Foreign Theater Operation*

By Clement Crystal

Paramount International Theaters Corporation,
New York 18, New York

Summary—**The theater situation in Australia is treated extensively in this paper and building problems in Egypt and in Peru are outlined briefly. It is pointed out that the rest of the world looks to America for the latest innovations in theater construction and equipment.**

No matter where one goes in this world, people in general are much the same. They all have the same impulses as ourselves, like to live well, look well, eat well, and have all the luxuries possible, all of course governed by local custom and supply.

In Australia, the people are perhaps more like Americans than anywhere else in the world. They are gracious, hospitable, and great movie fans as well as motion picture builders and operators. The Australian theaters, in general, are large, well constructed, well designed from sight lines as well as acoustically. It is not unusual to find 3000 to 4000 seats in even the neighborhood houses. They are usually constructed of reinforced concrete, of modern design with beautiful patios surrounding their lobbies; the walls are of plaster and the acoustical materials well thought out in design, with indirect lighting. The foyers and aisles are usually carpeted and a real de luxe form of decoration is used throughout. Some theaters even were carpeted under all seats.

During the recent global war (which physically crossed Australian shores) their theaters were kept in operation. It is true, replacements were hard to obtain, but they did a splendid job and even now, with replacements still very difficult to acquire, they have kept and maintained their theaters in excellent condition.

Throughout Australia the fire and safety regulations are similar to ours. Only in rare situations can one find a theater with poor exit

* Presented October 20, 1948, at the SMPE Convention in New York.

facilities. However, their fire-alarm systems, particularly in Adelaide, the capital of South Australia, far surpass ours. There they have the latest type of warning system thoughout the city. In each place of business and on street corners where a fire-alarm box is stationed a loudspeaker microphone is built into the box which is hooked directly into the nearest fire station.

In the rear of the Paramount branch office, right by the film vaults, one of these fire-alarm boxes was on the wall. We pushed a button and within a second a voice came back over the loudspeaker from the fire station: "What's the matter, Paramount—what's wrong?" This enables one immediately to tell the Fire Department how serious the fire is, and the type of fire that it is. This method gives the Fire Department the opportunity of telling how to fight it and exactly what to do. In turn, the Fire Department knows exactly what type of apparatus to send out. This system is also hooked on to the sprinkler system, so that should a sprinkler go off it causes a flash in the main fire station—the minute the circuit is broken, you hear a voice coming over that same speaker saying, "What's the matter, Paramount?" In this case, should no one answer, certain apparatus is dispatched immediately. Should a fire break out and one be unable to remain near the fire box, they can speak to you over this microphone from a distance of better than a hundred feet.

At the fire station, in order to demonstrate the qualities of the system, a button was pushed which sounded in the rear of a theater. A voice came back, asking the Fire Department what was wanted. The fireman said an American was looking over the system and he wanted to show how it operated. Whereupon the fireman turned more power on the microphone and the voices of the actors from the screen could be heard. It was pointed out that a large fire, which most probably would have caused extensive loss of life and millions of dollars in damage, recently was prevented, due to this alarm system, as the Fire Deparment was able to tell the people turning in the alarm how to fight the fire until such time as the equipment arrived.

This system is also used throughout the streets of Adelaide and many lives have been saved—pedestrians as well as firemen—by not having to send out full equipment. When an automobile is on fire, a person can go to the box at the corner, push the button, and report the extent of the fire, and adequate rather than full equipment is sent out.

False alarms are prevented because if someone rings the alarm and

is asked, "What's the matter?" and the person does not say what is wrong, the fire station immediately turns the amplifier on full, so that the fireman's voice will reach blocks away throughout the neighborhood, with the control officer at the fire station calling out, "Catch the person who turned on the alarm!" In this way, the Fire Department is prevented from turning out equipment because of a false alarm.

Throughout Australia we found big, beautiful theaters in the suburban areas, so designed that in the rear of the orchestra on one side there is a double-glass partition which gives clear vision to the screen and a door which opens from the lobby into a room approximately 15 to 20 feet wide by about 8 feet deep. They call this room their "Crying Room" and they keep it exclusively for mothers who are forced to bring their infants and children to the theater. The room has its own amplifier horn and the mothers are able to see the picture through the double-vision glass, and nurse their babies. Should a child cry, the rest of the people in the theater will not be disturbed.

In the theaters that have no "Crying Rooms," they render the following service in order to attract the mothers to the theater: A patron comes in with a baby in a carriage—she buys her ticket (and generally speaking all seats are reserved). She gives the usherette the baby's bottle and tells her what time the child should get it; the usherette takes her ticket, fills out a slip which gives the woman's name, location of her seat, hour of feeding, and pins it on the child. At the proper time, the usherette heats the bottle, goes to the seat, gets the mother and the mother comes out and gives the child the bottle—returns to her seat and the usherette takes care of the child. This was really very amusing because we thought we had enough to do to operate theaters and take care of our public, without arriving at the stage where we also had to act as nursemaids! However, you would be surprised at the way this service is received and appreciated.

On the opposite side of the rear of the theater they have a similar room with about 12 seats which they set aside for private parties. People having a dinner party at home, and wanting to make a film show part of the evening's entertainment, can reserve this entire room for the performance. In this way they have the pleasure of having their own crowd together—separate and apart from the rest of the audience. Should they have had a little too much to drink, they, in no way, either by conversation or actions, disturb the rest of the people in the theater. This is a popular custom that might well be incorporated in our plans throughout this country. The only addition that might

be added would be to create a private lavatory within the confines of this room.

Generally throughout Australia you will find that many theaters are entered on the mezzanine, or as they call it, the dress-circle floor. To get to the stalls (which is the orchestra in our language) you must go down a flight of stairs. To get to the balcony you must walk up a flight of stairs. From this you will see they try to prevent the people using the better-class and more-expensive seats from having to climb stairs.

Most performances throughout Australia have reserved seats. They run three shows a day—matinee, 3:30, next show at 6:30, and the last show at 9 o'clock. Most theaters have usherettes. The girls are attractive and very well gowned. Their dresses, shoes, and stockings are supplied by the management and are in exceptionally good taste.

In short, and apart from the fact that they have usherettes instead of ushers, it is very difficult to be in many of the typical Australian houses and not believe that one is actually in Chicago, Kansas City, Toledo, or Atlanta. The spirit and operation of the American motion picture theater has reached there more completely than it has any other place in the world.

All the major American companies who have built and are operating theaters throughout the world have constructed them in the same style and manner in which I have just described. Wherever you go, any place in the world, you can generally tell from its operation whether the theater is run by American companies or by local interests.

In constructing a theater in Cairo, there is the additional problem that one cannot excavate deeply; generally speaking, 3 feet below the curb is the water line. Most buildings are constructed on wood or concrete piles, depending upon the type of building that is erected, and usually you have to walk upstairs to approach the lobby in order to create a basement floor. Reinforced concrete is used throughout, with the exception of the roof where, in some cases, large wooden trusses are used and in other cases, steel trusses. The fire regulations for exit purposes are similar to those in the United States. In Egypt, as elsewhere throughout the world, they look to our regulations as an example of the best methods of safety for their business.

Paramount is now building a theater which is very near completion in Lima, Peru. This house, when completed, will be the finest theater in all of Latin America. The structure is of reinforced concrete,

aluminum sheet roofing supported by steel trusses; the walls in general are plastered but in some cases have acoustical rock-wool blankets covered with perforated transite. This, of course, is only out in the front facia of the balcony and around the rear-wall portion of the theater. The theater lighting system is especially designed with the new Frank Adam Electric Company dimmer. The main ceiling has a series of high-hat recessed electric fixtures so that all light shines directly down on the audience. The interior also has a series of neon lighting running around the auditorium at the mezzanine floor level. The theater is designed in such a manner that the smallest amount of floor space is used in the auditorium floor, mezzanine, and balcony. The theater is equipped with the American Seating Company body-form chairs, fully upholstered throughout.

It is customary in Peru that balcony patrons must enter the theater from a different entrance than those who patronize the auditorium and mezzanine floor. These people generally have been considered lower class and throughout Peru the balconies are equipped with wooden benches, concrete steppings, or wooden chairs. In other words, the poorer class of people are given no consideration whatsoever, so far as conveniences and comfort are concerned. However, we feel that low-price patrons shall be considered just as important as the others, and we have equipped the balcony with fully upholstered seats, given the balcony a lounge, nicely furnished, carpeted the floor and aisles to the balcony, and given them beautifully tiled, modern rest rooms.

Major American companies all feel the same way and we are striving to bring to the people of the world the better things in life which we have all been fortunate enough to give to all classes of people in America.

In America we are not allowed to have class distinction, but in many places throughout the world, and especially in Latin America, there is class distinction and the local theater owners and operators look down upon the low-admission people. American companies feel that they are the backbone of our business and that success can only come to us through continuous patronage of the theater by the middle and lower classes, and that a theater built to attract only the better classes can never be a successful venture.

On the exterior of the Limá theater there are a stainless-steel electric sign and marquee signs with flasher borders, equipped with Adler letters, using both neon and fluorescent lighting. The soffit of

the marquee is equipped with gold and white glass mosaic and some of the predominating free-standing reinforced concrete columns are also covered with the glass mosaic. The entrance doors are herculite glass, new for the Latin American field.

Much of the foregoing has had to do with improvements, innovations, new conditions, and new comforts which the American motion picture industry is bringing to many parts of the world.

CONCLUSION

The rest of the world looks to us for the latest innovations in theater construction and equipment and they try to follow in our footsteps. One deplorable factor is, however, that in their efforts and endeavors to be as American as possible, they are making use of outmoded American plans and devices and are heedlessly following them instead of checking to make sure that what they are doing represents the newest in development. We hope, in time, and with all of the cooperation at our command, to remedy this situation at the earliest practicable moment.

Theater Engineering Conference

Physical Construction

●

Note: For the Theater Engineering Session on Regular, Prefabricated, and Drive-In Theaters, Chairman Satz requested that all discussion be held until after the delivery of the last paper in this group. The material which follows, therefore, is in the nature of a panel discussion and deals with all four papers in this particular section.

Discussion

MR. S. CHARLES LEE: Is it better to enter a drive-in theater from the stage or from the rear? In one of your plans it appears that at least part of the time you enter from the rear of, shall we call it, the auditorium.

MR. S. HERBERT TAYLOR: The answer to that question depends upon local conditions. The important thing is to provide a considerable length of driveway before you reach the ticket booth, so that cars are not backed up on the highway. In some cases, if your screen were at the rear of the tract, you might possibly enter in the front of the theater, but where your screen is on the road side of the tract, which usually is the case, we are extending the entrance drive back in some cases to the rear ramp and in some cases about two thirds back in the theater.

MR. LEE: In other words, it has no effect on the operation, or from the standpoint of the lights of the car approaching the drive-in theater, whether you enter from the screen side or whether you enter from the rear.

MR. TAYLOR: The lights have been screened out when the car is making its turn into the theater tract. After that you can instruct drivers to turn out their lights. Very often natural conditions accomplish the screening.

CHAIRMAN LEONARD SATZ: I should like to ask Mr. McNamara if he considers the 23-inch seat a little too wide? By providing a seat of extra width, would it permit the patron to shift around in the seat too easily from side to side and thereby cause discomfort to the persons sitting directly behind? Is there any limitation that you would set on the width of the theater chair?

MR. JOHN J. MCNAMARA: In my opinion 23 inches is not too wide, but anything beyond 24 might prove so wide that the people would slouch sideways rather than sit straight.

MR. BEN SCHLANGER: The 23-inch chair is too wide. It is advisable not to have a chair any wider than necessary, because it will permit the person in that chair to shift. What the person needs is not a 23-inch chair, but he needs elbow room, and, if possible, extra arm blocks for each person should be provided. In other words, I can visualize space in between seats. Even a very stout person can sit very comfortably in a 21-, or 22-inch chair, providing that he has enough elbow room.

MR. MCNAMARA: My assumption was that it would be from center to center of seats, rather than having the seat itself 24 inches, so that 24 inches would take in the arm block.

CHAIRMAN SATZ: Then I think there has been a misunderstanding. Mr. Schlanger, we are very much interested in double-arm blocks. In fact, before

we placed orders for a large amount of seating recently, we inquired as to whether or not that would be practical. It did not work out, principally because of the high loss of seats that would result.

MR. H. E. GREENSPOON: Mr. Lee made a statement that he hoped to build theaters for about $75.00 a seat. Could Mr. Lee elucidate and give us a little more detailed information about how that is possible? We are financing ourselves up in Canada, building theaters for about $200.00 to $225.00 a seat, and this information would be very welcome.

MR. LEE: It is possible to build a theater for $75.00 a seat as at the present time I am doing it. The form of construction will only apply to areas in which the ordinance follows approximately the Uniform Code. I think the Uniform Code is now accepted in some 500 cities in the United States. So I shall confine myself to that.

The main form of construction that we have used is, starting with a flat slab, we built below ground with reinforced concrete and brought our walls up to six inches above grade. From this point on we are using what is known as the Lamella truss system without any reinforcing rods across the span. The truss system is adaptable; if you use a 50-foot span you can use 2-inch lumber, and by fireproofing it, we have found that we are well within the limits of the Code.

We have used plaster to the extent of nine feet above the grade, and over this we are applying a sheathing, first a good sheathing and over that an interlocked aluminum sheet. This gives us complete waterproofing, and a very low-cost application.

At the front of the theater, we designed a tower, and by building this tower of staggered pipes, we have been able to secure a very interesting effect. We have buried into the slab some floodlights, and by having changeable colors, I think we are going to get some showmanship out of it.

On the front, we have used a combination of stone and plaster and the major portion above the marquee line will be of ribbed glass running in two different directions.

The present indication is that the theater will be very interesting in appearance, and at the present time I have costs in which I can award a general contract at $75.00 per seat.

CHAIRMAN SATZ: Would you mind explaining that aluminum interlocked construction. Does that carry right up and around the roof? Is the roof of curved construction?

MR. LEE: Completely around, yes.

CHAIRMAN SATZ: Similar to the radius of a Quonset hut?

MR. LEE: We have a slide here that shows one adaptation of it on a 2500-seat operation.

CHAIRMAN SATZ: And the interior finish?

MR. LEE: For the interior finish we are using expanded metal with an insulating material underneath the expanded metal. By painting the expanded metal we are going to obtain an architectural effect with our colors, and by having the insulating material, such as rock wool, behind the metal screen we shall take care of our acoustical correction. At the present time we are experimenting with Palco bark for that purpose, which on the West Coast is a little cheaper.

CHAIRMAN SATZ: Is that the only acoustical treatment you are giving the auditorium?

MR. LEE: No, the rear wall is a perforated masonite with rock wool.

MR. SCHLANGER: I should like to refer again to seating, because I think it is too important to ignore. You made a statement, Mr. Chairman, that the double-arm-block system used up too much space. I am not for or against double-arm blocks at the moment, but I do want to explain some dimensions. For example, if we had a 20-inch chair that had a double-arm block system, that is, on each side of the chair, it would be 20 plus $1^1/_2$ inches on each side. That would be 23 inches. So that if you were willing to devote 23 inches to a chair, which is not unusual, then your arm blocks would not be taking up too much space. It is purely a matter of simple arithmetic.

You do not use double-arm blocks in all the seats, but in staggered-seating plans where you use this system to help control the position of each viewer, so that he has a clear view between the heads in front. It may very well be that when the exhibitor becomes accustomed to more space per patron, as he has in back-to-back dimensions, that 23 inches devoted to each person will not be considered very much in the near future.

CHAIRMAN SATZ: By a double-arm block, do you mean one solid piece of extra width or two separate blocks on separate standards?

MR. SCHLANGER: At the present time that is just two separate arm blocks made up of two separate chairs. Many seating companies seem to be investigating the possibility of combination arm blocks of a wider width.

CHAIRMAN SATZ: With double standard throughout the row?

MR. SCHLANGER: I do not know what they are going to do. It may be a regular standard, it may be a double standard. They are investigating that now, but have come to no decision.

CHAIRMAN SATZ: Mr. Alexa, would you care to say something about that?

MR. F. W. ALEXA: At the present time the standard chairs are from 18 to 22 inches, but the 18-inch chair is no longer used. The widest chair at the moment is 22 inches. Above 22 inches you run the cost of the chair up pretty high, because of the difficulty of preparing dies to form the steel backs. The average chair width normally used is about 21 inches. We have installed some chairs here recently that had an arm block that was about 4 inches wide, and the purpose of it was that it could be used for writing as well. This happened to be in a lecture room, and it did not have a bad effect at all. We used a chair about 21 inches wide with this wide arm block, and it did not take away from the comfort of the chair. There should not be too much objection to the idea of breaking up the chairs in sections and using double-arm blocks. The only cost involved there is an extra standard, and if that is going to achieve what you are after, good sight line and comfortable position, there should not be any objection.

MR. FREDERICK J. KOLB, JR.: In your drive-in theaters, Mr. Taylor, what level of screen illumination and what level of surrounding illumination are you seeking, particularly for a 60- or 72-foot screen? You said in one installation you provided some artificial moonlight which, I take it, provided a constant, perhaps fairly high level of scattered light, and I wonder what you are planning to reach in that level, and then what you do for screen brightness to provide a satisfactory picture.

MR. TAYLOR: I regret I am not prepared to give you an answer on that subject. The situation is this: Soft moonlight, we know by experience, does not interfere with the illumination on the screen. The illumination on a large screen is not up to indoor standards, we know that also. But we make up in size for lack of illumination.

It is remarkable how well you can see. If you care to drive just ten miles from New York City, you can go over to Paramus, New Jersey and see the size screen you were talking about. You can stand on the other side of the fence, some 700 feet from the screen, and see the picture fairly well.

CHAIRMAN SATZ: Mr. Kolb, do you have any ideas of your own as to what the level of screen illumination of that motion picture should be?

MR. KOLB: Well, I have some ideas, but I do not think anyone can reach them.

MR. LEE: May I ask Mr. Taylor what he considers the farthest row in which the occupants of the average car can see without complaints?

MR. TAYLOR: We are planning a theater now with a 15th row. A car in the rear ramp will be about 660 to 670 feet from the screen. That theater will have the largest size screen, of course. The capacity of that theater is over 1000 cars.

MR. LEE: That answers my question, although I have never been able to see clearly past the 7th row, myself.

MR. NEILL WADE: Mr. Taylor, could you say something about the surface treatment? Is there anything special needed on these outside screens?

MR. TAYLOR: The surface treatment of the tract itself, the ramps, or the screen itself?

MR. WADE: The screen on which it is projected.

MR. TAYLOR: No, they require very little special treatment, because the screen is so large that any slight irregularities are compensated for, by the size of the picture. We were somewhat afraid of that when we put steel plates on the face of the screen, because there is a slight rippling effect in the steel plate, but in actual practice it worked out very satisfactorily. The plates are simply painted white.

MR. WADE: The number of units that make up the screen brought that question to mind. Mr. Schlanger was talking about seats. With the advent of these new plastic materials, would they be suitable and wear longer than some of the fabric covers which are being used as an upholstery?

MR. SCHLANGER: I do not have any wear tests on those. If you mean the plastic-coated fabrics, some of the good ones stand up pretty nicely, and they are more sanitary than the fabrics. The fabrics are a little better from an acoustics standpoint. The fabrics are not so good from the cleanliness standpoint. There are many factors that enter into it. However, there is a large variation in wearing quality of these plastic-coated fabrics. Some of them are excellent.

CHAIRMAN SATZ: Mr. Wade, I might mention that during the Maintenance Session, I think there will be persons here who will be exceptionally well qualified to speak to you on the subject of vinylite resins or any of the other plastic-type coverings as compared to the old-style leatherette.

MR. J. S. CIFRE: Mr. Taylor, have you given any consideration to the inclined screen, that is, inclining the screen so that it reflects the light back to the eye of the observer?

MR. TAYLOR: Yes, we have such a screen under construction at the present time. It is not actually built as yet, but it is just about to be built.

MR. CIFRE: What do you expect for advantage in that type of construction?

MR. TAYLOR: You obtain a better throwback of light to the viewing area. Some of the light which is cast on a vertical screen is scattered upward, and that light is more or less lost so far as return to the theater patrons is concerned. We figure that with a slanted design we shall return more light directly to the cars that are parked in the theater.

MR. JOSEPH J. ZARO: Mr. Lee, I believe you said that you awarded a contract at $75.00 a seat. Do you mean merely for your general contractor or for your entirely equipped theater?

MR. LEE: That is for the construction without any equipment, but includes heating and ventilating, electrical wiring, painting, and all construction items, ready to move in the equipment.

MR. ZARO: It is actually not a complete theater, then, at $75.00 a seat.

MR. LEE: Unfortunately the parlance that the architect uses is usually for the construction of the building and the operator installs his own equipment.

MR. ZARO: What are your costs actually running?

MR. LEE: The equipment, as you know, could vary according to the type of equipment you selected and the seats. There are some persons who could tell you exactly how much your equipment will cost in a given size theater. For a 1000-seat theater, I would say that your equipment costs today run about $38,000.

MR. ZARO: On your low-cost theater, what type of construction would you compare that to under prewar conditions? In other words, taking your theater as an over-all building, exterior and interior, how would that compare as far as cost?

MR. LEE: I should say that prewar that similar type of construction could have been built for nearer $40.00 a seat.

MR. ZARO: Has any consideration been given on the West Coast to use of vermiculite construction in wall-panel construction for theaters?

MR. LEE: Yes, we have had vermiculite construction on the West Coast several times and have had it under consideration. We have a very great problem in connection with seismic loads, what you might term earthquake resistance, and we investigated vermiculite concrete from the standpoint of lessening those loads and also considered the crushing strengths that we could get out of it. We have never been able to use it with any degree of economy.

MR. R. T. VAN NIMAN: Mr. Taylor, what experience have these theaters had with the theft of car speakers, with damage from the weather, and with damage suits from patrons who drive off without taking the speakers off the car windows?

MR. TAYLOR: There has been very little loss of speakers. Of course, some occasionally are lost but not many.

So far as maintenance is concerned, the products that our company has handled have stood up very well. I know of no such instance where patrons have had damage done to their cars by driving off without taking the speakers off the windows and have sued the theaters.

CHAIRMAN SATZ: I should like to ask Mr. Taylor if there are any figures that he could use to explain his statement that family business predominates. Can you give us an average of how many people appear in each automobile, or is there any guess that you would care to give as to what percentage of your business is family business?

MR. TAYLOR: The average per car runs around three, and I would say that the family business is 75 to 80 per cent of the theater business.

MR. WADE: Mr. Taylor, could you give us any idea of how the cost per patron for the construction of drive-in compares with the figures we have already heard for the indoor theaters?

CHAIRMAN SATZ: Would not that have to be cost per car?

MR. WADE: Let us reduce it to a common denominator. What is the patron average?

MR. TAYLOR: A fully equipped drive-in theater, from 660 cars to, say, 850, will vary in cost from $100,000 to $200,000. If you take the number of cars and multiply them by three, you can pretty nearly produce a patron figure.

Of course, it is possible to construct drive-in theaters for less than that. But in the Metropolitan New Jersey section, they are going in for first-class construction right now.

CHAIRMAN SATZ: Do you base that on any particular average for wages or any standard in this area?

MR. TAYLOR: No, that is New Jersey experience. It is North Jersey, where you have a very high wage level.

MR. VAN NIMAN: I should like to ask Mr. Taylor whether there is any prospect, with the advent of high efficiency for the focal lens, that it would be desirable to move the projection room closer to the screen, so that not so much space will be lost in front of the booth because of the light beam. As it is now, it is about 200 feet for the average distance.

MR. TAYLOR: The usual distance at present is 239 feet. Perhaps Mr. Smith can answer your question.

MR. V. C. SMITH: I do not know whether I can answer that question or not. Recently, I was with Bausch and Lomb, talking over this particular problem, and apparently it is quite difficult to solve. I think it will be a few years before this becomes a possibility. It would be desirable for one or two reasons, in that you would be able to park cars in the space that you are now using for the projection booth, and you would also be able to cut down the amount of space between the projection equipment and the screen.

MR. VAN NIMAN: Who is going to make the lenses?

CHAIRMAN SATZ: You will just have to wait on that.

MR. ALBERT STETSON: I would like to have Mr. Taylor give us an expression regarding the advantages and disadvantages of wooden-screen structures compared with steel. I am thinking of safety as well as expense.

MR. TAYLOR: My vote goes for the steel. The screen structures are getting so large that I do not see how you can secure safe and economical construction with wood. It may be possible, but I prefer steel.

MR. LEE: Mr. Taylor, do you have any information where the run of the picture in the drive-in theater has paralleled the neighborhood run? What impact has the drive-in theater on the indoor-theater attendance?

MR. TAYLOR: That is a question I am not competent to answer.

CHAIRMAN SATZ: We shall try to get an answer for you, Mr. Lee, before you leave.

MR. JAMES FRANK, JR: Mr. Taylor, what is the amount of land required for various sized theaters, the number of acres for 500- to 700-car theaters?

MR. TAYLOR: I can, in a general way. The actual area of a 660-car theater is about eight acres; actually, eight and a half. This is just the bare ground for the theater. If you want to protect yourself from side encroachments, if you want ground for some other purposes that might develop in connection with your theater, you certainly want to provide more. As a general rule, you cannot buy just the acreage you need because the theater is more or less pie-shaped. So with the 660-car theater, I should say you would need from 12 to 15 acres; for an 850- to a 1000-car theater, you need from 15 to 20 acres.

Many times when you go to buy a site you will find that you can obtain the balance of the tract, which might be quite sizable for very little more than what is desired, and the choice part of it will cost you a lot more per acre than the balance of it will. So the tendency has been to take tracts that are larger than needed, which gives some reserve for future business which might develop in connection with the theater.

MR. SCHLANGER: Let us go indoors for a while. One of the things that I think would be helpful would be for the architects to collaborate on some standard on sight lines. Mr. McNamara, in figuring the clearance of sight lines in a theater, did you follow the principle of getting the clearance over the heads of the persons seated immediately in front or over the heads of people seated two rows in front of a spectator, or any other method? Soon this will become an item that will be settled by the Society but I think now is the time to get started.

MR. MCNAMARA: I think that it would be impracticable in most cases to obtain the sight line directly over the head of the row directly in front except in the forward rows of seats. More important would be the staggering and the sweep, rather than trying to see over the head of the row directly in front, which would be almost impossible in most cases.

MR. SCHLANGER: Do you calculate sight lines to clear the head two rows ahead?

MR. MCNAMARA: Not exactly, it would be more the second row with the staggering of the seats, which would give you a good sight line.

MR. SCHLANGER: I do not understand the answer very clearly yet. My question was, if in making your calculations, you make your calculation over the heads immediately in front, which you say you do not, and you would rather use staggered seating, as I gather, instead of trying to get over the heads in front, because that would be giving you too steep a slope. So then we have to figure that sight line over some head or some in-between compromise. So the question then is, do you figure the clearance ahead over two rows ahead?

MR. MCNAMARA: No. I do not figure it at all over the row ahead. I figure the sight line on an arithmetical progression, allowing sufficient space to give good sight lines, or with slight staggering, and leaving the front portion of the theater more or less flat.

MR. SCHLANGER: It still is not clear. I assume, then, you are looking between the two heads in front of you, that the heads in the front of you are not in the way, is that correct, the two heads in the next row in front of you are not in the way? You do achieve that?

MR. MCNAMARA: That is correct.

MR. SCHLANGER: Then, beyond that, must not the person see clearly over the head in front of that?

MR. MCNAMARA: Of course.

MR. SCHLANGER: Do you figure your sight lines over the heads two rows ahead?

MR. MCNAMARA: But I do not figure each row for the second row ahead or for the first row ahead. I do not think anybody does. You do not figure theater sloping on the basis of seeing over each row and figuring each second row, but use this theory as a method of checking the sight line.

MR. SCHLANGER: If we have the two heads in front of us out of the way, they are no longer a problem, so that the row immediately in front is no problem. Then the next problem is to be sure that you see over the head in front of that for the next row, and if you do see over the head two rows ahead, you are going to see over all the other rows. I have noted in the past, in checking up floor slopes in the history of theater design, that some compromise was made whereby they did not figure over the head immediately in front, and neither did they figure immediately over the head two rows in front. There was sort of a safety margin. They figured somewhere in between, which is a waste in theater floor slope. So I am just wondering what practice you or other architects follow.

MR. MCNAMARA: My practice is not to figure each row or each second row. We figure the entire house. The sight line is also determined by the location of the screen. So that the question of figuring just over the head of the person directly in front is not, in my estimation, a practical way to figure the entire sight lines for a house.

MR. SCHLANGER: It is impossible to figure a set of sight lines without having a set of assumptions. You have to start with an eye and it has to see over something. You have to figure clearance over some head.

MR. MCNAMARA Maybe that is the way you figure it, Mr. Schlanger, but it is not the way I figure it.

MR. SCHLANGER: The other is a mystery. I should like to get it out in the open.

CHAIRMAN SATZ: May I suggest we get the opinion of a third architect. Would Mr. Lee care to tell us how he figures that?

MR. LEE: I think everyone here who is interested in sight lines would like to see these two series projected on a blackboard, or on a screen. There are two schools of thought here. Mr. Schlanger has one, which of course we highly regard, and Mr. McNamara has another, which is equally well regarded by the other school of thought. I think that it would be very interesting if they would present their views on the blackboard and give us a chance to then judge whether or not there are errors. (NOTE: The blackboard demonstration was not held because of time limitations.—*The Editor.*)

MR. SCHLANGER: These are not two theories. This is just simple arithmetic, the theory comes later. I really would like to use a piece of chalk and a blackboard and illustrate what has been said in order to follow the problem through intelligently.

CHAIRMAN SATZ: Maybe we shall be able to do that. In the meantime, could I dispense for a minute with the services of the engineers and ask a practical man to give us his opinion? He has made many installations and I am sure he knows a lot about the subject. Mr. Alexa, would you care to get into this controversy?

MR. ALEXA: In a way it rather crimps my talk tonight which is based on sight

lines. There is no doubt that the ideal condition is that the sight line should clear the head of the row directly in front, and as Mr. McNamara and I believe Mr. Schlanger agrees, it is impossible to do that because of the restrictions due to the codes that govern the slopes of floors. So the next approach to this would be to see between the heads of the people directly in front of you, and in that case all you have to do is to make sure your sight line clears your second row ahead of you regardless of where the patron may be sitting in relation to the direct line of view. In order to prevent the situation that presents itself where your chairs are directly behind each other, you would have to stagger the chairs and, as Mr. Schlanger says, it is a matter of mathematics that could be easily demonstrated on a blackboard.

MR. SCHLANGER: Mr. McNamara said that the use of as flat projection angle as possible is desirable. What do you think, Mr. McNamara, is a maximum angle that you would adhere to, that is, not go over a certain angle?

MR. MCNAMARA: About 20 degrees.

MR. SCHLANGER: The recent American Standards Association report mentions this as 12 degrees. The SMPE used to use 18 degrees. That is a pretty important angle. The distortion caused by 20 degrees is serious.

MR. MCNAMARA: I said that would be the maximum.

MR. SCHLANGER: I believe the American Standards Association comes closer to what it ought to be, and that is 12 degrees. In a theater we designed in Lima, Peru, which Mr. Crystal explained, we had a double-balcony theater, and the degree of projection is somewhat less than 13 degrees.

CHAIRMAN SATZ: I should like to ask Mr. Lee to explain, or to amplify, his statement made before about dimming out neon. We recently had occasion to use cold-cathode illumination and we had quite a problem before we got the required intensity, that is, for running lights, and if you would like to amplify your statement, what you mean by dimmed-out neon, I should be very much interested.

MR. LEE: We have used dimmers on neon circuits for quite a number of years. My electrical engineer would have to go into the technicalities of the exact wiring diagram, but we use Autrostat dimmers, and with the Autrostat dimmer we have had no trouble whatsoever in dimming everything, except red.

CHAIRMAN SATZ: We used cold-cathode, and as we dimmed cold-cathode the color characteristics would change.

MR. LEE: I have corrected the color characteristic. In fact, recently we have used an entirely different theory. We have used white neon, and, by a very simple process of painting, have obtained the desired color. That left us with no problem at all. We started by using gelatine and then we abandoned the gelatine and painted a strip on the white neon. By simple experiment, it probably takes us half a day, depending on the colors we have used in the auditorium, to get the exact tone that we want on our neon, and it has eliminated a great deal of trouble.

CHAIRMAN SATZ: Have you used cold-cathode to any extent in any of your installations?

MR. LEE: We have cold-cathode, but not with the dimmer systems. We have always used neon.

CHAIRMAN SATZ: How large a transformer do you generally use for running lights, not house illumination?

MR. LEE: I do not think I can answer that.

CHAIRMAN SATZ: We found that 120- and 60-milliampere transformers in some circumstances were still too much. We had to use 30-milliampere.

MR. LEE: On our neon we have used 30's almost consistently; on the cold-cathode, I cannot say, we have used so little of it.

CHAIRMAN SATZ: We have also had good results where blue lights were indicated using colored tubes and the old-fashioned neon to get a low, dim intensity.

MR. LEE: You can do it with a paint that saves much time and money. In that connection, by using the white neon and painting the strips on it, you can change it, for instance, with the seasons. We have changed some houses entirely when we have gone from the cold season to the hot season. We have just wiped off the paint and changed the whole character of the auditorium.

CHAIRMAN SATZ: Is there any noticeable blistering or peeling of the paint which causes spotty illumination?

MR. LEE: Not at all.

CHAIRMAN SATZ: Would you consider that a practical thing to do?

MR. LEE: Absolutely. I can prove it by many years of use.

CHAIRMAN SATZ: Then I understand that you are in accord with atmospheric lighting in so far as summer and winter seasons are concerned.

MR. LEE: The operators have different opinions on that, but I think that there are quite a few of them in different territories that have taken the position if they can change the character of their houses from time to time, it adds interest.