages. Percy Corry, at the age of seventy-one, has decided that the Strand Electric will have to do without him in the front line of action. To pay a tribute to Percy Corry is a formality for he is well known as himself on account of his world-wide lecturing and extensive writing on theatre subjects. No back-room boy this!

Corry is not only a prolific writer but also a prolific reader and was, as he says, mainly educated at the Public Library, Stockport, having had to sacrifice two years of a scholarship by leaving school at fourteen to augment his “respectable” working-class family’s income. In the first world war he enlisted in the Army Service Corps as a driver—of horses and mules. In spite of this it became, shortly after, Royal (R.A.S.C.) and more predictably Corry became a Sergeant, the better to employ his pen.

After the war as a manufacturer’s agent for confectionery he became an ex-soldier in chocolate-creams. As a disciple of Bernard Shaw, he has carried his devotion to extreme lengths; on the one hand digesting and keeping down mountains of raw vegetarian bounty, on the other digesting and giving forth the mammoth well-cooked broadsides of the plays. Percy Corry has played most

of the big parts, Tanner, Don Juan, Magnus and Shotover. Nevertheless, he has not confined himself thereto, one of his favourite roles being Maurice Meister in Edgar Wallace’s *The Ringer* and his most recent role only last year, was Shylock for the Stockport Garrick, with which he has a long association. He states that this Shylock was a Corry version which some approved but others did not. It did not conform to the usual interpretation and he says that, judging it objectively, he feels it was psychologically right but theatrically less effective than he had hoped.



He first began producing in 1924 with *Paolo and Francesca* and has directed scores of plays since, including many of those of the master. It is this role of actor and producer that has made Percy’s work for the theatre, particularly the amateur theatre, so valuable. Strand Electric prides itself on knowing intimately the needs of its customers, acting the consultant rather than the salesman. Strand Electric itself, of course, knows nothing; it is the individuals it attracts and has attracted that make it what it is. Of these none was more influential than Corry.

So much for “Superman” (to misunderstand G.B.S.). What kind of man is he? Well, certainly two-masked, for he has found no difficulty in playing managing director of his own firm, “Watts & Corry”, and founder manager of “Strand Electric”, Manchester, at one and the same time. During the second world war he was able to goad and inspire the Torpedo Attack Teacher and other specialised trainers to success by doubling the part of director of the principal contractor and manager of a sub-contractor. With all respect to the others mixed up in this strange wartime adventure it owed everything to Corry’s energy.

It should not be assumed that he thrives only in the limelight; for throughout the long years of anonymity imposed by the original editor of TABS, his pen was busy on unsigned contributions or heavily disguised ones as “Busker”. Quite why staff contributions had to be anonymous is not at all clear, especially as Corry was one of the two (the other was Applebee) to grace the pre-war pages complete with potted biography and photograph.

By the way, Percy Corry is no longer a vegetarian; too true to be good, he was nearly as flexible in this respect as the stage installations he planned. Some will regard this as a sad tale of decline and fall; others will see it as the wisdom that goes with age.



PITLOCHRY FESTIVAL THEATRE

by Percy Corry

This is a theatre that has operated successfully for fifteen summer seasons and has established an international reputation. Each season it presents a varied programme of six plays in repertoire, from April to October. In the first season in 1951, Festival of Britain year, the total attendances were something over 35,000: in 1964 the total was nearly 64,000 and in 1965 it was over 70,000. The faith of its founder, John Stewart, shared by his collaborator and successor Kenneth Ireland, has been more than justified. The theatre is now one of the major attractions of the Central Highlands.

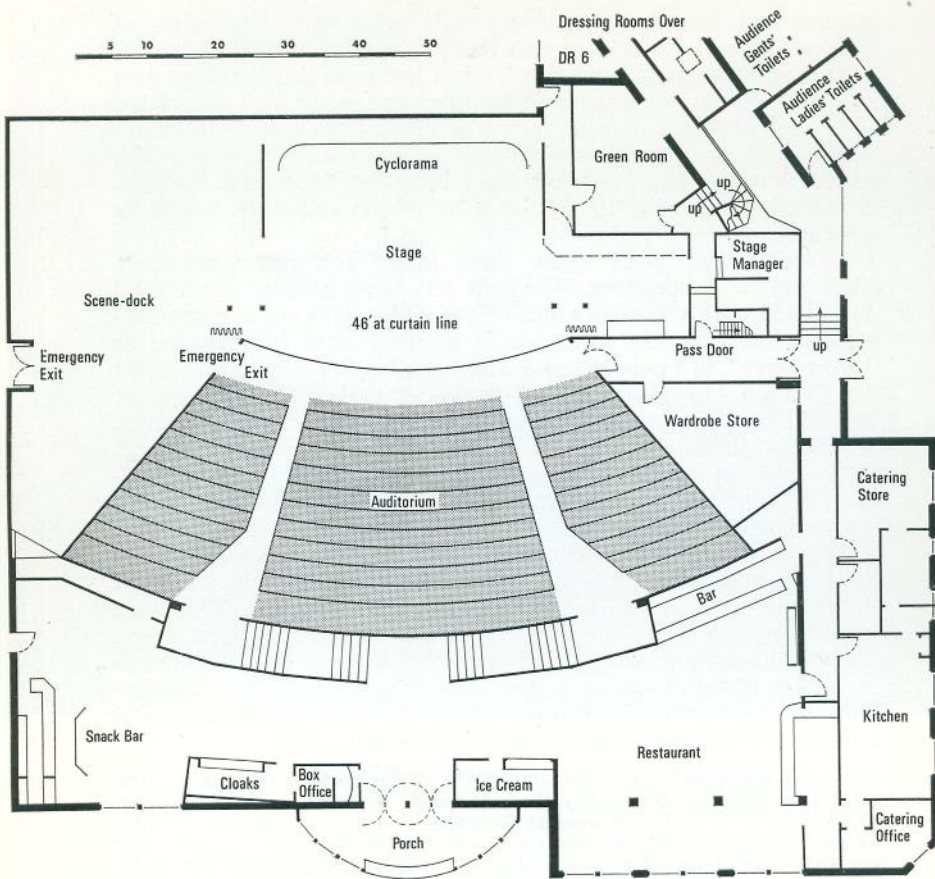
Because it was impossible to obtain a building permit in 1951 the theatre was created in a tent—before Stratford, Ontario, did the same thing. The shape of the theatre was partially dictated by the tent, and the excellent audience/actor relationship was acquired fortuitously, not theoretically. Because the stage had to be at one side of the large marquee, the audience was extended widely, the 502 seats occupying only 12 rows. As a result the maximum distance to the stage is about 35 ft. A proscenium stage was required and the

opening had, therefore, to be very wide—over 45 ft. The height of the opening was lower than was really necessary and this has now been remedied. The “letter-box” effect has gone and the stage now has most of the advantages of an open-end stage with the added advantage of wing space at each side beyond the line of the auditorium. The sight-lines at the extreme ends of the rows are less than perfect but are less imperfect than in many West End theatres. A reduction of about 10° in the splay of the side walls would be sufficient.

During the fifteen years there have been many necessary alterations and additions. The tent has been fortified by a rigid outer shell and although some of the additions have a more permanent character, the structure as a whole must be regarded as “temporary” in a pre-fab sense. Unavoidably, it must have a limited life. This is not to say that the theatre has a “makeshift” appearance. The whole of the front of house has its own special attractiveness, aided by a kilted director and manager and a brave show of paintings by Scottish artists. When one explores the back-stage regions, however, the impression of impermanence is emphatic. From the auditorium there is no clue to the daunting difficulties that exist. The quality of the settings is a tribute to the skill and ingenuity of the designers and stage staff. The settings are considerably varied in shape and style to suit the particular plays presented. This wide stage is proving to be thoroughly “adaptable” when director and designer have imagination. Although the tent still forms a sound-absorbent lining of ceiling and walls it is possible to hear comfortably in every part of the house. There are, of course, acoustical difficulties when the theatre is used for musical concerts.

(Opposite) Pitlochry Festival Theatre 1965. Performance of Marivaux's The Double Inconstancy. Directed by Vlado Habunek. Designed by Thierry Bosquet. (Below) Scene from The Revengers Tragedy, showing the stage at Pitlochry adapted as “open stage”; the side walls and the downstage area extended into the auditorium. Directed by Brian Shelton. Designed by B. S. and Dee Kelly.

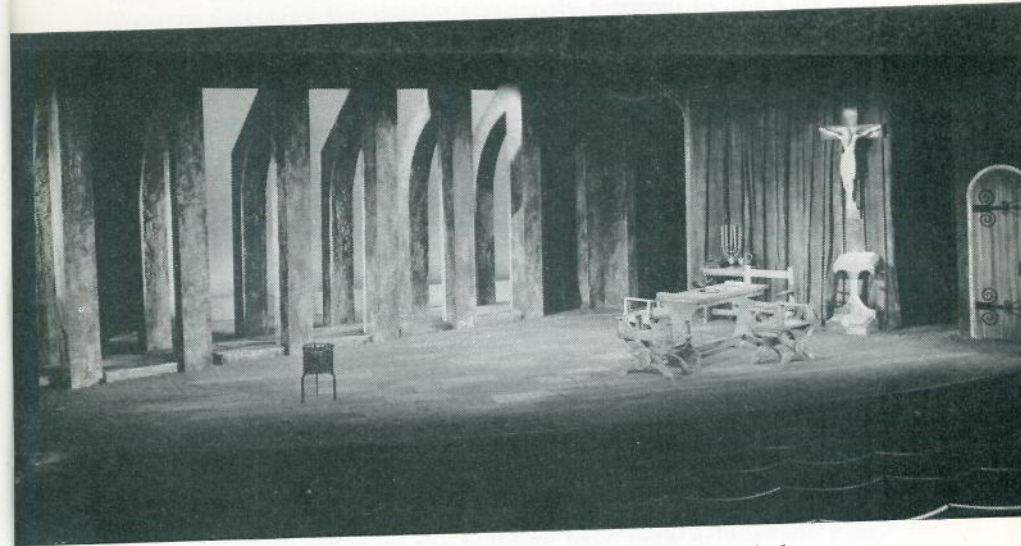




Plan of Pitlochry Festival Theatre. Stage floor is 1 ft. high. Dressing room block extends over green room and the property store is over the wardrobe.

Sooner or later this successful theatre must have the permanent building and the greater facilities it needs and deserves. Obviously there is a need for a greater seating capacity. On an evening in late September Bentham and I were glad to know that our seats were reserved when we saw people being turned away in scores. On such occasions, which are not at all isolated, the House Full notice can give but wry satisfaction. Probably a capacity of something between 600 and 700 would be right. When this new theatre is planned (as it surely must be) one hopes that the present form will be preserved. In that case, it is probable that the stage would be somewhat wider than at present to reduce to a minimum the number of extra rows required to give the greater capacity, and thus to preserve the very satisfying form of auditorium.

Frederick Bentham has often trailed his coat provocatively in asserting that the proscenium stage is the most adaptable of all stages. He could, with justice, claim that Pitlochry provides him with eloquent support.



Stage setting for Act I of *Murder in the Cathedral* at Pitlochry. Directed by John Lawrence. Designed by Daphne Dare.

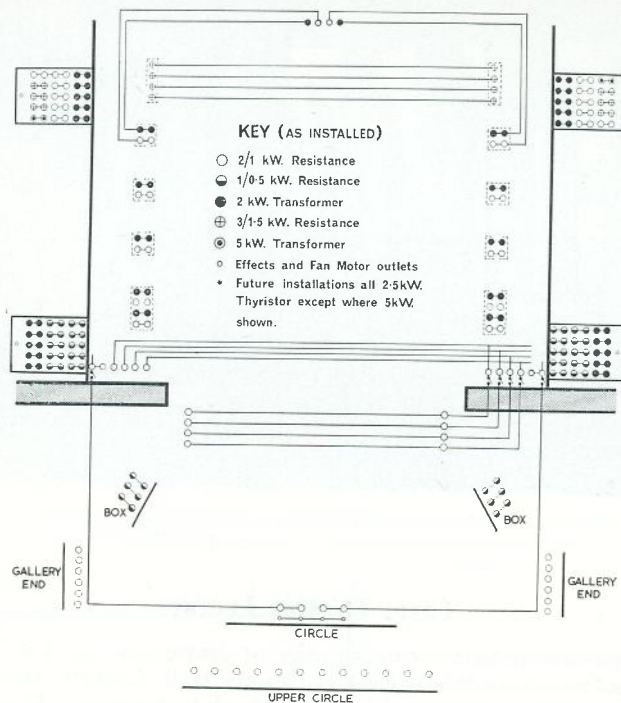
Civic Theatre Lecture

The recorded lecture for twin projector devised by the A.B.T.T. for the conference on this subject at County Hall, London, last Spring has now been re-arranged for a single slide projector. The lecture slides are from the unique Strand Electric collection and it is in consequence distributed by them as Recorded Lecture No. 4. The lecture is only applicable to the British scene and arrangements can be made by the A.B.T.T. to provide a speaker in some instances to conduct the discussion afterwards.

Standard Electrical Layout

During the discussion which followed our Autumn stage lighting course it was suggested that an occasional electrical installation layout would be of interest. The layout shown here is based on the ABTT recommendation as a minimum for a proscenium stage with minimal apron as is common in London's West End. The first such installation was carried out for the Apollo theatre and the control was a Strand CD with a combination of servo-operated resistance

and transformer dimmers. Nowadays as all dimmers would be Thyristor type the distinction between resistance and transformer no longer applies. All dimmers from now on are variable load and only the top limit 5 kW, 2.5 kW or 1 kW needs to be specified.



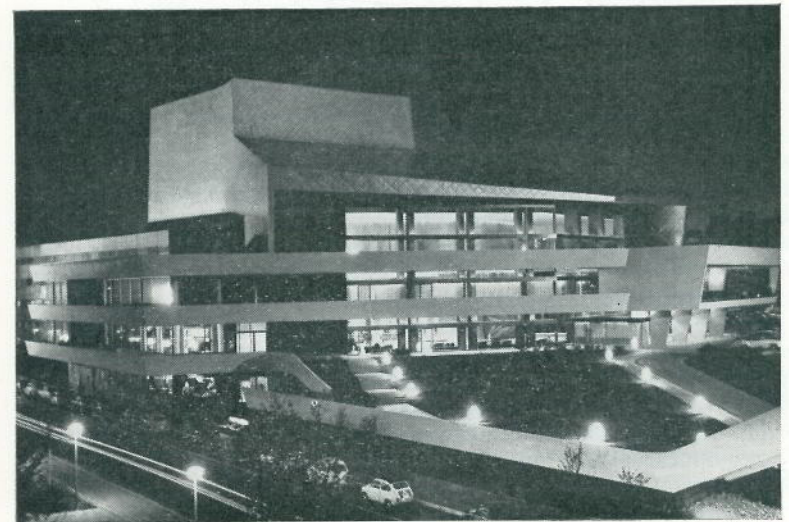
The layout suggests 24 circuits feeding 48 sockets paired adjacent mainly situated on the Upper Circle. In a modern single tier house this would be a ceiling slot position, FOH side wall positions are slots in a modern theatre or stage boxes in an old. There are six dimmers for this each feeding paired outlets. These are split equally either side of the pros. as are six apron clips. A certain amount of sharing between FOH and Stage goes on and this is indicated diagrammatically with switches. On-stage the dip sockets are either mounted under separate traps as shown or a continuous slot with separate short lids may be preferred. In which case the sockets would be grouped somewhat in the same manner as the plan shows for the flies. The large multi-way boxes up there allow great flexibility of layout when compared to the older habit of small fly boxes localised strictly to equipment.

NEW THEATRE AT BONN

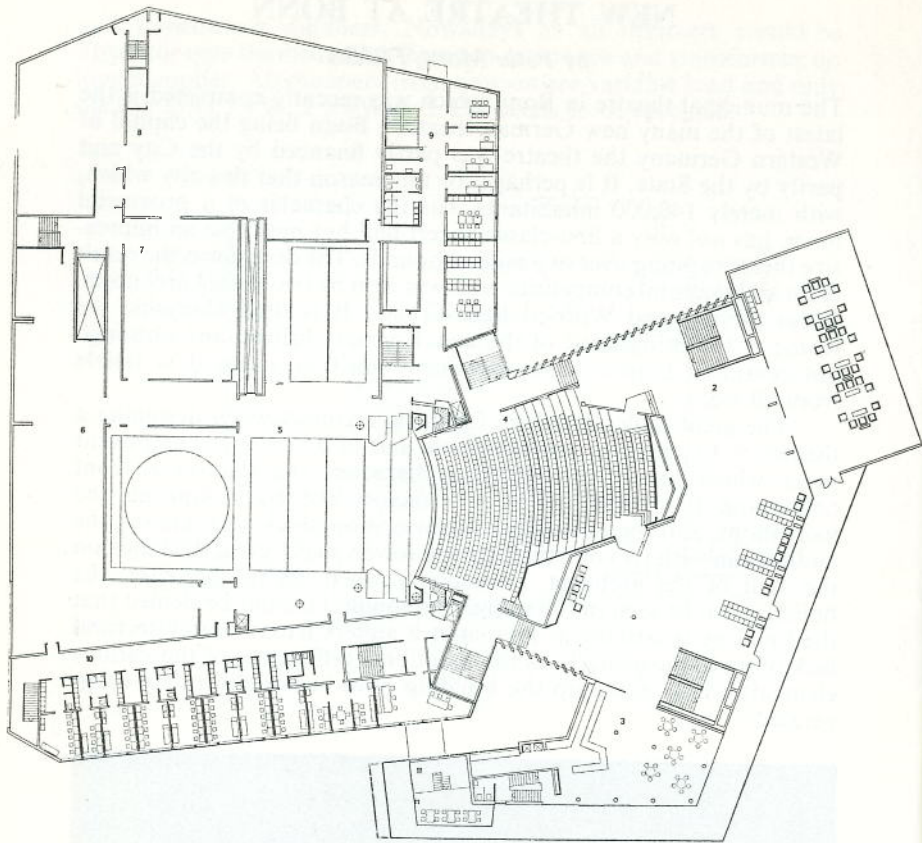
by Peter Moro, FRIBA

The municipal theatre in Bonn which was recently completed is the latest of the many new German theatres. Bonn being the capital of Western Germany the theatre was partly financed by the City and partly by the State. It is perhaps for this reason that this city which, with merely 140,000 inhabitants, has the character of a provincial town, has not only a first-class concert hall but now also an impressive theatre costing over two million pounds. The design was the result of an architectural competition and was won by two young architects, Klaus Gessler and Wilfried Beck-Erlang. It is sited alongside the Rhine at the bridgehead of the new Kennedy bridge, and although not central it is in a most prominent position where it is visible from all sides.

The great difficulty which faces the architect when designing a theatre is to create a unified whole out of a series of component parts which are of a conflicting character: the glamorous front containing the public areas, the factory-like back housing the workshops, and the office-like administration block surrounding the auditorium with its voluminous stage tower, make great demands on the skill of the architect, particularly when, as in this case, the building can be seen in the round. Although it cannot be denied that the building is striking at first sight it suffers from an architectural lack of unity particularly as the functional differences of the various elements which make up the building have been deliberately exaggerated.

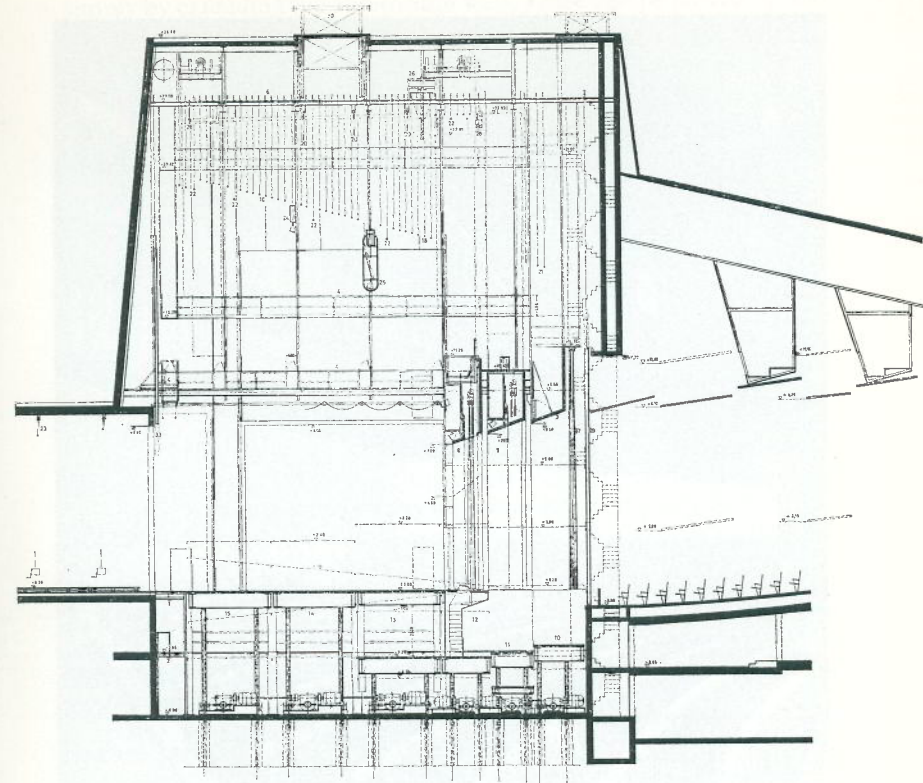


Neues Stadttheater, Bonn.



Plan of Stadttheater, Bonn, showing stalls floor and stage floor level.

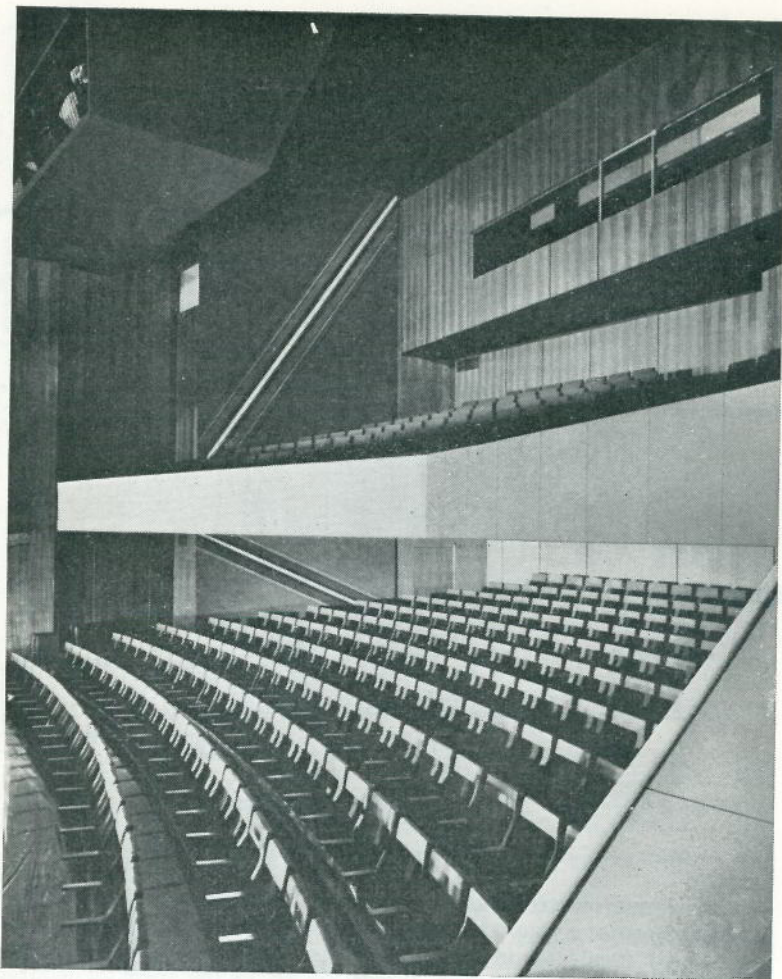
The stage tower itself has obviously caused the architects embarrassment and an attempt has been made to disguise its outline by encasing it in a shape which suggests that the auditorium and stage tower are one element. A veneer of diamond quilted aluminium is wrapped over stage tower and auditorium alike in order to produce an apparent unity between two elements which are in fact entirely separate units, resulting in a phoney dynamic shape which is irrelevant to the internal form. It is the general lack of restraint in design motifs and finishes and the desire to deviate from the right-angle in plan and elevation which gives the building a rather jazzy appearance. It cannot be denied, however, that at night when the exterior disappears in merciful darkness the brightly lit and extensively glazed foyers give the building a character which is festive and highly theatrical in itself.



Section through stage at Bonn.

The internal treatment is more successful. Foyer, cloakrooms and bars are of a size which the German public has come to expect in its new theatres and which in this country, if it existed, would be described as extravagant. Works of art in the form of a large relief in steel, an enamelled screen and a wall entirely covered with what looks like the block of a giant woodcut, partly blackened, have been incorporated in the interior design.

The auditorium is perhaps the most successful part of the building. It seats nearly 900, but feels small and intimate. It is deliberately asymmetrical in design, using a balcony which flows into the stalls on one side only. Rather self-consciously, the balance is restored by a vertical feature wall on the other side which is brightly coloured and carries a striped design. Both colour and design seem out of keeping with the general character and colour scheme of the auditorium. The auditorium is generally kept dark by the use of panels veneered in Zebrano and seats which are covered in a bluish green



View of auditorium at the Stadttheater, Bonn.

fabric. An interesting, if perhaps elaborate, device is the lighting. While the curtain is down the spaces between the undersides of the lighting bridges which run across the ceiling are made flush by a grid of light fittings which, when the curtain rises, are raised out of sight and out of the line of throw of the front of house lighting.

There is no proscenium arch and the auditorium walls and ceiling form the opening to the stage. An innovation by the theatre consultant, Adolf Zotzmann, is the introduction of two additional proscenium towers, arranged behind each other up-stage and which can (without affecting sight lines) reduce the proscenium opening

simply by extending the auditorium wall. These can be moved up and down stage and also flown out of sight altogether, presumably pushing the setting line up-stage. The stage has a curved front which helps to connect the acting area with the auditorium, and the curtain and safety curtain are arranged to come down at the edge of the curved forestage. The forestage, which is made up of sectional lifts, can be converted into a large orchestra pit. Because of the position of the safety curtain it is unfortunately not possible to use the forestage area as an extension of the stalls. The stage is not of the usual cruciform arrangement, but has only one side stage and a back stage. As is common practice in Germany, the acting area incorporates a system of lifts. In addition to this there is a sliding stage which contains a revolve of just over thirty feet in diameter, normally parked in the back stage, which can travel downstage into the acting area. The stage and its workshops, which are well above street level, are connected with the ground floor by a vast lift.

The equipment and dimensions of both stage and workshop areas are of a standard which only exists in Germany. This part of theatre design has in fact been developed and perfected to such a point that there do not seem to be any problems left. It must be an enviable situation when the architect is given detailed plans for stage and workshops which he has merely to incorporate in his building. Because of the enormous experience and expertise in stage design available in Germany, mistakes seem to be unknown and everything seems to be working perfectly and to everyone's satisfaction. This eliminates from the architect's task, which in theatre design is difficult enough, a vast area of argument, and indecision.

In Germany the architect is in the enviable position of being given a precise and well-worked out brief by people who know exactly what they want as well as a large sum of money to realise its solution. What makes one even more envious is the pride which everybody takes in their new theatre and the intelligent respect with which it is managed and administered. It is inconceivable that a theatre, such as the one in Bonn, would be cluttered up without reference to the architect with the kind of odds and ends which often seem to appear in England as soon as the architect's back is turned. Judging from the experience in Germany it seems to be perfectly possible to run a theatre efficiently and fill it to capacity without plastering it with posters, photographs and home-made notices.

Strand Electric in Germany

The firm of Karl Hessenbruch, (63) Giesen/Lahn, Siemensstr. 21. will in future manufacture stage lighting as Strand Electric Bühnenbeleuchtung GmbH under the direction of Herr. Gerd Ohlmer of Diedr. Buschmann, Braunschweig, Strand agents in Germany.

TOWARDS AN IDEAL LIGHTING CONTROL

by Frederick Bentham

It is now over seven years, or twenty-nine issues, since I wrote in TABS about designing lighting controls, except for my article on this subject a year ago. However that control for Covent Garden Opera was very special, being designed for the requirements of one house. What is now necessary is some general philosophy on the subject sparked off by David Thayer's article in the USITT journal and the copy of his exam paper on control which he has kindly sent me. An exam paper it is, but with none of the permissive "candidates should only attempt three out of the five questions" stuff. There are some ninety-three questions and up and down dear old U.S. they are probably scratching their heads over, "state actual and ideal number of—Preset Scenes, Grand Masters, Scene Faders, Scene Masters, Scene Sub-Masters, Group Masters . . .".

I shall not attempt to answer these because I have to confess I do not know what the difference between a Scene Sub-Master and a Group Master is, nor do I know what all these control knobs or levers are for. I hope Mr. Thayer will not think me defeatist when I say that the form of switchboards as they exist never should have had, and never has had in my case, any direct influence on new designs. A design is a matter of reconciling three things only—(a) **Need**, (b) **Technology**, (c) **Economics**. Due to the technical advance inherent in (b) what has been done before at any particular moment in time probably has had, and today certainly has, negligible influence on the new design. Any attempt to ensure that the new solution will also do operationally what the old did, simply because the operator is used to it, is to hang a millstone round development. In my opinion this is precisely what one famous European maker of lighting controls has done. One can work his control exactly in the same way as its old tracker wire predecessor if need be. But in fact I have not been able to find anyone who does just this because they all prefer the presetting, which is also built in.

Each lighting control is what it is and does what it does, as a result of the economic/technology factor of the time.

Remote control began because of the need to keep the large smelly liquid dimmers down in the basement out of the way and not because remote control *per se* has anything to do with lighting. Grouping-up on separate masters originated as the obvious thing since the dimmer handles of the old mechanical boards had to be mounted on short lengths of shaft supported at intervals on bearings. There is no logic in the division of lighting controls into master families or groups other than this. Even when flooding from battens was the staple lighting, the best effects were obtained not by using the colour shafts, but by contrasting different colours in different battens. Switching was separated or even omitted completely from the lighting control station in early German practice because the

compact tracker wire dimmer regulator was not load-carrying and to divert the wiring to pass that way was not economic in most cases. Thus the switches are not absent because no one wanted to switch a light on or off. Perhaps no one now wants to in a German theatre, because they have for decades got used to not being able to do so.

All in all, if Mr. Thayer sends me the results of his questionnaire survey I shall read them with interest and promise to ask the editor of TABS to publish them, but it will have nothing whatever to do with the design of the perfect stage lighting (or TV lighting) control.

It is common practice to begin an article on lighting control with the simpler forms for the smaller installations and work one's way up, but this time let us begin with the most expensive control, the one for the largest installations and leave the other controls for a second article. There is a good reason for this in that at this moment technical development, provided there is sufficient money, can allow us for the first time to stand back and survey operational requirements completely free of technical restraints. Completely free is a large claim but it is very nearly true and in any case true enough not to affect the present argument.

The break-through at this moment in time is represented by climbing onto what may be termed the computer band wagon. To make use of the components, data stores and logic circuitry present in the larger computers. The object is to bend these to serve lighting control in much the same way as back in 1935 I borrowed the organ console for stage lighting. In Strand Electric we have designed more or less on organ lines, at any rate as far as circuitry and wiring is concerned, ever since. It is now time for a change and by the time this issue of TABS appears the result of this change—instant automatic plotting and instant repeat—should be ready for demonstration in our head office theatre.

How was this new, revolutionary as publicity would say, and expensive as veracity compels us to declare, system designed. The answer is by ignoring everything that has gone before and finding out instead what we needed to do. The result is utterly different and is already collecting criticisms from the do-as-you-used-to-do boys that one ought to have this or that, for example, group masters whereas there are none and so forth.



“. . . completely free of technical restraints.”

The design in its present form is for stage lighting control, not primarily for television lighting and begins at the lighting rehearsal. This being the most exacting time of all, let us consider what happens at the first one. There are three kinds. The first is of the all too rare type where the lighting designer has done his homework and arrives with a plot with even some tentative dimmer levels (intensities) written in. As the ultimate judgement is visual the original plot gets pulled about and a new set of dimmer levels results. The second form of lighting rehearsal is the common one. In this the director with or without a lighting designer sits down, calls for this and that lighting channel, qualifies each with doses of up-a-little and/or down-a-little, until the moment arrives when he calls "O.K., that is Cue X. Plot it."

The operator is now faced with checking the positions of the dimmer levers for a hundred or more channels to make sure they are all written down properly. This takes time and the director gets impatient.

When all is ready, or as nearly ready as it is ever likely to be, the next cue is arrived at in the same way and so on for perhaps the whole of an act. We now have to run through from one lighting cue to another to get the actual process of changing right. So far the operator has merely got a series of figures (dimmer levels) against each channel for each cue. How he can get from one to the other in such a way as to give the effect required has yet to be worked out. As the run-through proceeds modifications are made, dimmer levels changed, channels removed and new ones put in.



"... the most exacting time of all."

Before long there is disaster. "No, not that way," shouts the director. "Go back and do that cue again." In a full rehearsal with company and scenery the operator may be told to go back several cues, to Cue 17, for example. In either case "Go back" usually heralds a crisis for, so far as the operator has been able to plan or practice anything, it has always assumed moving forwards through the show. Cue 17 may be the result of things done in all or some of the preceding cues. It is the rehearsal that keeps the operator on his toes and of his duties it is the constant writing down and scratching out on the plot, together with the reading and reproducing the detail of the plot, and setting a hundred or more preset levers at a time, which is the cause of strain. Inaccuracies creep in and the more tired all become the worse things get. It is significant that examination of a large number of plots showed that the number of cues per unit of time fell off rapidly after half time.

The third or last type of lighting rehearsal is the one for which

there has been no time available at all. It is combined with the dress rehearsal. The lighting is vamped as the rehearsal or even sometimes the show itself proceeds.

It could be said that plotting and interpreting the plot in terms of the switchboard controls is a bugbear on any sized installation, but in the case of a really large number of control ways the condition



"... modifications are made."

becomes chronic. When in addition there are several productions in repertoire and new ones are also being introduced there is no let-up for the operator. Another trouble is that an operator gets little time to practice his routines for a particular show and in consequence they never become second nature as with the actor and his part; he is thus more easily thrown by some slip or hitch.

Already it can be seen that the ideal lighting control must meet the following requirements:

- (i) Automatically plot instantly all the various dimmer levels that form a lighting cue.
- (ii) Automatically and instantly read and translate into switchboard terms the levels comprising any lighting cue and, what is more, do this in any sequence so that cues can be taken out of context.
- (iii) Have the absolute minimum of controls to be used by the operator. This because he will never get much chance to devise or to practice more than simple manoeuvres.

Item (iii) is far more important than people realise. For example, most people would say that a dozen master levers of various sorts is not much for an operator to get used to and carry out his various cues with on a machine where the individual dimmers are set automatically for him. This is not true. All our elaborate automatic

memory system can go for nothing if we have to rely on the operator jiggling about with a number of masters to get the final effect. Things which do not conform to a well-rehearsed drill lead to slips and at master level **these will inevitably** lead to big slips. If for a particular cue masters A, B, C, D have to come up in the order 4, 1, 2, 3, whereas the norm is 1, 2, 3, 4, it is all too likely that we may pass onto the next cue without having brought up master A at all! This is only a simple example.

In fact, the new Strand lighting control (System MDM) has only two masters representing the incoming new lighting and the outgoing old lighting respectively. Of course there is more to it than that, but even when the cross-fader or the cut button (to switch) is used they operate those same two masters.

The question arises as to what happens in a three- or four-part cue when lighting groups make separate entries. A little thought, which some are not prepared to give, shows that the lighting state which immediately precedes the new entry is a separate cue. Of course it never was treated as such before because of the labour of writing it all down and because presets, where they existed at all, were too few to waste in this manner. Ad-libbing with group masters arose solely from the need to conserve presets and as the new control we are describing has an **unlimited** number of these, group masters are out. The operator concentrates on timing only; and quite enough too, if it is done properly.

One obtains similar shocks when considering the setting up of the lighting before recording.* Having determined the masters, the other question is: What type of individual dimmer controls does one need to each dimmer channel? First of all they must be capable of being operated instantly by the switchboard's own memory so that each lighting effect or cue on the stage is represented by the state of the individual controls. This is essential because of the modification that goes on during rehearsals and which may even have to take place during the show, if a spotlight has been knocked or an actor is out of station. A glance at the control desk must tell the operator how the various lighting forces are deployed. What is in, what is out and on what check. Can a



"... keeps the operator on his toes."

* "Write" is the **correct** computer term for "record" but is not used in this article to avoid confusion with pencil and paper. Writing with these consists of a few notes on a postcard or preferably in the margin of a copy of the play.

particular lamp be raised any more and so forth. This is even more important if, as I hope, the lighting designer works his own control at rehearsal.

All this does not mean that one needs anything resembling the orthodox dimmer lever to do this. We used to think so, as those who saw our punched card desk (System KTV) demonstrated in April, 1959, may remember. Re-thinking from zero it is necessary to remind oneself that the machine will record and reproduce the lighting levels more accurately than any operator. It follows that one simply needs to be able to raise, lower or stop each channel (sometimes several at a time), and to know at each individual control if any further gain is possible or if the lamp is right out. All this together with information as to whether the channel forms part of the incoming or outgoing lighting can all be incorporated into a compact luminous rocking tablet taking up minimal space. So



"... the labour of writing it all down."

pleased are we with this idea that we have applied for a patent to cover it, the rest of the system having received a patent some time ago.

It is not the object of this article in TABS to try and sell System MDM; very few indeed are going to be able to afford it. The few that can, cannot afford not to have it, however.* No, the notion behind this article is to remind all of us of the need to have a good old re-think from time to time, so that we do not demand

facilities from habit and custom only. It so happens that in the terms of System MDM we can re-think the problem of lighting control completely; so that in the end perhaps we can truthfully claim we have the answer to a problem as old as stage lighting itself. Not of course to tell you what you want to do with your lighting—that being the job of the artist, and his wants may be quite irrational; but at least to tell you what you and your switchboard did—irrational or not.

In the next issue of TABS I hope to write about lighting controls in a lower more everyday sphere.

* Sydney Opera House please note.—Ed.

A SHAKESPEARE TOUR IN THE EAST

by Brian Benn

When last year I went as Chief Technician of the New Shakespeare Company on a tour in Asia, the company of thirty-three, sponsored by the British Council, visited Pakistan, India, Ceylon, the Philippines, Hong Kong, Malaysia, and Kuching. The greater part of the tour was in Pakistan and India and our experiences in many different halls and theatres suggest that any reasonably large company should expect the worst working conditions, as this expectation was often justified. Stages vary from good to incredibly bad. Examples of the first category might be the Birla Theatre, Bombay; New Empire, Calcutta; Tagore Memorial Theatre, Bangalore; Aifacs Theatre, New Delhi.

The size of the sub-continent and its enormous population implies a complexity of cultures, languages, and entertainments. There is little or no contact with Western theatre productions or methods and the main source of entertainment is the cinema. It is a poor village that does not boast a tiny cinema, almost hidden by vivid hoardings depicting plump ladies and gentlemen glaring soulfully at each other against a background of charging horsemen.

The oldest medium of all is dancing, in many forms and styles. Dating back beyond recorded history, it has an almost unbroken line of tradition and development and a vocabulary of gesture and movement that transcends language, but demands a high concentration from the audience and familiarity with the innumerable stories that are re-created. Its very antiquity is in a way its worst enemy, and several schools are striving to re-vitalise an intrinsic part of Indian life that is losing ground through lack of interest from modern audiences. Performances often suffer through tawdry settings and poor lighting.

By comparison, our notion of theatre is a very recent introduction. Beginning as an almost private entertainment for the European communities, presented by touring companies from Europe, it has spread through a sort of variety show to accompany silent films. It is now the province of a very few professional groups and numerous amateur societies. The amateurs mostly perform foreign plays in the original or in translation, whilst the professionals are striving to find an indigenous strain of drama, based like the films of Satyajit Ray on the lives and needs of the people. The government attitude both in Pakistan and India is a benevolent one; in Karachi the plans for an Arts Centre and Theatre are in the final stages; in Delhi there exists a National School of Drama, whilst throughout India a series of large modern theatres has been built to commemorate their great poet Rabindranath Tagore. Neither country is over financed and it is commendable that such outlay should even be considered.

The plays performed by our New Shakespeare Company were *The Taming of the Shrew*, *The Tempest*, and *Richard II*. All costumes and properties were made in London, and we took with us twenty-four Patt. 123 500-watt Fresnel spots, ten Patt. 23 500-watt profile spots, six Patt. 60 floodlights, and six 150-watt PAR lamps and holders. Rigging included six 12 ft. alloy barrels used as bars or booms with wire rope bridles. Control was by four Junior 8 Slider Boards, packed to travel and operate in two crates. All cables were fitted with 5-amp 3-pin rubber plugs and connector sockets. At first I felt some doubt as to whether the equipment would suffice for three plays of widely differing demands, but in the event it was adequate.

The primary electrical problem was always the available cur-



Four Junior 8 boards, packed to travel and operate in two crates.



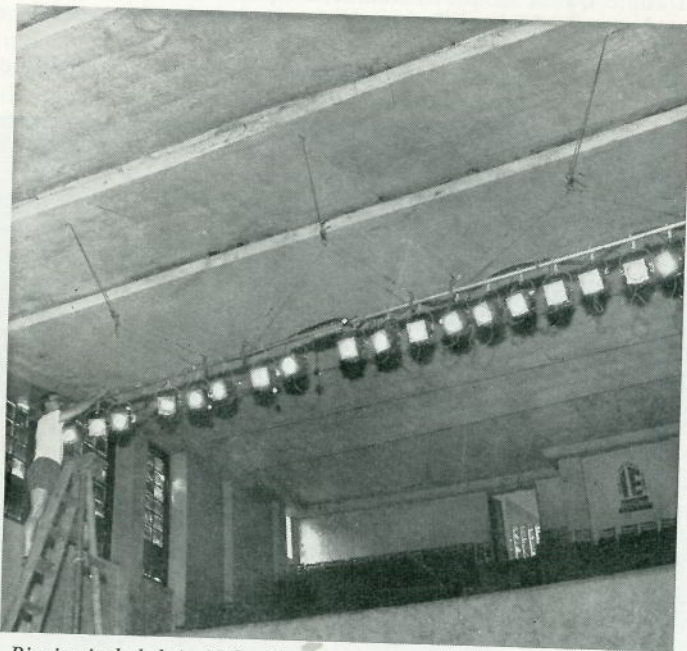
A terrifying arrangement of bamboos was provided.

rent capacity, but in fact only once was it necessary to reduce load and then this was due to storm damage in Northern Ceylon. In several places unscheduled blackouts were experienced, affecting large areas of the towns, but this appears to be an accepted part of theatre going in those places. The age and condition of the temporary mains leads supplied on several occasions added to the "will of Allah" attitude of the local electricians caused me grave concern, but in all cases a short prayer and a resolute refusal to recognise a smell of burning helped enormously. The equipment stood up to the widely varying conditions of temperature and humidity, even the transition from the steam heat of Karachi to the dry hot dust bowl known as the

open-air theatre in Lahore. The dimmers responded on voltages ranging from 180 to 250, and once narrowly avoided a heady draught of 400.

Few places had any sort of permanent grid. Usually a terrifying arrangement of bamboos was provided or incredible amounts of line were needed to secure to high roof members. Even where a grid was found, often the lack of pulleys, fly rail, or even cleats meant acrobatics by our staff to fly even a normal border.

Most places had no installed stage lighting or control, even the



Rigging included six 12 ft. alloy barrels used as bars or booms with wire rope bridles.

new and splendid Tagore theatres with capacities in the thousands: but where controls and equipment were available they were well maintained by competent operators.

With regard to theatre equipment in general, the severe import tariffs imposed by India and Pakistan have made the purchase of new items a financial impossibility to most prospective buyers. Small stocks of lanterns still exist and are standing up fairly well to dust, varying voltages, and mis-matched parts. Lamp stocks are obtainable, at high cost, and are mainly of Japanese origin. "Switch-on" cues and cues faster than 15 seconds duration inevitably caused filament failure. The need for technical advice and for a little modern material is very real, and it is very moving to see what the



The fan bracket also provides the fixing for a Strand spot.

technicians strive to attain with the poorest of improvisations. I watched Gautam Joshi, lighting director of the Indian National Theatre, refurbishing old street lamp reflectors and shop fittings to mock up floods and spots for their magnificent dance drama *The Story of India*. It is typical in such a land of contradictions that in the same city I should see young men, at the Tata Institute for Research, building a 50-way magnetic amplifier lighting control, all hand-made, to their own design.

Road transport bristles with unfamiliar problems, such as the *octroi* system which means that trucks can be stopped along the road and held by the police until a stiff fine is paid because of vague infringements of the regulations. Again there is the transferring of loads from one truck to another when crossing a licensing boundary or an attempt by a contractor to "make the job pay" by loading pig-iron on top of the scenery at the edge of town.

Like so many of their institutions, Indian and Pakistani theatre is at a crucial stage of development, looking with great respect at the past, trying to find a present, and needing stimuli from within and without. Unlike us they have no common language to feed the growing child, no common heritage to unite millions of people, but I for one have no doubt that the magnificent Asian capacity for compromise and their gift for communication will surprise the world.

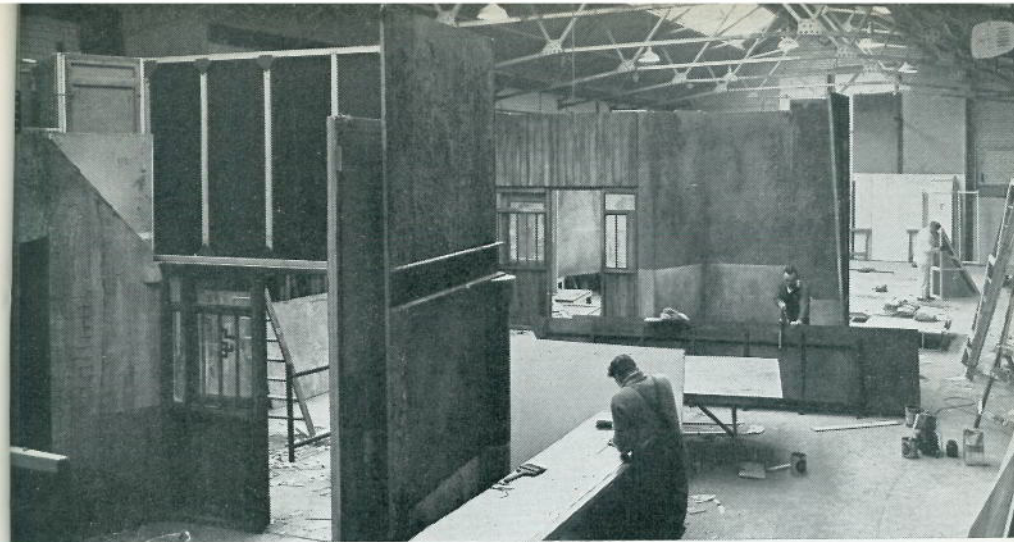
Production can attain a very high level, as we saw at the Indian National School of Drama, where a performance of *King Lear* was given for the company, in Urdu, costumed, produced and set in a manner that would have done credit to many companies in this country.



TELEVISION AND STRAND ELECTRIC

At irregular intervals we have published examples of Strand Electric lighting controls in television studios. On these pages we give other examples of the organization's work for television production. The Strand / JMB collection of decorative fittings and properties housed at 87 Lambs Conduit Street, London, W.C.1, provides a remarkable addition to the resources of the Hire Department as represented by the showroom at Kennington.

Television scenery is manufactured by the Broadway studios of Strand/Watts and Corry in Manchester shown opposite and is frequently to be seen on the home screens. Among the productions built there were *Coronation Street* and the studio productions of *The Avengers*.





TELEVISION DESIGN

by *Richard Greenough*

Richard Greenough began designing in television for the BBC having studied architecture and having worked in theatres. Has been with ATV since 1955 and is now head of Visual Services.

Many designers in the theatre, exhibition and other allied fields want to become television designers, because they believe there is unlimited scope in this medium. To a certain extent this is true, but there are limitations including studio space, money, and the fact that the end product is seen on a screen which is rarely more than 2 ft. wide. In long shot very little detail is seen on the screen and in close up the actor fills the picture. Apart from an "establishing shot", which may or may not be taken, only a small section of a set is seen at any one time.

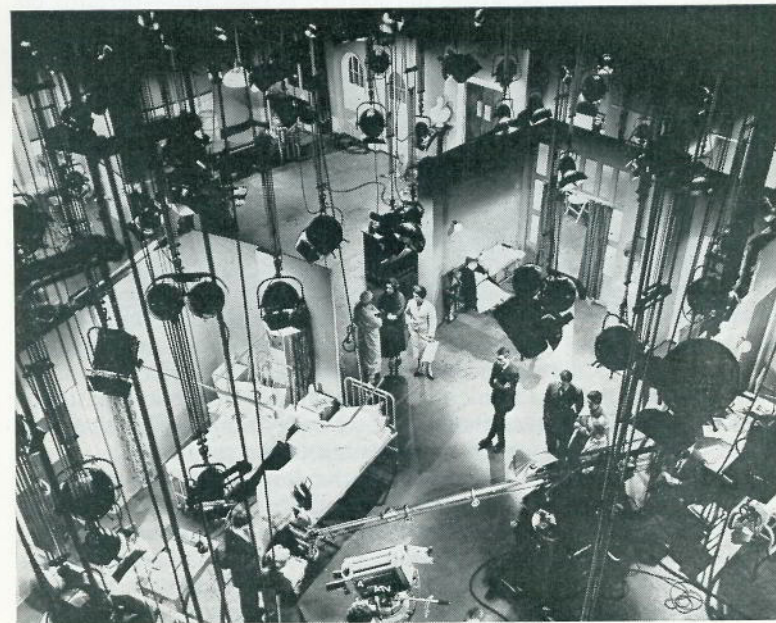
All television organisations adhere to some sort of budget—be it man-hours or money. The designer therefore has to use all his ingenuity to produce what is required by the director within the

limits of the space and facilities available. I have found that it takes two or three years for a designer who is experienced in stage or exhibition work to adapt himself to television design, and to acquire the sureness for the design to be right first time. There is no time in television, once the scenery has been built, for second thoughts and major alterations.

When the limitations have been accepted by the designer, he has almost infinite scope for styles of presentation. There is no other medium which has to cater for plays, talks, documentaries, series and all aspects of light entertainment.

The most obvious and easiest setting is the realistic type used for the majority of shows, and of which the viewer never tires. He accepts it most readily as it is the background he would expect to see behind actors who are playing out a story set in everyday life. Indeed many viewers are surprised to learn that *Emergency Ward 10* is produced in a studio, and not done as an outside broadcast from a real hospital.

Although I have said that the realistic set is, in my opinion, the easiest to design, this is only because the designer has a script to work from, which should give him a very clear picture of the period, style and atmosphere of a play. He can also ascertain the requirements for windows, doors, staircases, etc., as a basis on which to build up the set. The designer must have sufficient experience and



(Opposite) The Lena Horné Show. Designer Brian Bartholomew. (Above) Sets for *Emergency Ward 10*.

knowledge to create a set which is practical, and must be inventive enough to provide a correct and interesting background. I have avoided the use of the word "artistic", as this is usually taken to refer to something beautiful. Often the designer is called upon to design slums, factories or living-rooms of characters who have poor taste. These sets, however, can have a beauty of their own. The designer has to be careful not to get "carried away" and produce a most lavish set which could only belong to a man earning £10,000 a year, when the character in a play is clearly earning £1,000.

There is no limit to the demands on a designer's skill and imagination. Not every play takes place in a sitting room. It may be on the moon, or down a coal mine. For the series *The Plane Makers*, two full-size aircraft were built by ATV's Construction and Mechanical Workshops. The first, the SF 200 jet airliner, 80 ft. long with a wing span of 66 ft., was built to a design supplied by a leading aircraft designer—but the second, a supersonic vertical take-off strike fighter/bomber, was designed in great detail by a television designer. The latter aircraft was 50 ft. long, with a wing span of 23 ft. It was self-propelled and reached a speed of 40 m.p.h. on the runway.

Although the designer derives a great deal of satisfaction from producing realistic sets well, he is always striving to create new and original forms of presentation. Many plays can be presented in a "stylised" set—that is, where the scenery is indicated—perhaps by cut-out doors, windows and/or props., etc., in front of a cyclorama. This form of presentation can give a new fresh and exciting look to a play. If this style is used very often, however, the viewer will soon tire of it, and it would not then provide the desired impact. This method should therefore be reserved only for a play which would particularly lend itself to this form of presentation. For most plays the "good old" realistic set is relied upon.

Quite the opposite applies to talks programmes. There is no point in sitting a number of people in a drawing-room where pictures and pots of flowers sprout out of their heads. If the speakers have something to say and have interesting faces, the less there is in the background the better. I have found that a laurel bush, preferably thin and unhealthy, placed out of shot in front of a lamp lighting the cyc., gives a very good out of focus mottled effect—a most suitable background*. I think it is important that shapes and patterns are not used which cause the viewer to worry about what they are when he should be watching and listening to the speaker.

It is in "Light Entertainment"—the song and dance shows—where the designer has most scope to use his imagination. Only in television does he have this opportunity. Very few revues are produced in the theatre, and these are usually rather unadventurous where scenery is concerned, although there has been, due to the influence of television, a step forward in the past few years in the use

of new materials and designs. The majority of film musicals still rely on realistic sets.

There is almost no limit to the materials, textures and effects available to the designer. It is important, however, that he uses restraint, as a simple, well-designed set is much better than one cluttered with a lot of clever, over-designed pieces. Again a new, exciting idea must not be used too often, otherwise it loses its originality and the viewer becomes bored with it.

Light entertainment shows are "a natural" for the use of lighting effects. The background behind a singer can be changed from being fully lit to black during a song, for no other reason than that it is a pleasant effect and suits the mood of the song. By weaving strip lights into the design of the scenery, the look of the set can be completely changed by having them lit or unlit. The source of light does not have to be concealed. Naked lamps can be used to form patterns, can be lit or unlit to change the mood, and flash to give excitement. Shadows can be thrown on to the cyc. in sharp shapes or out of focus textures and changed at will during a sequence. Often clusters of lighting fittings have been used in limbo, purely for their decorative effect—no other scenery being necessary.



A full-size aircraft designed by Ronald Fouracre for The Plane Makers and constructed in the ATV workshops.

It is, of course, of the utmost importance that there is extremely close co-operation between the designer and the lighting director. The designer, when he conceives an effect, must discuss this with the lighting director so that they work together.

The building of scenery from wood and canvas is only halfway to producing a set. "Props."—that is, all the tables, chairs and bits and pieces which go to dressing the set are of the utmost importance, and they are carefully selected to blend in with the scenery, helping the period, style and mood of the set. Also of vital importance are the lighting fittings. Wall and table lamps make very good dressing,

* Linnebach again, see TABS last issue, page 14 et seq. (Vol. 23, No. 3).

and give a reason for the source of light in night shots, in the way that a window does for day. A hanging chandelier showing in the top of the picture gives the impression that the set has a ceiling, although it may not have one. Great care has to be taken, however, that the chandelier does not get in the way of the sound boom, or throw an unwanted shadow if placed in line with the key lighting of the set.

Although at present in this country television pictures reach the viewer in black and white, colour is used extensively in the studios. The designer has to be familiar with the way colour translates to the black and white picture, and chooses his colours especially for their tonal value. Colour is used partly because it is more satisfying to work with, and partly because artistes seem to get more "lift" and give better performances when there is colour around them. After weeks of rehearsing a drama, the actor sees the set two days before the performance—sometimes not until the same day! It is therefore necessary for the actor to feel "at home" in his surroundings immediately. The right setting can give an enormous boost to his performance.

As with most work connected with television, a designer's life is usually "all go"! But I can think of no more exciting moment than when the studio floor is cleared for action, and the designer sits before the monitor watching his original ideas transformed into reality.

AN OPERA HOUSE IN TORONTO

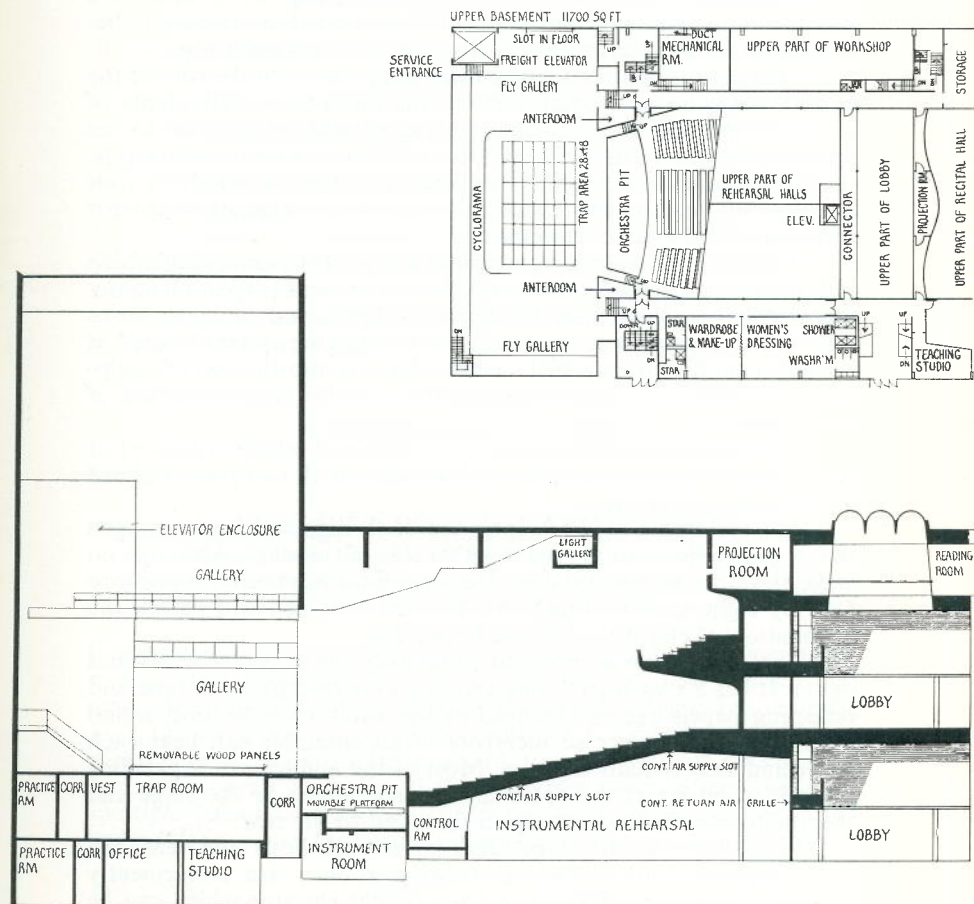
by Wallace Russell

Scarcely had our September editorial with its plea for accuracy in reporting appeared when an article in The Times on the Toronto Faculty of Music proclaimed wildly that the lighting there was governed by a computer. As we supplied this equipment we feel it our duty to let our Canadian correspondent, Mr. Russell, put the record straight. (Ed.)

Of the thousands of Torontonians passing along University Avenue every day probably not 5 per cent of them are aware that nestling behind the Royal Ontario Museum is a theatre seating just 811 but with a full size opera house stage—probably the most spacious stage yet to be built in Canada. The Sir Ernest MacMillan theatre is located in the recently completed Edward Johnson building, which is part of the College of Music of the University of Toronto. This is a memorial to Edward Johnson who was born in Canada and became Manager of the Metropolitan Opera.

The theatre was built primarily for the use of the Opera School at the University. The school, under the leadership of Herman Geiger-Torel, has become one of the leading schools of opera on this continent. It offers a programme of classes in staging, acting, voice

and movement. With the completion of the theatre even greater glories lie ahead. Before this the Opera School gave an annual public performance in the University's 450-seat Hart House theatre, famous for many years across the country, but with a stage lacking the proportions for opera. Now the school is able to present full length works in addition to its past custom of giving operatic excerpts and one-act operas.



University of Toronto, College of Music Theatre: plan and section. Proscenium opening is 34 ft. wide and 32 ft. high and the grid height above stage is 85 ft.

The theatre has a lofty ceiling with excellent acoustics for music. It has a very large orchestra pit with an estimated capacity of one hundred players. The pit is complete with an elevator which permits the forestage to be extended for concert programmes.

The stage itself measures 134 ft. from wall to wall, 48 ft. from apron to back wall, with a grid height of 85 ft. and a proscenium 54 ft. wide by 32 ft. high. Fly galleries are located at each side of the stage and there is a further gallery across the back of the stage linking the two side galleries. This gallery is designed to permit the future installation of a paint frame giving double function to the cross-over gallery.

A single purchase counterweight system is installed. The 38 sets so far provided are of the channel guide type and are located on a module of six inches. There is, in addition, a rigid safety curtain behind which is located an electrically operated lighting bridge.

There is a well placed spot gallery integrated into the roof of the auditorium running the full width of the theatre and with plenty of room for location and adjustment of equipment. In addition to the auditorium spots (Pattern 293 2,000-watt) there are disappearing type footlights, four borderlight strips, each of which is wired for four circuits, left, centre and right, plus numerous plugging strips for directional and special equipment.

There are, of course, numerous floor pockets, several of which are of 5 kW capacity for use with effects and scene projection equipment. All the connections to the borderlights and plugging strips over the stage are made through a novel plugging system located at the electrical fly gallery which permits the easy substitution of equipment or transfer of circuits without the need for great quantities of flexible cable.

The lighting control system, the console of which is located at the rear of the auditorium, has 131 dimmers with two presets ahead and 20 memory groups.

The cyclorama is 130 ft. long and 35 ft. high and is so arranged that it can be flown or moved to either side of the stage. Although no stage elevators are yet installed, the stage floor has been trapped into four by eight sections which can be used now and will permit the installation of elevators at some future date.

The auditorium is intended principally for music concerts and opera. It has a very high ceiling giving a long reverberation time and reflecting panels are so arranged in the auditorium to send sound back to the performer so members of an ensemble can hear each other and thus remain together. Most of the auditorium is panelled in dark wood set at the optimum acoustic angles to the stage and the auditorium floor slopes up to some 30° to the rear.

In addition to the stage area, large workshops and rehearsal areas together with extensive dressing rooms, are conveniently located to the stage. There is a large freight elevator which can be used to bring scenery from basement storage locations to the stage. This freight elevator also continues up to the fly level.

As well as classrooms, practice rooms, teaching studios and offices, the building also features a small concert hall with 450 seats circularly arranged about a small platform. Here piano, singing and small instrumental recitals and concerts take place. This hall has proved to have exceptionally fine acoustics and is very popular with many non-university performing groups. At the rear of the hall is a large recording room having extensive electrical equipment for recording and the giving of electronic music concerts combined with a seven-channel stereo system.

A further feature of the building is its very excellent music library which has many private studios for study and the playing of records.

The Opera School has already produced several famous singers among them, Jon Vickers, Teresa Stratas, Robert Goulet, Victor Braun and Don Garrard. The close connection with the Canadian Opera Company also headed by Herman Geiger-Torel affords the students of the school, both singers and technicians, opportunities of professional experience during the Fall Opera Festival in Toronto. The Opera School is jointly maintained by the School of Music of which Ettore Mazzoleni is the Principal of the Faculty of Music, Dr. A. Walter is Director, with Dr. Boyd Neel as Dean of the Royal Conservatory of Music which encompasses both institutions. The school, of course, offers programmes in all musical instruments and musical groups will also be using the MacMillan theatre. A full-time scenic and stage technology course is offered by the Opera School and is the only course of its kind in Canada.

BRIDGES AND SLOTS

by *Martin Carr*

Mr. Carr is a theatre consultant and lighting designer. He supervised under William Bundy the new stage lighting for Covent Garden last year. He has had considerable experience in stage management and is therefore well versed in the practical side of making a theatre work.

The bridge as a means of suspending stage lighting equipment has not in the past found favour in this country. This attitude has arisen from two factors. In the first instance no stage in this country, with the exception of the three giants of London,* had sufficient playing depth to be able to afford to lose valuable down stage hanging space; secondly the auditorium architecture with its multiple balconies, provided cheap points of suspension, but high ceilings from which the correct lighting angles could not be obtained.

* *Royal Opera House, Covent Garden, Theatre Royal, Drury Lane, and the London Coliseum. As the last named is now a cinema on a long lease the big stage with its revolves forms one of the West End's wasted spaces (Ed.).*

The current boom in theatre construction has revealed an absence of information on the design of bridges upon which the architect, the engineer and the lighting specialist can draw, and as a result some first-class examples of how not to solve the problem have been produced.

The value of the bridge lies in the ready access it provides for maintenance, adjustment and focusing of lanterns, be it during a rehearsal, a performance or at any other time. No other activity upon the stage or in the front of house has to stop whilst ladders are brought out; there is virtually no manual labour involved, and a full bridge of perhaps twenty or more lanterns can be coloured and set in less than a quarter the time taken to do the same job for a normal spot bar using the conventional ladder. Added to which, the electrician can—or should be able to—see where he is directing the unit without either getting into bodily contortions, or having the back of his neck burnt in the process. With the growth of the repertoire theatre access to lanterns assumes a far greater significance, since otherwise much of the day may be taken up with re-setting to cater for the demands of a daily programme change.

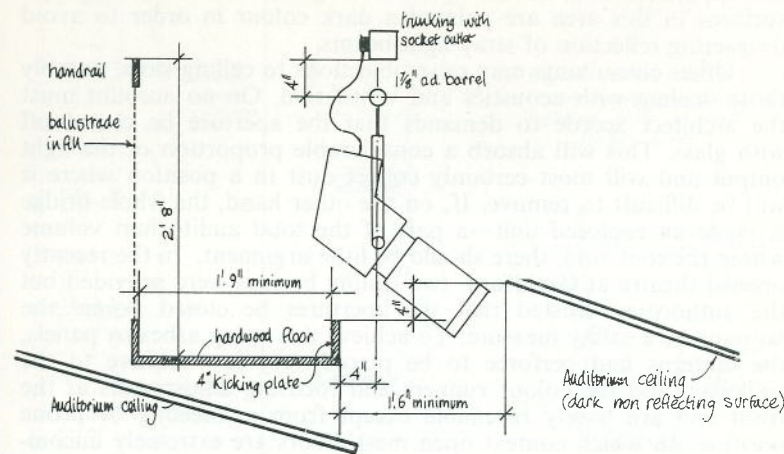
With this understanding of the value of the bridge has come the need for detailed information, and research has been undertaken to evolve the basic elements of a satisfactory bridge design.

The requirements of the bridge either in the auditorium or over the stage may be summarised thus:

- (a) The structure must provide access and a feeling of security without excessive bulk or waste of valuable space.
- (b) There must be room to suspend the largest lantern *likely to be used within reason* from the particular position, and



Fig. 1. Open auditorium bridges at the Questors Theatre, Ealing.



Auditorium Lighting Bridge-Critical Dimensions

Fig. 2. ABTT recommended minimum for FOH small bridges.

lanterns so mounted must be able to cover all relevant areas of the stage and if necessary, parts of the auditorium (i.e., orchestra pit, apron or runway, etc.).

- (c) The extremities of the lantern must be within reasonable reach of an operator standing on the walkway, and whilst adjusting the lantern he must be able to see the stage area being covered by the light beam.

A recent example of open auditorium bridge design at the Questors, Ealing, is illustrated in Fig. 1. Here the handrails are splayed wider than the walkway in order to accommodate lanterns angled sideways, and there is therefore a considerable gap through which the unwary might fall. The design of the bridge allows insufficient room for commonly used medium sized lanterns to be suspended from either rail. If one of these has to be focussed sideways or downwards, a special cross bar has to be added to make a suspension point, and this effectively blocks access along the bridge.

Where a bridge is to be incorporated in the auditorium ceiling, the architect will naturally wish to make the aperture through which the light beams project of minimum size. Care must be taken to ensure that lanterns can be sufficiently angled to cover all the stage visible from this position, and it should be remembered that occasionally bulky items such as colour change mechanisms or effects devices may be added to the fronts of lanterns at the line of the opening. If the ceiling is angled upwards at this point to minimise

the apparent width of the aperture (Fig. 2) then it is vital that surfaces in this area are painted a dark colour in order to avoid distracting reflection of stray light beams.

Other consultants may raise objections to ceiling slots, notably those dealing with acoustics and ventilation. On no account must the architect accede to demands that the aperture be closed off with glass. This will absorb a considerable proportion of the light output and will most certainly collect dust in a position where it will be difficult to remove. If, on the other hand, the whole bridge is made an enclosed unit—a part of the total auditorium volume within the roof void, there should be little argument. In the recently opened theatre at Guildford, two ceiling bridges were provided but the authorities insisted that the apertures be closed *behind* the lanterns as a safety measure. To achieve this using asbestos panels, the lanterns had to be placed very low relative to the walkway, and the colour runners and focusing adjustments at the front end are barely reachable except from a kneeling or prone position. In which context open mesh floors are extremely uncomfortable. In this theatre also, we are reminded of the importance of access on to the bridge which should be adequate for the movement of both staff and lighting units; here lanterns to be taken up onto the bridges have to be hauled up by rope from the auditorium since the access passageways are not wide enough to permit them to be carried onto the bridges.

To digress for one moment away from the purely technical,

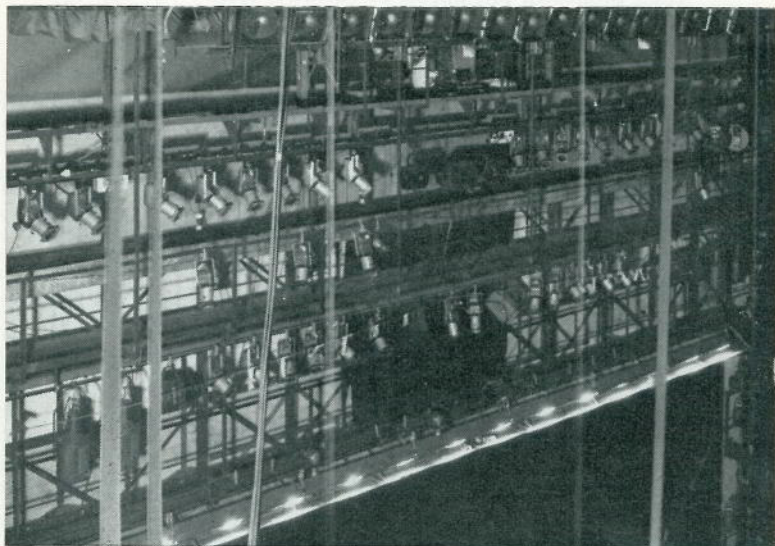


Fig. 3. Three-deck lighting bridge over proscenium, Royal Opera House, Covent Garden.

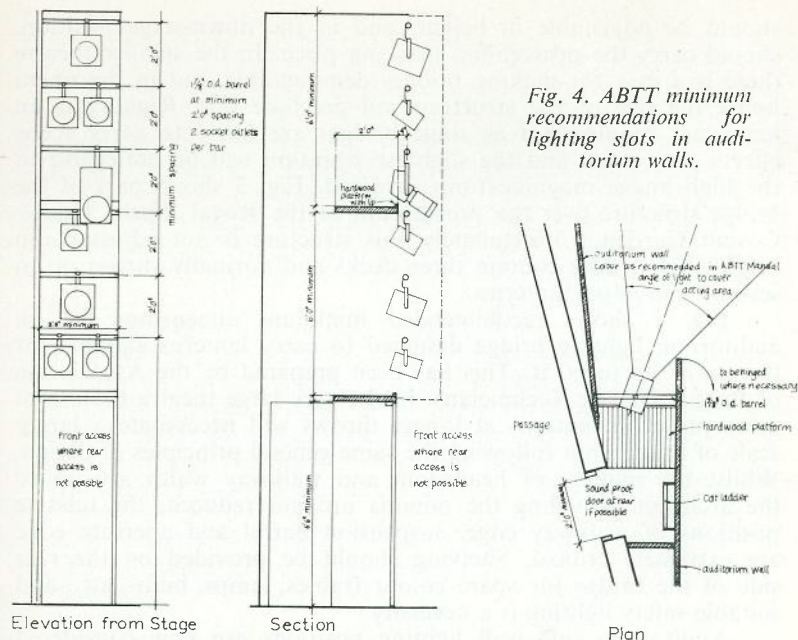


Fig. 4. ABTT minimum recommendations for lighting slots in auditorium walls.

the bridge arrangements for F.O.H. lighting at the Nottingham Playhouse are worthy of study as an example of an architect's good intention which does not meet lighting requirements. In this theatre the auditorium was designed with a high ceiling, one purpose of which is associated with ventilation. Front of house top lighting is concealed in a drum structure* which echoes the design of the fore-stage. Although operators cannot work in the drum during performances owing to the danger of dropping things, the real disadvantage arises from the limited range of horizontal lighting angles available from this structure. The value of the normal auditorium bridge lies in the wide choice of angle given to the lighting designer, and the restriction of the drum at Nottingham results in somewhat flat and uninteresting front lighting. The lesson to be heeded from this is that lighting bridges should run the full width of the auditorium from wall to wall.

Under normal conditions the F.O.H. ceiling bridge should not be regarded as a suitable location for follow-spots. The size and weight of these makes it preferable to build a special enclosure where structural rigidity can be provided, and optical effects projectors can also be installed.

Over the stage we are not troubled by aesthetic requirements, and practical use is the only governing factor. Most stage bridges

* See TABS, Vol. 23, No. 1.

should be adjustable in height, and in the down-stage position, should carry the proscenium masking piece. In the smaller theatre there is a case for making bridges demountable, but in the opera house the size of the structure will preclude this. Rigidity is an important requirement as stage bridges are likely to carry scene effects projectors, and the slightest vibration will be noticeable at the high image magnifications involved. Fig. 3 shows part of the bridge structure over the proscenium at the Royal Opera House, Covent Garden. Unfortunately, this structure is not adjustable in height, but it does contain three decks and normally carries up to seventy individual lanterns.

Fig. 2 shows recommended minimum dimensions for an auditorium lighting bridge designed to carry lanterns suitable for throws of up to 60 ft. This has been prepared by the Association of British Theatre Technicians. In the very large theatre the use of more powerful lanterns at longer throws will necessitate a larger scale of bridge, but following the same general principles of design. Whilst the matters of headroom and walkway width are up to the architect providing the minima are not reduced, the relative positions of walkway edge, suspension barrel and aperture edge are extremely critical. Shelving should be provided on the rear side of the bridge for spare colour frames, lamps, bulbs, etc., and suitable safety lighting is a necessity.

Auditorium side wall lighting positions are now considered essential, especially if there is a fore-stage.* Access to the lanterns is again important, and therefore the lighting slot should be provided with a rear entrance (Fig. 4). A series of horizontal bars at 2-ft. centres are considered preferable to vertical barrels and boomerang arms, and standing platforms with a cat ladder should be provided at 6-ft. intervals. It is important that the leading edge of the side wall does not cut off the beam when the lantern is turned to cover the farthest part of the fore-stage, and it *may* be useful to provide a hinged flap at this point. If rear access cannot be provided then it must be possible to use the lantern suspension bars as steps for front access. Surface finishes adjacent to the side slots must again be dark in order to minimise reflection.

The value of the auditorium lighting positions cannot be overstressed, and it is vitally important that the design of the structure springs in the first instance from practical considerations. Over the stage, bridges are generally de-mountable, and are a matter more for the engineer than the architect. Nevertheless, design suited to lighting practice is equally important, and it has been the aim of the ABTT Lighting Committee to provide the basic facts from which satisfactory designs may be evolved.

* An example in Canberra appeared on page 22 of the last issue of TABS (Vol. 23, No. 3) (Ed.).