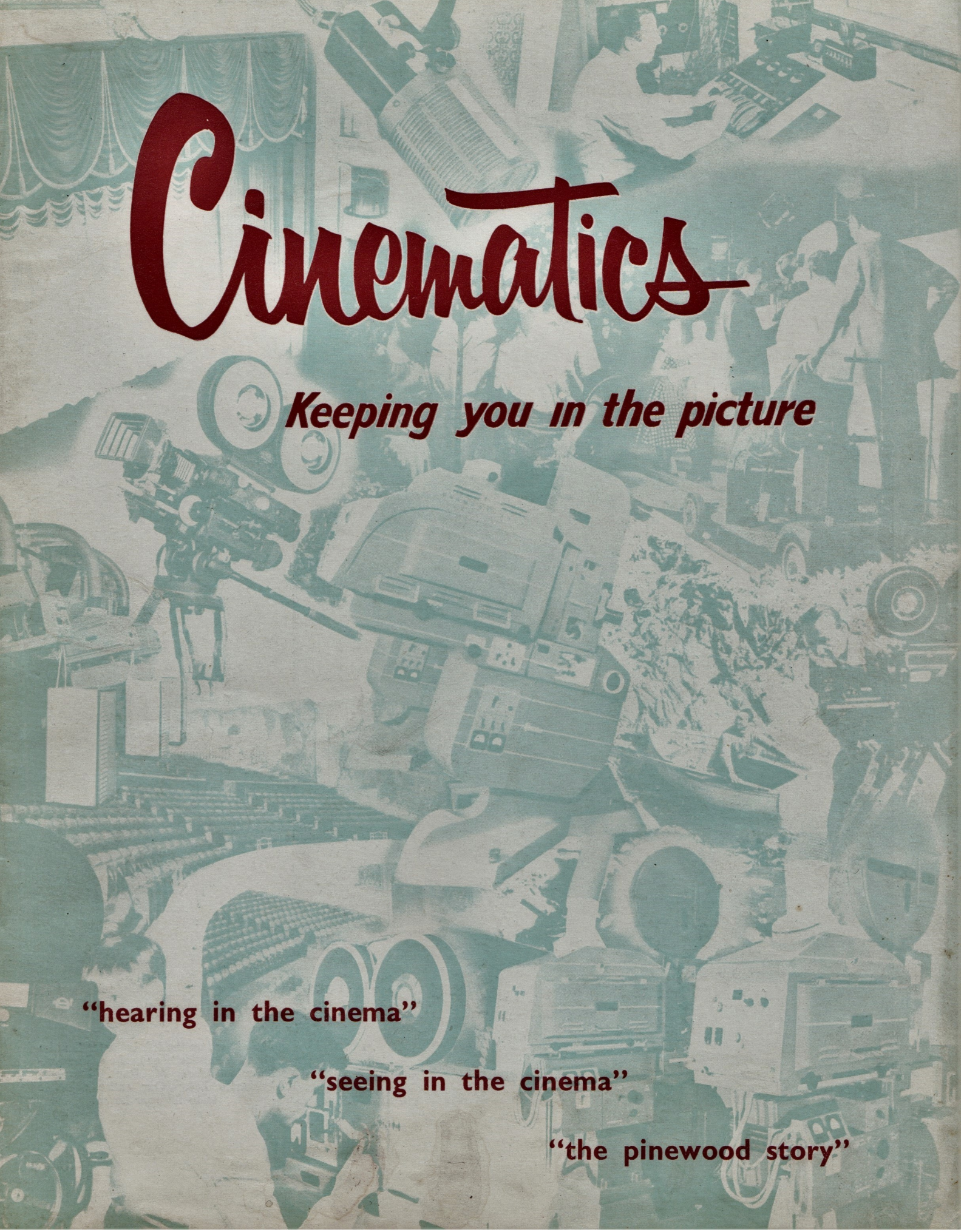


Cinematics

Keeping you in the picture

"hearing in the cinema"

"seeing in the cinema"

"the pinewood story"

Cinematics

Keeping you in the picture

The picture on the left indicates the aim of "Cinematics" and the Gaumont-Kalee division of Rank Precision Industries Ltd. Our entire objective is to fill *your* house

Published by the Gaumont-Kalee division of Rank Precision Industries Ltd., 37-41, Mortimer St., London, W.1, for private circulation among friends and associates in the Film Industry at Home and Overseas.

May We Introduce . . . .

"CINEMATICS " will not be found in any dictionary. It is a word that we have coined to cover not merely the science of cinematography, but also all technical aspects of cinema, film studio and film laboratory operation. "Cinematics" supersedes the "Gaumont-Kalee News". We decided to change the format for many reasons, one of which is that the new format allows much more scope and gives the Editor a better chance to cover his subject. We have tried to fill this first issue with items of interest, but naturally, in a field as large as the cinema it is impossible to be completely comprehensive. For this reason future issues of "Cinematics" will cover a wide and varied range of subjects. We aim, for instance, to include from time to time articles from practical specialists on such subjects as projectors, projection lenses, arc lamps, sound reproducers, seating, auditorium and stage lighting, screens, stage draperies, mechanical equipment for cinema and "live" stage operation, and more general articles on the combination of these varied factors, within the architects' overall plans, to give the optimum result in technical excellence, good showmanship and commercial efficiency.

In addition to discussing the equipment itself, we shall examine, with the help of successful exhibitor friends, the various ways in which personal attention to the multitudinous technical details of theatre operation can make all the difference to the audience, the staff, the management and the shareholders.

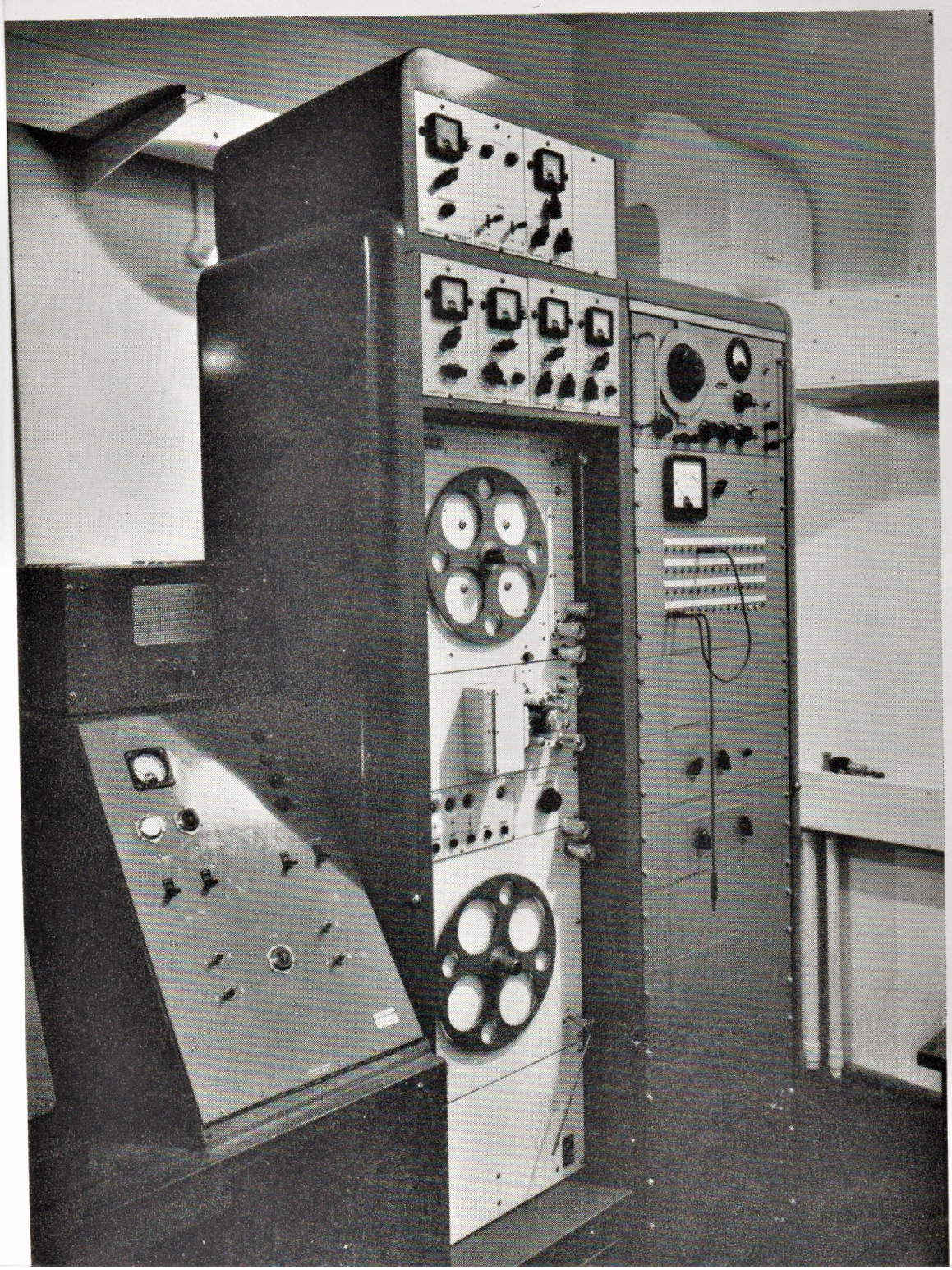
Similarly in the studio and laboratory field, we shall publish informative and useful material on cameras, "taking" lenses, recording, re-recording and "dubbing" equipment, processing equipment and so on, with contributions from cameramen, recordists and other specialists on their respective techniques.

We hope you will agree that a good start has been made with this first issue and we do feel that we are particularly well placed to render this service to the cinema industry. Firstly, the extensive group of factories operating under the "Man with the Gong" banner of Rank Precision Industries, who are sponsoring this publication, produce all the widely varying types of equipment mentioned, and many more besides. Secondly, the factories now comprising the Rank Precision Industries group have been producing these specialities ever since the early days of the industry, and have naturally acquired a considerable volume of experience and "know-how" over the years. Especially in the research and development departments which play so important a role in our ever progressing industry. Thirdly, the Rank Group, with which Rank Precision Industries Ltd. is associated, controls studios, processing laboratories, and over 700 cinemas in the United Kingdom, Canada, Eire, Jamaica and Portugal; with interests in over 400 in Australia, New Zealand, South Africa, Malaya, Ceylon and Holland; and the knowledge and experience of these massive production and exhibition units is readily made available to the manufacturing organisation as occasion demands. Finally, we are modest enough to realise that there are limits to the technological resources of any one organisation, even one so extensive and old established, and will therefore freely enlist the aid of distinguished outside contributors whenever we feel that "CINEMATICS" will thereby render itself more interesting and useful to its readers throughout the world.

We invite comments and criticisms on this first issue, and promise to do our very utmost to respond to all calls for technical advancement in the cinema industry, which we are proud to serve.

Gaumont-Kalee

Recording Room, No. 5 Theatre. Gaumont-Kalee cabinet magnetic recorder, with patchbay, intercom., interlock controls and lamp signals. Magnetic loop recording gear is seen above the main recorder



into Pinewood

THE Rank Organisation's Pinewood Studios have two newly-built Theatres, equipped throughout by Gaumont-Kalee.

The first, called Number Five, is designed for normal studio viewing of rushes and cutting copies; post-synchronisation by direct recording; and transcription from magnetic to optical soundtracks. This theatre will serve the normal productions of the Studios.

The Second theatre, Number Six, is for Rank Screen Services Ltd.; it provides the same range of services as Number Five, plus six-way re-recording equipment for dubbing. Also, the projector soundhead, extended from the Gaumont-Kalee Type 83 design, will reproduce normal optical release tracks, 200 mm. push-pull optical, and 200 mm. magnetic recordings.

Each theatre suite is complete in itself and consists of four main rooms—theatre, monitoring room, projection cabin, and recording room. A most comprehensive inter-communication system provides speech and signalling facilities between all rooms in each suite.

No. 5 Theatre—Equipment:

EACH OF THE TWO special projectors, developed from the G.K. 20, has the well-known motor arrangement of one synchronous and one interlock motor. Operating direct from three-phase mains, the synchronous motor drives the projector, and the interlock idles. Operating from a remote interlock distributor, the machine is driven by the interlock motor, and the synchronous motor idles. Finally, the synchronous motor can drive the projector, while the interlock motor drives the interlock "slave" of another machine in tandem.

Thus, in No. 5 Theatre at Pinewood, two standard Gaumont-Kalee cabinet model reproducers can either be tandem-driven by the projectors, or interlocked for independent drive from a remote distributor.

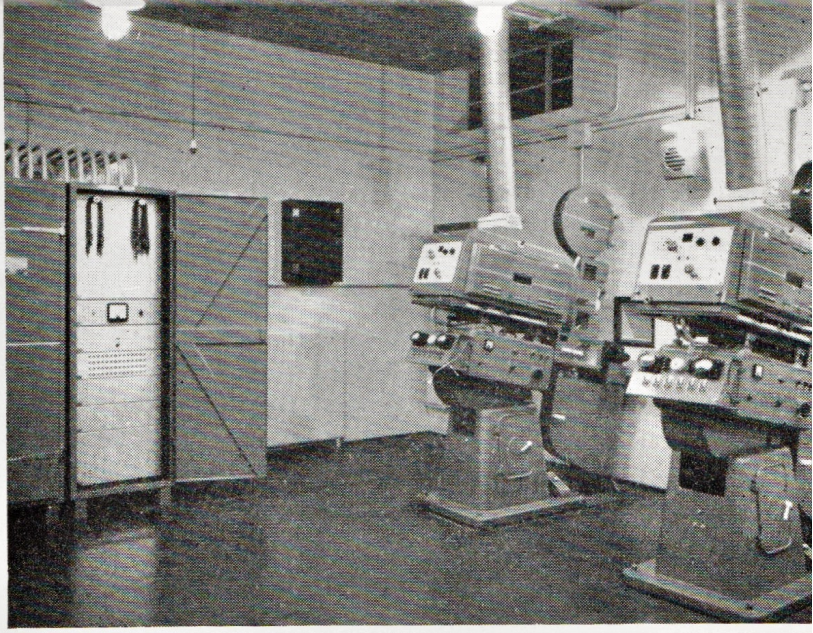
The recorder is also driven by interlock—either independently or in tandem from the projection gear. Beside the flexible facilities afforded by these arrangements, loop-boxes, taking up to 85 ft., are provided. The reproducers handle either magnetic or optical tracks.

Either commercial or direct-cut discs can be played by the 3-speed high fidelity disc reproducer. Tape play-back is also provided.

The projection system is completed by the 30-watt cabinet rack, with input and monitor amplifiers. All audio connections from the reproducers terminate in a patch-bay for line connection as required.

At the screen end of the theatre, the speaker is a Gaumont-Kalee No. 2 Duosonic behind a silver screen, masked for full CinemaScope.

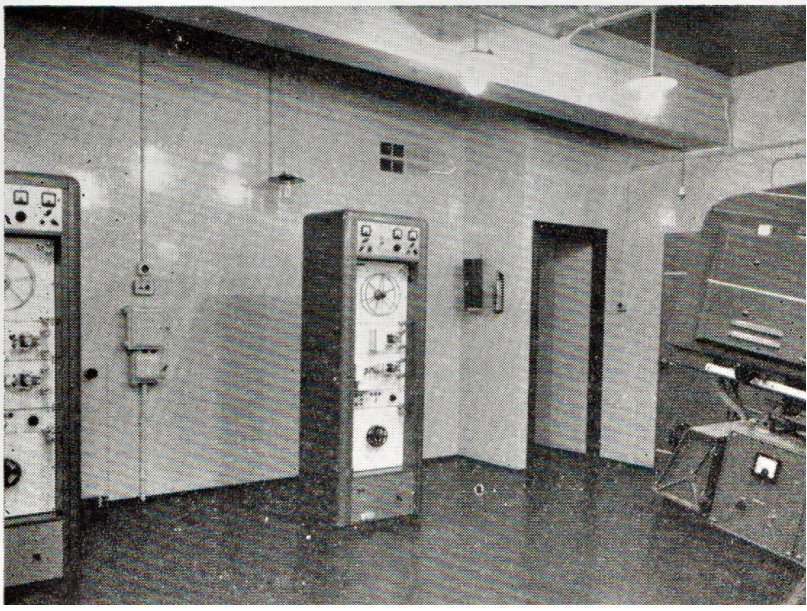
(*Please turn page*)



No. 5 Theatre — two G.K. "20" projectors, for single or interlock drive

No. 6 Theatre. Microphone mixer desk — theatre seen beyond

The spacious No. 5 Theatre projection room. Tandem driven reproducers, using optical or magnetic tracks, team with the projectors, either for local drive or remote interlock



The theatre control desk gives remote fader-control of the theatre sound, speaker cut-out switch when using headphones, and a "mixer-monitor" panel for film editors' "dummy runs" prior to mixing. The 3-channel microphone mixer panel, with volume indicator, keys, controls, signals and intercom, is in the monitoring room.

The Gaumont-Kalee cabinet-type magnetic recorder, with patching test equipment and facilities bay, is installed in the recording room. Provision is made, above the recorder, for recording of magnetic loops for post-synchronising.

This equipment operates on the general system of interlock already explained, and can thus be controlled either from the monitor room or the theatre. It is completed by the interlock motor control panel, lamps signal system, and intercom unit.

Theatre No. 6:

THIS THEATRE possesses, in addition to the same range of services and facilities as its neighbour, No. 5, complete equipment for re-recording and 6-way mixing.

In the projection room, four Gaumont-Kalee cabinet-type reproducers (three magnetic, one optical), with loop-carriage, team with high fidelity disc- and tape-players to provide a flexible range of sound outputs for line-feed to the mixer console.

In the recording room, the equipment is similar to that in No. 5. The microphone mixer in the monitoring room handles two-channels only.

6-Channel Mixer Console:

TWO INPUT-CONTROL groups, each with separate master fader, form the central section; each group is associated with six equalisers, panel-mounted above the controls.

Between fader-groups, telephone simulator and high-pass-filter keys are provided. The volume indicator is the well-known Gaumont-Kalee peak-reading meter.

Circuit checking is by metering panel, which, with lines - patching panel, fixed - frequency oscillator for alignment test signals, monitor-selector controls, "intercom" unit, theatre projection remote controls, master-switch, and signal lights, complete the console array.

Power:

AN ANNEXE to No. 6 houses the two interlock distributors, of which one is the normal Gaumont-Kalee unit which will drive any or all of the associated machines. A smaller unit drives either or both recorders.

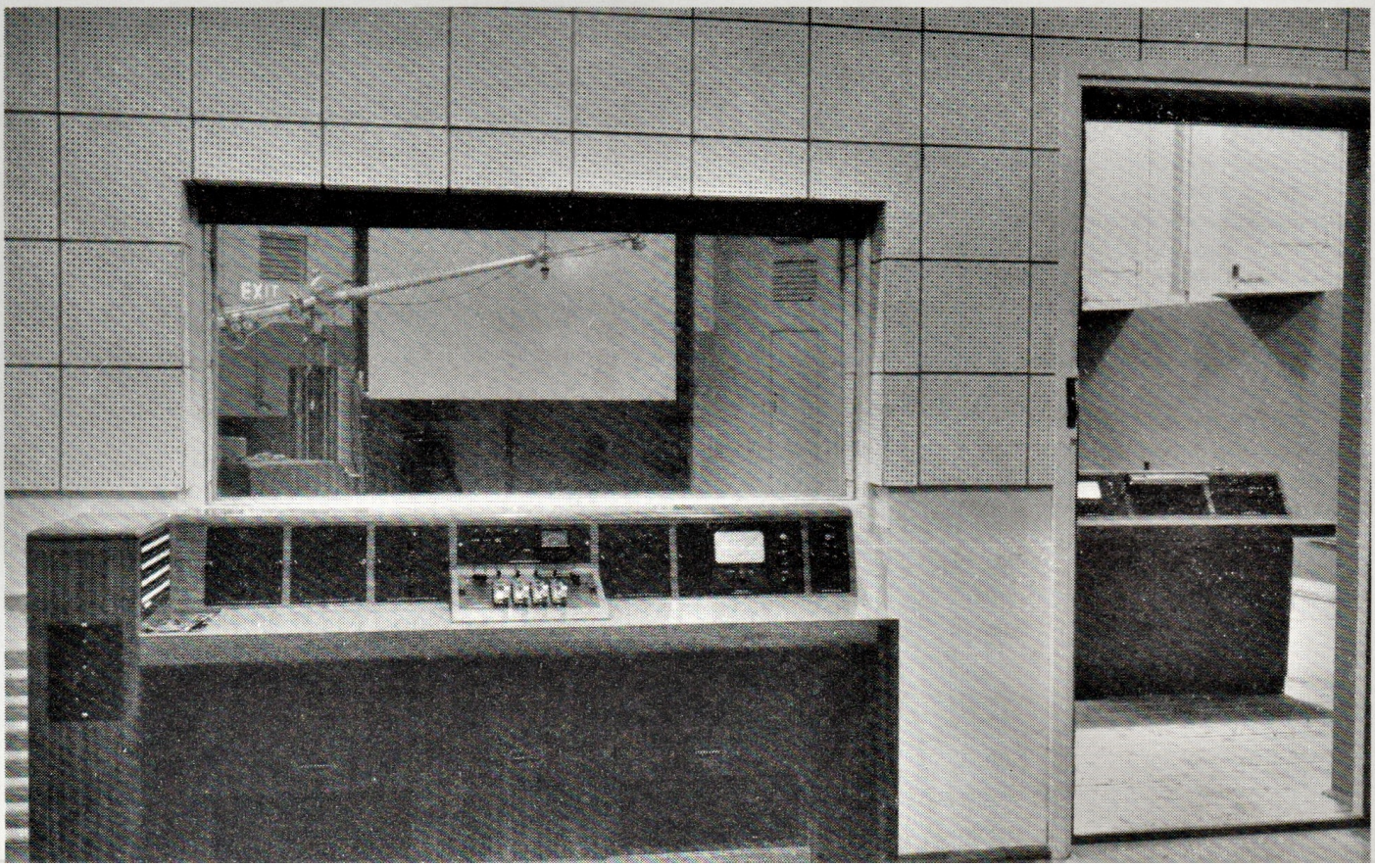
Power units for the recorders and reproducers are self contained by the units themselves. The 6-way mixing console and the microphone mixers carry their own power supplies, housed in their individual desks, and readily accessible.

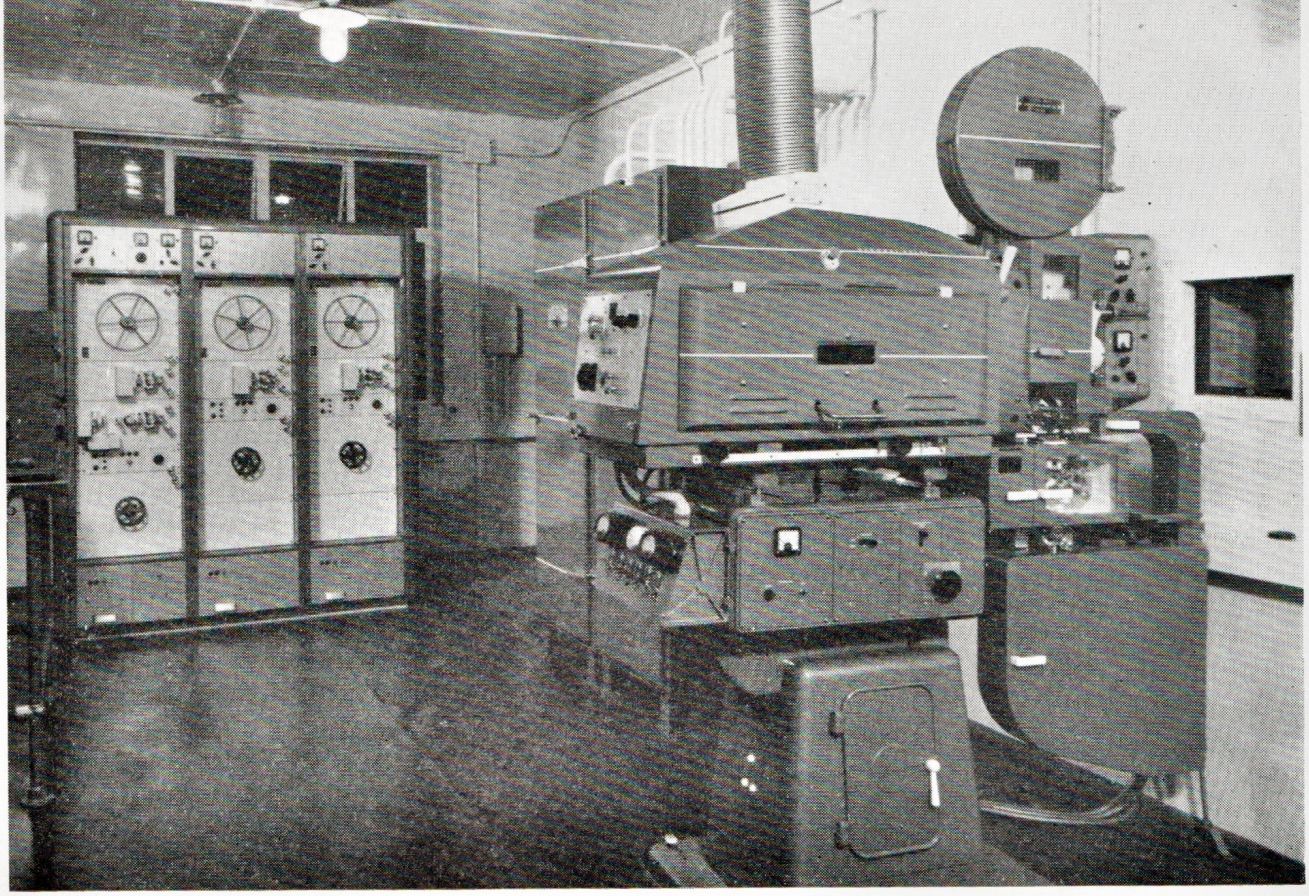
Special attention has been given to ease of servicing, even to the extent of built-in strip lighting inside the theatre control and mixing desks.

Planned and executed by Gaumont-Kalee engineers, and detailed facilities of both of these installations were evolved in close collaboration with Pinewood Studio technicians. The resulting special requirements are not, however, of such a nature as to preclude the use of such equipment in other studios—on the contrary, the extremely comprehensive and flexible nature of the facilities and services provided by Gaumont-Kalee at Pinewood have an important and increasing interest for film studios everywhere.

Rising production costs underline the urgent need for speedy, efficient, and economical technical processes —an ambient into which Gaumont-Kalee equipment fits perfectly.

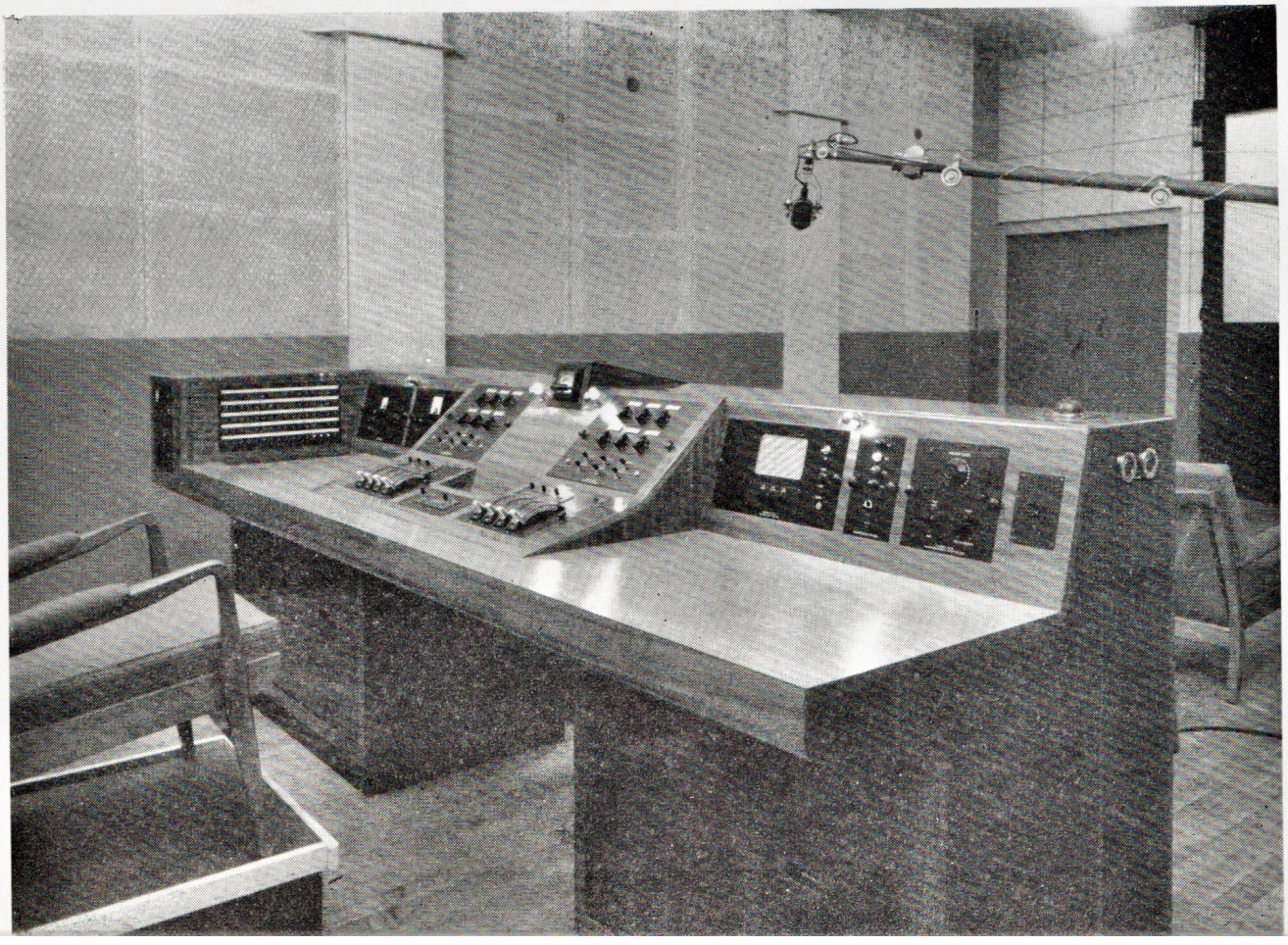
Monitor room, No. 5 Theatre. Three-way mixer desk, with microphone pre-amplifier, volume indicator, monitor control, intercom. and signal panel. Theatre control desk seen through window

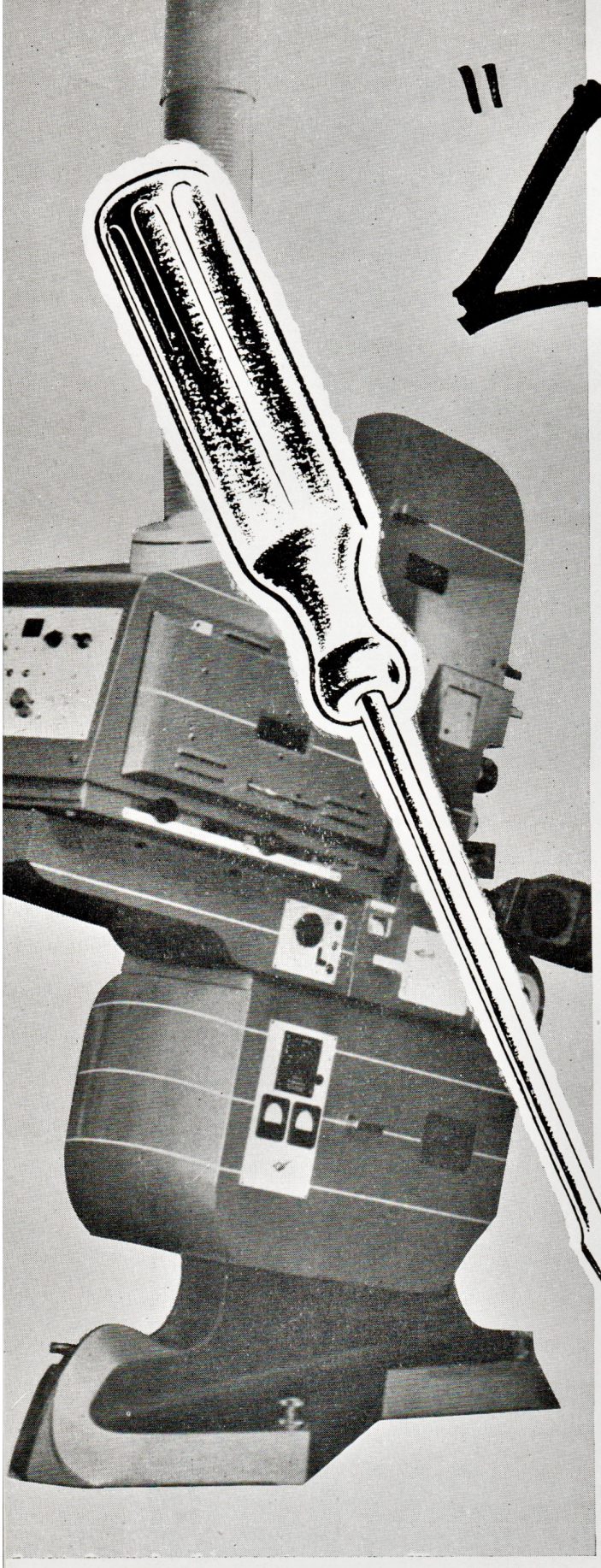




No. 6 Theatre projection suite. Gaumont-Kalee cabinet-type reproducers flanking theatre amplifiers and projector. One of the cabinet machines is equipped for both optical and magnetic playback — the other two for magnetic only

Six-channel mixing console in No. 6 Theatre. Two centre panels carry faders, and associated equalisers; volume indicator shown above. Patchbay on left — services and facilities right and left of fader groups. Power supply units housed in lockers below desk





"Leave well

HAVE you ever come across the nervous operator with a screwdriver in every pocket . . . and an ulcer? I meet them once in a while, and find they are generally 'boys' of the old brigade who still believe the fallacy that presenting a programme to a critical audience is a hazardous business which calls for constant vigilance and mechanical tinkering. I say a fallacy because, in my experience, this is just not true.

My box is equipped with G.K.21 Lightmaster projectors and my maxim and, for that matter, the maxim of my staff, is—"leave well alone". I find that the equipment is extremely reliable and will run many complete shows without even a hint of trouble.

Focus Twice

IN MY OPINION the basic essentials for an operator are that he should watch the supply voltage constantly, for variations mean adjustments to the arc feeds; that he should focus twice, watch the screen . . . and never worry. He should focus twice when he begins a reel because the gate temperature builds up, and may cause the film plane to alter. He should watch the screen both from the projection box and the auditorium. I make a point of spending a good part of my time in the auditorium, where I look at the picture from the audience's point of view, and pay particular attention to the sound. Quite often I have heard parasitic noises which, although not audible in the box, can be eliminated from the box.

Speaking of sound, how do you balance the monitor speaker with the auditorium speakers? Personally, I would prefer a fixed resistance to a variable control on my monitor speaker, for I believe that a good volume balance should be struck between the two and, once obtained, no one should ever alter it.

I agree that the comparison between an empty house, with the 'wick' turned down and a full house, with an appropriate increase in volume, often produces such variations in monitor speaker volume that the operators are tempted to make adjustments; but take my tip—to ensure a correct volume level in the auditorium (full house or not) leave the monitor control alone.

Rock 'n' Roll

THE OTHER DAY one of my more attractive usherettes brought in a gramophone record she had recently added to her collection. Very proud of it she was, and asked if I would play it during the show. Now, personally, I don't mind Rock 'n' Roll, but it really had the audience jumping, and I reckon it took just one minute for the manager to phone me with: "Turn that darn thing off."

This experience has convinced me that indiscriminate use of records throughout the programme is unwise.

alone!" says the Chief

I think I am a showman and, until this recent lapse, have always tried to make my music suit the mood. Let me give you an example of what I mean.

My theatre opens at 1.15 p.m. and I make the audience's transition from the street to the cinema as smooth as I can by choosing my records carefully. Contrast the style that would suit this spot with the circus atmosphere I try to provide during the ice-cream interval.

Any conscientious operator, aware of the effects of recorded music on his audience, is faced with the difficulties of synchronising music with his programme, and I would dearly love the opportunity to pre-record my complete record programme on a tape-recorder, so that I only have to synchronise once. Incidentally, do overseas operators use "Three Blind Mice" and "Blaze Away" as fire signals, or do they have other recognised alarms?

Colour Titles

I HAVE a great deal of admiration for the designers of modern colour film titles. Some of them that we watch on the screen to-day are most dramatic and succeed in compelling the attention of the audience. My admiration for these splendid colour titles has resulted in a standing order in my box that all proscenium lights must be out immediately the censor certificate is off the screen. I know there are some operators who believe they can add extra attraction by playing coloured lights on colour titles but, personally, I am against it.

A couple of hundred yards down the street a pal of mine is the Chief in an equally large cinema. He and I have always been friendly competitors, and occasionally take time to visit each other to find out what is new. We have even been known to pass on friendly tips, and I was able to give him one just the other day.

When I was in his box I noticed a boy cleaning the carbon deposit from an arc lamp mirror. He was using steel wool and filling the lamp with metal particles. Now I appreciate that this deposit is a menace, but in my own box we always remove the mirror from the projector before we attempt to clean it—in fact we even take it right out of the room. We have found that by far the best way to clean the carbon deposit from the mirror is to use a very fine grade steel wool. Whatever you do, don't use an abrasive on aluminium or metal mirrors, or you will shift more than the deposit!

Waxing

IT ANNOYS ME that there is only one film wax available for both winter and summer use. It seems strange that wax manufacturers have not realised the difference that temperature makes to the ease of application of wax. I would like to see two available of different consistencies for this would certainly make waxing easier. I know that it should not be necessary for the operator to wax his films, but we always do in our box unless the film has been run eighteen times.

Cue-Dots

IT IS QUITE COMMON for us to receive films which have had at least a hundred showings and when they reach this stage they can no longer be trusted, for quite often we find then damaged at the leader and tail. When we receive a film which has been shown two hundred times, we are almost certain to find it damaged and we very carefully check it and make good before we attempt to project it. I have learned from bitter experience that cue marks often suffer and I am astonished how few operators use the standard marks when they replace lost or damaged dots. In my years in the box I have seen many extraordinary symbols which to the individual might make sense, but to the new-comer to the hieroglyphics spell danger and shaky change-overs. In the first place, unless I check the dots I do not know what to expect in the right-hand corner of my screen, and it is generally a coincidence if the squiggles appear at the right time, so this business is almost a fetish with me. My box is equipped with a Premier Cue-Dot Marker; we use it religiously and make a point of following the British Standards Institution Specification 1492, of 1948, this, as you probably know, determines the correct position for the cue marks as follows:

(*a*) Change-over Cue Marks are positioned 18 clear frames from the beginning of the *run-out-leader*.

(*b*) Motor Cue Marks are positioned 10 feet plus 12 picture frames from the beginning of the *change-over cue marks*.

HEARING IN THE CINEMA

BY J. CARSON

THE cinema patron has gained a better appreciation of sound quality—largely due to listening to new radio receivers, television sound channels, V.H.F. radio receivers and long playing records which are now commonly obtainable. He hears them, usually, in fairly good "domestic acoustic conditions", which compare favourably with the acoustics of many cinemas.

Today, the public are "shopping" for their film entertainment. Cinemagoers are choosing the theatres which show the pictures they want to see, as against the "Cinemahabit". This includes the best in presentation, bright clear pictures on the screen, and sound which assures every patron of comfortable listening pleasure. The sound must at all times be intelligible, intimate, and a close approach to the original. It must be so closely related to the action and atmosphere, the artists and development of the plot, that the illusion is real and "the patron is in the picture". A film which achieves this gives the public what it wants. Good sound contributes substantially to the success of a good film. For it to do so the sound source must be capable of giving balanced response from 50 c.p.s. to 10,000 c.p.s. (or above), with freedom from distortion. All elements of the sound system must be the best possible, especially the loudspeaker assembly, it is the performance of the loudspeaker which can make the patron acutely aware of good sound. Apart from the broad frequency range it must reproduce faithfully, it must be capable of distributing sound without loss of tonal perfection to all seats in the auditorium—each person must enjoy "effortless listening" the sound should be "spoon fed" from the rear screen to each seat. Loudspeakers can these days be designed for use in any auditorium, be it a standard conventional theatre or one of the stadium type.

The public's goal is then—the cinema exhibitor's goal—this is one instance when we know what the public wants. The objective—from a quantitative and qualitative point of view—is the distribution of sound with proper tonal balance between all frequencies, so that the "intelligibility factor" is high—both for speech as well as music.

If engineering is still brought to bear and full use made of modern sound reproducer equipment available today, high quality reproduction from optical and magnetic recordings can be obtained.

Electro-Acoustics

THE FIELD of architectural acoustics as applied to the cinema, deals with the adjustment of auditoria to accept sound from a modern sound system, and if the "acoustical condition" is not corrected to meet exacting requirements, then the final sound quality from good recorded film cannot be presented to the audience without introducing confusion in certain areas of the seating and destroying "good hearing".

Both the shape of the auditorium and the proper use of sound absorption material is necessary, also the loudness level of the direct sound should be such that it dominates the reflected or reverberant sound.

When considering shape the audience should be close to the loudspeaker, i.e., benefit from the direct sound. Fan-shaped auditoria enable this to be achieved, this shape has the added advantage of keeping troublesome long path reflections at a minimum and is acoustically superior to the rectangular shaped building, which can have all the acoustical vices. Even so, steps can be taken to introduce adequate sound absorption treatment. It is desirable in nearly all cinemas to control the reverberation time, i.e., the rate of decay of sound (see recommended optimum curve) and at the same time attain good tonal balance.

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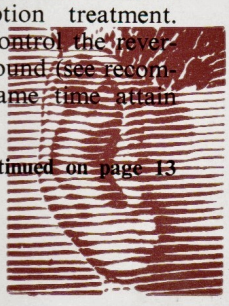

SEEING IN THE CINEMA

BY R. ROBERTSON

WE, the forty-five million British public, 'Went to the pictures' more than a thousand million times last year. We went to see the picture, but the picture that we saw was seldom that actually shown us, but a much tidied up, embellished and generally improved version of it.

Our eyes are merely a link in a chain of complex physical and mental processes involved in the art of seeing. The visual impression of which we are conscious, an image constructed by our mind out of the data transmitted from our eyes, supplemented and edited in accordance with other knowledge and previous experiences.

Familiarity

WE SEE BEST what we know best. An example is the aged sempstress who does not need her glasses to thread her needle but to whom a page of type is a blur without them. Similarly, a child learning to read must start with large print, and only increasing familiarity with the shapes of letters and words enables him to read small type. As also it is common experience that small print in a foreign language is less legible than in one's own, and it is interesting to speculate how much this factor contributes to the box-office success of the well-established formula of well-known, well-publicised stars and the mixture as before—only more so?

A recognised thing tends to be 'seen' as it is known or thought to be, regardless of how it is presented—unless the attention is deliberately directed to the presentation as such or this is disconcertingly novel.

This is especially true when the interest is so strongly held that emotions are aroused, as by a really exciting film, but irrespective of the quality of the film it is remarkable how readily and quickly we become oblivious to quite severe distortions when we pay our shillings to be entertained—distortions as 'keystone' and bending arising from projection rake and screen curvature and fore-shortening arising from obliquity of view—as also how readily we adapt ourselves to the wide range in picture size and brightness between the best and poorest served seats.

Brilliance

BRIGHTNESS IS UNCHANGED by distance but does vary quite widely with the direction at which a modern high gain screen is viewed. The eye, however, while very sensitive to brightness differences within its view, is not at all critical when direct comparison is avoided. In reading, for example, the brightness of the page may vary from a few foot-lamberts only in a quite good artificial light up to a thousand or more in bright sunlight, and we are quite unappreciative of the magnitude of the brightness.

Attainable brightness of the cinema screen corresponds to that of a page seen in good artificial light. The B.S.I. recommend that the brightness of the centre of the screen, as seen from any seat, should lie between 8 and 16 foot-lamberts, but brightness as low as 4 foot-lamberts at extreme angles is not unusual—and reported to be rarely exceeded on the very large outdoor screens of "drive-in" theatres.

Size

APPARENT PICTURE SIZE which probably varies more than brightness is quite as important as regards comfort and enjoyment. What matters is not the actual size of the screen but its apparent size from where we see it, which, in a typical theatre, may vary over a range of about 4-to-1, depending on where we sit.

From the front rows a twenty-foot wide screen, say, fifteen feet away, is every bit as large and dominating as a forty-foot screen thirty feet away—and most of us

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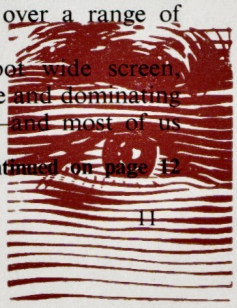
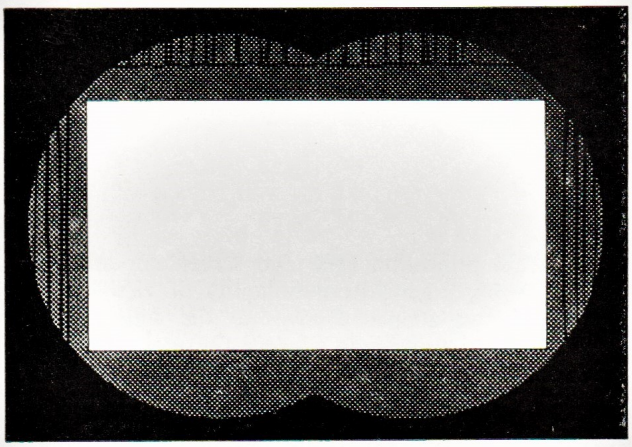
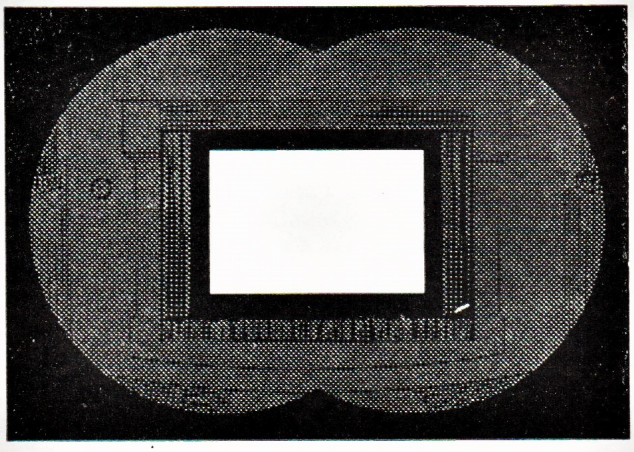


would consider either too near or too large for comfort. From the rear seats, however, even the forty-foot screen may not be effectively larger than a seventeen-inch television screen seen from a comfortable distance, though better picture quality, as also knowledge that the screen actually is vast, reinforced by skillful publicity of the 'giant screen,' may persuade us that we are getting a better eyeful.

The importance of size derives partly from the larger filling of our accustomed visual field of view and partly from the greater wealth of detail which we can more readily distinguish.

This normal field of view encompasses roughly





Although the normal field of view of the human eye covers 180° by 120° we are not really aware of everything that occurs within these arcs. The upper picture shows what appears to be an ideal screen size within the field of view of the human eye, but this is a fantastic size and would not give good results for there comes a point of enlargement when detail is lost in 'fuzz'. The lower illustration shows a typical cinema screen as seen by the human eye. This is about the optimum size. The shaded portion is visible to the eye and anything of interest occurring or moving within this will attract attention away from the screen

180° horizontally by 120° vertically. We are only sharply aware of a very small region of this at a time, but remain sufficiently aware of what is visible in the rest for anything of interest to attract our attention and in normal seeing are continually shifting our attention, moving our eyes and head, to scan the scene before us.

The large area of our attention occupied by a large appearing screen involves correspondingly large scanning movement which contributes to enhanced feelings of reality, as also the more the eye is filled the less the likelihood of distraction by extraneous matters.

Contrast the same scene as seen in the ratio of magnification which obtains between the front and rear seats of a typical cinema. The greater wealth of detail evident in the enlarged view not only assists in holding attention by providing more for the eye to wander over, but, like the device of the "close-up", increases satisfaction by giving the viewer "bigger eyeful of what he wants to see more of".

Detail

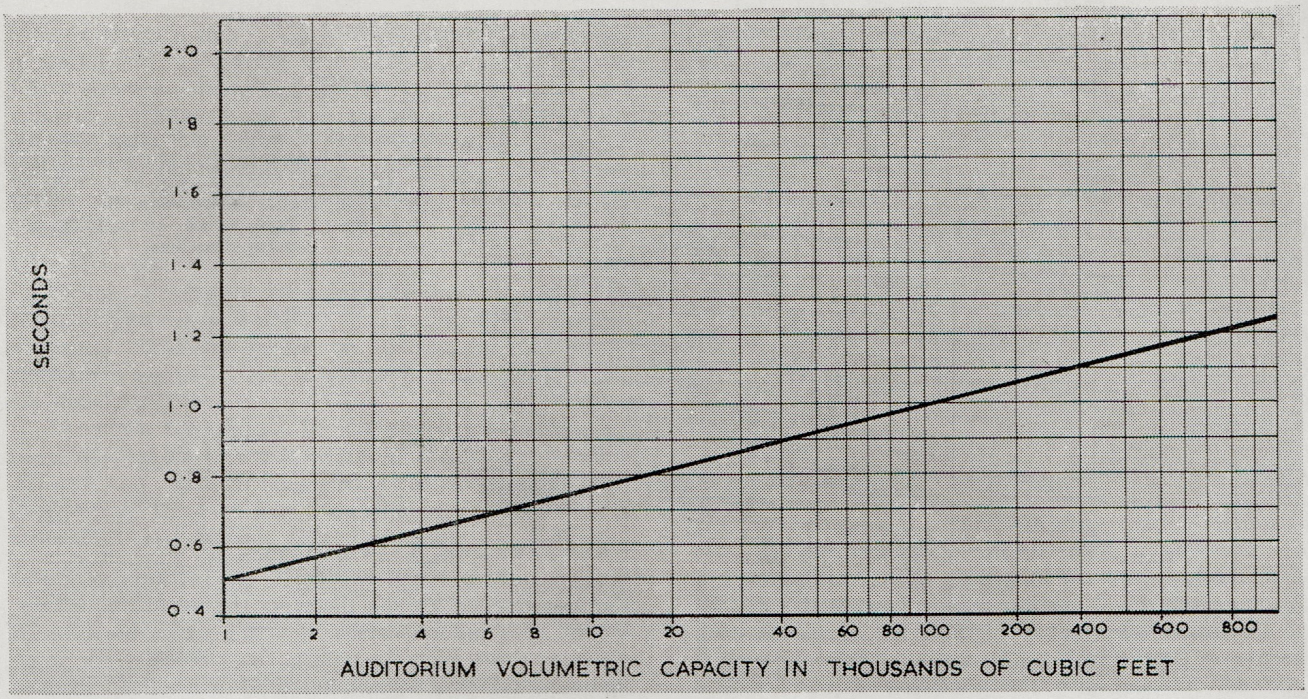
THIS SUPPOSES that there is detail of interest in the projected picture which is sufficiently sharp to reward a closer view. There comes a point at which finer detail is lost in general fuzz and further magnification is 'empty' since it cannot reveal any further detail but merely a picture which, while larger, is less distinct.

An unsharp picture is most uncomfortable because the viewer instinctively attempts to accommodate his eyes to see it in sharp focus and the fruitless effort results in eye-strain and general exasperation. His proper remedy is to view it from an increased distance, at which the blur—which is in effect undesired detail—becomes less noticeable; the picture as a whole then appearing less detailed, but sharper.

Thus increasing the size of the screen may not bring any advantage to the front rows of seats, which can be—and probably already are—too close for comfort. It does, however, bring a better picture to the many more patrons behind, and it is the present experience of the industry that to do so is "good business".

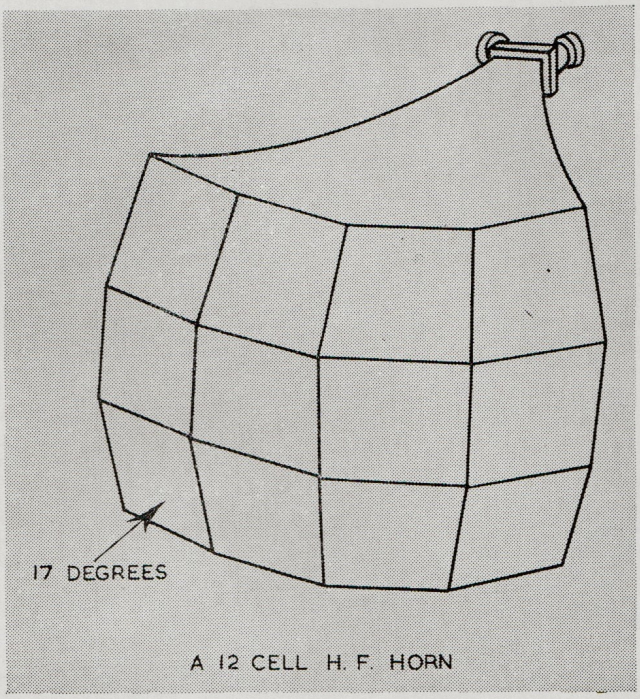
The current trend of development in the cinema is all towards larger and still larger pictures. The white matt screen is, today, out-dated by the more effective directional screen since its preferential reflection towards the customers enables doubling the picture area without loss of brilliance, while more powerful projection lamps now becoming available enable a further comparable increase by putting more light on the screen.

Still larger pictures—without loss of quality or brightness—is the aim of various radically new projection systems as "Double-Frame VistaVision" and "Todd A.O". We, in this country, are still awaiting sight of Todd A.O. but have had several opportunities to see "Double-Frame". At the time of writing, the Royal Command film, "The Battle of the River Plate", is being shown at the Odeon, Leicester Square, on Gaumont-Kalee "Double-Frame" projection equipment, and is a striking demonstration of the possibilities opened up by such systems.



A typical curve showing optimum reverberation times for various volumetric capacities (at 500 c.p.s.). The curve can be used for cinema auditoria using sterophonic sound reproducer equipment

The cellular H.F. Horn used with the bass section, can be supplied in sizes to suit the dimensions of any auditorium. Each cell will give a coverage of 17 degrees both vertically and horizontally and suitable horns fixed at the correct height will provide direct sound to all seats



"Hearing" continued from page 10

Reflections which have travelled over 60ft. longer than the initial direct sound, cause confused hearing, and in speech syllabic over-lap occurs and intelligibility if affected. Sound concentrations from curved walls and ceiling can cause echoes if the path exceeds 60ft. A large variety of commercial absorbents are available in various forms, these consist of rock wool, fibre glass, asbestos and building board, and nearly all carry National Physical Laboratory absorption data certificates. A typical acoustic tile would have a co-efficient of absorption at 1,000 c.p.s. of about 75% (see typical absorption curve) and the application of tiles of this kind should not affect the aesthetic or decorated features of any auditoria. It is possible to arrive at a close approximation of the final hearing condition by dividing the total volume (in cubic feet) by the total number of seats, and if this simple calculation shows a figure exceeding 130 cubic feet per seat—then acoustic treatment is needed to bring about optimum reverberation conditions.

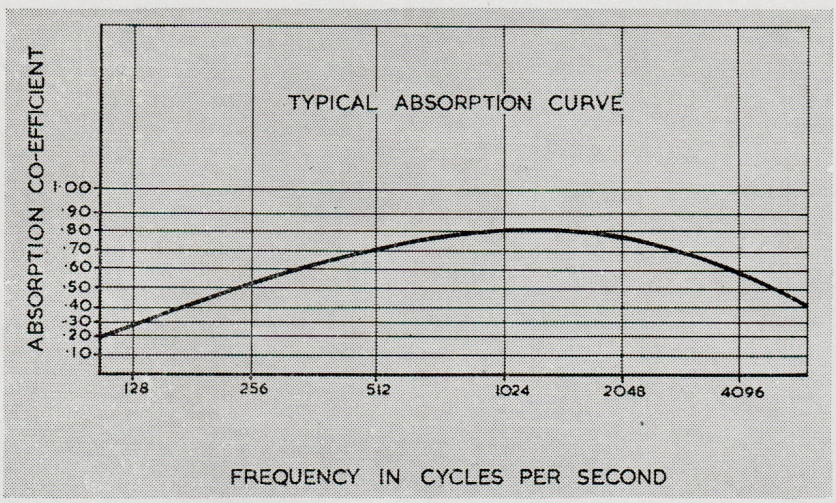
When planning for good acoustics—it is always advisable to consider . . .

(*a*) Keeping the volumetric capacity as near 130 cu. ft. per seat as possible.

(*b*) Treating all curved wall areas, domes, curved ceilings and cove shapes with acoustic absorbent.

(*c*) Fixing absorption material to parallel side walls, which can cause sound flutter and confused hearing.

please turn page



Curve data of various absorption materials will give a good indication of the co-efficient of absorption, and a material with an absorption closely resembling the typical curve shown here would be suitable for most situations

(*d*) Applying a high absorbent material to all rear walls to prevent long path reflections, which can destroy good hearing in the front stall seats.

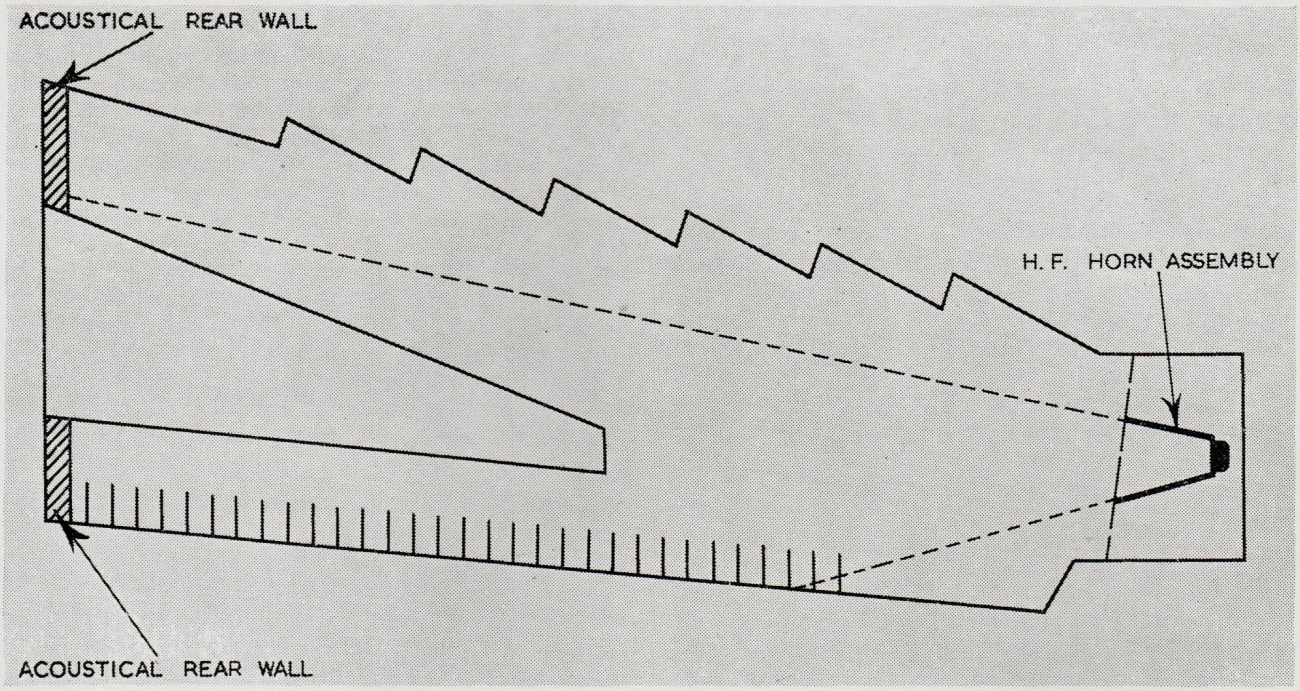
An acoustical expert will provide an analysis showing the precise details with a full recommendation, which if followed out will give the condition required. The expert may suggest the introduction of absorption material to control the reverberant sound, and this would be necessary because the cinema theatre using amplified sound and presenting some 75% speech and 25% music subject matter generally requires a reverberation period lower than that for a concert hall used exclusively for musical entertainment.

Loudspeaker Assemblies

SPEAKERS ARE BUILT in two parts, one section reproduces the bass frequencies and the other the treble frequencies. Whilst both are important, it is the treble horn which provides those high frequencies so necessary for intelligibility, and this horn is designed in a cellular form to enable the high frequencies to be well distributed to all parts of the theatre seating. Each cell of the complete cellular mouth opening (see sketch) will provide a horizontal and vertical coverage of about 17 degrees, therefore horns can be built to any size to suit the dimensions of any auditorium.

The design of the bass section of the loudspeaker

Section shows H.F. Horn fixed at correct height to give direct sound distribution to rear stalls and rear balcony seating. In difficult theatres it is sometimes necessary to employ two H.F. Horns, one slung to feed the stalls seating and one positioned to feed the circle seating



assembly is such that it will give satisfactory distribution of sound and the number of cone speakers employed in this section is determined by the seating capacity and volumetric capacity of the auditorium. Equipment manufacturers will always advise on the best speaker size and give the characteristics of their products. These enable the right assembly to be installed to meet all requirements.

The Stage

LIKE THE AUDITORIUM, the stage should receive close consideration when installing new loudspeakers, and its acoustical condition should be adjusted so that reverberation is kept at a low level and no stage echo effects are apparent.

Acoustic felt should be suspended at the rear of the loudspeakers (the full width of the stage) or alternatively, rock wool or fibre glass padding fixed and held in position by wire mesh on the rear wall. These absorbents will prevent reflections from the wall area and also reduce the stage time period.

Two closely related variables now become evident:

(*a*) The response characteristic of the sound system as a whole.

(*b*) The acoustical condition of the auditorium.

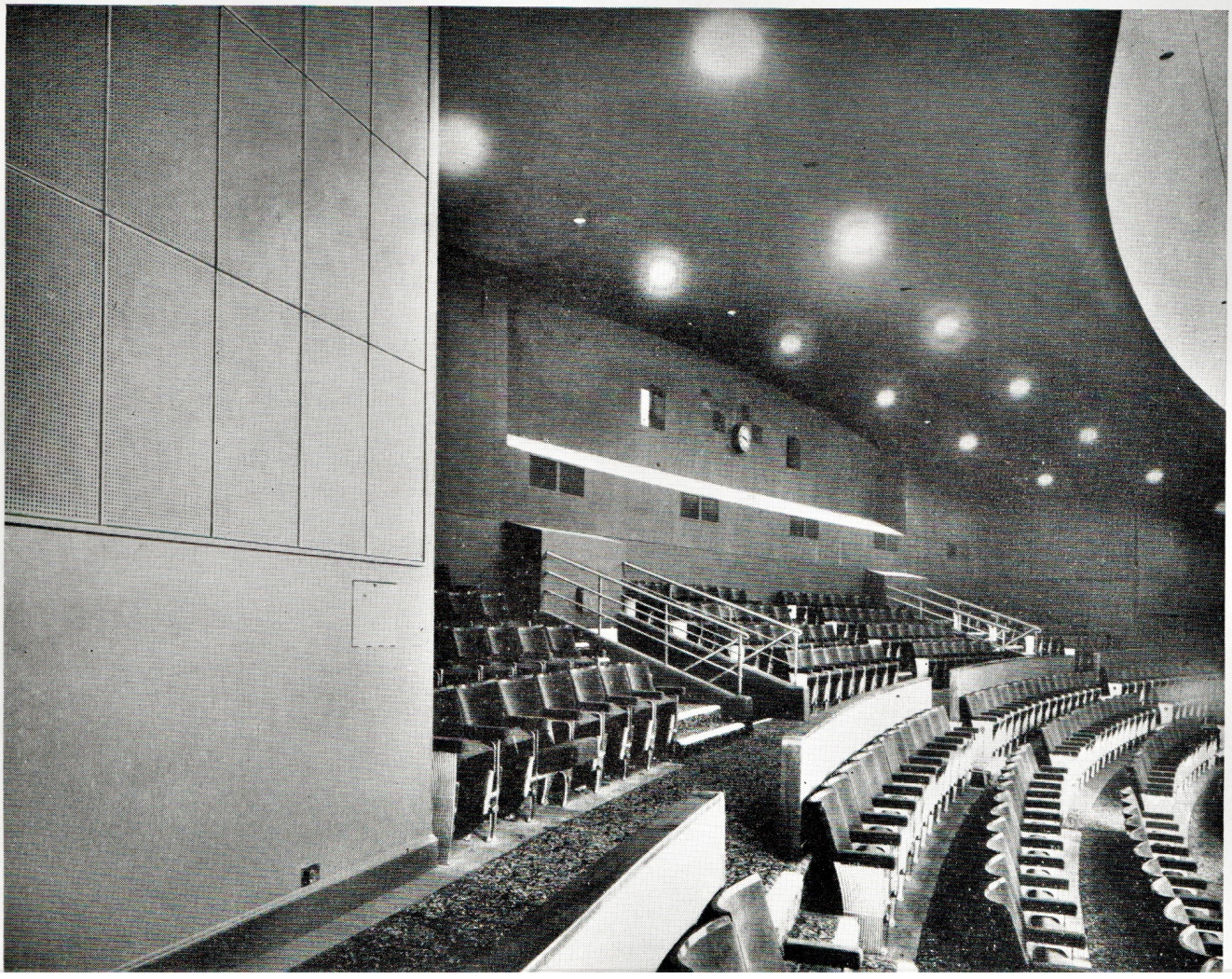
If both are properly adjusted, vital, living sound with natural realism is achieved.

The cinema owner who intends to sell sound (and he *is* selling sound) will consider the performance of the installed reproducer set, and take the necessary steps to have it adjusted, modified or even replaced to conform to an agreed standard, such as that recommended by the Academy of Motion Picture Arts and Sciences.

From the sound track of the film to the final acoustics of the theatre, each element must accurately fit in place and play its part in creating a perfect high quality illusion. It remains however to "present the sound film" and by the judicious use of the volume/loudness control, some scenes can be emphasised, such as the roar of an earthquake, a battle scene or an explosion shot. Then again, the proper adjustment in loudness must be given to the exciting whisper. These sound cues should be listed and used for each presentation of the film programme. We know that in industrial areas the average cinema patron prefers fairly loud sound, but in the country districts the sound is usually maintained at a lower level. It is worth remembering that patrons in general appreciate less sound, but now demand better sound.

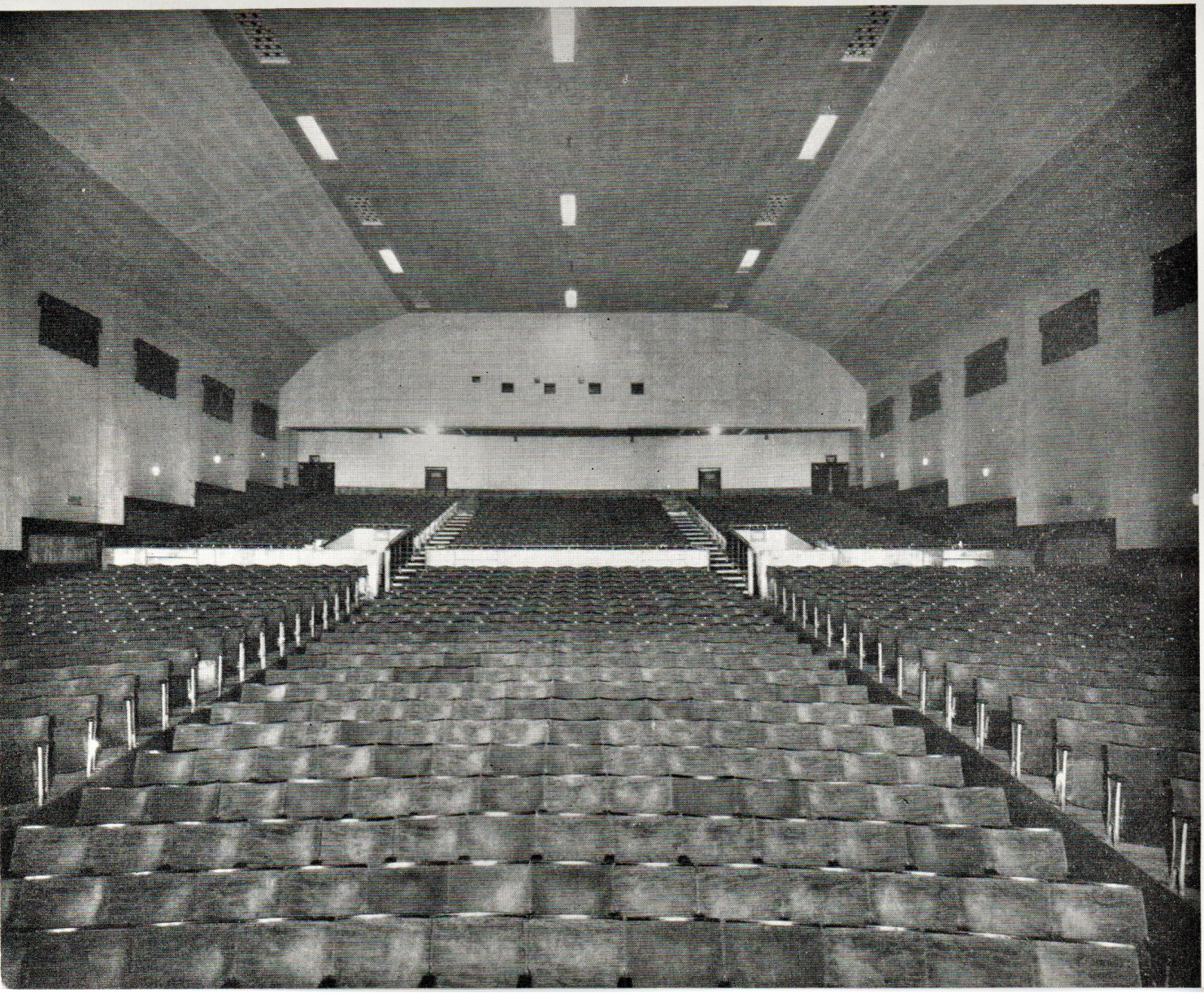
Good sound reproduction must be achieved, if the present-day critical audiences are to be satisfied, and the cinema is to continue to compete with growing competition from other sound entertainment sources.

The picture below shows the application of acoustic tile treatment to the side wall, ceiling and rear wall of a cinema balcony. Note that it appears to be an integral part of the decor

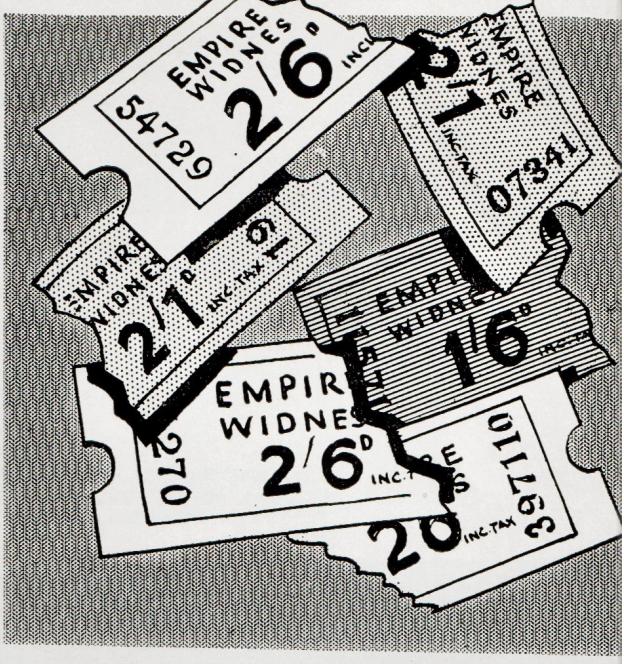


A CASE HISTORY . . .

The Empire Cinema, Widnes, Lancashire, is a 1,200-seat stadium type hall equipped for Cinemascope. Built in 1937, the Empire has a long-established reputation for giving the population what it wants. Successful management has played a big part in this profit-making enterprise and has included the use of modern methods wherever possible



OF SUCCESS



"Business, they say, is doing very nicely"

GENERALITIES are dangerous . . . and so are things typical! Try to find the 'Common Man' or the 'Typical American' and see how far you get. The same thing goes for British cinemas. Where is the typical British cinema? How does it operate? Does it make money?

We cannot provide the answers, but what we can do is to introduce to you a very ordinary British cinema with some extra-ordinary features—and leave you to compare it with cinemas you know (perhaps your own).

Meet the Empire, Widnes, Lancashire. Built in 1937 to provide entertainment for the 49,360 people who live in Widnes, this 1,200-seat hall is one of three owned by two brothers. Business, they say, is doing very nicely—it always has, and there's really no reason why it should change—"Providing, of course, we keep up with the times".

Local Tastes

YOU DON'T OPERATE in Widnes for twenty years without learning about local tastes, so the Empire has established a reputation for giving the people what they want.

Mr. J. Geering, the general manager of the group, told us that the entire operation is based on the requirements of his audiences. Lancashire people just stay away if they don't get what they want—and perhaps they are typical in this. What do they want? They want their money's worth, so you can go to the pictures in Widnes for 1/6d., 2/1d. or 2/6d. No matter where you sit in the Empire you see and hear everything in comfort. The Empire is a stadium-type hall and its 1,200 seats slope steeply from rear to front, so that no hats or heads obscure the view of the Westone Stereo screen. This audience focal point is 36ft. wide when set for Cinemascope. Ratio changes are controlled by Magnascopic masking. Widnes is surrounded by chemical factories and the atmosphere is often polluted by their own particular brand of 'smog'. Because of this, Mr. Geering does all he can to obtain a long screen life, and helps to achieve it by cleaning the screen regularly with a long-handled soft broom. His manager makes a point of leaving the screen at the Cinemascope position when not in use so that any discolouration is even over its surface.

Staff

THE HALL STAFF of the Empire consists of eleven: the manager, three cashiers, four usherettes, one confectionery kiosk sales-girl, and two doormen. The projection box is staffed by a chief operator and two boys. The lack of a second operator isn't noticed nowadays—it used to be before June, 1956. It isn't now because of *Projectomatic*; but more of that later. In Widnes, sulphuric-acid workers come by the dozen, but cinema staff are hard to find. Once again, Mr. Geering has tailored his organisation to meet public requirements, and his staff is just right for the operation of the hall.

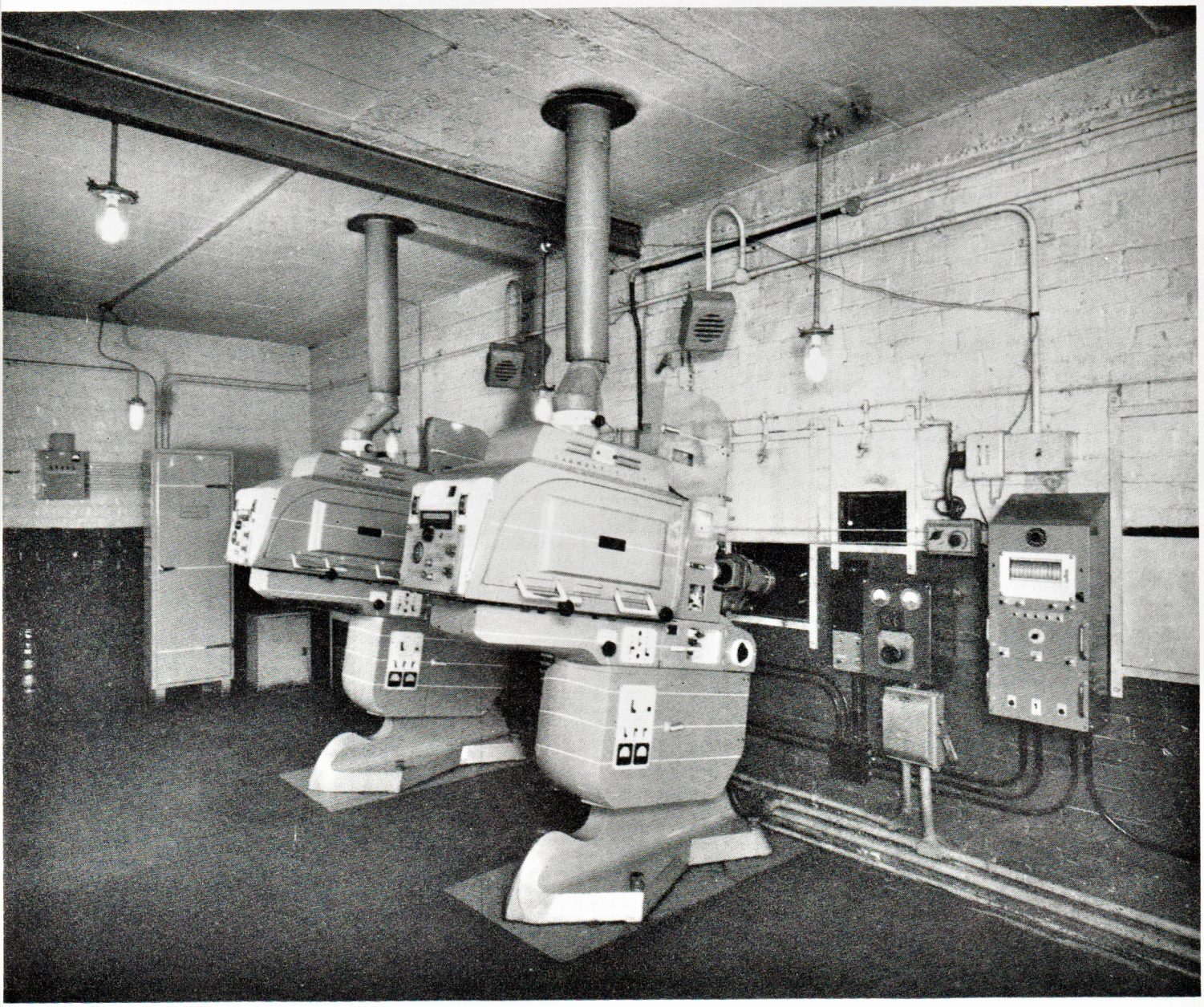
To understand this you must know the routine. We learned that Widnes folk make a big thing of going to the pictures. They work regular hours, most of the women do, too. This means that continuous performances are out. The Empire runs two shows daily: one at 5.40 p.m., the other at 8.10 p.m. The hall is closed on Sundays and only two afternoon matinees are presented. One advantage of this routine is that seats for any performance can be booked in advance. Widnes picture-goers like to know they can watch the film of their choice from the seat of their choice, and it is common to find patrons who have been booking the same seats for years. Yes, "by public demand" really means something here.

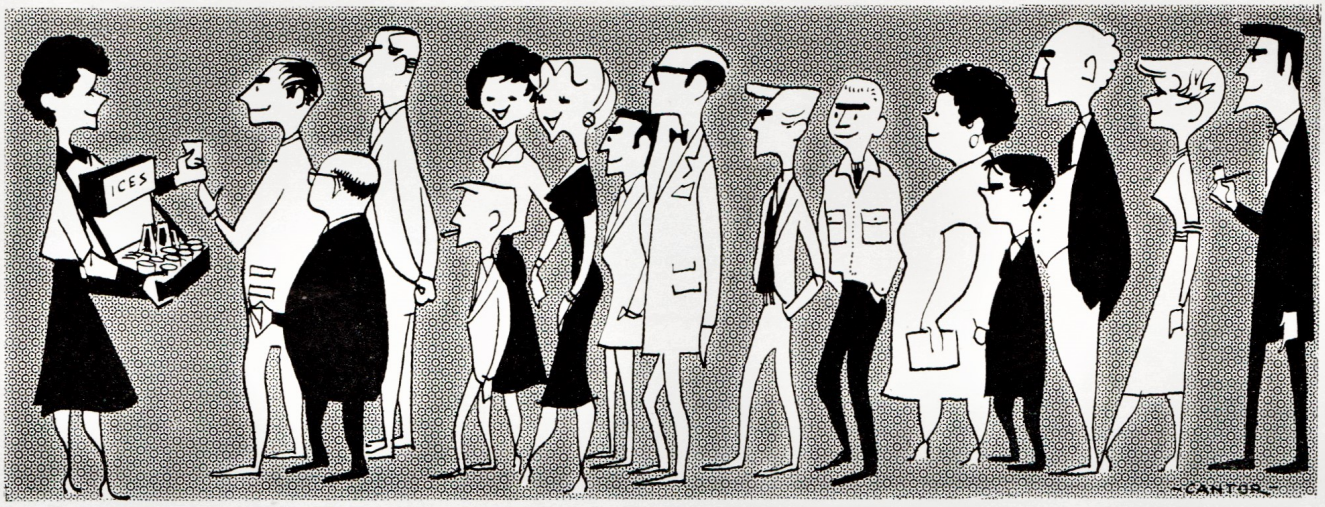
Bookings

THERE IS NO SET ROUTINE for film bookings. Mr. Geering is a very shrewd judge of the films likely to fill his hall

fourteen times a week and, to aid the achievement of this ambition, he rings the changes between three-day and six-day bookings. The average programme runs for two hours and twenty minutes. Double features are rare. His audiences like a programme to begin with a short, then the news, followed by the main feature film. This means two and a half hours of non-stop entertainment and, what is more, uninterrupted entertainment, for 'two shows nightly' avoids constant comings and goings. No one ever says "this is where we came in", and no one ever tramples over the rest of the row in order to get out. The programme doesn't break even for an ice-cream interval. The four Empire usherettes sell refreshments during the showing of the trailers. Do refreshment sales suffer? The answer is a most emphatic "No!" It is a fact that kiosk and house sales of ice-cream and chocolates amount to 50% of the total nett takings each week. The entire staff is proud of this achievement, for it didn't come easily. Success results once again—from the maxim "give the customers what they want". What the customers want is a wide selection of top quality merchandise. Mr. Geering gives it to them. It is as simple as that! (Of course,

July, 1956, saw the installation of 'Projectomatic.' The control box on the right of the picture actuates the entire Empire show





the prominent kiosk, right beside the booking office, and the attractive usherettes could have something to do with it!)

Back-room

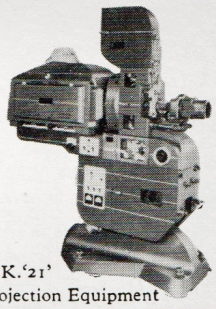
BUT WHAT OF THE DEPARTMENT the public never sees? What goes on in the back-room of the Empire? How can one man and two boys keep 16,800 discerning patrons happy every week? Well, we asked the general manager for his 'ten-golden-rules' for presentation. As journalists, we were shaken by his answer, for instead of producing ten points of 'good copy', he volunteered only one. "Put in Projectomatic! We equipped the Empire on July 25th, 1956", said Mr. Geering, "and on July 26th Projectomatic was doing the job for us. Sure, it took a bit of getting used to, but what a joy it is not to have to worry about presentation routine". The chief operator of the Empire uses Projectomatic intelligently. He knows that he has in his box a piece of equipment that will take a load off his mind—provided he lends it the skill he has acquired through years of experience. "I use my first house on Monday as a rehearsal", he said. "If I don't get the timing dead right first time, I alter it after the show." Like chiefs everywhere, the Empire man is a showman; he likes Projectomatic because he can concentrate his presentation into one performance, knowing that thereafter his audience will see a perfect show every time. We don't suppose he will ever get over the satisfying thrill of seeing his twin G.K.21 projectors operating under the control of the electronic box . . . within the box.

So, all is well in Widnes! Going to the pictures, and going to the Empire in particular, is a well-established habit. Mr. Geering is a happy man, for he knows that he has helped develop a local entertainment which not only keeps the population happy but also keeps his cashiers fully occupied.

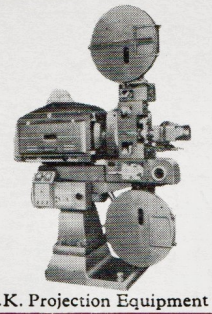
As we said at the beginning—the Empire, Widnes, is not 'typical' of anything. It has a character of its own, and whichever way you look at it . . . it is successful.

This prominent confectionery kiosk is situated alongside the Empire booking office. Kiosk and house sales of ice-cream and chocolate amount to 50% of the total nett takings

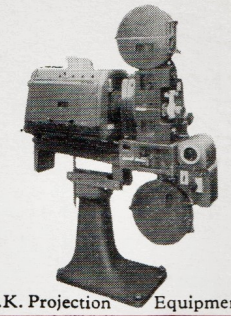
Everything for the motion picture industry from one source



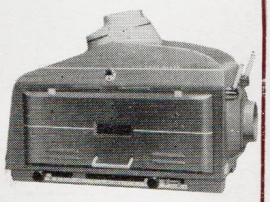
G.K.'21' Projection Equipment



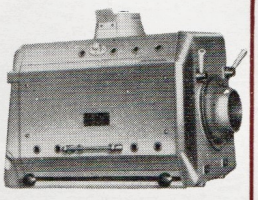
G.K. Projection Equipment



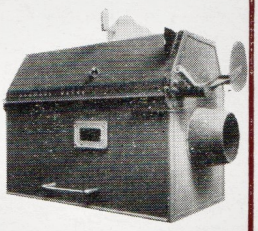
G.K. Projection Equipment



'President' arc lamp

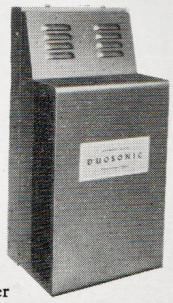


'Universal' arc lamp

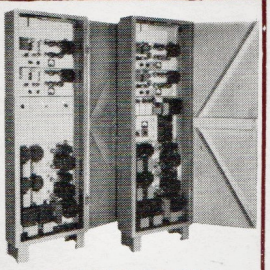


'Commander' arc lamp

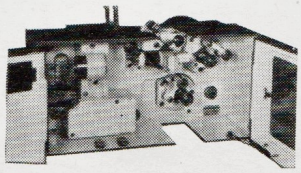
18w single Amplifier



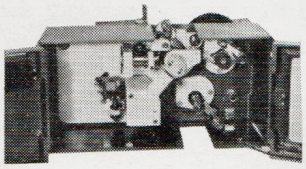
18w dual Amplifier



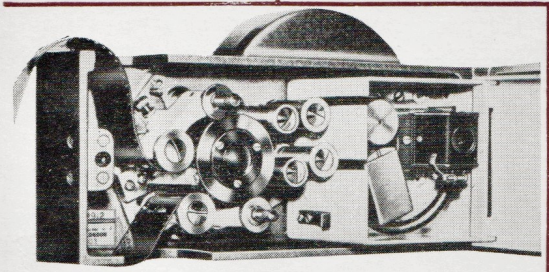
30w & 60w Amplifiers



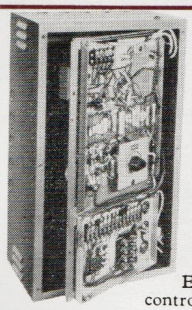
83 Soundhead



543 Soundhead

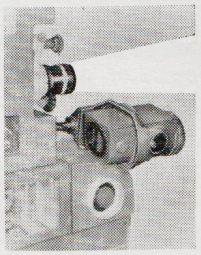


Magnetic Soundhead

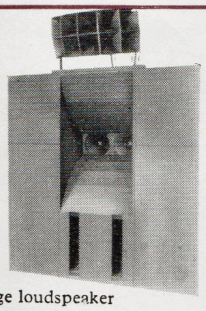


Effects control unit

'80' Rectifier

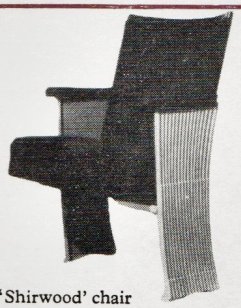


G.K. Lens & Anamorph

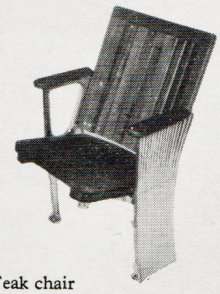


Stage loudspeaker

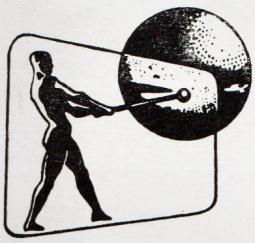
'Diplomat' chair

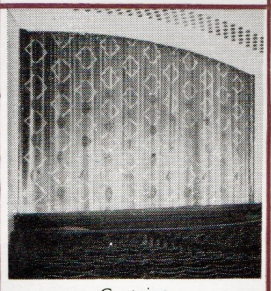


'Shirwood' chair

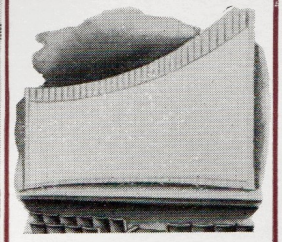


Teak chair

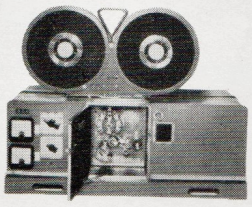




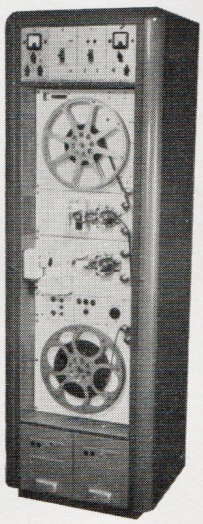
Curtains



'Perlux' screen



Optical Sound Recording Camera



Optical/Magnetic Reproducing Equipment

Printed by Richmond Hill Printing Works Ltd., Abbott Road, Bournemouth.