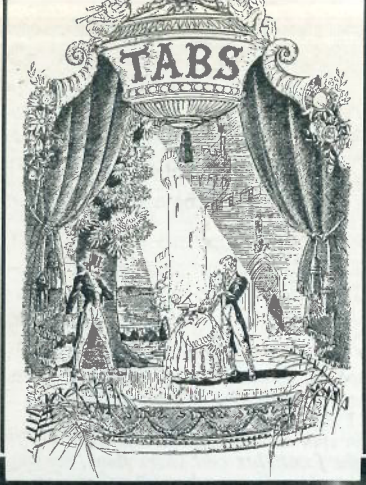

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Cover picture by courtesy of the Administrator of Sadlers Wells Opera Trust. Photograph shows all the stage lighting in Sadlers Wells Opera House. Taken by Reg Wilson with a fish eye lens centred on No. 1 Batten overhead. Below this appears the proscenium border and auditorium terminating in the distorted crescent of the footlights and stage floor. Above No. 1 Batten can be seen the other overhead Battens and the flown out scenery including skycloth.

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What is a stage?

The requirements for a stage were so aptly stated by Basil Dean last Spring in an article* written for the TAC/AMC conference that one might be forgiven for thinking then that the last word had been spoken. Yet at a recent discussion between a number of theatre people on the design of a stage, it was obvious that some were, in the advice they were tendering, assuming their own preferences were axiomatic. What Mr. Dean wrote was " The stage requirements are really very simple; plenty of space and height, with walls at right-angles to each other and free of all obstruction above and on and beneath the stage level. The more completely these simple requirements are met the more efficient the stage will be."

*TABS, *Vol. 23, No. 1. March 1965.*

The practical realisation of this means in proscenium theatre that the last fixed immovable lump of concrete is the proscenium opening with its fire curtain. This we may have to have if the theatre is any size, but once the proscenium aperture at its maximum has been decided on and sealed by the fire curtain, it should be assumed that from there on each director should be free. Free that is within the ever present economic limits, to do whatever he wishes. Always provided that none of his personal means of artistic expression needs a road drill to remove when the next man comes along. For theatre people like others, pass on one day either to another job or to another world.

Road drill demolition suggests concrete but sometimes the concrete is metaphorical but equally difficult to remove. Elaborate machinery purchased at great cost might stay to clutter up the stage for many a long year, simply because a sanction to throw away what was purchased at great cost by the ratepayers cannot be obtained.

The solution is a commonsensical and an unselfish recognition of the fact that though you may love the lighting liberty of built-in bridges and towers, another man sees them as only an encumbrance in a vital downstage area. That the revolve which to you spells opportunity, to another means limitation to a miserable mechanical circle and in the wrong place at that. That the cyclorama of limitless horizons can, unwanted, a confining prison wall make. That a desire to see stages roll by to sink or rise at the touch of a button, may evoke only the sinking feeling beneath another man's waistcoat button. To see examples where this has not been applied one need only look at Nottingham where the strange shape of the backstage is a solid reminder not of an eccentric architect, but of the wagon-stage ideas, of a director who never, in the final event, ran the place.

The inevitable conclusion is that a stage should allow all the freedom to fit-up of an exhibition hall—an Earls Court or an Olympia —within which one can equip and build on as semi-permanent or as temporary a basis as necessary. What theatre people rightly fear, however, especially in the case of a resident Civic theatre company, is that unless something gets built as part of the architecture now they will not get anything at all. Thus beyond the proscenium is this free space in which one can do so much, but being poorly equipped one can do little in practice and no further funds are in sight.

The backstage area and the PC sums for its equipment should have a direct ratio in cost to the rest of the building. If the front-of-house scheme has some more gold knobs on, an extra silk carpet and another marble staircase with platinum handrails added, then this must mean proportionately more money for the equipment and accommodation backstage as well.

PLANNING OF THE "OLIVER!" NATIONAL TOUR

By Ian B. Albery

The unusual scenic set up for this musical was described by Sean Kenny in TABS *Vol. 18, No. 2, Sept. 1960. It is still running at the New Theatre, London, but at the same time it has just started on a national tour. Mr. Albery is production manager to Donmar Productions and describes some of the special work involved.*

While it is dangerous to generalise, my impression of theatre technological progress is that it has been rather slow. There have been a few exceptions, such as the use of new materials for construction of scenery, sophisticated systems of lighting control as permanent equipment, and, particularly in Germany, ingenious permanently installed mechanised scenery handling systems primarily designed for interval and repertoire changing, rather than for fluid scene changing seen by the audience. In the U.S.A., where one would expect the most progress and where labour costs are high in the professional theatre, the Unions have delayed the introduction of new techniques; while in the amateur theatre, technological ingenuity has been largely directed to the " dead-end " of experimental multi-purpose adaptable theatres. In Russia, while there is the continuing influence of German-type mechanical systems, the large cheap but disciplined labour force has delayed any revolutionary change. Many of you will

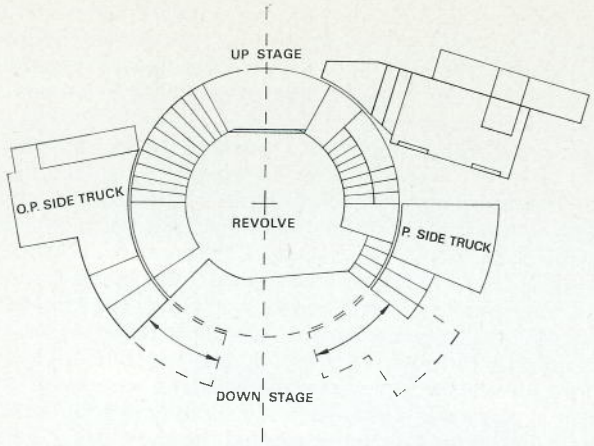
now be wondering to what purpose we should change our attitudes to planning, rigging and presentation of shows, as the old traditional ways are satisfactory and not only involve less capital expense and effort, but are also independent of fallible mechanical systems or new-fangled equipment.

However, I believe that, every now and again, one should take stock and return to first principles by conducting a searching examination of methods and their end results. Obviously a multi-scene show, planned for a short prior-to-London tour before the do-or-die effort in the West End, is essentially a different proposition from a post-London tour of an already successful show. On a prior-to-West End show the running order of scenes may change daily. The Production Manager must therefore ensure maximum flexibility of all units, with the minimum possibility of having to confront the people responsible for the artistic direction with the statement " the way the scenery is planned—a change in the running order is impossible." On a post-London tour it can be asumed the show has " gelled " and that full advantage can be taken of this.

However, with any show there is still a vast field of technological aids to be considered following the basic principle that there is a *prima facie* case for such aids, if a particular change or effect depends for its action on one or more of the following:

(*a*) Split-second timing, between Stage Manager and Operator.
(*b*) The synchronisation of action between two or more technical staff.
(*c*) Hard manual labour where, because of the effort required, delicacy of movement is difficult to achieve.
(*d*) A movement that is difficult for the operator to observe and therefore difficult to perform accurately during each and every performance.
(*e*) A movement where, for reasons of space or sight-lines, it is impossible to conceal an operator.
(*f*) A multiple simultaneous action by one operator, where presetting of controls would ensure accuracy.
(*g*) Extensive rehearsing of local staff, incurring a loss of time and heavy financial costs especially if opening performances have to be delayed.

At this point the traditionalist will be feeling in the mood to write a letter to the Editor pointing out that mechanical and electronic systems are unreliable. This is utter nonsense if they are properly planned and engineered for the job required, and provision has been made for emergency procedures in the event of power failure, etc. In the same breath I should also add that while regular inspection and maintenance is a matter of common sense, this is usually far less time-consuming and worrying than the constant retraining of staff required through wastage and sickness and of deputies for the additional casual staff that would otherwise be required.



Basic diagram showing revolve which turns completely and two side trucks which move independently within limits shown by arrows.

Not every show is a textbook case for scenery mechanisation and *Oliver!* is exceptional, as every problem from (*a*) to (*g*) listed above occurs. Mechanisation is therefore the logical outcome for the revolve and side trucks, but I would venture to say that if another production team had encountered these problems (particularly six years ago) they might have side-stepped them and forced the designer to change his original concept, and this would have had serious effects on the success of the production. For the benefit of those who have not seen *Oliver*! I should explain that the portable revolve is irregular in shape on its perimeter, making the conventional wrap-around hauling cable and winch impracticable. In addition, the side trucks have to swing independently on the periphery of the revolve and all this is on an open stage with no false stage under.

For the touring production, nearly a year before the tour opened, Stan Coppin, our production engineer, started serious investigations of control systems which might improve on the system employed at the New Theatre where a " driver " is concealed in the revolve who receives instructions from the prompt corner. The system which offered the greatest flexibility, particularly as the revolve would probably have different positions for many scenes on tour depending on the width of auditorium and the resulting sight-lines, was the use of Selsyn Transmitter and Receiver motors. These would enable the Stage Manager in the prompt corner to preset on a 360° dial the position of the revolve to say 178° and by pushing a button, on cue, send the revolve automatically without further attention or need for a " driver " to this position. The charm of this system is that flexibility is complete and the number of presetting positions are infinite as one is no longer governed by separate mechanical limits for each. Of the

many snags encountered in introducing it into service one was where to position the Selsyn unit in relation to the revolve as its diameter was too great to fit between the revolve top and the stage floor and for many reasons I didn't wish to increase the height of the revolve. The situation chosen was understage and instead of a conventional kingpin assembly we have a hollow kingshaft for the motor and lighting cables passing through a hole drilled in the stage floor to the Selsyn unit understage which is combined with eight sliprings in a framework. The framework is designed to bolt, screw or clamp to any manner of support understage and I have only one nagging fear that, as six flying pieces of scenery have to be plumbed with the revolve to the nearest inch, we may strike a theatre where there is structural steelwork in the area we need to position the kingshaft. However, if this does arise or we come across misconceived theatres where there is no understage basement we have an alternative system of sliprings mounted on kingplate in the normal manner and, even though we could not use the Selsyn system, the revolve could be controlled by remote push buttons on a flexible lead by a member of the touring staff in the wings.

All the mechanical design and construction of the revolve and side trucks was undertaken by Hall Stage Equipment Ltd., who had previously constructed the original at the New Theatre and the export version for the United States. The improvements in the National Touring version are many, but the most important is the lightweight U-channel construction of the revolve and chassis designed to be clipped together for speed. Revothene wheels are used for silent running, and fluid-drive couplings are fitted to all motor units to ensure smooth acceleration and stopping. A further, but as yet untried, improvement is that of using a rack and pinion system for driving the side trucks uphill on raked stages and this will receive its baptism when we move from the Opera House, Manchester, to the Grand Theatre, Leeds, where there is a rake in excess of $\frac{1}{2}$ in. to the foot. All motor drive units have quick-release facilities so that each can be independently manhandled to keep the show going in the event of electrical or mechanical failure.

The flying is the only other major complication in the show, and the one problem is that three vital items related to the revolve fly diagonally up and down the stage, across the paths of travel of each other's counterweight-bars. In the same bay also a chandelier has to fly plus an escape bridge from a vertical ladder stage left, supported from the grid.

One solution would have been to install temporary counterweights as at the New Theatre, which is a hemp house, but this would involve a considerable waste of time and energy when touring, not only in transporting but also in rigging. To overcome this problem I designed special frames clamped across individual counterweight bars, so that each piece under was suspended at its point of balance and, by using special slings governing the drift of the counterweight bars, we managed to ensure that, theoretically, provided we have a

clear working height of not less than 44 ft. it is possible to work a show on a conventional counterweight system.

In hemp houses I propose trying to use rope double and triple fall tackles to move the flying pieces at the required speed, of from 6 to 10 in. per second.

Two principles I have followed for flying are that all suspension cables from flying pieces terminate, at the exact drift required, in special rings to chain under counterweight bars, or tie to hemp lines with strainers at the bottom for exact levelling. In other words, throughout the tour no wire cable has to be retied and dogged, which would waste precious time; secondly, all grid work for spotting or heavy lifting is by rope lines, which can be installed in half the time it would take to rig wire cables, etc., for temporary counterweights. The ropes we tour are quite interesting, being made of black polypropylene, which is rot-proof, relatively constant in length under load (not subject to variation according to humidity) and whilst only $\frac{5}{8}$ in. in diameter, has a breaking strain of over two tons with a safe working load of nearly 1,000 lb.

The scenery was built by E. Babbage & Co. Ltd., and painted by Alick Johnstone Ltd. as for previous versions, and Harry Robinson, our production carpenter with years of experience running the show at the New Theatre, besides our many other productions, managed to obtain with Babbages even further improvements in design for quick fit-up and, most important of all, rigidity which is very difficult to achieve with mobile open-work scenery under touring conditions. Possible points of interest here are the back-cloth (overall 60 ft. by 36 ft.) which has been made with a combination of ties and eyelets so that it can be successfully hung under almost any conditions of restricted space between fly galleries and under rear bridges and still be stretched taut vertically and horizontally, with the centre of the cloth correctly positioned for perspective in relation to the depth of stage behind the main set. The side masking required is nil if the walls of the stage are painted black; if not, camouflage netting and hessian are employed, although no effort is made to mask lighting or other normal theatre equipment. Incidentally, the netting is designed so that the flyman can clearly see through it to the stage for visual timing of cues when working from a fly gallery, and the masking can be hung upside down so that they can still see, if the flying system in a particular theatre is worked from stage level.

The lighting in *Oliver!* is of paramount importance for the success of the production and apart from needing very accurate spot setting and focusing, extremely fine balancing of light intensities is required over approximately seventy cross-fading cues. There is never a black-out and the multiple use of the set rules out grouping of circuits or the retaining of specials for particular scenes, with the result that a mistake made on one cue is likely to remain " built in " for a long time. Further, for true finesse, many of the cues are best taken visually by the operator or timed to coincide with music cues which obviously calls for an operator fully conversant with the show.

View of stage set for opening scene showing problems of diagonal hanging overhead.

For a long time I have been doing my best to encourage Strand Electric to turn their undoubted skill from permanent switchboard installations to a truly portable and quick-to-fit-up touring switchboard with presetting facilities* and with the advent of the Thyristor dimmer it seemed at last possible, although to begin with Strand were concerned with the " clean-up " unit adjacent to the rack which was discouragingly large and heavy. During the next year I did my best to delay the proposed tour of *Oliver!*, although there were other delaying factors at work, until Strand achieved the breakthrough in portability with the Junior model, and when finally a date was settled for opening *Oliver!* at the Opera House, Manchester, they were already demonstrating a portable 20-way Thyristor switchboard at the New Theatre to check among other things that there was no interference from the chopped wave-form, particularly under full load conditions, with our microphone systems, including a radio microphone used by the boy playing Oliver Twist. At this point Strand were in the position to offer us a 60-channel three preset desk with dimmer racks of 10 units each. After careful study of our touring requirements, including phase separation, and individual dimmer loading, and the maximum connected load (150 amps per phase), we decided on 52 × 2 kW channels and 8 × 5 kW channels. In addition to the desk and dimmer racks there was a portable distribution

* *For the importance of presetting, see article on page 13.*

rack, with 60 ft. of incoming mains cable. From there the mains are distributed to the dimmer racks as are the control cables from desk to racks, all with preformed cables with plugs and sockets. There are three 10-channel patch boxes giving A or B selection, thus in fact, 90 circuits are under control. Our specification was that no individual item should by reason of weight or bulk be difficult for two men to handle, and this has been met. A conventional 12-way portable board seems very ponderous by comparison.

Bill Bruce, production electrician for more shows than he probably cares to remember, requested various extras to be built in such as cue lights and buzzer, master blackout, clock with sweep second hand, plot board and lights and extra identification labels for preset switches. Strand seemed to think these latter spoiled the unadorned beauty of their control desk, but we had our way and everyone is now happy—especially the operator.

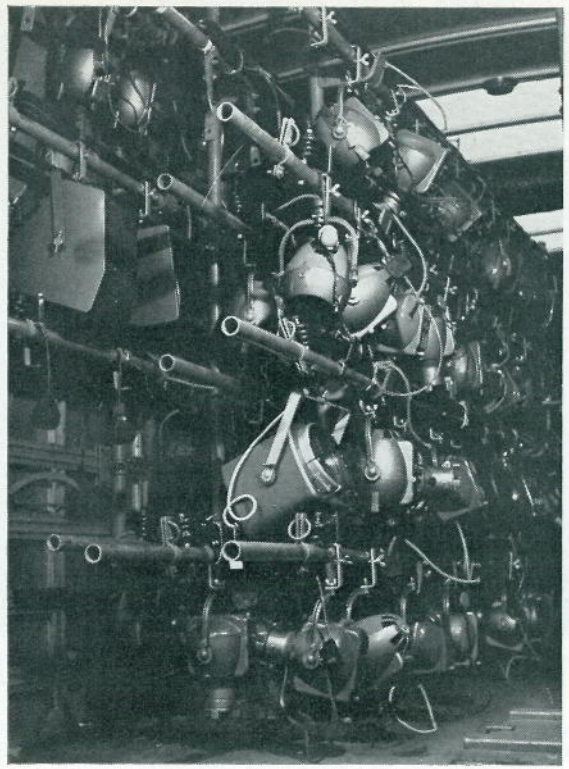
One serious problem, which I hope is now solved, was that of voltage variation in different parts of the country, as the control volts must be stabilised at 24 V or the dimming curve can go astray. This would cause considerable inconvenience in resetting marks. A variac has now been fitted for the control current on the desk and the voltage can be checked and adjusted before each performance.

When touring, therefore, provided the lighting equipment is plugged in and focused as in the previous theatre, virtually no fundamental change should be required to the lighting plot, and the lighting rehearsal is solely a matter of seeing each cue in turn to make any marginal adjustments.

At this point I should make it clear that no circuits or equipment whatsoever belonging to the local theatre are used with the possible exception of some of the centre F.O.H. spots for filling in for the full-up scenes. At no point in the show are we dependent on local equipment or operators.

The lighting rig is novel in that I was determined to break away where possible from the conventional system of dismantling all the equipment and travelling the bars, the spots, the lamps, the frames, the barn doors and the cables all separately which always means lengthy delays in rigging and plugging up. The solution was to travel each bar or boom complete with its lanterns fixed and plugged up to 100 ft. lightweight multicore which in its turn was looped along the bar and retained by special clips.

Obviously such bars could not be laid on the floor of a lorry. With the help of Hall Stage and Pickfords, racking was devised to meet my requirements to carry fifteen 20 ft. aluminium spot bars or booms complete with their lanterns and cables, all within a standard 1400 cu. ft. lorry. All the lanterns (Patts. 23, 123, 223) were lightweight die-cast with the exception of the Patt. 60s for the backcloth. No individual bar had more than six circuits and the 120 ft. 13-core 40·0076 P.V.C. multicores fixed to the bars were stripped back for 20 ft. to feed individual circuits. Each bar can be carried by two men, although for comfort a third man in the middle is desirable.



Interior of lorry showing bars and booms with lanterns ready to travel assembled.

For the extra spots required F.O.H. a large selection of aluminium scaffolding and fittings, including miniprop jacks, is carried to erect booms on either side of the auditorium. These are fed with 13-core 40·0076 asbestos covered multicore.

To give some idea of the speed of fit-up with such a system it took only one and a half hours at Manchester to hang, plug up and flash out ten 20 ft. bars with over ninety spots.

The sound equipment toured is a comprehensive microphone and mixer system designed by Stagesound to our specification to be plugged into and be compatible with any local sound reinforcement system likely to be encountered in the U.K. The microphones used are 8 Shure unidyne 545 F—four being used on special anti-vibration mounts in the footlights, the remainder being hidden in the scenery. There is also a Vox radio microphone and all these feed into a six-channel mixer unit (multiple input with A and B selections) with a visual meter to assess output level before feeding into the local amplifying system. To combat interference from thyristor switchboards,

Complete touring lighting control for Oliver! 60-channel 3-preset control, six 10 channel thyristor dimmer units and mains distribution unit.

electronic valves and other electrical equipment there is provided on the mixer a series of alternate earthing paths each with an on/off switch on the front panel. For technical communication and lighting rehearsals a four-channel two-way intercom is carried and we are currently developing a " hands off " type intercom whereby two-way conversations can be carried on without either party selecting " talk " or " listen ". This I used very successfully for lighting at Manchester, and Stagesound are now putting the finishing touches to it. Basically this new type of intercom works by using two separate amplifier channels one of which is frequency restricted. This cuts down the risk of the usual loop feedback.

With regard to the fit-up itself the order of get-in, hanging and building, has to be carefully planned following the principles of Critical Path Analysis as to the working hours of staff so that all components of the production are ready on time for the lighting rehearsal and technical run-through and so that the vital skilled touring operators are not exhausted at the critical time of the first night. Without our special touring switchboard and other facilities it is doubtful if *Oliver!* could be opened on tour to full West End standards before Thursday, as under conventional conditions a minimum of two full dress rehearsals would be required to train stage, flys and electrics staff, besides the additional time required to plot the lighting

on the house switchboard. At Leeds we plan to open on Wednesday night, but if all goes well I hope to be able to manage Tuesday openings and still have a performance as near perfect in technical standards as possible; certainly to a higher standard than many a West End show can boast.

While many of the ideas briefly mentioned above, together with a multitude of other small innovations, have yet to be proved over the next few months, I am confident that the team work of our production organisation, whose individual members are second to none in the industry, will ensure that the paying public in the provinces see the best entertainment which, needless to say, is the only way of combating declining audiences.

To the cynics who will query if the capital cost and teething problems of introducing modern equipment are justified, I can only state that, from available data and past experience, all the extra capital costs incurred should be recouped during the tour by the extra performances given due to opening earlier and by the labour costs saved prior to opening and during the run. The capital equipment remains as an asset and, further, one has the security of having all vital cues and functions always under the control of one's own staff and as a result a better show.

IDEALS AND REALISM IN LIGHTING CONTROL (I)

by Frederick Bentham

In my article " Towards an Ideal Lighting Control " in the last issue of TABS it was a question of what should we want to do in circumstances untrammelled by limitations of a technical or financial kind. As we saw then, given sufficient money, technological development today permits that approach for the first time.

We now have to consider lighting control where restrictions exist. The most important limitation will be economic. There simply will not be sufficient money available to say " I must have this or I must be able to do that ". This does not mean that nothing can be done; far from it. A financial limitation will not be aggravating for one can usually appreciate all too well the reason behind it. Limitation by unreason is irritating beyond all measure for this is sheer prejudice.

The solution at the lowest level of expenditure presents itself in the shape of the Junior 8.* It is true that there are only four dimmers, but eight circuits can be switched to share these or direct to the mains. The eight socket outlets can be used for more than eight actual stage lighting circuits by substitution. The question arises whether any extra money should be spent on a full set of dimmers and to this the answer must surely be " no "! When needed all circuits can be switched over to the dimmers for a fade-in or dim out. The

* *See* TABS, *Vol. 22*, No. *4*, *Dec. 1964*.

next event should be the purchase of a second Junior 8 to bring the number of circuits up to sixteen. After this a Master dimmer unit becomes the next desirable addition in order to provide full control. This will in fact give a much better facility than a full set of sixteen dimmers could do. They would only be difficult to work without some form of mastering. All this is set out in a *certain* commercial leaflet and should not need dwelling on here. Matters get more interesting when real money is available and the design of a control can be approached with some sort of liberty, however slight.

The Junior 8 (8 circuits) began at £50, presetting can begin at £500 (20 circuits) and this is true control.* No real freedom of control can be claimed without presetting and in consequence we should consider exactly what this means. Essentially the lighting changes which present operational difficulty are those which concern several dimmer channels at once. Provided the control has finger-tip levers close, but not too closely (not less than $\frac{3}{4}$-in. centres) mounted then it is not difficult to move up to six of them manually, though this will depend on their relationship to each other. It could be difficult under some circumstances to move more than two. In a slow change like a dawn several levers can be kept manually in play, a touch here and a touch there. Unfortunately a large number of changes affect what may be termed a chorus of lights and the larger the installation the more usual the chorus effect becomes.

Once a complete set of dimmers is ranged together under the fingers the next step is to cover the need to group-up for those chorus movements which are beyond manual dexterity. Now it does not matter whether some controls have done this mechanically hitherto or that others have relied on electrical selection to A and B master faders. What is of great concern is why the grouping-up is required. The answer is of course to get from one lighting effect to another. There is no reason why the next lighting effect should have any mechanical or electrical relationship whatever to the one that preceded it or to the one that will succeed it. It is true the particular lighting cue may represent a development of its predecessor but nevertheless the actual completed lighting effect is a picture in its own right and should not, at any rate in theory, be tied to what the controls and their operator may or may not be able to do. Inevitably the logical answer is provided by a preset—a complete second set of levers on which the next lighting effect can be set up in advance irrespective of the effect now being held as lighting in use. The cue when it comes will merely consist in raising one preset master fader and taking out the other as slowly or as fast as required. It is a matter of outgoing and incoming light and the correct amount of lap over.

For years the provision of a second set of control levers to act as a preset was out of the question for all but the relatively expensive systems and prior to that was not possible at all. Thus an economic barrier was presented and prior to that a technical one which no money could overcome. It is to those days that mechanical inter-

* *See page 28.*

locking and 2-way change-over switching belong. The thyristor dimmer makes presetting possible at reasonable cost and therefore this is the first auxiliary facility we should choose.

In small installations of up to say twenty channels it will be possible to alternate from preset I to preset II resetting the levers as required provided they are finger-tip type levers (Fig. 1). This plus some manual operation should do all that is necessary. No switches are required either, since individual levers can always be pushed down to simulate this effect. A cut switch in series with each preset fader is advisable if these are rotary type. Things become complicated when more channels are in question because the resetting time of a preset of forty channels must obviously take twice as long as one of twenty. It is still possible, however, to think in terms of presetting and add another set of dimmer levers. In consequence a forty channel 3-preset control makes sense with its two changes in reserve in addition to the one in use (Fig. 2). Small lighting changes in the nature of modifications to the more comprehensive changes represented by the presets can still be performed manually. I find it impossible to believe that when given a choice of 3-presets or two only with switch-grouping, one will not find the former infinitely more flexible. This would be in spite of the fact that a straight 3-preset will have only three masters and the corresponding switch grouping system will boast of four or even six masters.

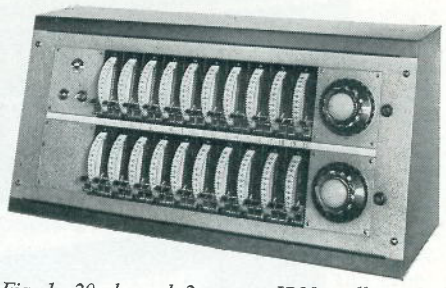


Fig. 1. 20 channel 2 preset JP20 wall or desk mounting control for thyristor dimmers.

Where the 3-preset scores is in its simplicity and complete independence of one set of controls from another. One can set up a preset almost " with abandon " for whatever is done has no effect on the lighting in use at the moment. Switch grouping in contrast can only be used with care; yet we must now explore the various ways of pressing it into service as a switchboard aid. The reason for this is that with a larger number of dimmer channels (such as sixty, eighty, one hundred or more) the operator can no longer reset a preset each time quickly enough, nor can extra presets be incorporated without the control panels becoming overlarge.

Some solutions have assumed as many as ten complete sets of preset levers but to get them in the space they have had to be miniaturised in various ways. This is bad practice because finicky levers do not allow manual " in scene " operation, nor easy reading for plotting.

The answer is certainly to extend the number of presets but *not in this way* and these methods were described in the previous

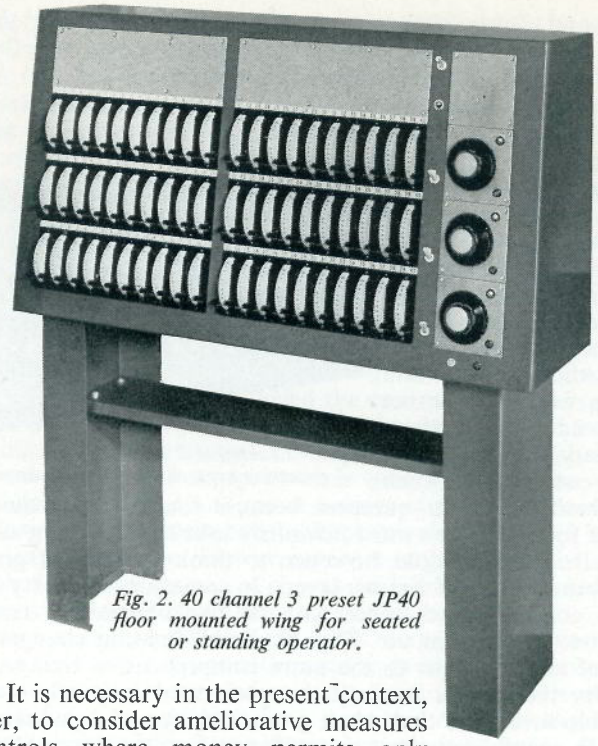


Fig. 2. 40 channel 3 preset JP40 floor mounted wing for seated or standing operator.

article. It is necessary in the present context, however, to consider ameliorative measures on controls where money permits only additions to the basic 3-presets that were satisfactory for forty channels, but which now have to cover double that number. There is a large number of theatres whose installation will centre around sixty or eighty channels, but whose scale of enterprise must put realism before idealism. Their need is for a family run-about switchboard, something with more capacity than the minis outlined above, but their lighting designers will have to make do without a Rolls-Royce or even a sports model. As has already been pointed out, once the number of levers in a preset exceeds forty, difficulties may be encountered in resetting in time for re-use. It follows therefore that the operator will be helped if he does not have to expend a whole preset for every change. Consequently separate groups must be formed within a preset. There are still large numbers of controls in existence where it was thought that permanent family groups would do this. Largely this idea sprang from the fact that in very early mechanical manual switchboards a certain number of dimmer handles were pivoted on a piece of shaft between two bearings.

The only permanent master that has any validity is one for all stage lighting in front of the house tabs. The footlight, where it exists, need not be on this, but the rest must as the object is to

prevent an ugly hotch-potch of spotlight patches appearing on the curtain. This one master knob overrides all other controls in respect of those channels. Beyond this, complete flexibility of choice must lie. Any channel on the larger controls should have the possibility of being connected either to group A or to group B. A 3-preset desk with A and B groupings will mean six masters plus an extra one for the front-of-house channels. The simplest way to form these groups is to have 2-way change over switch per channel (Fig. 3). Thus channels are selected to be either on all three A-group Preset masters or on all three B-group Preset masters. Two lighting cues can be got from each preset so long as no channels have to be common to both groups.

It would greatly extend the use of these two groups if it were possible to have a third one to look after channels not required to change. Unfortunately this means a three position switch and the centre position is never very easy to find. Also there would be the drawback of extra masters. Nine instead of six demands the complication of a grand master, as all these knobs cannot be operated together manually.

The main reason for the third group is to feed some channels which must remain unchanged while a cross-fade takes place within the same preset. If, however, selection on A or B was by pairs of independently working push buttons each of which locks-in unless tripped by its twin, then the result would be as follows: select A and trip B, select B and trip A, select both A and B (by pushing simultaneously) or trip both off (by not pushing one right home). All these actions could be very positive and would enable master B to be raised and master A taken out giving a change-over effect while channels selected as common would not alter at all. At one time strict 2-way switching had to be practiced, otherwise all channels on both groups would run together as one. This limitation still applies where lighting currents are directly switched or the control desk uses an A.C. network, and thus these facilities for commons belong to the more advanced control system with luminous control levers referred to in the next article.

It has been vehemently argued that one ought to be able to select groups quite independently on each preset. Such an arrangement receives no commendation from me because although minor advantages accrue on certain cues nevertheless for the cross-fades between presets, which are the commoner and more important cues, separate selection entails a great deal more work for the operator. This comes about as the groups on the outgoing preset must correspond to those on the incoming preset. When these are separately selected double work matching them up is involved.

Matching one control state to another leads to the problem of how best to arrange dimmer levers of one preset in relation to those of another. The worst possible method is to alternate them side by side. To perform a simple action like clearing a whole preset down to zero would involve picking out every second or third lever. So

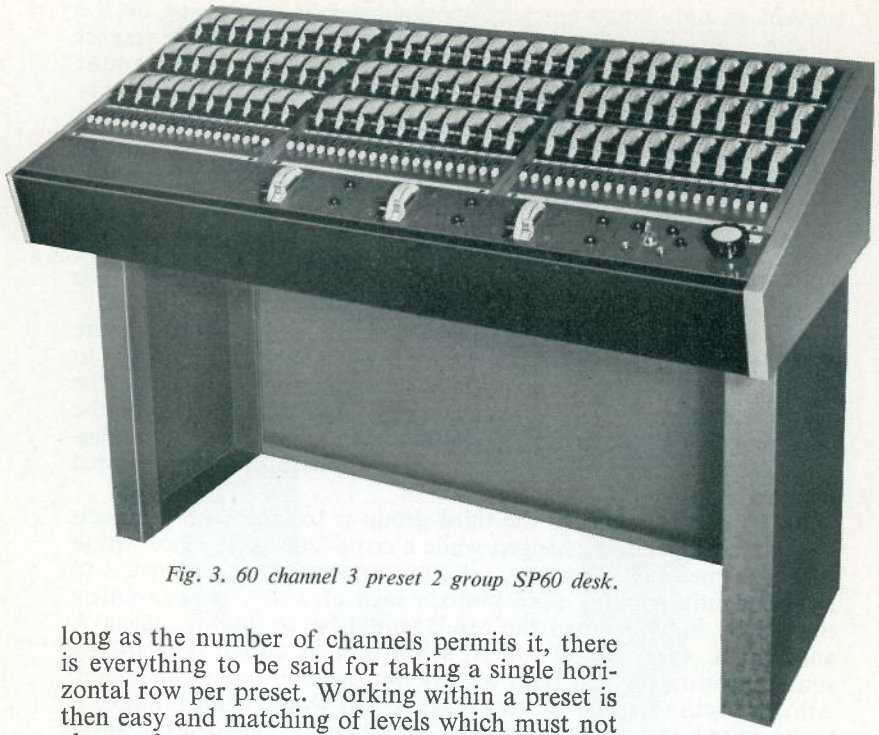


Fig. 3. 60 channel 3 preset 2 group SP60 desk.

long as the number of channels permits it, there is everything to be said for taking a single horizontal row per preset. Working within a preset is then easy and matching of levels which must not change from one preset to another is only a matter of glancing at the vertical neighbour.

We now have to consider further refinements that arise where more expenditure is warranted. The most obvious of these is the abolition of a separate switch per channel for group selection by integrating it with the dimmer scale. This is given a touch contact and is internally illuminated, in two colours—white and red. Using levers like this not only saves space but it is possible to send a selection signal by touching the scale and also to display four conditions by having the lamps on singly, together or off. Two important opportunities are opened up, the most important being that the selection on two masters singly or together to form commons as outlined above becomes readily possible also separate group selection on each preset does not represent a drawback since the group combination on one can be made to match any other at the touch of a button. Other facilities such as group memory action also follow. But this and the story of the remarkable reduction in equipment to do this over a period of only twelve months due to the changeover from relays to solid state switching, must await the next issue of TABS.

(*To be concluded*)

LIMOGES THEATRE

by Elidir L. W. Davies FRIBA

Having designed (way back in 1962) a movable theatre ceiling for the St. David's Theatre, Wales, which will allow for an adaptability of audience capacity, I was interested to visit a civic theatre at Limoges, roughly in the centre of France, and built by the architect Pierre Sonrel.

This theatre, situated on a high site in the centre of the town forms part of a compact group of buildings comprising the School of Dance, School of Music and capacious administrative offices and flats.

The auditorium of the main theatre has a seating capacity of 800. This is increased by 700 when the ceiling is raised. The School of Dance has a smaller theatre with an auditorium for 250.

In the main theatre the auditorium is circular in shape with a stalls area of 550 seats and a dress circle of 260 seats. This is designed for the presentation of drama. When, by raising the ceiling, the grand balcony is exposed, seating for 700 persons more is brought into use, chiefly for opera, large scale musicals and Municipal affairs.

The electrical operation of raising and lowering the ceiling was demonstrated. It is powered by four motors and it takes four minutes. It is silent beyond an almost inaudible hum.

Here I should describe that the movable part of the ceiling (painted grey), has its outer circle designed as a flat plane, while a fan-fluted centre (even decorated with a gold edge *en éventail*) gives an illusion of added height, no matter in which position the total ceiling is set (i.e. higher or lower), and furthermore this optical-cum-architectural illusion is not only conducive to a feeling of greater space in the theatre than it actually possesses but is reinforced in its solidity by a well calculated positioning of permanent lamps in the flat outer area.

It was explained that this adaptable ceiling, in its three years of use, had already proved of the greatest value not only theatrically but commercially and from a civic point of view. The town of Limoges is a Regional Centre and has no other building of this total capacity for its Municipal and Departmental or Provincial affairs.

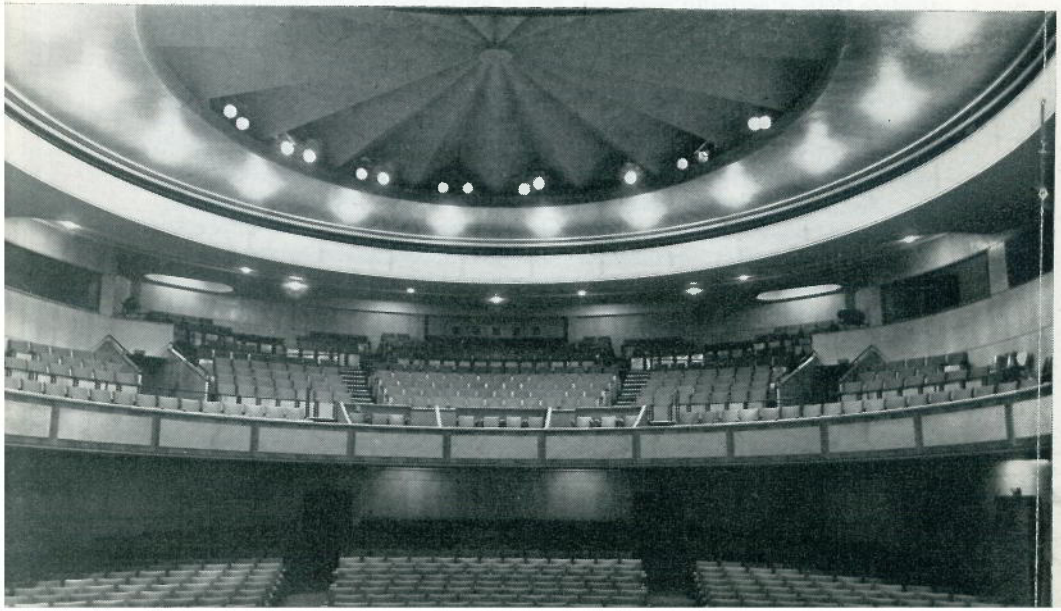
The stage Proscenium opening measures 40 ft. extending on each side to give a total width of approximately 85 ft. The depth is approximately 50 ft. Permanent footlights separate the orchestra pit and it appears that no forestage over the pit has yet been attempted. The stage lighting control is in the projection room which is set at the rear of the dress circle balcony, at the wing sides of which are set sound proof rooms for translating and where television cameras, etc., can be set up.

In the front of the house, the positions of lighting battens—or lighting bridges—were very sketchy. I had no-one to explain the

Complete three-tier auditorium at Limoges for 1,500 *seats and below reduced to* 800 *seats (two tiers) for drama by lowering the ceiling.*

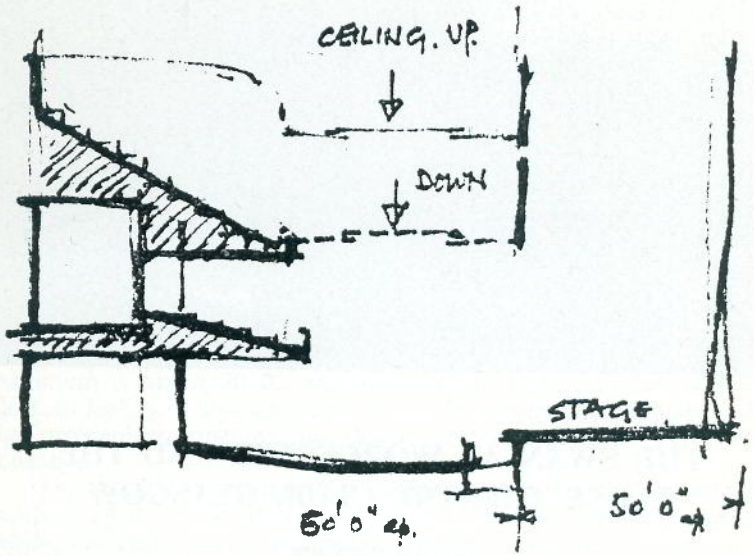
lighting arrangements but they were patently a little out of date according to or in relation to A.B.T.T. thinking.

The decor of the auditorium was *extremely* practical with its battleship grey fauteuils with a rather sombre red carpet, wood panelling of birchwood overall. It presented, I thought, a comfortable



but somewhat town-hallish appearance of a pre-war period, a little uninteresting and inappropriate to its many dramatic shapes. Other approaches to the theatre were generous and well executed, particularly the foyer with its huge glass fronted bureau, superlative quality marble floors and meticulously executed columns in hammered concrete. In fact all details were well considered.

The auditorium is separated from the public space by a continuous 8–10 ft. space and this is used for the hanging of coats, an arrangement which appears to quite overcome our familiar queuing



Sketch of theatre section at Limoges.

before a 4 ft. aperture. From this area one enters directly to the back of the auditorium at stalls level and by gently curving staircases which lead to dress circle and balcony level. As can be seen it was all very simple and 100 per cent workable.

The total cost given to me was approximately 1½ milliard francs (roughly £1,000,000) and for this sum a very comfortable theatre with well-equipped stage facilities and properly appointed dressing rooms and administrative offices were included.

The Editor wishes to thank M. GEORGES LEBLANC of CLĒMANÇON, PARIS for supplying the two photographs opposite.

THE SWAN AT WORCESTER AND THE CLOSE THEATRE CLUB, GLASGOW

by Martin Carr

Two small theatres opened their doors during 1965, creeping into being without any of the publicity that attached to their more glamorous contemporary at Guildford. For all that, they are no less worthy of consideration.

The Swan at Worcester is recognisable as a conventional Theatre. Built and run by the local Arts Association, it functions mainly as a home for local Amateur Societies, with occasional professional productions. The exact policy to be followed does not seem as yet to be fully determined, and this is reflected in certain features of the building.

Slightly away from the main centre of the City, the theatre is pleasantly situated overlooking the Racecourse. The building is unpretentious in appearance, in keeping with its modest cost (£60,000 plus donations in kind) but, nevertheless, the interior decor has been

carefully chosen to provide the maximum warmth and a welcoming atmosphere.

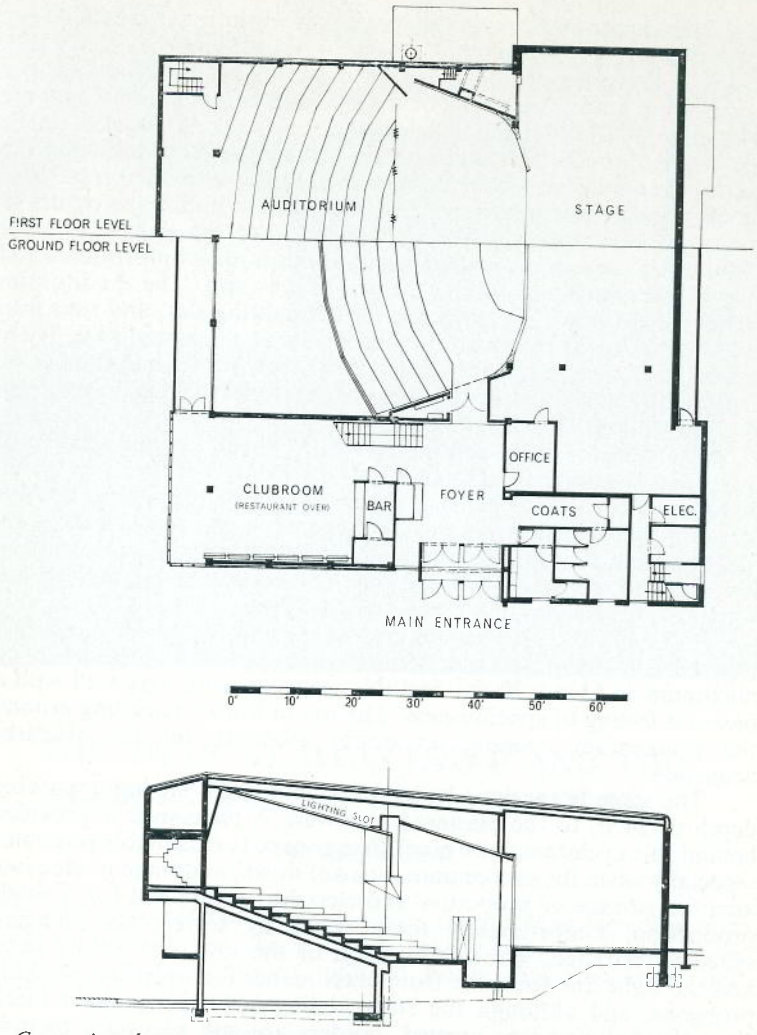
The audience of 353 is seated in a single raked tier facing a proscenium stage, the width of the opening being variable between 24 and 36 ft. The sliding panels which form the proscenium continue the decor of the auditorium, and are well contrived to minimise the picture frame effect. Unfortunately the seating is divided into three blocks by wide side gangways, and these tend to nullify the virtues of the adjustable opening. We understand that the gangways were required by local safety regulations, and this is most unfortunate, and should be unnecessary, in a theatre of this size. The Auditorium ceiling slopes down with a break for the lighting slot, and runs into the stage to form the top of the proscenium at a height of 14 ft. There is a curved apron stage with a maximum depth of 7 ft., and this can be lowered to auditorium floor level, or sunk to form a small orchestra pit (see section). The stage riser is 2 ft. 6 in.

The seating is very comfortable with a back to back spacing of 3 ft., and the vertical sight lines for the tiered seats are very good. Three rows of seats are normally placed on the flat floor area, but this seems to be something of a mistake. There is a gap between the stage and the front row, particularly noticeable when the apron is not in use, and this may tend to isolate the audience from the performers, which is unfortunate in a theatre of this size.

Although the proscenium can be opened out to 36 ft., in fact this is not done because of masking problems. The practical maximum is about 30 ft., and this seems to work very well with a pleasant feeling of spaciousness. The use of timber panelling around the proscenium opening no doubt accounts for the excellent acoustics.

The stage is spacious by amateur standards, having a working depth of 24 ft. to the plastered rear wall. A cross-over is provided behind this cyclorama (see plan). Wing space is reasonably generous, especially when the proscenium is closed down, and there is adequate area for storage of properties and electrical equipment for a single production. Unfortunately there is no fly tower, and hanging space is restricted. The combination of the low roof to the stage and the sight line from the front seats makes for overhead masking problems, and although the stage ceiling has been painted black since the building was opened, borders are still necessary to hide lighting equipment; these tend to be obtrusive from the near seats. It is perhaps regrettable that so many seats are placed upon the flat floor, and a lower stage combined with a continuous rake to the seating would have minimised the masking problems and also overcome the slight lack of contact from the stage mentioned earlier.

The theatre has a pleasant foyer which serves also as a restaurant during the day, and has adequate Dressing Rooms. There is a decided shortage of other accommodation, there being no wardrobe space or green room, while the minute Manager's office serves also as the Pass Door communication between stage and Front of House.



Composite plan at ground and first floor levels, and section of the Swan Theatre, Worcester.

For lighting, there are excellent Front of House positions provided by the auditorium ceiling bridge and side wall slots, all with easy access from the stage. When other technical problems have been dealt with it will be possible to provide a stage Lighting Bridge in the proscenium top which will be above the main Traverse curtain, but which will not occupy any hanging space over the stage. After an initial period of temporary control, the theatre is now equipped with a Strand Junior Preset system of 60 channels, 40 of

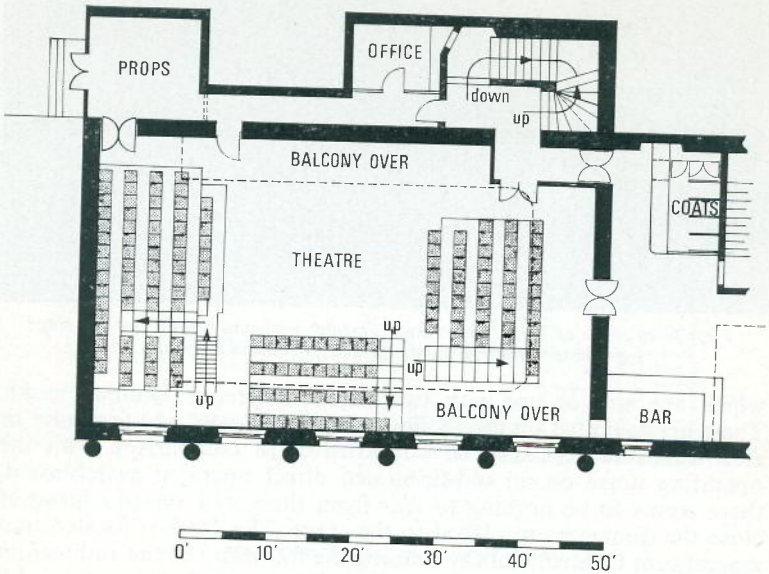
View from stage of Swan, Worcester showing wall and ceiling slot for stage lighting also control room, masked by vertical strips at rear.

which are now in use with two Junior Thyristor Dimmer racks. These are mounted on the fly floor, Stage Left, and any fan noise or electrical hum seems to be unobtrusive. In comparison with the operating noise on an old-fashioned direct operated switchboard, there seems to be nothing to fear from these new systems however close the dimmers are placed to the stage. The Desk is located in a magnificent Control Gallery running the full width of the auditorium rear wall, from which there is a first class view of all the stage. All dimmers are 2 kW variable load, and with three presets, this control represents luxury previously only dreamed of by Amateurs.* At the time of opening, the theatre was equipped with Strand lanterns in the 500 watt Baby range—Patt. 23s and 123s. These seem to be under powered for this building, especially in the Front of House positions, and the value of the 1,000 watts range is now being appreciated. There is often a tendency—in my view a mistaken one—to think that two 500-watt spots can do the work of a single 1,000-watt unit at less cost. Two small lanterns do not produce the same effect or the same light output as a larger unit.

Although the theatre is operated by Amateurs, who also provide the working staff, there is a professional Manager and also a resident Electrician/Stage Manager. Presentations to date have included besides local Societies, a number of concerts, several " One Man " shows, and productions mounted by a professional company gathered together for the occasion under the title of the " Lead Players ". It is believed that plans are in hand to build workshops and storage nearby, and if this is done the Swan would be well equipped to run seasons of professional Repertory.

* *The Junior Thyristor system which makes presetting economic for the first time in this field has only been available for six months or so* (ED).

Within the limits set by a very restricted budget and a possible lack of clear-cut policy, the Architect (Henry Gorst, B.Arch., A.R.I.B.A.) is to be congratulated upon a very satisfactory first venture into the field of Theatre Planning.

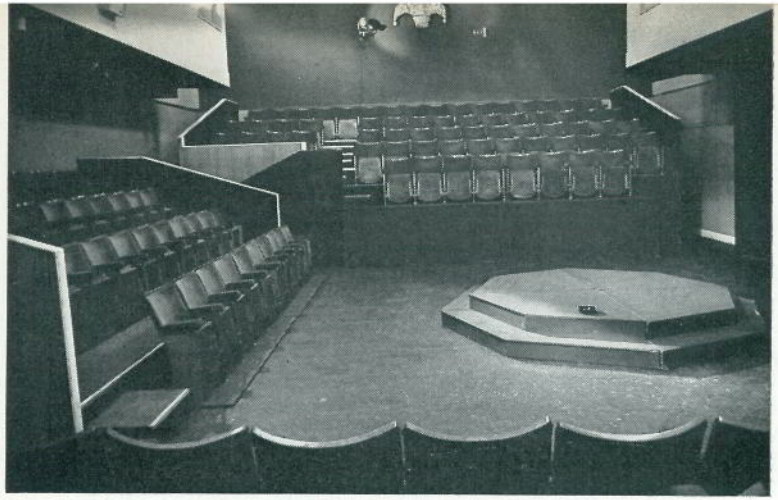


Plan of Close Theatre Club, Glasgow.

The Close Theatre Club at Glasgow has been formed as an associate organisation of The Citizens Theatre, and whilst coming under the same governing body, is self-contained and independent.

The Close is an experimental Open Stage Theatre, formed within the shell of an old, and at one time, infamous, Dance Hall, adjacent to the Citizens building. After some initial experiment with the audience " in the round ", it has now been agreed that the shape of the hall lends itself best to a three-sided seating arrangement, with an acting area 24 ft. by 20 ft.

The seating capacity is 149 arranged in three permanent blocks (as shown on the plan). These blocks are not symmetrically arranged around the acting area, and this leads to some lack of cohesion in the audience. The centre and stage left blocks are alike, but the larger block, stage right, is isolated by a wide gangway, and the seating is raised much higher. The need was to provide an actors " cross-over " beneath, but it has had the unfortunate effect of forming what is known locally as the " Jury Box ". Since the theatre was opened another row of seats has been added to the front of this " box " and this has made some improvement, but the photograph shows that there is still an entirely different audience/stage relation-



Thrust stage at the Close Theatre Club, Glasgow.

ship in this block. The separation between blocks is further stressed by their solid end facias; balustrades might lighten the effect and improve contact, though the seating is otherwise comfortable and well spaced. An interesting aspect of public behaviour has been revealed in the unwillingness of many to cross the acting area in order to reach the " jury box " block. This area is generally the last to be filled, and this often adds to the lack of balance in the audience. This is surprising considering that this is a Club Theatre, and that those who join do so in the knowledge of what to expect inside.

Technically, the Theatre is fortunate to have as a relic of the Dance Hall, a narrow balcony running along three sides. This forms an excellent lighting gallery, and all control is from one end. The overhang of the gallery brings it rather close to the acting area on one side, and its absence on the fourth wall can present problems; none the **less it is a valuable asset. The bulk of the lanterns used are** Patt. 23s and 123s, with a few Patt. 223s for the strong stuff. Unfortunately the ceiling of the hall is high (22 ft.) and although this helps acoustically for music, it is difficult to provide lighting over the acting area unless expensive " Pole-Op " lanterns were to be used.

Lighting control is by a Strand H.A. 24 switchboard fitted with 12 slider dimmers. Quite clearly this is inadequate for a theatre in which the lighting plays so vital a role, and the lack of master facilities is a grave disadvantage. One hopes that once the theatre is established a modern system may be installed.

Dressing rooms and ancillary spaces are minimal, but there is a pleasant Club room with bar and catering facilities. The decor of the hall is a trifle cold, and it is unfortunate that the ceiling has been painted white, thus emphasising its height.

Whilst this theatre illustrates some of the problems to be found in converting an existing building, it is nevertheless a bold experiment on the part of the Citizen's management.

PORTABLE CONTROL BREAKTHROUGH AT LAST!

On smaller installations it is possible to envisage a unit in which the dimmers and their preset controls are one. This is known as the Strand TEN/20 and consists of ten variable load thyristor dimmers (nine 2 kW and one 4 kW) connected by the now well-known Strand Junior 8 circuit to feed 20 circuits. Each of these can be switched independently on dimmer, on mains or off. Quick connection terminals, master isolator cum blackout switch and twenty 15-amp B.S. 3-pin socket outlets complete an extraordinarily compact unit. As with the Junior 8 but on a larger scale, connection is rapid and greatly increases the field of use. Portability is ensured by its small size 39 in. wide by 34 in. high by 16 in. deep and a weight of under 140 lb., which allows it easily to be carried through normal doorways up and down stairs etc. Nor is the TEN/20 confined to touring applications since it can form a self-contained permanent installation, low in cost and requiring the minimum outlay in installation as no special rooms or other site problems arise.

Strand TEN/20 self contained Preset control with cover to dimmer compartment removed.

PLANNING FOR DRAMATIC EDUCATION

by Percy Corry

In October 1964 a conference was held by the County Architect's Society and the National Association of Drama Advisers. As a result of this the latter are to publish a booklet on Design of Drama Spaces in Secondary schools. It intends to set out the primary aims of Drama in teaching and will suggest in some detail the sort of space and equipment that is needed by teachers in this field. Meantime we publish Mr. Corry's thoughts on this important subject.

The relationship of drama to education has changed considerably in recent years during which there has been some interesting but rather tentative experimenting. It is not yet easy to get a very clear statement of the practical implications of the change.

The fundamental change appears to be that " drama " or " theatre " is not now a subject to be taught as an extension of Eng. Lit., nor is it merely a method of relating a dramatic performance (the school play) to an audience. The processes of performance, with or without an audience, are now being specifically used as an educational aid to the development of personality. It is claimed that uninhibited expression in theatrical form stimulates the mental, intellectual, emotional and social development of the child and of the adolescent. Use of improvisation is said to create greater freedom of communication and to develop aesthetic appreciation.

What would appear to be in process of development is not Educational Drama, but what is best described as Dramatic Education. Just as Physical Education uses gymnastics as a means and not as an end, so Dramatic Education appears to use theatre techniques as a means of personal development, however un-theatrical an individual may be, and not for the purpose of creating theatre practitioners or theatre-goers. It may be assumed that in the process all students would develop some understanding awareness of the arts in general, which would include all the performing arts. This form of education, therefore, could help to produce discriminating and critical playgoers, which would be good for the theatre.

It is claimed that for the purposes of Dramatic Education the normal provision of a proscenium stage in an assembly hall is unsatisfactory. (Most assembly halls and their stages are unsatisfactory for most purposes.) Many experiments in providing alternative facilities are being made, particularly in the teacher training colleges, but the majority of new schools still have the usual assembly halls with flat floors and stages of varying degrees of inadequacy. It is not unusual for authority to be slow in discarding established practice, but it may well be that authority has not been presented with sufficiently convincing argument and specific practical alternatives. Much of what has been written on the subject is a repetition of vague generalities that could provoke questionable interpretation in practical terms.

What follows is an attempt to summarise what are believed to be the general requirements for Dramatic Education after discussion with various people concerned, and to suggest ways in which the facilities needed can be provided. If the requirements have been misunderstood or the suggestions are not acceptable, it is hoped that any objectors may be stimulated into submitting their criticisms. It is obviously impossible to provide one standardised solution. Variations are inevitable and are, in fact, often desirable.

The primary need for Dramatic Education is a room which is allocated specifically for the purpose. The room (hereinafter referred to as the D.E. Room) should be planned and equipped for that purpose, just as the gymnasium and the art room are planned and equipped for their purposes. The D.E. Room appears to have the following basic planning needs:

1. An area of 1,200 to 1,600 sq ft is favoured. The need is for flexible use of free space and it would seem to be reasonable to suggest a square of say 40 ft. by 40 ft. The word square has unfortunate modern implications and there may be strong preference for oblongs, circles, ellipses or hexagons, but these could be more restrictive than squares. Within the square the area of operation can be varied to suit individual fancy.
2. A minimum of two entrances should be provided, preferably opposite to each other. These should be not less than 3 ft. wide. Double doors with a 5 ft. opening would be an advantage. Bulky objects may have to be moved in and out of the room.
3. The floor should not be the highly polished hardwood show-piece so often favoured for stages in schools. Students will rush about the room: they will fall on the floor, sit on it and lie on it. At times they may want to paint it, wash it and re-paint it. They will drag around rostrums, scenic units and other articles. A heavy-duty linoleum would be suited to the needs. It may be requested that the floor should be capable of taking stage-screws, which would indicate a soft-wood floor, uncovered. Such screws, however, damage the floor surface and could create dangerous splinters. Brace-weights should be used instead of screws, without the hazards of the latter.
4. The surrounding walls should be free from obstructions. The walls may frequently be the background to scenic units and, as such, could require some sort of lighting. A normal requirement would be that some portion of the wall should have a smooth reflecting surface, painted off-white or a very pale blue-grey. Some users would probably prefer a rough textured surface and a darker colour. Either should be acceptable. In addition it would be an advantage to have a cyclorama cloth which can be moved on a track to any part of the perimeter.
5. Any windows should be at high level, say 10 ft. above floor level and must be capable of being blacked-out efficiently and easily. For much of the time daylight must be excluded. Ventilation must not be impeded and should have separate provision. Extra

heat will be generated by the stage lighting equipment and this should be taken into account.

6. It would be desirable to provide a 3 ft. wide gallery all round the room, about 10 ft. above floor level, in which case any windows would be at gallery levels.
7. Considerable noise will be created at times. The room should be sited and/or insulated to prevent nuisance to and also from occupants of adjacent premises. If possible, the D.E. Room should be near to the Art Room and to the Woodworking, Metalwork and Needlework premises, as the activities in those will often be complementary. Also, the changing rooms and showers provided for an adjacent gymnasium could probably be shared. It would appear to be sensible to include the Music Room in this block.
8. Storage space must be provided for properties, furniture, scenic units, rostrums, costumes, lighting equipment, etc. This space should adjoin the D.E. Room and access from both inside and outside the room would be useful. It is suggested that one wall of the room should consist of doors leading to a space about 8 ft. wide. Heavy and bulky articles would be stored at floor level. Shelves would be provided for the smaller articles. Rails and hangers would be necessary for costume storage.
9. The planning of the roof and ceiling will be affected by the flexibility required in the siting of lighting and other suspended equipment. A tubular steel grid over the whole area is sometimes demanded so that curtains may be suspended in any part of the room and that spot lanterns may be moved to direct light to whatever part is being used as the acting area. If any grid system is used there should be access from above. Otherwise, all the changes will have to be made from high ladders. At times there will be acting at floor level, with or without audience, and sometimes raised stages of differing heights and shapes will be improvised in various parts of the room, with or without curtains and/or scenic units. In practice it has been found that although it is fairly easy to move rostrums and other floor standing units, considerable time is wasted in moving lanterns about and re-focusing them when transferred to new positions on such a grid without top access.

   It is essential that the flexibility that is demanded shall be achieved easily, safely and quickly. Otherwise, in practice the flexibility will be minimised or the time wasted in making adjustments will be wildly disproportionate to the time spent in using the hard-won flexibility.
10. The general lighting should be planned to avoid interference with the lighting of the various acting areas. Pendants should be avoided. Flush fitting tungsten lights would be the most suitable. Fluorescent tubes should not be used. The general lighting should be dimmer controlled.

It is reasonable to assume that Dramatic Education practice would lead to a desire to produce and to attend more ambitious performances than are feasible in the D.E. Room. Although it should be possible to present performances to audiences in that Room, the audiences would be small and would be seated on movable rostrums. In Junior Schools it is probably unnecessary to provide any more ambitious production facilities. It is recognised that in the past there has been a reluctance to provide any drama facilities at all in Junior Schools. This reluctance has had some justification, but if the use of drama in education has been correctly stated it must be assumed that dramatic education will apply also, and possibly more emphatically, to students under eleven years old and a D.E. Room should be provided for them. Its equipment and facilities would doubtless be less extensive than for the senior students.

In the Senior Schools and Colleges it is assumed that the more ambitious performances would be desired. It is also assumed that those who study instrumental music and singing will wish to give and to attend orchestral and choral concerts in appropriate surroundings. For such performances an audience of 200 to 300 is generally favoured. Greater audience capacities are usually beyond the projection range of juvenile performers.

It is desirable, therefore, that in the senior establishments there should be, *in addition to the D.E. Room*, a simplified form of theatre with tiered seating and facilities for the more elaborate productions. This theatre should have some flexibility and be available not only for student performances. It could attract visiting companies presenting Children's Theatre, Mime and Dancing Displays, Concerts, etc. and also be available for lectures and meetings. It is certain that this proposed multiplicity of usage will be critically received by many of the advocates of drama studios. They fear, not without some justification, that many planning authorities will regard the old flat-floored multi-purpose hall as meeting the requirements. Whether they do so will depend largely on the force behind the statement of requirements. For thirty years and more some of us have damned the conventional assembly hall reasonably, imploringly, forcibly and exasperatedly but have had too little effective support from those who have to suffer from the inadequacy of such halls. It must be asserted emphatically that the theatre would be supplementary to the D.E. Room and that both are for their differing purposes. If both cannot possibly be provided the theatre could be planned to be adaptable for both purposes. A large stage area, not necessarily a raised stage, could serve as the D.E. Room. Alternatively, the latter could be increased in size and more extensive portable seating arrangements made.

Details are given later of a type of training college theatre which could be adapted, if necessary, to serve the dual purpose.

EQUIPPING THE D.E. ROOM

Fig. 1 shows a suggested lay-out for a square D.E. Room of the size suggested earlier (40 ft. by 40 ft.). Three entrances are shown and there is a 3 ft. wide gallery all round.

The basic equipment supplied should be suitable for improvised activities and for simple performances to student audiences of limited size. It is fairly certain that additional equipment will be required sooner or later. The nature and extent of such additions will depend on the ingenuity and enthusiasm of tutor and students. It is sometimes claimed that neither desks nor chairs are required for the students. If any chairs are supplied it must be possible to remove and store them easily.

Rostrums

These should be provided in a number of related heights to allow assembly either as tiers for seating or as platforms of varied shapes and sizes. Rostrums less than 1 ft. high would be of rigid construction

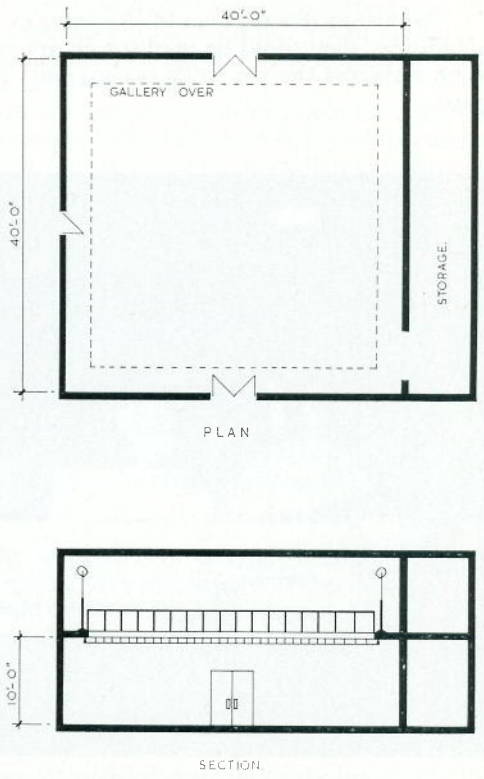


Fig 1.
Sketch plan and section of D.E. Room with gallery all round, 3 ft. wide. Normal activity space would be 34 ft. 34 ft.

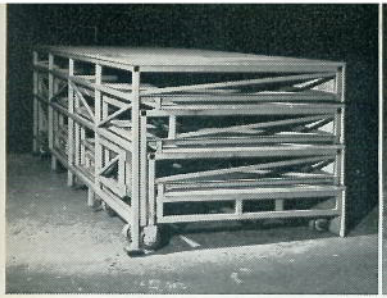
but those of greater height should have detachable tops and folding underframes to permit storage in minimum space when not in use. For maximum flexibility in use the units should conform to a standard module. Ease of handling is an important consideration and it is suggested that 6 ft. by 3 ft. and 3 ft. by 3 ft. are the most suitable plan sizes with heights in multiples of $7\frac{1}{2}$ in. or 8 in. maximum.

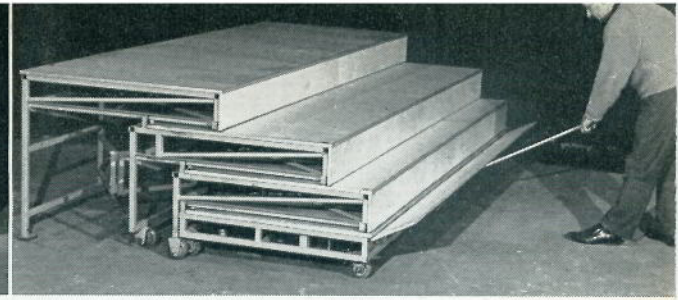
Retractable Seating Tiers

A less laborious but more expensive method of providing the stepped areas is the use of units of tiers which can be extended or retracted easily. These tiers are known in America as bleachers. They can be supplied in a variety of sizes and may be either portable or fixed. A standard size suitable for a D.E. Room could provide say three or four tiers, each 12 ft. long and 3 ft. deep. The height of the risers can be either $7\frac{1}{2}$ in. or 1 ft. 3 in.: if the acting areas are to be at floor level the 1 ft. 3 in. risers should be used. Four of the portable units 12 ft. $\times$ 3 ft, each with four tiers would provide considerable flexibility.

The retractable tiers could also serve as stepped acting areas and in addition, they could be used for choirs or orchestras, if required. When retracted the tier units occupy only about 3 ft. 6 in. of floor space.

Shapes and scenic units specially designed for use in Dramatic Education.





Retractable Tiering. Rear view of the equipment (left) when retracted, showing folding gates and square steel tube under-structure. Floor wheels are non-marking plastic; pressure and guide wheels in each tier are solid steel. Extending the Unit (right). The pull-rod lifts an automatic safety-brake and the unit is extended or retracted in a matter of seconds. The brake allows the unit to be anchored positively in any intermediate position.

Retractable Stages

If a raised stage is required and one of fixed height in a fixed position is acceptable, a retractable stage should be considered. This consists of an understructure of square-section tubular frames joined together by extending links. The stage top consists of hinged sections 3 ft. in depth. A box-unit with fixed floor forms the forestage to ensure rigidity. Steps are often inserted in this forestage. When the stage is fully retracted it occupies about 5 ft. depth of floor space with the forestage unit forming a platform of about 3 ft.

The size of the retractable stage can be varied to suit the size of the space available. A total depth of 18 ft., 21 ft. or 24 ft. is usually adopted in such installations. In use, the depth can be varied in multiples of 3ft.

"Shapes" and Scenic Units

These have been specially designed for use in Dramatic Education. There is a standard range of 21 units of a lightweight construction and of different sizes, all based on a 9 in. plan and $7\frac{1}{2}$ in. height module. Thirteen units are rectangular and can be arranged as a flat platform area or as stairs, seats, etc.: 6 units are triangles and semicircles and two are rectangular panels for backings, borders, screens, etc. These panels may be hinged together either vertically or horizontally. The units can be used to create varied settings on the acting area. The settings would be entirely suggestive: the units are not intended to provide any theatrical realism.

Cyclorama Cloth

A canvas cloth would be suspended on a single curtain track and this would create a background on which light and colour could be projected. The track would be fitted to the underside of the gallery and the cloth drawn manually to whatever part of the room was to be used for the acting area. The cloth could be used with or without fullness and when not needed it could be removed and stored, or could be bunched in a width of approximately two inches per foot run, i.e. a 60 ft. cloth would bunch to a width of 10 ft. As an alternative to the canvas cloth the track could be used for curtains.

Stage Lighting

Because of the desire to move the acting area to any part of the room, the lighting lay-out requires very careful planning to give the maximum possible flexibility. It must be assumed that it will not be economically practicable to provide separate lanterns for each possible position and that they must be moved about to give the required changes of direction. As was stated earlier, the transfer of lanterns from one position to another should be as simple as possible to avoid wastage of time and labour. If the suggested gallery is provided this will make it possible to choose, easily and quickly, a wide variety of positions and it would also permit the lighting control to be permanently installed in a position from which the whole of the area could be seen.

To avoid the need for a suspended grid over the room the gallery positions could be augmented by two lighting towers which have been specially designed for the purpose. The tower shown here has a top bar to accommodate four lanterns, adjustable in height from 10 ft. 6 in. to 15 ft. These heights can be varied in manufacture if desired. Incorporated in the tower is a ladder leading to a platform, with handrail, to enable the lanterns to be quickly and safely refocused when necessary. In the case of a Junior school it is probable that two lighting towers, each with four lanterns, would be sufficient without any lighting from a gallery. Dimmer control of all lanterns in use at any one time should be possible.

Suspended Grid

As previously suggested, if a grid is considered to be necessary, there must be access above as otherwise far too much time and labour are involved in moving the equipment from one position to another. The provision of cat-walk access to all the positions in which lighting equipment may be placed would be costly. Such a grid would seem to be of doubtful value if the primary purpose of the

Room is its use as a free working space.

If the grid is provided it is essential that the lanterns are always easily and safely accessible from the cat-walks for focusing, changing lamps or colours and for maintenance.

Suggested Schedules of Equipment

The equipment listed must be regarded as basic and it may well be that the people directly concerned could make out a good case for some variation in the types and their quantities. The basic equipment should be as flexible as possible. The need for, and the variety of additions will arise from the imaginative use of the basic units.

EQUIPMENT FOR JUNIOR STUDENTS

It is assumed that Junior students will have only limited concern with scenic effects and lighting and that the provision of folding rostrums for audiences may not be necessary.

Scenic "Shapes" and Units

A flexible basic set could include:
12 rigid rectangular rostrums (6 ft. × 3 ft. × 7½ in.)
6 „ „ „ (3 ft. × 3 ft. × 7½ in.)
These could form a platform of 15 ft. × 9 ft. × 1 ft. 3 in. high when required.
12 smaller and rectangular rostrums of varied sizes to create dais and steps.
2 each of triangles (3 ft. × 4 ft. 6 in. sides).
2 each of semicircles (3 ft. and 4 ft. 6 in. diameter).
3 panels 2 ft. 3 in wide and 5 ft. high.

Stage Lighting

Two Lighting Towers.
Eight Patt. 45 500-watt or Patt. 123 500-watt Fresnel spots.
One Junior 8 dimmer Unit.
Circuit Wiring. A minimum of 16 socket outlets should be provided at floor level in groups of four near the centre of each wall.

EQUIPMENT FOR SENIOR STUDENTS

It is assumed that the suggested gallery will be provided but not a suspended grid.

Rostrums

12 Folding Rostrums 6 ft. × 3 ft. × 1 ft. 10½ in.
8 „ „ 6 ft. × 3 ft. × 1 ft. 3 in.
8 Rigid „ 6 ft. × 3 ft. × 7½ in.

They would provide platforms of, say, 360 sq. ft. at 1 ft. 10½ in. high, 216 sq. ft. at 2 ft. 6 in. high.

They would also provide audience or performance tiering 24 ft. wide (as a continuous run, or in 4 × 6 ft. widths) with 5 treads and risers 3 ft. deep × 7½ in. high or 3 treads and risers 3 ft. deep × 1 ft. 3 in. high. The related dimensions of these units make possible

a wide variety of other arrangements as groups of scenic blocks or platforms.

Cyclorama Track and Cloth

Panorama Track, continuous along the four sides of the room, fixed underneath the front edge of the lighting gallery. If the cloth is to be kept taut, tie-tapes and base barrel, or a timber weight-trough, should be provided; chainweight will be sufficient if the cloth is to hang loose.

Scenic "Shapes" and Units

As the folding rostrums will provide platforms, etc. on the same modules, " Shapes " used by senior students would be chosen from the smaller step rostrums, triangles, semicircles and screen-panels.

Stage Lighting

Floor: Two Lighting Towers.
Eight Patt. 123 500-watt Fresnel spots with barn-door shutters.
Gallery: Eight Patt. 123 500-watt Fresnel spots with barn-door shutters.
Eight Patt. 23 500-watt Profile spots.
A continuous barrel along each side of the room at high level but accessible from gallery.
Control: Three Junior 8 Units with Master 3.
Circuit Wiring: There should be a minimum of 16 sockets for floor-level lighting, and 32 at gallery level. Of these any 24 could be used at one time.

Sound Equipment

There is an insistent demand for equipment to provide musical and other sound effects. It is obvious that music, " noises off ", recorded and amplified speech must form an important part of the dramatic activities. The following equipment has been suggested as reasonable: record player, tape deck, amplifier and mixer unit, microphone and two loud-speakers.

If the money available is restricted, the comparative values of sound and other equipment should be carefully considered.

FLEXIBLE THEATRE FOR COLLEGE OR SENIOR SCHOOL

As was suggested in an earlier paragraph, in Senior Schools and Colleges it is usually desirable that there should be a form of theatre in which there could be more ambitious performances than are possible in the type of D.E. Room proposed. In this theatre adequate facilities for audiences should be regarded as a necessity, and this completely rules out the conventional assembly hall with its inevitable flat floor.

The theatre should be available for student productions and concerts: it should also be suitable for visiting professional companies and for lectures, meetings, etc. It would be rash to stipulate any particular form of theatre as most desirable, as various different types could successfully serve the purposes by appropriate adjustment of techniques employed.

Fig. 2 shows plan and section of a theatre designed for a training college in the North-West. It is one method of providing the required facilities simply and not expensively. This theatre will have varied uses—plays, operas, mime, ballet, choral and orchestral concerts, lectures and meetings being the main usage. A separate hall is available for flat-floor activities.

The theatre will probably be most used with an open end-stage. There are no flying facilities. The auditorium and acting area have a common ceiling with apertures for lighting equipment, and for curtain tracks, with cat-walks above. The auditorium is steeply tiered and the acting area is at ground level. The size and lay-out have been partly dictated by site area and cost. Both could be improved with less restriction.

If a proscenium stage is required, and it is expected to be required, curtains will be suspended on the track over the front of

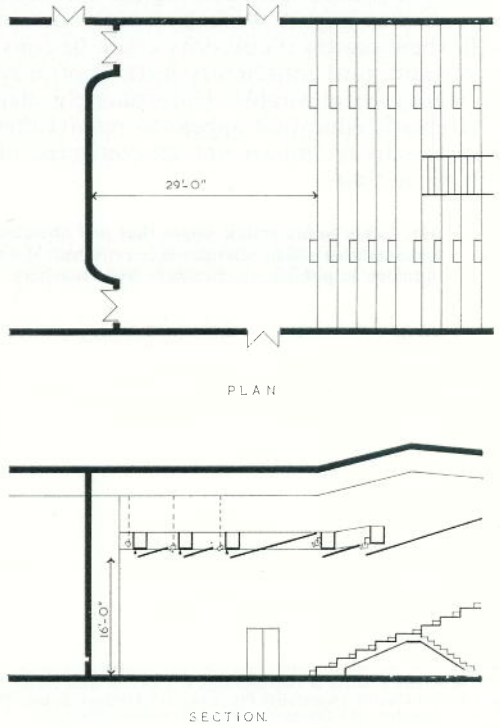


Fig. 2

Plan and section of theatre designed for Sedgley Park Training College. Architects Reynolds and Scott, Manchester.

the acting area to act as proscenium and main tabs. Side masking will be provided by book-wings.

If a three-sided stage is needed, rostrums will be used at each side of the acting area.

If a centre stage is wanted, rostrums will be used at the rear of the acting area, creating a transverse stage. Additional rostrums at the sides could be used to provide for an audience in the round, if desired.

The stage area of 47 ft. by 30 ft. could be cleared and used as free space for improvised activities, if desired, but it will not be a substitute for a D.E. Room as the theatre will be in fairly constant use for its varied purposes. Part of the need for a separate D.E. Room in any school is the impracticability of clearing the space of its desirable clutter after each session to allow for other activities.

A logical outcome of the development of Dramatic Education could be to provide each Junior and Senior School with a D.E. Room appropriately equipped, and for each district to have a flexible theatre which could be shared by a number of schools for their own performances and for visiting companies. There is no space left in which to argue the pros and cons. The case for schools sharing a theatre has been argued sporadically since 1947 without any obvious impact. Perhaps a vigorous campaign could now meet with some success if authority could be convinced that it is the least costly and most satisfactory method of providing facilities that will ultimately be inevitable. Unfortunately, many of the practitioners of dramatic education appear to restrict their concern to their own area of activity and are not yet convinced of the wider scope. They will be, in time.

Mr. Corry in his article hopes that any objectors to the requirements he postulates will be stimulated to criticism. We would welcome further opinions to publish, particularly from teachers. (EDITOR)

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