

REPORT OF THE THEATER ENGINEERING COMMITTEE*

Summary.—A combined report of the Sub-Committees on Projection Practice, on Civilian Defense in Theaters, and on Screen Brightness. Of especial importance is the "Report and Recommendations on Proposed Mechanical Methods for Film Conservation," of the Projection Practice Sub-Committee, and which has already had wide distribution throughout the motion picture industry.

The Sub-Committee on Civilian Defense presents a program of defense measures to be studied with a view of making suitable recommendations for defense to the industry.

At the outset of this report, it may be stated that the Chairman and the personnel of the Theater Engineering Committee, including the members of the Sub-Committees, realize that the demands made upon the various members in cooperating with the war effort, or as a result of being actually engaged in technical work for the armed forces, make it difficult to pursue the usual committee activities in peacetime fashion. Nevertheless, it is gratifying to report that much work of a constructive and important nature has been accomplished by the Theater Engineering Committee, some of which, as will be noted below, is directly related to the war effort. Many new things are coming out of the war, and it may prove that the technical experience and knowledge of SMPE committees, such as the Theater Engineering Committee, will be found to be of major importance, not only to the civilian motion picture industry, but as well to the motion picture activities of the Government.

The Theater Engineering Committee, therefore, has endeavored to maintain its scope of activities on as broad a plane as possible under the present trying circumstances; and accordingly it is with gratification that the Chairman is able to present in this report an account of work done during the past six months that should be regarded as important as any the Committee has done in the past.

* Presented at the 1942 Fall Meeting at New York, N. Y.; received October 25, 1942

There are four Sub-Committees of the Theater Engineering Committee, namely, (1) Projection Practice, (2) Motion Picture Screen Brightness, (3) Motion Picture Theater Design, and (4) Civilian Defense in Theaters. The last named sub-committee was established by the Board of Governors several months ago, and has been holding meetings at frequent intervals. Its first report is included herewith.

SUB-COMMITTEE ON PROJECTION PRACTICE

During the past six months the Sub-Committee on Projection Practice has been actively engaged in problems directly related to the war effort. The first of these was the question of "Wartime Conservation in Theater Projection," and in the June, 1942, issue of the *JOURNAL* there was published a very complete discussion of methods of conserving both film and motion picture equipment in the theaters. This report was an elaboration of a ten-point program of conservation originally proposed by Mr. Richard Walsh, president of the International Alliance of Theatrical and Stage Employees, and the War Activities Committee of the Motion Picture Industry, and was presented at a meeting of the Atlantic Coast Section of the Society at New York on May 21st. The meeting was attended by several hundred projectionists of the New York Metropolitan area, and the report received wide attention in the motion picture trade press.

Following this report, the third revision of the Projection Room Plans was published in the September, 1942, issue of the *JOURNAL*. The original plans were published in August, 1932, with revisions in October, 1935, and November, 1938. Such revisions are necessary from time to time in order to keep pace with the changes and developments in the art and practice of projecting sound motion pictures and to make sure that projection rooms are so planned as to permit maximum efficiency of operation of the equipment installed within them. These recommendations have received wide acceptance throughout the entire industry, and have also been reprinted in all the major trade publications.

During the month of August, it became known to the industry that the Military and Civil Departments of the Government were using motion picture film in very large quantities—in fact, it subsequently developed that the quantities of film involved were so great that the Motion Picture Film Manufacturers would have difficulty in supplying enough film for both civilian and government use. Accordingly, much attention was given to possible ways and means of conserving

film, or of reducing the quantity of film used by the civilian Motion Picture Industry. The situation was accentuated by the fact that early in September stocks of motion picture film were "frozen" by the War Production Board.

Several meetings of the Projection Practice Sub-Committee were called for the purpose of studying a number of proposals that were made for reducing, by mechanical means or changes in equipment, the quantity of film used by the Motion Picture Industry. It was the unanimous opinion of the Sub-Committee that the question of film conservation should be given very serious attention, and that everything possible should be done to accomplish the desired results. Although several such specific mechanical means had been proposed, it was the opinion of the Sub-Committee that the entire question should be considered in a broad and technically sound way—that is, to determine what would be the consequences of adoption by the industry of *any* system whatsoever of conserving film by mechanical changes in equipment. Regardless of the nature of the system, questions would arise in connection with materials available for making the change from the present to the proposed system, labor necessary for making the parts, the availability of expert mechanics and machinists, the possibility of the diversion of such material and labor to this work from important war industries; and accurate estimate of how many changes would be required to install a new system; the performance levels resulting from the change; and many other similar and relevant questions.

As a result of several meetings by the Projection Practice Sub-Committee, the following "Report and Recommendations on Proposed Mechanical Methods for Film Conservation" evolved. This report was begun, as mentioned above, as a project of the Projection Practice Sub-Committee of the Theater Engineering Committee. It developed, however, that the question of conserving film by mechanical means involved not only questions of projection, but embraced as well, the production and distribution branches of the industry. Accordingly, through the efforts of the Chairman of the Theater Engineering Committee and the Engineering Vice-President of the Society, other technical committees of the Society were brought into the work of preparing this report. It should be emphasized that the following report represents a valuable piece of work brought about by collaboration of a number of SMPE technical committees. In view of the great urgency of the question, the report was made available to

the trade press prior to publication in the JOURNAL, and has been called to the attention of the Military and Civil Departments of the Government and the Motion Picture Industry. The report follows:

**REPORT AND RECOMMENDATIONS OF THE SOCIETY OF MOTION
PICTURE ENGINEERS ON PROPOSED MECHANICAL METHODS FOR
FILM CONSERVATION**

PREAMBLE

In presenting to the Civil and Military Departments of the Government and the motion picture industry its detailed recommendations relative to recently proposed methods for conserving film by physical changes in the picture and sound processes and equipment, the Society of Motion Picture Engineers desires to state its reasons for such action and to define its general attitude.

The motion picture industry of today represents an outstanding triumph of technology. It is based on the work of engineers, manufacturers, writers, directors, actors, producers, laboratories, exchanges, theater exhibitors, and theater-operating personnel. It has been built up to its present high standards through the last forty years of painstaking and intelligent effort, trial and error, scientific and engineering development, and artistic evolution. It has won public acceptance on an amazing and gratifying scale. The good will of the public toward the motion picture and the place which the cinematic art fills in the lives of our citizens must never be lightly jeopardized. Doubly is this the case in times of war, for now the motion picture is not only a means of entertainment and education but also a great builder of morale, a relaxation for tired nerves, a rejuvenator, and a spur to greater national effort toward our ultimate victory.

The Society of Motion Picture Engineers is accordingly deeply interested in the preservation of the hard-won standing and achievements of the motion picture industry. It is opposed to any unwarranted change, to any step of which the consequences have been insufficiently analyzed, or any precipitate and insufficiently considered basic change in technological methods. It must be vigorously stressed, however, that the Society does not oppose change as such, but is strongly in favor of the prompt adoption of demonstrable improvements. The Society is thoroughly open-minded and judicial in these matters. It has no preference for any organization or method as such, nor yet any prejudice or opposition toward suggested forward

steps in the art. It does believe, however, that thorough analysis of any proposed technological change must be carried out with experimental verification by means of neutral engineers prior to its widespread adoption. It believes further that any claimed economies or simplification should be subject to experimental verification on a small scale in the hands of competent technical observers prior to their adoption.

Otherwise stated, the Society of Motion Picture Engineers regards with the utmost seriousness any radical change in industry methods. It is heartily in favor of the adoption of any such methods as, after careful analysis and experimental verification on a minor scale, are proved practicable. It is opposed to hasty and experimentally unsupported action on a large scale. It urges the industry and the government to consider the insurance value of determining basic facts before making fundamental modifications. It stands for completely fair and open-minded investigation of facts and prompt action based on such investigation.

The Society of Motion Picture Engineers offers to the government and the motion picture industry the following definite recommendations and plan for carrying them into effect, including a detailed questionnaire embodying those points which must with propriety and for the sake of safety be considered by those neutral engineering investigators who may study experimentally any proposed physical methods of reducing film consumption. In doing this, the Society believes it is freely rendering a valuable and constructive service to the motion picture industry and the Government and is fulfilling one of its major purposes. So far as the Society can appropriately and effectively be of further service, it will endeavor to assist the Government on our road to victory, and to help the industry to maintain its high standing and its efficiency of operation.

SECTION I

Resolution

That a carefully selected group of neutral, competent motion picture engineers should be retained by the motion picture industry, the Government, or both; that they should be provided with means for the construction, reconstruction, and comprehensive operating tests of relevant equipment; and that they should report with all reasonable promptness, consistent with the collection of adequate data and the analytical formulation of valid conclusions, to the mo-

tion picture industry, the Society of Motion Picture Engineers, and the Academy of Motion Picture Arts & Sciences, on all relevant operating data, cost data, material requirements, material savings, industry procedure, and recommendations relevant to all promising submitted methods for conserving motion picture film in the theater field.

The work of these engineers will presumably include, if necessary, the modification of cameras, sound recorders, composite-shot equipment, studio projectors, moviolas, laboratory processing equipment, exchange equipment, theater projectors and sound equipment, and special equipment (*e. g.*, color motion picture equipment).

Among the questions to be answered by the neutral engineering group mentioned above, the following are basic and should receive especially precise and detailed treatment:

SECTION II

Production

I. Studio Practice

(A) *Cinematography*.—(1) Will the proposed system require changes in camera equipment?

(a) Will alteration of sprockets, pull-down mechanisms, cams, *etc.*, be necessary in all cameras, and if so, will the changes be readily adaptable to all makes and types of presently available cameras?

(b) Will the camera drive motors and interlock mechanisms now in use require alteration?

(c) Will presently used lens equipment be adaptable, or will new lenses of different focal lengths be required?

(d) If the camera aperture is changed, what will the dimensions and aspect ratio be?

(2) Will the proposed system be similarly adaptable to the various color cinematography equipments?

(3) How will present background projection processes be affected?

(4) Would it be practicable to operate with present standard cameras and equipment, making the necessary changes in the printing process?

(B) *Sound*.—(1) What changes in sound recorder and re-recorder mechanisms are *essential* for operation of the proposed system (*e. g.*, sprockets, scanning system, *etc.*)?

(2) What changes in sound recorder and re-recorder mechanisms are desirable for satisfactory operation of the proposed system (*e. g.*, mechanical filtering, scanning-slit dimensions, *etc.*)?

(3) What other changes must be made in sound equipment or technique (*e. g.*, equalization recording level, pick-up technique, mixing noise reduction, *etc.*)?

(4) Would it be practicable to operate with present standard sound-recording equipment, making the necessary changes in re-recording or printing processes?

(5) Will any changes be necessary in other sound equipment (*e. g.*, reproducers, moviolas, effect equipment, *etc.*)?

(C) *Physical Properties (Sets).*—(1) Will the proposed system necessitate any changes in the regular routine of picture production?

(a) Will changes be required in set lighting techniques?

(b) Will studio sets be changed in size and proportions?

(c) What other changes are required in the general physical set-up of studio operation?

(D) *Cutting and Editing.*—(1) Will different techniques be required in the normal practice of cutting and editing picture and sound-track negatives?

(a) What changes in equipment will be necessary (*e. g.*, rewinds, moviolas, splicers, *etc.*)?

(E) *General.*—(1) Will the proposed system readily adapt itself to present 16-mm production technique, considering that it is often essential that 16-mm and 35-mm subject material be inter-cut?

(2) Will studio review rooms require alteration (similar to theater alteration)?

II. Laboratory Practice

(A) *Printers.*—(1) Will mechanical alterations be required in printer equipment?

(a) How will continuous picture printers be changed?

(b) Will intermittent picture printers be altered?

(c) Will alterations be required in sound printers?

(d) Will changes be required in light change equipment and interrupter mechanisms?

(2) What changes will be required in optical and trick effect machinery?

(B) *Developing Machines.*—(1) Will changes be indicated in developing machines?

(C) *Negative Handling*.—(1) Will negative handling methods be changed (*e. g.*, splicing, roll lengths, cue marks, notches, *etc.*)?

(D) *Print Inspection*.—(1) Will changes have to be made in print inspection techniques, *i. e.*, alteration of special type high-speed inspection projectors, *etc.*?

(2) Will changes be required in print-splicing techniques?

(E) *Raw Stock*.—(1) Will different standards of raw stock supply be required, *i. e.*, width perforation standards, unit reel length, *etc.*?

(F) *General*.—(1) Will the unit length of print shipments from the laboratory to the exchange depots be altered?

(2) Will the production capacity of the laboratory be affected, either in footage capacity or "entertainment minutes" production ability?

(3) What changes will be required in laboratory equipment to produce 16-mm prints from negatives made according to the proposed standard?

(a) Will mechanical changes be required in continuous and intermittent projection printers and in 16-mm contact printers?

(4) What changes will be required in color laboratories (*e. g.*, registering printers and special processing equipment, special registry films, *etc.*)?

Distribution

(I) Exchange

(A) *Transportation*.—(1) Will changes be required in shipping containers?

(B) *Exchange Office Operation*.—(1) Can prints be mounted on standard present size reels?

(2) Will different size reel bands be required?

(3) Will alterations of the different types and kinds of splicers be required?

(4) Will changes be necessary in vault and storage facilities?

(5) Will changes be required in exchange review rooms (similar to theater operation)?

Exhibition

I. Theater Operation

(A) *Projection Equipment*.—(1) Projector Picture Heads:

(a) What changes will be required in each type of projector mech-

anism to accept film of the new proposed standards (*e. g.*, sprockets, idlers, aperture, *etc.*)?

(*b*) What change may be desirable in each type of projector mechanism to accept film of the new proposed standard (*e. g.*, shutters, lenses, *etc.*)?

(*c*) Is it planned to retain the present picture proportions? If not, what will be the new proposed dimensions and the new proposed picture aspect ratio?

(*d*) Will it be practicable for the projectionist to make the proposed modifications in the theater and *without* the assistance of outside experts?

(*e*) If not, will it be practicable for the projectionist to make the proposed modifications in the theater and with the aid of outside experts? If so, what organizations are, or will be, available to make these modifications?

(*f*) If neither (*d*) nor (*e*) are practicable, what special facilities and personnel will be necessary to make the proposed modifications?

(*g*) What is the space between consecutive frames on the film in the proposed system? If it is different from the present standard, how does it affect projection?

(*h*) Will the angular velocities of the projector parts differ from the present standards? If so, what will they be and what will the effect be upon the life of the projector?

(2) Projector Lamp-Houses:

(*a*) What changes, if any, will be necessary in each type of lamp-house to accommodate it to the proposed system (*e. g.*, carbons, optical systems, *etc.*)?

(3) Projector Sound-Head and Associated Equipment:

(*a*) What changes will be required in each type of sound-head to accept film of the new proposed standards (*e. g.*, sprockets, idlers, *etc.*)?

(*b*) What change may be desirable in each type of sound-head to accept film of the new proposed standards (*e. g.*, scanning system, *etc.*)?

(*c*) Will the width and position of the sound-track differ from the present standards? If so, what will the proposed new standards be?

(*d*) Will it be practicable for the projectionist to make the proposed modifications in the theater and *without* the assistance of outside experts?

(*e*) If not, will it be practicable for the projectionist to make the proposed modifications in the theater and *with* the aid of outside ex-

perts? If so, what organizations are, or will be, available to make these modifications?

(f) If neither (d) nor (e) are practicable, what special facilities and personnel will be necessary to make the proposed modifications?

(g) Will the angular velocities of the sound-head parts differ from the present standards? If so, what will they be and what will be the effect upon the life of the sound-head?

(h) If the film speed is changed, what changes in quality of sound reproduction will result? By what means can objectionable effects be reduced, to what extent, and with what additional resulting effects (e. g., changes in frequency characteristics of theater reproducing systems, changes in scanning systems, studio preëqualization, amplifier gain, mechanical filtering in the sound-head, etc.)?

(i) Will the new systems change mediocre or just average sound reproduction to unacceptable reproduction?

(B) *Film.*—(1) What effect do the following factors have, both individually and collectively, upon the life of the film and safety of operation?

(a) Change of linear speed.

(b) Change of sprocket diameters (number of teeth engaging).

(c) Change of film tension.

(d) Change of film temperature at the aperture.

(e) Other relevant factors.

(C) *Screen.*—(1) What changes, if any, will occur in the dimensions and aspect ratio of the screen image, and will re-masking or screen replacement be necessary?

(2) What change, if any, will there be in screen brightness?

(3) What change, if any, will there be in picture quality (e. g., definition, flicker, steadiness, etc.)?

(4) Will the new systems change mediocre or just average pictures to inacceptably soft pictures?

(D) *General.*—(1) From an engineering standpoint, will the proposed system represent an advance in the art of projecting motion pictures?

(2) What effect will the proposed modification have upon the theater audience?

(3) What effect, if any, will the proposed modification have upon the fire hazards and safety in theater operation?

(4) Will the proposed change be temporary or permanent?

(5) Will the proposed system be readily interchanged with the

existing system in order that present standard prints may be projected when desired?

(6) How much film will the proposed system conserve annually?

General

(1) What will be the total cost to the motion picture industry, the military forces, and the U. S. Government agencies to make the adaptation to the proposed system in terms of materials, man-power, manufacturing facilities, and time?

(a) What will be the total cost in these specified terms to put the system into practice in the studios of the motion picture industry?

(b) What will be the total cost in these specified terms to put the system into practice in the laboratories of the motion picture industry?

(c) What will be the total cost in these specified terms to put the system into practice in the exchanges of the motion picture industry?

(d) What will be the total cost in these specified terms to put the system into practice in the theaters of the motion picture industry?

(e) What would be the individualized costs to the military forces and the various agencies of the U. S. Government to make each of the specific changes as mentioned in (a), (b), (c), and (d)?

(2) What is the availability of all the various types of needed materials, manufacturing facilities, and man-power required, considering the present emergency conditions?

(3) Can or will military forces and government agencies readily adapt their present production, distribution, and exhibition program to the proposed standards?

(4) Will the adoption of the proposed system make the supply and inventory of standard parts for various types of motion picture equipment obsolete?

(5) What total length of time would be required to completely adapt the equipment used for the present standard production, distribution, and exhibition, to the proposed system?

(6) Can an adequate supply and inventory of new parts be made readily available as the adaptation of the new system progresses?

(7) Would it be practicable to issue prints of both the present standard type and also the new proposed system, simultaneously?

(8) What effect will the proposed standard have upon the reissue of pictures, produced under the present standard, which are now

stored in libraries of the motion picture industry, the military forces, and agencies of the U. S. Government?

(9) During any conversion period, at what rate would the proposed film savings approach the expected maximum?

SECTION III

Further Procedure

The Society of Motion Picture Engineers is prepared to assist the Government, upon request, in any feasible way, in directions in which it is qualified in order to contribute toward the war efforts of the United States. It will continue to endeavor to coöperate further with the motion picture industry to protect and raise the high repute and favor in which the motion picture is held by the public.

Any call for its future collaboration with the Government or the industry will, as in the past, be promptly and effectively heeded.

SUB-COMMITTEE ON CIVILIAN DEFENSE IN THEATERS

The Sub-Committee on Civilian Defense in Theaters was formed for the purpose of assisting theater operators in technical questions relating to civilian defense. There is an unmistakable indication that theater management needs and wants technical advice on certain of its civilian defense problems.

Representatives of theater management find themselves confronted by an extremely large number of special devices advocated for various purposes. In most instances the management lacks the technical facilities or training for correctly evaluating these devices.

The Office of Civilian Defense has issued general regulations relating to theaters but these regulations permit great latitude and discretion to management and leave to management the solution of many technical problems. It is the intent of the Sub-Committee to coöperate with the Civilian Defense Authorities. As new regulations are issued, the Committee will study the problems arising therefrom. It is its hope that out of the activities of the Committee will arise a manual or series of bulletins which can be placed in the hands of the industry for guidance in technical matters relating to civilian defense.

A theater presents one of the most acute civilian defense problems because of the large number of persons involved. Theaters are to continue to operate under air-raid conditions so that the problems must be faced and solved. The war may be of long duration, and

therefore many measures are of a semi-permanent nature. The Committee will not, for the present at least, cover the routine of air-raid drills, the organization of theater staffs, the actual handling of patrons, and the like. It is believed that its most valuable service will be in the solution of purely technical problems relating to physical equipment.

The Sub-Committee membership has been so selected that the technical field is broadly covered. It is its intention, however, to bring into consultation with it important representatives of manufacturers, technical bureaus, civilian defense authorities, and many others, as required by the variety of technical problems involved. The Sub-Committee plans to be a clearing house for information received from the general membership and from outside sources.

Some problems have been solved since the formation of the Sub-Committee. At the time of its creation, bomb extinguisher powders, snuffers, tongs, and other devices for handling and extinguishing incendiary bombs were being sold to theater operators. Recently, the National Board of Fire Underwriters, with the approval of the Office of Civilian Defense, has declared that such powders are not materially better than sand, dry dirt, or ashes, and are therefore not recommended. The spray method of extinguishing incendiary bombs, which was considered questionable by certain members of the Committee, has been largely superseded by the solid jet or stream method. While many of the improper devices may not be harmful in themselves, nevertheless, their adoption by uninformed management may lead a false sense of security and prevent the adoption of the best and most effective equipment.

One of the purposes of this report is to request the membership to submit to the Sub-Committee its technical problems relating to civilian defense, and what is more important, to ask the membership to contribute to the Committee, for the benefit of the industry and consequently of the nation and its war effort, all its knowledge which may be of assistance in connection with theater civilian defense.

The Sub-Committee is fully appreciative of the limitations arising out of shortages of material, equipment, and skilled labor, and realizes that it will be necessary in many instances to compromise, and depart from ideal conditions and from established codes and regulations, and make the best of conditions as they are.

It is conscious of further limitations, for any committee of an engineering society must avoid even an appearance of commercialism

or, as a general rule, of advocating or favoring any one of a limited number of patented devices. The Committee does not know as yet to what degree this may hinder its efforts, but it realizes this may constitute a stumbling block to giving the best service. It has already collected a great amount of data, but at the present time it would like to have further information upon, and the benefit of your experience, with the following:

Emergency Lighting Systems.—The Sub-Committee would like to provide theater management with definite data upon, and suggested layouts for, simple emergency lighting systems. It would like to advise on the types and capacity of batteries and other current supplies; permissible lengths of wiring; voltage drop with different lengths and diameters of wire; suitable lenses to obtain proper diffusion for general or specific illumination; relays for automatically operating lighting systems, and related topics.

It is its intent to call in representatives of manufacturers of these devices and have them explain to the members the merits and properties of the devices, and it will attempt to determine their limitations and then to suggest to the membership or to theater management the best types of device for their use.

Shatter Resistant Glass.—A theater has of necessity a certain amount of glass included in its construction. The stage skylight is necessarily of glass and as a rule there are glass mirrors. There is plate-glass in the box-office, the theater doors, and in certain windows. Research on this subject has been carried on by the Bureau of Standards and other organizations. The reports are, however, generally too cumbersome or technical for theater management to absorb. The Sub-Committee will analyze the results of this research and present them in reasonably non-technical form for the benefit of the theater managers.

Blackout Materials.—Here again theater management is confused when confronted by an endless variety of liquids, plastics, and textiles for application to glass to render it non-transparent. The insurance companies have already sustained substantial plate-glass losses because of the application of black paints to glass with consequent rise in temperature and cracking of the glass. The Sub-Committee will call into consultation engineers from the plate-glass insurance companies and consult with them upon this subject and relevant subjects. It will also confer with the manufacturers of glass and of coating materials. Meanwhile, it would value the contributions of members of the Society on this subject.

Luminous Paints.—Too little is known about this subject by theater management. Use of phosphorescent or other luminous paints, unless under predetermined conditions, may be worse than useless. In this instance, as in others, a false sense of security may be engendered and the use of phosphorescent materials may prevent the use of some more effective method. The Sub-Committee will examine particularly their suitability for outdoor purposes. It will explore the whole subject with the thought of developing the advantages but pointing out the limitations of luminous materials.

Structural Protection.—While as yet there has been little tendency toward protecting buildings in this country by sandbags, barricades, and the like, or by making structural changes to increase bomb resistance, nevertheless questions may arise, and the Sub-Committee will keep itself informed on this subject. It hopes to determine the best method of protecting a stage skylight against falling missiles. It may recommend the examination and possible strengthening of long span theater roofs, the improvement of exit facilities, and selection and improvement of certain parts of the theater, such as lobbies and large rest-rooms as air-raid shelters. Removal of chandeliers may be recommended.

Fire-Fighting Equipment.—The Sub-Committee will study the recommendation of the National Board of Fire Underwriters and the Civilian Defense Authorities as to the equipment desirable or necessary for handling and extinguishing incendiary bomb and other fires. It will endeavor to keep itself informed on the latest development and in turn so inform the industry.

First-Aid Equipment.—As far as it is within its province to do so, the Sub-Committee will study first-aid equipment and first-aid room requirements.

Miscellaneous Equipment.—From time to time, miscellaneous devices will be developed. New needs will arise. The Sub-Committee will be prepared to assist where needed.

Inter-Communication Systems.—In the larger theaters particularly, there is need for system of inter-communication between the various parts of a theater during the occurrence of an emergency. The Sub-Committee will endeavor to keep its recommendations along these lines to a minimum.

Notification Systems.—Various arrangements have been made for notifying the audience of the occurrence of an air-raid emergency. Some theaters depend upon verbal notification from the manager

from the stage. Others have provided slides. There has been some discussion of using trailers, illuminated signs, or other means. The Sub-Committee will attempt to present to the industry as much information as is available on this subject, and here particularly it would appreciate having the advice and experience of the membership and the industry.

Sabotage.—The Sub-Committee will determine the extent to which it may be proper for the Committee to explore methods of prevention of sabotage in theaters.

These are only a few of what appear at this time to be the more important questions confronting the Sub-Committee. Conditions are, however, so changeable that it may be confronted with new problems tomorrow which it can not reasonably expect today. For this reason, the Sub-Committee plans to be flexible in its operations and in its viewpoint and to keep itself posted on current developments and needs.

The membership of the Society can be of service to it in letting the industry know that there is such a Committee working for it and anxious to be of every possible assistance and ready to contribute its services to the national welfare.

SUB-COMMITTEE ON SCREEN BRIGHTNESS

Prior to the advent of the war, this Sub-Committee had been studying possible ways and means of measuring the brightness of motion picture screens in theaters, and had already drawn up the desired specifications of illumination and brightness meters necessary for making such measurements. Contacts had been made with instrument manufacturers in the hope that one or more of them could be induced to design such instruments and make them available to the motion picture field. However, with the onset of the war, these laboratories found themselves unable to cooperate in this endeavor in view of the more pressing demands arising from their engagement in war work. As a result, the Sub-Committee found itself unanimously of the opinion that neither development nor manufacturing facilities could be available for a project of this nature "for the duration"; and, furthermore, that developments resulting from the war effort would very probably be available after the war that would have considerable bearing on the design of the needed instruments.

For this reason, the Sub-Committee has remained inactive during

the past several months and will probably continue so until victory comes.

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Theater Engineering Committee

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