theatre

a thesis in architecture

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A THESIS PRESENTED TO THE FACULTY OF THE RICE INSTITUTE IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER IN ARCHITECTURE 1949
THE SCHEME PRESENTED IN THIS THESIS IS FOR A COMMUNITY THEATRE. IT IS NOT INTENDED AS A SOLUTION TO ALL OF THE PROBLEMS OF THE COMMUNITY THEATRE BUT RATHER IS OFFERED AS AN ABSTRACT SOLUTION TO BE MODIFIED TO MEET LOCAL CONDITIONS.

THEATRE TODAY IS BOTH AN ART AND AN INDUSTRY. IT MAY BE A COMMUNITY ENTERPRISE OF AN AMATEUR NATURE OR A HIGHLY PROFESSIONAL AND COMMERCIAL ART INDUSTRY SUCH AS EXISTS ON BROADWAY. IT IS A VERY IMPORTANT FORM OF ENTERTAINMENT AND A SOCIAL FORCE TO BE RECKONED WITH. BEARING THESE FACTS IN MIND IT IS APPARENT THAT THEATRE ARCHITECTURE IS A HIGHLY SPECIALIZED PROFESSION. FEW PRACTICING ARCHITECTS HAVE THE KNOWLEDGE AND EXPERIENCE NECESSARY TO DESIGN EFFICIENT WORKABLE THEATRES. STANLEY MCCANDLESS, ASSOCIATE PROFESSOR OF LIGHTING, YALE UNIVERSITY THEATRE SAYS, "ARCHITECTS SHOULD THROW AWAY MOST OF THEIR REFERENCE MATERIAL. A MOST VICIOUS CIRCLE HAS DEVELOPED WHERE ONE ARCHITECT COPIES THE MISTAKES OF ANOTHER; WHERE EQUIPMENT COMPANIES ARE FORCED TO LIST OUTMODED EQUIPMENT TO SUPPLY THE 'STICKS' BECAUSE ARCHITECTS CONTINUE TO SPECIFY IT AND, WHERE THE YOUTHFUL GLAMOUR OF ANOTHER DAY SECRETLY LEADS A MIDDLE AGED BUILDING COMMITTEE TO REMEMBER THE DAY WHEN FOOTLIGHTS AND BORDERLIGHTS . . . A FEW CUTOUT WINGS AND A BACKDROP WERE ENOUGH".

.... REACH OF ONE ANOTHER (WITH THE ADDITIONAL POSSIBILITY OF GOOD RESTAURANTS AND SOME SHOPPING FACILITIES NEARBY) WILL ALLOW THE PEOPLE TO MORE EASILY FIND COMMON GROUND.

A DISCUSSION OR CONSIDERATION OF THE SITE ALSO TOUCHES THE MATTER OF FINANCING. IT SHOULD BE OBVIOUS THAT THERE IS NOTHING IN THE DRAMATIC ART FORM OR IN THE NATURE OF THEATRES THAT MAKES IT IN ANY WAY LESS NOBLE IF IT IS ASSOCIATED WITH INDUSTRIES THAT WILL MAKE IT A SELF-SUPPORTING INSTITUTION. MOST THEATRES OF THIS TYPE COULD TO THEIR VERY GREAT ADVANTAGE HOUSE OTHER FACILITIES WHICH WOULD HELP PAY FOR THE MAINTENANCE OF THE BUILDING, INSURANCE, TAXES AND ALL THE MANY OVERHEAD CHARGES WHICH MAY MAKE THE DIFFERENCE BETWEEN SUCCESS AND FAILURE IN A COMMUNITY THEATRE GROUP. IT HAS BEEN SAID 'NO MATTER HOW HIGH MINDED THE PRODUCERS AND PLAYERS AND BOARD OF DIRECTORS MAY BE THE ARTISTIC ELEMENTS WILL REFLECT THE EFFECT OF THE BOX OFFICE AND OF THE THEATRE'S REAL ESTATE BALANCE SHEET.'

CIRCULATION

IN THE COMMUNITY THEATRE EASE OF MOVEMENT FOR PUBLIC AREAS IS A PRIME REQUISITE. ALL FACILITIES FOR PUBLIC USE SHOULD BE RELATED IN SUCH A MANNER AS TO PROVIDE EASY ACCESS BETWEEN THE VARIOUS PARTS TO PERMIT FULL USE OF SUCH AREAS BY THE AUDIENCE BEFORE THE SHOW, BETWEEN THE ACTS, AND AFTER THE FINAL CURTAIN.

WITH COMMUNITY PARTICIPATION IN ALL PHASES OF THE PRODUCTION AND PRESENTATION OF THE DRAMATIC PERFORMANCE AN EVENING IN THE COMMUNITY THEATRE MUST BE CONSIDERED A SOCIAL EVENT AS WELL AS ENTERTAINMENT. IN MANY OF THE OLDER EUROPEAN THEATRES THE SPECTACLE OF THE SPECTATORS WAS CONSIDERED AND SPACE PROVIDED FOR CONVERSATION DURING INTERMISSIONS HOWEVER THIS GENTLE SOCIAL EXCHANGE IS NON INCOME PRODUCING AS FAR AS THE MASS PRODUCTION AND DISTRIBUTION OF HOLLYWOOD'S MOVIES OR BROADWAY'S 'ETERNALLY ARTIFICIAL PIECES' IS CONCERNED AND HAS BEEN NEGLECTED.

VESTIBULE


THE USUAL ARRANGEMENT OF THE BOX OFFICE FACILITIES IS TO PROVIDE TWO WINDOWS, ONE FOR CURRENT SALES AND ONE FOR ADVANCE SALES. THE VESTIBULE SHOULD PROVIDE ADEQUATE SPACE FOR TWO LINES TO FORM IN FRONT OF THE BOX OFFICE WINDOWS WITHOUT BLOCKING THE ENTRANCE TO THE LOBBY. IF THE THEATRE IS TO HOUSE OTHER INCOME PRODUCING FACILITIES ACCESS TO THESE FACILITIES SHOULD BE THROUGH THE VESTIBULE.
BOX OFFICE. The box office should be located in the vestibule to provide protection from the weather for patrons buying tickets. The box office should command the entrance to the lobby and at the same time permit lines to form at the ticket windows without obstructing the lobby entrance. Warren Munsell, business manager of the theatre guild, states that the ideal box office should be at least 8' x 12' and should have outside ventilation. It should have two ticket windows—one for current sales and one for advance sales. These windows should be close enough to have access to each other yet far enough apart to allow separate lines to form in front of them. The actual area should be determined by the use of the house. Ticket racks are needed for each show for which advance reservations are being accepted and desk space for working mail orders. A safe for holding the receipts may be located in the box office or in the managers office. In the event that the house is to be used for motion pictures between dramatic presentations (motion pictures such as outstanding foreign films or revivals may be shown on a subscription basis or tickets may be sold at the box office to increase income by preventing the house from remaining dark between dramatic productions), the usual equipment found in the motion picture box office should be provided. This would include the automatic ticket dispenser and the change machine. In the proposed scheme the box office is located to provide easy circulation between the offices on the upper level box office and toilet facilities without using the public areas or facilities.
OFFICES

To operate efficiently the theatre will require a limited staff of permanent personnel. This staff should include a business manager, director, designer-technician, costumer and cleaning personnel. Offices must be provided for the members of the staff. The business manager is traditionally associated with the front of the house operations and office space is provided for his activities directly over the box office. As touring companies may perform in the theatre facilities for the company manager and advance press agent are provided adjacent to the house manager's office. The director's office is located off of the interior court. This location was selected as it provides easy access to the auditorium or the green room, yet it is removed from the possible noisy activities on stage or in the shop during preparation for a production.

A work space office is provided for the costumer. This is necessary for working on costume designs, keeping records of costumes, material purchases, checking fittings and supervising the making of costumes. Costume office is located on the flow line between dressing rooms and the green room in order that the costumer may check the costumes before actors go on stage.

The designer-technician office is directly adjacent to the shop area and is provided with a glass partition to allow technician to supervise all activities in the shop. This is a 'must' when amateur carpenters are using power saws and other machine tools. Space is required in the office for storing designs, ground plans, lighting diagrams and all purchase records regarding materials necessary for the execution of stage sets.

THE LOBBY

As mentioned in public circulation the performance in the community theatre must be considered as a social event as well as a dramatic entertainment. Therefore the lobby should be arranged to show off large groups of people and their clothes. A combination of lobby and exhibition space is desirable as it is hoped that the community will take an interest in the production of the play as well as in the presentation and exhibit space. It is desirable to show the various developments, designs for costumes and stage scenery and models of sets. This space is not to be used as an art gallery. However, some theatres of this type do permit local artists to show their work in such spaces. This may be another approach to the problem of breaking down the separation of art audiences.

The lobby is the social area before and after the performance and during the intermissions and as such must accommodate a large portion of the audience at one time. The actual size being determined by the size of the house. (No exact formula can be given for square feet of lobby required per seat). If the building is used for daytime presentations natural light in the lobby is desirable. The finishes in the lobby should be durable and easily cleaned and the floor should be carpeted to reduce noise.

The large lounge and exhibition space in the proposed scheme may be considered as part of the lobby area. It is felt that a well-appointed area of this size would have many uses in addition to those directly related to the theatre. In addition to rehearsal this space may be used for receptions, meetings, parties and other small social gatherings. A pantry adjacent to the lounge provides serving facilities for refreshments.
THE SCHEME PROPOSED IN THIS THESIS IS IN AGREEMENT WITH THIS ARRANGEMENT EXCEPT FOR THE KITCHEN INDICATED IN CONNECTION WITH THE WOMEN'S DRESSING ROOM.
FACILITIES ADJACENT TO THE LOBBY

1. TOILETS
Adequate toilet and powder room facilities should be provided for the public. These should be located in such a manner that they are not the most obvious thing upon entering the lobby. If possible, the toilets should be located on the same level as the lobby. Very often due to space limitations, the toilets are located in the basement. This is not the ideal location.

2. CHECKROOM
Facilities for checking coats should be adequate or omitted entirely. The checkroom should open from the lobby, provision should be made to have a sufficient number of attendants and a sufficiently large opening so that standing in long lines after a performance is not necessary. If other facilities are to be located in the building (bookshop, studios, etc.), the checkroom may be arranged so as to serve the additional facilities.

3. GREENROOM
Although the greenroom is primarily for the actors, it is often used by the public to meet the members of cast. This space may also be used as a small lounge or rehearsal room. Its usual function is as a lounge for actors who are waiting for their cues.

THE AUDITORIUM

The average capacity for a community theatre is approximately 800 persons or less. The need to vary an 800 seat auditorium is not urgent, but if it is felt that provisions should be made for smaller audiences, curtains or folding walls may be used. If such equipment is used it should be placed in such a way that it does not appear to change the essential proportions of the auditorium. It is true that empty seats visible to actors are detrimental to good performances. In the proposed auditorium the capacity is varied for intimate staging by the use of a space definer. (See Diagram E.)

Local conditions will help in determining the proper size of the auditorium; however, it would be well to keep in mind the disadvantages of a small auditorium. With a small auditorium, the production is forced into a longer run to make expenses. In the community theatre with amateur players, the actor will quite probably have to work all day (in some non-theatrical job) and play his part at night. Such a schedule is not conducive to high grade performances over a period of several weeks.

If for financial reasons provisions for road shows must be included, the minimum seating will increase to 1200 or 1400. This is necessary to provide a reasonable income for a short run by a professional company under Equity. This increase in seating may bring many disadvantages among which are a lack of intimacy and lack of flexibility in auditorium shape and stage type. It is questionable whether the possible income and educational value to be derived from touring companies or a revived 'road' would justify modeling the community theatre after the professional theatre.
THE BASIC SEATING ARRANGEMENTS IN USE TODAY IN THE THEATRE.

1. CENTER AISLE
   This arrangement is rather common in small auditoriums. The fault with this scheme is that the area providing the best sightlines (the center of the house) is denied for seating.

2. CONTINENTAL
   A fairly common seating arrangement in Europe. This system enjoys only limited use in the United States. Increased spacing between rows which in effect provides a cross aisle between each row. Usually limited to houses with less than 500 capacity.

3. SIDE SECTION
   Seating is divided into three sections and access is provided by two side aisles. Width of the center section of seats remains fairly constant. The taper or splay of the side walls near the front of the house is compensated by varying the number of seats in the side sections. This arrangement is superior to the center aisle.

4. STADIUM
   A more complicated seating arrangement than the first three schemes. The stadium type is used in the larger capacity auditoriums. Basically the side section scheme with the addition of two crossovers.
FACTORS CONTROLLING THE CHOICE OF SEATING ARRANGEMENT.

1. REQUIRED SEATING CAPACITY.

2. BUILDING CODE (USUALLY SETS MAXIMUM NUMBER OF SEATS BETWEEN AISLES AND MINIMUM SPACING BETWEEN ROWS).

3. THE DISTANCE FROM THE REAR ROW OF SEATS TO THE STAGE IS ALSO A FACTOR. IF THE DISTANCE IS TOO GREAT IT IS IMPOSSIBLE TO PLAY DRAWING ROOM COMEDIES OR ANY INTIMATE TYPE OF PLAY AS THEY WILL NOT CARRY TO THE REAR ROW OF SEATS. 75' - 100' IS A REASONABLE DISTANCE FROM REAR ROW TO STAGE.

4. SIGHTLINES FOR THE SIDE SEATS IN AN AUDITORIUM SHOULD PERMIT AT LEAST 2/3 OF THE ACTING AREA TO BE SEEN THROUGH A CONVENTIONAL PROSCENIUM. WHEN BALCONIES ARE NOT USED A COMPLETE VIEW OF THE FORESTAGE SHOULD BE POSSIBLE. THE LATERAL SPREAD SHOULD BE CONTROLLED AS SEATS BEYOND A TEN DEGREE ANGLE FROM THE SIDE OF THE PROSCENIUM ARE USUALLY NOT VERY GOOD.

NB THE 100' DISTANCE MENTIONED IN (3) IS DESIRABLE EVEN IN AUDITORIUMS OF 1200-1400 CAPACITY. IN THE LARGER AUDITORIUM IT MAY BE NECESSARY TO USE A BALCONY. IF A BALCONY IS USED THE BALCONY FRONT SHOULD BE WITHIN 50' OF THE STAGE.

AUDITORIUM LIGHTING


AUDITORIUM CEILING

THE CEILING OF THE AUDITORIUM SHOULD ALLOW FOR PLACEMENT OF BEAM LIGHTS. THESE ARE SPOTLIGHTS USED TO LIGHT THE ACTING AREA. BEAM LIGHTS ARE USUALLY LOCATED IN SLOTS. IN MANY BROADWAY THEATRES WHICH ARE NOT EQUIPPED WITH CEILING SLOTS IT IS NECESSARY TO MOUNT LIGHTS OF THE FRONT EDGE OF THE BALCONY. THE INTERVAL BETWEEN SLOTS SHOULD BE 15'. FOR MAXIMUM FLEXIBILITY IN MOUNTING POSITIONS THERE SHOULD BE AN EXTENSION OF THE OPTIMUM CEILING SLOT DOWN THE SIDE OF THE AUDITORIUM. THE SIDE SLOTS IN THE PROPOSED SCHEME ARE A CONTINUATION OF THE FIRST CEILING SLOT. THE CEILING AND SIDE SLOTS SHOULD BE ARRANGED SO AS TO ALLOW LIGHT BEAMS FROM THE INSTRUMENTS TO PASS TO THE STAGE WITHOUT SPILLING LIGHT ON WALLS OR CEILING SURFACES. SLOTS SHOULD BE LARGE ENOUGH TO PROVIDE A CLEAR SPACE FOR ALL MOUNTING AND MOVEMENT OF THE LIGHTING INSTRUMENTS THROUGH A PREDETERMINED DIRECTIONAL RANGE. IN PLANNING THE CEILING SLOTS ACCESS TO ALL LIGHTING POSITIONS FROM BACK STAGE BY DIRECT ROUTES SEPARATE FROM AUDIENCE TRAFFIC MUST BE PROVIDED AND EACH POSITION MUST BE LARGE ENOUGH FOR AN OPERATOR TO SET, FOCUS, AND MAINTAIN THE INSTRUMENTS. THE MOUNTING APPARATUS PROVIDED SHOULD BE ADJUSTABLE TO ALLOW THE USE OF VARIOUS TYPES AND SIZES OF INSTRUMENTS. THE INITIAL PLACEMENT OF THE CEILING SLOTS WILL BE DETERMINED BY THE DESIRED ANGLE OF THROW OF THE BEAM LIGHTS. THE FACILITIES DESCRIBED SHOULD NOT BE COMPROMISED WITHOUT CONSULTING SOMEONE FAMILIAR WITH THE PROBLEMS OF STAGE LIGHTING.
DIRECTORS REHEARSAL CONTROL STATION

THIS FACILITY IS A NEW ONE NOT USUALLY FOUND IN THEATRES TODAY BUT IS PROPOSED AS AN ADDITION WHICH WILL MAKE FOR A MORE EFFICIENT PRODUCTION. THE CONTROL STATION SHOULD BE CONVENIENTLY LOCATED AT A CENTRAL POINT ON THE MAIN FLOOR OF THE AUDITORIUM. IT WILL CONSIST OF A BOX BUILT INTO THE FLOOR BELOW THE SEAT IN FRONT OF THAT SELECTED AS A CONTROL STATION. THE BOX SHOULD CONTAIN A STANDARD 115 VOLT CURRENT OUTLET FOR LIGHT, STANDARD TELEPHONE JACK CONNECTED WITH A SIMILAR JACK AT THE SWITCHBOARD, A STANDARD MICROPHONE JACK CONNECTED TO AMPLIFIER AND LOUD SPEAKER FACILITIES ON STAGE. THESE FACILITIES WILL ALLOW THE DIRECTOR AND HIS ASSISTANTS TO CHECK THEIR PLANS IN THE OTHERWISE DARKENED AUDITORIUM AND TO MAKE ADJUSTMENTS AND KEEP IN TOUCH WITH THE BACKSTAGE WORKERS WITHOUT INTERRUPTING THE REHEARSAL AND TO ISSUE DIRECTIONS TO ACTORS ON STAGE WITHOUT THE USUAL SHOUTING.

THE STAGE

BASICALY THE STAGE SHOULD BE AN EMPTY BOX SURROUNDED BY FOUR WALLS WHICH MAKE POSSIBLE A FREE AND EASY MOVEMENT OF SCENERY EITHER VERTICALLY OR HORIZONTALLY. IN CONNECTION WITH THE FORM THIS SPACE SHOULD TAKE THERE EXISTS DISAGREEMENT EVEN AMONG THE EXPERTS. THIS DISAGREEMENT IS ESPECIALLY CONCERNED WITH THE GRIDIRON. THE GRIDIRON HAS BEEN DEFINED AS A NUMBER OF STRUCTURAL SHAPES SUSPENDED 70'-90' ABOVE THE STAGE FLOOR USED TO SUPPORT THE LINES AND EQUIPMENT NECESSARY FOR HANGING AND FLYING SCENERY. WITH CERTAIN EXCEPTIONS IT IS OBVIOUS THAT A GIVEN AMOUNT OF CUBAGE UP IN THE AIR DOES NOT HAVE THE MULTIPLICITY OF USE THAT IT WOULD HAVE AT STAGE LEVEL.

IT SHOULD BE NOTED THAT THERE ARE SEVERAL STRUCTURAL TYPES OF SCENERY WHICH CANNOT BE SET OR SHIFTED BY ANY MEANS OTHER THAN HANGING OR FLYING. THERE ARE OTHER STRUCTURAL TYPES WHICH MAY BE SET AND SHIFTED BY OTHER MEANS BUT MAY BE HANDLED MOST EFFICIENTLY BY HANGING OR FLYING. EDWARD C. COLE, ASSOCIATE PROFESSOR AND PRODUCTION MANAGER OF THE YALE DEPARTMENT OF DRAMA, STATES, "A THEATRE WITHOUT A GRIDIRON LIMITS THE CREATIVE EXPRESSION OF THE PLAYWRIGHT DIRECTOR SCENE AND LIGHTING DESIGNER AND FORCES THE TECHNICIAN TO EXTREMES OF INVENTIVENESS AND INEFFICIENCY TO MOUNT AND HANDLE SCENERY AND LIGHTING EQUIPMENT". ARCH LAUTERER OF MILLS COLLEGE (AN OPPONENT OF THE GRIDIRON) FEELS THAT FOR EDUCATIONAL AND CIVIC THEATRES A HORIZONTAL GRIDIRON WHICH WOULD PROVIDE FOUR TIMES THE FLOOR AREA IS PREFERABLE TO THE PERPENDICULAR GRIDIRON. THIS ARRANGEMENT GIVES ADDITIONAL AREA FOR MOUNTING SHOWS AND REHEARSALS.
SWITCHBOARD
For efficient lighting control the switchboard should not be located backstage. The operator should have a view comparable to the best seat in the house. Some recent theatres have located the switchboard in the orchestra pit masked from the view of the audience. Such an arrangement in the proposed scheme would destroy the feasibility of the forestage area so the board has been placed in a booth at the rear of the house, instead of the usual manual board. It is proposed that an electronic console control, such as that developed by George Izenour be employed. This new system for electronic control of lighting equipment by either fingertip or automatic control consists of only two compact units, the console control desk and its attached preset panel. This tube bank contains the actual dimming and switching equipment is located backstage out of the way. In the proposed scheme this is indicated as the tube room. This system is the first attempt to apply electronic intensity control to lighting for the theatre. With its flexibility there is hope of achieving Apella’s dream of “the scene made to live in light—light the perfect slave—unifying—clarifying—emotionalizing—light defied.”

PROJECTOR ROOM
Locate at the rear of the auditorium near the light control booth. Projection booth should provide all necessary equipment for the showing of films. Facilities may be utilized in conjunction with projected scenery and special effects.

SOUND CONTROL
Adjacent to the projection booth the sound control room should contain necessary turntables amplification system and proper storage for sound effects records and other records. All sound equipment should be built in. In conjunction with the amplification system, microphone outlets should be provided at one side of the proscenium back stage and in the center of the forestage. Sound control room may be used by director as a viewing room.

FOLLOW SPOTS
On either side of the facilities at the rear of the house a wing has been provided for follow spots. Wings shall have a rail but above the rail will be open. Sound and light control booths will be glazed.

FORESTAGE
As this is the portion of the stage on the audience side of the proscenium it may be considered as part of the auditorium rather than as part of the stage. A very workable use of the forestage is achieved by using a three position elevator for the forestage. One position would be as a continuation of the stage level. The second position would be at the floor level of the auditorium. This would allow extra seats to be brought in for special events. The third position would be slightly below the auditorium floor level, which would provide an orchestra pit for musicals or operettas. For other arrangements of this area see sheet E. In the proposed arrangement the side slots are available for additional entrances for actors or for special mounting positions for lighting instruments. The additional entrances make possible an Elizabethan staging. Before planning any special arrangement with an Elizabethan stage it would be well to investigate the local building codes as temporary construction in front of the asbestos curtain is often prohibited.
IT WOULD SEEM THAT THE IDEAL ARRANGEMENT WOULD BE A COMPROMISE OR COMBINATION OF THE PERPENDICULAR GRIDIRON AND AN INCREASED STAGE FLOOR AREA. IN THE STAGE AREA SPACE IS THE MOST VITAL CONSIDERATION. THE STAGE SHOULD BE SO ARRANGED THAT UP TO FIVE SETS CAN BE SET UP AND STACKED IN SUCCESSION WITHOUT BEING SEEN FROM THE AUDIENCE DURING THE PERFORMANCE AND THAT THIS BE DONE WITHOUT ACROBATICS ON THE PART OF THE STAGE HANDS. OPEN AIR SCENES REQUIRE THE APPEARANCE OF GREAT HEIGHT SO AGAIN A HIGH STAGE LOFT OR GRID AND AN EXPANSE OF UNIMPEACHED WALL SPACE IS DESIRABLE. A PERMANENT CROSS OVER IS A DESIRABLE FEATURE AS IT ALLOWS THE ACTORS TO GO FROM ONE SIDE OF THE STAGE TO THE OTHER WITHOUT WEAVING AROUND SCENERY AND PROPS. IN THE PROPOSED SCHEME THE DRESSING ROOM CORRIDOR PROVIDES A PERMANENT CROSS OVER.

THE ACTING AREA EXTENDS SLIGHTLY MORE THAN THE WIDTH OF THE PROSCENIUM AND SHOULD HAVE A MINIMUM DEPTH OF AT LEAST 20'. THE STAGE FLOOR SHOULD BE OF SUCH CONSTRUCTION TO ALLOW FOR TRAPPING. HOWEVER IT IS NOT THE DUTY OF THE ARCHITECT TO PROVIDE TRAPS NOR SHOULD ANY SPECIAL EQUIPMENT SUCH AS REVOLVING STAGES OR HORIZONTAL WAGON TRACKS BE PLANNED BY THE ARCHITECT. THE SPACE BELOW THE STAGE SHOULD BE UNIMPEDED. ALL STAGES ARE PREFERABLY PROVIDED WITH FORESTAGES. THIS IS DESIRABLE FOR PERFORMANCES WHICH ARE TO BE SEEN IN THE ROUND RATHER THAN THROUGH A PICTURE FRAME SUCH AS SOLOISTS AND LECTURERS.

CYCLORAMA. SURFACES FOR CYCLORAMAS VARY GREATLY AS TO MATERIALS, NUMBER OF UNITS AND SHAPE. IN PLANNING FOR THE TYPE OF CYCLORAMA TO BE USED PROVISIONS MUST BE MADE FOR MOVING SCENERY BOTH HORIZONTALLY AND VERTICALLY. A PERMANENT PLASTER CYCLORAMA IS DESIRABLE FOR USE ONLY AS A BACK WALL OF AN ENCIRCLING STAGE. CURVES MUST BE ACUTE AND AS A RULE IT WILL BE FOUND DESIRABLE TO TILT THE CYCLORAMA BACK SLIGHTLY TO REDUCE OBJECTIONABLE SOUND WAVES.

CYCLORAMA LIGHTING. The Cycorama trough is essential with a permanent cycorama or dome and is often desirable with a hung cycorama. Its size and position are best established by detailed planning of the cycorama lighting before the trapped area can be laid out or the structure of the stage floor designed. In addition to the cyc lights and footlights electrical outlets must be provided (built in pockets) at the stage floor, around the proscenium, in the gridiron, and at the teaser batten position. The exact number and location should be determined by the consultant.

CURTAINS. An asbestos fire curtain must be provided. Sides of asbestos travel in a smoke pocket. The most flexible arrangement for the house curtain is to provide a drop curtain with a draw curtain track.

FLY GALLERY. The fly gallery provides the locking rail for the counterweight system. The rail may be located at floor level or as in the proposed scheme it may be raised above the stage floor to keep the floor area clear when wagon sets are used. Access to the fly gallery is provided by a spiral stair. From the fly gallery the stair continues to the grid to provide access to the head blocks. The number of rope sets in the counterweight system should be determined by the technician or consultant.

STAGE MANAGER. As the stage manager is responsible for all activity back stage during the run of a show he should be located in a strategic position. His desk is usually located near the proscenium. He may be on either stage right or stage left but should be on the same side as the control of the act curtain. In the proposed scheme he is placed on stage right because of the location of the fly gallery and the green room. This position will give him control of all flying of scenery and check in of actors from the green room. An intercommunication system should connect the stage managers desk with dressing rooms, light control, sound control and green room.
SHOP FACILITIES

In the community theatre, the scenery and costumes are usually constructed by volunteer workers under the direction of the permanent staff. To perform this work economically and efficiently, proper work space must be provided.

A. SCENE SHOP

Scene shop should open directly on to the stage and be separated from the stage by rolling doors preferably fireproof and soundproof. The shop may be located at the rear of the stage or at the side. The side position is preferable as the doors need not be as large as in the rear position to admit rolling wagon stages into the shop.

Facilities to be provided in the shop:

1. Paint Frame 40' x 28'
   This size necessitates a 21' well in the floor and access to the space below the shop must be provided to retrieve dropped objects.

2. Lumber Racks
   Best located immediately contiguous to the delivery door, between the delivery door and work tables.

3. Power Tools
   Radial saw mounted on work bench
   Band saw mounted on caster base
   Small power saw on caster base
   Drill press

4. Utilities
   Shop should be liberally supplied with outlets and floor pockets. Floor pockets should be placed horizontally to prevent closure with refuse. Sink should be provided near the paint frame.

5. Lift
   A sidewalk lift is provided in the shop to move heavy platform and stair units from the storage space under the shop.

6. Storage
   Adjacent to the shop is a storage area for stock size flats, ground rows and other pieces which may be reused.

7. Hand Tools
   A separate section is provided for storage of hand tools and hardware. Work bench for making hand props and other small bench work.

8. Light Room
   Used for storing instruments, lamps, cables and gelatines. Should have work bench for repairing instruments, cutting gelatines and frames.
COSTUME SHOP

Located between the dressing rooms and the green room so that the costumes can be checked before performances, the costume shop is best located on the same level as the dressing rooms as costumes must be cleaned and pressed between performances and any repairs must be taken care of at the same time.

The shop itself is divided into three sections: 1. Work room and storage, 2. Dye room, 3. Office and fitting. Additional storage is provided below the scene shop for costumes and drapes. Lighting is most important in the costume shop due to the nature of the visual task. Adequate artificial light must be provided in addition to natural light. Large tables are required for designing and cutting patterns. A flexible arrangement of outlets is necessary because of the equipment used, sewing machines, irons, curling irons. The dye room is equipped with set tubs and drying racks for dying fabrics for costumes and drapes. The custumers' office can be used for fittings and is equipped with cupboard space for the storage of hand props which may be considered under the control of the costume department.

PROPERTIES

A special prop shop is not necessary as most props of a special nature which cannot be borrowed or rented will be made in the scene shop. Storage space for props is provided under the scene shop so the lift may be used for moving furniture and large set pieces.

DRESSING ROOMS

Dressing rooms are located to provide easy access to the stage. If possible dressing rooms should be located on the same level as the stage to avoid climbing stairs in costumes. If it is not possible to locate dressing rooms on the same level as the stage they should be placed on the same level as the costume shop for ease in maintenance of the costumes. Toilet facilities for actors should be located on the same level as the stage regardless of the location of the dressing rooms.

The requirements for individual dressing rooms will vary depending upon the funds available and the possibility of producing professional shows in the theatre. Provisions for 15 - 20 actors in a combination of star and chorus dressing rooms would be satisfactory for this type of theatre. Additional dressing space may be obtained by using the costume shop if a very large cast is required. All dressing rooms should provide lavatory and toilet facilities. Closets are not required but plenty hanging space is necessary as an actor may have as many as ten costume changes. Dressing tables with good light should be provided and in the star dressing rooms a couch may be included for resting between scenes. The only concession to comfort would be to carpet the dressing room floors as the actors are often in their barefeet.
ACOUSTIC PLANNING

THE OBJECT OF ACOUSTIC PLANNING IS TO MAKE CERTAIN THAT THE AUDIENCE CAN HEAR CLEARLY AND WITHOUT EFFORT ANY SOUND WHICH IS PART OF THE SHOW. ALL OTHER SOUNDS EITHER FROM WITHIN THE THEATRE OR WITHOUT SHOULD BE RENDERED INAUDIBLE. IN GENERAL PROVISIONS FOR THE FOLLOWING SHOULD BE MADE.

1. PROPER SOUND DISTRIBUTION AND REVERBERATION.
2. ELIMINATION OF INTERRUPTIVE NOISES.
3. SOUND ISOLATION (MACHINERY HEATING EQUIPMENT AIR CONDITIONING MUST BE DESIGNED AND INSTALLED IN SUCH A MANNER AS TO REDUCE THE BACKGROUND NOISE LEVEL OF THE THEATRE)

COMPLETE ACOUSTICAL PLANNING IS OF COURSE A MATTER FOR ACOUSTICAL ENGINEERS. HOWEVER A KNOWLEDGE OF THE PECULIAR DEMANDS OF THE THEATRE IS NECESSARY OR THE RESULTING SPACE MIGHT BE QUITE GOOD UNDER A SINGLE SET OF CONDITIONS AND BAD UNDER ALL OTHERS. THE ARCHITECT SHOULD KEEP IN MIND THE RULES SET DOWN BY W.C. SABINE IN "ARCHITECTURAL ACOUSTICS".

1. SIDE WALLS AND CEILING IN FRONT OF ROOM SHOULD REFLECT SOUND AT NEARLY GLANCING ANGLES TO THE SIDE AND REAR OF THE ROOM.
2. EXTENDED CURVED WALLS OR CEILING SURFACES PARTICULARLY THOSE WITH CURVATURES IN TWO PLACES SHOULD NOT HAVE CENTERS ON AXES OF CURVATURES THAT FALL ON THE STAGE OR NEAR ANY PORTION OF THE AUDIENCE.
3. THE AVERAGE CEILING HEIGHT SHOULD BE DETERMINED BY THE NUMBER OF SEATS SO THAT THE CUBIC CONTENT PER SEAT IS NOT GREATER THAN 200.
4. THE TOTAL SOUND ABSORBING POWER SHOULD BE SUCH THAT WITH THE AVERAGE AUDIENCE PRESENT THE REVERBERATION TIME COMPUTED BY THE REVERBERATION FORMULA WILL FALL WITHIN THE RANGE OF ACCEPTABLE VALUES FOR A ROOM HAVING THE VOLUME OF THE PROPOSED ROOM.
5. UPHOLSTERED SEATS SHOULD BE SPECIFIED IN ROOMS WHICH SMALL AUDIENCE USE IS TO BE EXPECTED.
TWO RECOGNIZED METHODS OF ACOUSTIC CONTROL ARE SHAPES OF SPACES AND SURFACE TREATMENTS. IT IS PROBABLE THAT IN THE ABSTRACT SOME SHAPES ARE ACOUSTICALLY SUPERIOR HOWEVER SHAPES WHICH MAY APPEAR ACOUSTICALLY BAD ON PAPER MAY BE PROVEN SATISFACTORY AS A RESULT OF TESTS.

DISTRIBUTION OF SOUND

BECAUSE PART OF THE SOUND WAVE TRAVELS DIRECT FROM SOURCE TO AUDITOR AND PART IS REFLECTED FROM CEILING, WALLS, SCENERY OR CYCLORAMA, THE STAGE AND AUDITORIUM ACT ACOUSTICALLY AS COUPLED SPACES AND SHOULD BE STUDIED SIMULTANEOUSLY.

THE PRINCIPLE DISTRIBUTING SURFACE IS THE AUDITORIUM CEILING. UNDER BALCONY CEILING, REAR AND SPLAYED WALLS AND THE CYCLORAMA ARE USEFUL SURFACES. CEILINGS MUST REFLECT SOUND TO THE AUDIENCE EITHER DIRECT OR VIA WALLS. HOWEVER SOUND MUST NOT BE CONCENTRATED IN CERTAIN SPOTS NOR SHOULD IT REFLECT BACK AND FORTH BETWEEN PARALLEL WALLS OR GET TO THE AUDIENCE OUT OF PHASE WITH THE DIRECT WAVE.

THE DISTANCE TRAVESED BY THE FIRST REFLECTED WAVE FROM ANY SURFACE SHOULD NOT EXCEED THE DIRECT WAVE BY MORE THAN 50' OR THE AUDIENCE WILL HEAR AN ECHO. WHEN CHECKING WAVE PATTERNS SUCH PATTERNS SHOULD BE SATISFACTORY WITH SOUND SOURCE ANYWHERE ON THE STAGE IN THE ORCHESTRA PIT OR ANY SPEAKER MOUNTING POSITION.

THE REVERBERATION TIME CHOSEN SHOULD BE THAT WHICH FALLS HALF WAY BETWEEN THE OPTIMUM FOR SPEECH AND MUSIC FOR THE CUBAGE IN QUESTION UNLESS PROVISION HAS BEEN MADE FOR CONTROLLING REVERBERATION TIME. IF REVERBERATION CALCULATIONS INDICATE A NEED FOR ABSORBENT SURFACE TREATMENT THE LOCATION FOR SUCH MATERIAL CAN BE DETERMINED BY TESTS. WALLS, CEILING, FLOOR, AND SEATS LIMIT THE CHOICE OF SURFACE MATERIALS.

REVERBERATION TIMES OF ALL FREQUENCIES SHOULD BE APPROXIMATELY EQUAL THROUGHOUT THE AUDIBLE RANGE. REVERBERATION TIMES SHOULD BE THE SAME NO MATTER TO WHAT EXTENT THE HOUSE IS FILLED.
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balcony provides lounge area for shop crews. Balcony rail can be used to mount instruments to project designs on point frame or try out lighting arrangements.

 SCALE: 1/16" = 1'-0"
The storage area under the shop may be left open or compartmented to provide special areas for drapes, furniture, or props.

Mechanical equipment

Storage

Tube room

Equipment for elevator forestage

Trap space

Exhaust plenum

Unexcavated

Scale: 1/16" = 1'-0"
In order to achieve some degree of flexibility in the playing area without the use of expensive mechanical equipment the following arrangements are possible. The first three rows of seats shall be installed in sections and in such a manner to permit easy removal and rearrangement by volunteer stage crews. In addition to the two schemes below the elevator forestage allows for three additional arrangements.

1. Forestage as a continuation of the stage proper.
2. With the elevator at floor level extra seats may be placed in front of the first row to increase the capacity of the house.
3. With the elevator slightly below the auditorium floor level an orchestra pit is provided.

Scheme A. The first three rows of seats are removed and a two level sectional apron stage is set in front of the forestage. This provides an open playing area similar to the new stage arrangement of the Cleveland Playhouse. The light slots provide additional entrances for the actors.

Scheme B. The elevator forestage is lowered to floor level and the first three rows of seats are reversed to form an arena or intimate playing area. Again entrances are provided by the side slots. In this scheme the audience enters at 'A', to eliminate traversing the darkened portion of the house. The stage and rear area of the house are separated from the audience area by 'space definers' at 'B' and 'C'.
court and lounge from directors office
stage and side stages from auditorium

scene design "errand into the maze" by isamu naguchi 1947.