REPORTS OF SMPE COMMITTEES

SPECIFICATIONS ON MOTION PICTURE FILM FOR PERMANENT RECORDS*

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The statement that follows is presented as a preliminary report from the Committee on Preservation of Film. Its preliminary character stems from the fact that the assignment connoted by the title of this paper represents a major undertaking, the aftermath of war work made certain demands on the work schedules of members of the committee, correspondence and travel have been difficult, and as a consequence the committee has not been able to complete its work. One meeting of the committee was held in Washington on Sept. 27, 1946, subcommittees have been set up, and the various problems before us are being resolved. It is hoped, therefore, that a full and useful report may be ready for the 1947 Spring Convention.

In view of these circumstances the committee has decided to present an outline of the various considerations before it as a means of stimulating further discussion and of enlisting any help that others may be in a position to give. Here are the considerations:

(*1*) The volume of film of a record character has greatly increased and is continuing to increase. The Government alone may have some 300,000 reels of such material set aside for permanent preservation within the next few years in the form of motion pictures, to say nothing of microfilm, still film, and aerial maps. It has been roughly estimated that storage space equivalent to 4000 or 5000 vaults will be required for such material.

(*2*) Expository film (sometimes referred to as *documentary* film) for training, teaching, and the dissemination of information, is making a major impact on our consideration and the people concerned with

* Presented Oct. 23, 1946, at the SMPE Convention in Hollywood.

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such activities not only need help and guidance but are making insistent demands for such help.

(*3*) The great entertainment field as roughly represented by Hollywood and related sources is becoming historically minded and will not be content in the future to live on a day-by-day or a hand-to-mouth basis but is looking both forward and backward on a longitudinal basis.

(*4*) Industrial firms are likewise setting up their own archives and need the help and leadership this committee can give in respect to preservation.

(*5*) Both records and lives are being lost through the use and misuse of nitrate film.

(*6*) The National Board of Fire Underwriters, the National Bureau of Standards, and this committee need to speak the same language and preach the same doctrine in respect to this problem; this is not presently the case.

(*7*) Standardization of vault construction, laboratory practices, and related problems in handling film is badly needed.

(*8*) A further investigation of the permanency of color dyes, of plastics for a possible new film base, cold lights (mercurial and fluorescent) pin-point lights (Zirconium), and rehumidifying techniques to prevent brittleness of acetate film is indicated.

(*9*) In carrying out the work of the committee it seems expedient to make contacts with other agencies sharing similar interests and responsibility. Therefore, your committee requests authorization to make appropriate contacts with the following people: (*1*) National Board of Fire Underwriters, with a view to formalizing its recommendation covering the size of vents in ratio to the film storage load; (*2*) Federal Fire Council, seeking its co-operation in giving effect to the committee's recommendations, as well as receiving the aid of its engineering staff. *Note:* The Chairman of the Federal Fire Council Construction Committee, for example, has recommended such liaison; (*3*) Other committees of the Society, such as the committees on Color, Laboratory Practices, Processing Photography, and Standards.

DISCUSSION

MR. J. I. CRABTREE: Did you plan to store all this film in Washington or in another location?

MR. BRADLEY: Already 81 vaults have been filled at Suitland, Maryland, temporary in character and to be torn down. The major storage plant will be at Suitland, Maryland, where about seven acres have been set aside by the Govern-

ment for a $5,000,000 film facility, storage principally. Legislation has already been approved by the Senate, and is pending before the House, covering this project. However, we hope that many people will store copies of the same film in many parts of the country, because it is only through scattering of records, books, and other record material can we hope they will survive another war; bombing will be a factor.

MR. GEORGE TALLIAN: Is there any attempt made at the present time to treat film chemically before it is stored, or do you just put it away as is?

MR. BRADLEY: Attempts are being made and practices are being approved to treat the film in the laboratory to bring the salts up to a state of solubility, and therefore enable the maximum amount of hypo to be removed; and after that it will be a question of housekeeping in terms of temperature and humidity. But the question of coating and impregnation, embalming, and other techniques to put on the outside of the film has been considered and tested by the Bureau of Standards. I find I must be very cautious in what I am about to say because I realize that commercial interests are at stake; so I will merely say this: chemically we have found that none of those things add to the life of the film. As to mechanics and to wear and tear on the film, that is another matter.

MR. CRABTREE: During your many years of experience at the Archives, what percentage of the films have you had to duplicate because of incipient or partial decomposition?

MR. BRADLEY: I could not give you an exact percentage, Mr. Crabtree, but a considerable body of that film has deteriorated in our hands, because we were not able to duplicate because of lack of funds, equipment and personnel. We found in many cases, when the film was brought out of storage, unwrapped and unwound, the moisture in the air immediately precipitated deterioration; overnight, almost. Mr. Gregory, my former assistant at The National Archives, can bear witness to this fact. We have developed tempering techniques, bringing the film out and letting the temperature rise slowly by radiation. Care should be taken to prevent exposure of the film to the air until the temperature of the film is in balance with the temperature of the air; otherwise, moisture condensation on the surface of the film will result.

MR. CRABTREE: To what extent do you plan to store the film at low temperatures—say around 50 F—and to what extent do you plan to isolate the films in individual compartments as against mass storage in a unit vault?

MR. BRADLEY: On the nitrate film of high record value, we intend to store it in cabinets, reducing the unit of risk to a minimum, perhaps, one reel instead of a vault full of reels. We intend, for the same film of high record value, to maintain temperatures of about 50 F and about 50 per cent relative humidity. That is about as low a temperature as people can work in. We will have the tempering cans in which we will bring the film out of the vaults, set them in the workroom, and let radiation lift the temperature so it will be safe to unwind the film. Film of less record value can be stored without the cabinets. However, our entire program contemplates the transfer of record film to acetate stock as fast as funds will permit, so all of the Government record film will ultimately be on the safety stock, which has a much longer life than the nitrate film.

MR. CRABTREE: Has any estimate been made as to the life of the film in storage?

MR. BRADLEY: Three to five hundred years for acetate film, at which time it can be copied and perpetuated for perhaps three to five thousand years.

MR. CRABTREE: Has any progress been made in the transfer of images to metal films?

MR. BRADLEY: It does not seem necessary. The only metal used in this connection above an experimental stage has been aluminum which will pit under the influence of sulfur fumes. It also has a bad fault in that it crinkles and has to be ironed out. It is also opaque and projection has to be by reflection, but so far no other metal has been used widely. When acetate film has preservation characteristics better than the best rag paper, we do not feel the need for metal.

MR. CRABTREE: With regard to the vaults at present in The Archives Building, are the cabinets of 18–8 stainless steel, and have you observed any corrosion of the metal? In other words, will it be necessary to construct them of molybdenum stainless steel instead of ordinary 18–8, or what construction material have you found most desirable?

MR. BRADLEY: The cabinets are of molybdenum stainless steel. There has been some corrosion on them owing to the fluxing material when they were welded and fabricated. However, that is a seepage process, and we believe that that seepage will expend itself in a few years. We are simply wiping it off with lemon oil and watching it, but the main body of the cabinets themselves seem to be holding up nicely. A new cabinet has been developed which is called the Cascade Cabinet, previously mentioned in some of our reports, which can be made out of ordinary furniture steel at considerably less cost, and which can be thrown away when it rusts over a period of time, and be much cheaper than the stainless steel cabinets. The stainless steel cabinets cost us about $30 per reel to put the film away. Cabinets for eight vaults (about 2000 rolls) cost us about $60,000, which is much above the reach of the average film library. The Cascade Cabinet can be built for about $2 per roll (wholesale cost), and by painting and by having proper air we feel that they will not rust for over a decade at least; and at that time, if they did rust, new cabinets could be put in. They avoid insulation and other excessive expenses.

REPORT OF THE COMMITTEE ON STANDARDS*

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A perusal of the occasional JOURNAL issue which records the membership of the various committees of the Society shows that the Committee on Standards, with approximately 50 members, is the

* Presented Oct. 21, 1946, at the SMPE Convention in Hollywood.

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