tainment film, and is certainly up to the previously established standards.

You can see that the cost of making a picture for television, if we use the method I have just proposed, need not be measured in Hollywood figures. The equipment, of course, is expensive, but most television broadcasters have lights and cameras and other equipment already, and the total over-all cost to establish a modest film production setup for television of this type—well, some equipment people might like to figure that one out.

There is one other advantage of film for the picture that goes on the tube and that is, when it is photographed you have a record which you can keep and refer to, and cry over your failures.

In network broadcasting, of course, the problem of supplying television broadcasts to distant stations is not of such importance, but certainly independent television broadcasters will make a great deal of use of film for this purpose. Any station with any transmitting equipment at all can use film, whether they can use the other type of pickup or not.

I have tried to give you a rough outline of how film can be used in television. Experience and experiment will give the final answer, and the final answer will be the kind of picture you get on your home television receiver.

TELEVISION PRODUCTION AS VIEWED BY A RADIO BROADCASTER

WORTHINGTON C. MINER*

I have been assured by your Chairman that this is strictly an off-the-record gathering in which honesty is to be the keynote. That seems to put it up to me to clarify one point right away. Your advance publicity indicated that I was to discuss—and presumably with some authority—the problem of "Film in Television, as Viewed by a Radio Broadcaster."

Just so that you may know how much credence to give to whatever I say from here on, I want to state my qualifications as an

* Columbia Broadcasting System, New York.

authority on this subject. My background is the theater. I have never been a radio broadcaster; I have had only the most cursory contact with pictures; and, like everyone else I have ever met, I know nothing whatever about television. So now I shall go right ahead and make an authoritative analysis of the entire problem for you.

It has always seemed to me that in a discussion of this sort it is just as well for everyone to know as clearly as possible what we are all talking about. I therefore want to read a definition I wrote in preparing a report for television over 4 years ago:

> "Television is a new and inclusive art. It embraces many attributes of stage, screen, radio, and news reporting; yet it is none of these. It is not merely a derivative art, but an individual one, owing no more than a respectful gratitude to its ancestry. It possesses too many vital and unique characteristics of its own for it to adopt a servile allegiance to any paternal standard. Rather, it should allocate to itself the dignity of an independent standard, established in terms of its own peculiar, generic pattern.
>
> "It is the business of television to report the transient experience vividly and immediately, constantly alert to those unpredictable fragments of action and reaction that give life to the elusive moment. Television is the immediate truth presented in a pattern of deliberate selection."

In other words, television is potentially the greatest reporting medium in existence. This is its supremely individual characteristic. It should be clear, however, that naming the characteristic of a medium is not defining *what* it shall do, but *how* it shall do it. Temporarily, television must exploit its most provocative characteristic. Both pictures and radio went through the same phase.

So much for the definition of television. The next point which needs clarification is whether television can or should be limited to the production of entertainment. To the extent that pictures are produced for an audience to be assessed an admission fee, they must think in terms of show business, and that means entertainment. To the extent that radio, and likewise television, is produced for free distribution to the public, it must think in terms of public service. And within the scope of that concept entertainment takes a comparatively secondary place.

It may even be justifiable to question whether "entertainment" is not a biased limitation upon any discussion of television's potential. Consequently I am going to shift focus and analyze this problem as an answer to 2 basic questions:

First, should the backbone of a future television schedule for the home be produced on motion picture film?

And second, if it should, can it be done?

I must confess that the answer to the first of these 2 questions is in the nature of a warning, rather than of a dictum. Just consider for a moment the basic problem of the psychological effect that a motion picture via television may have on the audience. Will it feel it is seeing something "canned," rather than the original? I do not profess to know the public's response, but I can guess. And my guess is that temporarily, while the momentum of conditioning to motion pictures persists, the public will accept films of good quality without any great resentment. I will hazard a second guess, however, that there will be a growing uneasiness as the technical performance of live television pickup improves and live programs appear on any schedule bracketing film. I believe it will be a little like the difference between seeing a football game and seeing a newsreel clip version of that game one week later.

But the basic difficulty that faces the picture companies is the enormous breadth of scope in entertainment forms which they will suddenly be asked to cover. If it were possible to say that an entire television schedule of 10 hr a day could be made up of *A* productions from the top motion picture lots in Hollywood, it is possible that films might do a more excellent and polished job of production than television could ever do. But it is sheer folly to imagine that either 10 hr a day, or 5 hr a day, or even 2 hr a day can be solely devoted to this type of entertainment. Television, simply because it must maintain a standard of public service, has an obligation to produce in widely varied categories to a hungry public. It must produce fully as widely as radio.

Let us take a specific problem, the "Quiz." When Columbia was first considering the transmission of a regular television schedule, it debated seriously the advisability of attempting a quiz on television. A single fact, occurring at almost precisely the same moment, very nearly defeated the effort. (Remember that, because I am coming back to it.) Eventually a method of considerable flexibility was developed. It turned out to be a pretty good program, but something very nearly stopped us from going ahead at all. That something was the dismal and altogether dreary effort made by motion pictures to recreate the mood and quality of *Information Please*. I have not the foggiest notion whether or not a deal of intelligence

and imagination might evolve a satisfactory form of quiz on film, but I do know that it was most horribly mangled in that initial effort. All the years of experience behind motion pictures were not worth 5 cents to the producers of that particular film. It was, in fact, a new form, and in meeting it they floundered like porpoises. It is unnecessary to analyze all the reasons for this. The fact remains that this is a glaring example of motion pictures falling down once they stepped outside the strict confines of show business, of entertainment for theater release.

I do not know what a motion picture would do with *Wings Over Jordan*. I do not know what they would do with *An Invitation to Learning*. I do not know what they would do with *The People's Platform*. I only know one thing: They would have to throw away the book and start from scratch, and there is not one atom of proof that when the horses broke from the post, live pickup might not be half way round the track. But this type of argument can go on endlessly without being conclusive, for the simple reason that the best anyone can offer is an inspired guess, and a guess is a guess, no matter what adjective you put in front of it.

So let us assume for a moment that pictures should by the best standards make a full 10 to 20 hr of television every day in the week. That brings us right down to cases with the simple question, "Can it be done?" Can one hour of television, whether it be entertainment or news, whether it be documentary or informal, whether it be religious or social, can one hour of television be put on film cheaply enough to compete with the type of production which can be given with live pickup cameras?

The first obligation is simply to take the established costs for the average *A* or *B* picture in Hollywood. Let us say that a good working price for an *A* production is $600,000, for a *B* production, $300,000.

The *A* productions run approximately an hour and a half. That is at a rate of $100,000 a quarter hour. Very obviously, so long as television is to be transmitted to the home free of charge, there is no advertising rate in the world that can stand such an assessment.

Now, let us assume that you are going out and make an hour's entertainment for something within reason for television distribution. What is reason? I have heard that *Voice in the Wind* cost $40,000 to shoot and cost nearly that much again to add a new sound track. Forty thousand dollars is almost unreasonably low for a motion picture production, but it still is out of line with any reason-

able hourly rate for television. I have heard costs quoted on training films made by independent documentary producers of somewhere around $10,000 for 20 min. Nobody makes a great deal out of that, except in bulk. Yet $10,000 for 20 min is still $30,000 an hour, and that is still out of line with anything that television could afford. What, therefore, pictures must face is the fact that, because of a cold, hard economic equation, they will either have to lower the standard of film which they distribute to television, or make films for television at a staggering loss. Neither would appear particularly attractive.

Let us look at it from another angle. A figure which I had given me the other day was that during the year 1943 Hollywood produced 452 feature length pictures. Being overgenerous and assuming that these pictures ran an average of an hour and a half apiece, the total would be 678 hr. Presume that one network were to maintain a television schedule of 10 hr a day for one year—I use 10 hr with no hidden implication, but merely because it is easy mathematics—it would be putting out 3,650 hr of television, and if all of that were to be on film, Hollywood would have to multiply its plant 6 times before it could even take care of one television network.

Now I have heard this problem bandied about and heard hundreds of different methods of cutting this pie so that it looks tastier for all concerned. The arguments are too long-winded to go into. So I am going to try, if possible, to tie this down to something so basic that this economic equation will suddenly become a vivid reality for you. I am going to talk about nothing but the cost of film itself.

It takes 5400 ft of 35-mm film to make up one hour at present projection speeds. Assume that a studio were to organize itself to shoot television entertainment at a ratio of 2 to one. This would mean that there would be 10,800 ft of negative used. At a cost of 6 cents per ft, that is $648. Suppose that sample prints were made up at a ratio of $1^1/_4$ to one, and printed at 3 cents; the cost would be $202. The final print, 5400 ft, at 1.4 cents per ft, would be $75, a total of $925. For the air time to show this film on television, it would be necessary to employ 8 men at, let us say generously, $2 per hr; a total of $941 per hr. Now just remember this excludes any production cost—talent, lights, scenery, promotion, distribution, anything else; it is nothing but the cost of the film itself.

Making the same eliminations for television, you would have to use, for the same hour on the air, possibly 20 men at the same $2

per hr, or a total of $40. That is a difference of approximately $900 per hr. Now, quite disregarding any other factor involved in the production, this would mean on a yearly basis at 10 hr per day you would be spending $3,285,000 merely for the luxury of using film. If you use 16-mm reversal, you can cut that cost by about 3, and say that it will cost you $1,000,000. It is these equations, and there are hundreds of them, which make many of us like myself seriously doubt that it is in any way realistic to consider film as the basic form for the backbone of a television schedule.

I have taken up to this point an attitude that films cannot be used as the backbone of a television schedule. Now just in closing, I would like to mention some of the places where I think film can and will in all probability be used. For a number of years after the war, television stations are likely to grow up in scattered parts of the country, remote from the centers of talent, and temporarily linked to no major network stations. I think it is conceivable, therefore, that films may be used in this fashion: A show will be produced on television. There will be a receiver equipped with a 16-mm camera designed to make a visual and aural record of that program. As the program goes on the air, the camera will grind, and that film will be printed and distributed to these outlying stations at a rate which will make it feasible for them to contemplate a full television service without the staggering cost of producing the total number of hours within the confines of their own studios.

I think there will be another important use for film, perhaps the most important and the most permanent. Both the broadcaster and the theater operator will eventually be receiving spot news—a fire in Joplin, or a riot in Pittsburgh, or a parade in Butte, Montana. Many of these things will be unpredictable in time; many more will not be of sufficient importance to warrant allocation of full time for their showing. It would be ridiculous, for instance, to expect a New York exhibitor of a Betty Grable picture to stop the projectors 20 min before the end and announce, "We now bring you a baby contest from Galveston." It would not even be feasible to do it if the television cameras happened to have caught the Hindenburg fire. What can happen is that a film recording of the remote and immediate event can be picked up, rapidly developed, and held for release either a minute, or an hour, or 10 hr later.

I also believe that film may be used to enrich and give scope and change of locale internally to many television productions. Nobody

has yet measured how much pictorial effect can be gained from the limitations of a television studio. It is possible that television will develop a technique of many fewer setups and greater concentration than are normally practiced at the present time in pictures. Inevitably, however, there will be certain programs which will demand a sense of flexibility in time and space. When that is needed, I can see no reason why films should not be used for the purpose as parts of an otherwise live program.

And finally, there will be a certain portion of every schedule almost certainly devoted to the release of film per se. I do not know the percentage, but I believe that it will be extremely selective; it will not be the backbone of a television schedule.

In closing, I think there is one question which may have been growing in your minds as I have spoken. Granted that the arguments as I have presented them are valid, why should any motion picture person or company be interested in television? As an answer, I would like to recall the brief statement I made at the opening: "Television is a new and *inclusive* art. It embraces many attributes of stage, screen, radio, and news reporting."

There is, in addition, one simple fact which must not be forgotten. Television is a motion picture. It is adaptable not alone to home release, but can be used for theater release. There is no precedent to make me believe that the growth of television will supplant any previous medium such as pictures, radio, or newspapers. But I do know that television is all of these, and will intimately affect the conduct and the future in each of these fields. Every owner of a radio station, every owner of a picture theater, every owner of a daily paper, every publisher of a weekly pictorial is going to feel the effect of television. It cannot be ignored, and it cannot be held back. It is coming. And consequently it would appear to me that you motion picture people, looking at television, would be more realistic were you to ignore the problem of how to produce the best film version of a television program, and to ponder more and deeply on what a television program itself may be. Your future may depend on it.

DISCUSSION

Effect on Picture Quality

MR. PALMER: I think it is quite obvious to anyone who has ever spent any length of time in a motion picture studio that the picture, as you see it on the

stage of the studio, is as far removed from what you see on the screen in the theater as it possibly can be. It seems to me that the only thing that the television broadcaster can put on the *vido* screen is a picture of what is happening in the studio and the way it looks.

There are many things which happen to that picture in the processing which add immensely to its quality and to its perfection of detail, which you never saw at all in the studio. In the first place, the lighting in a studio has to be adapted to the limitations of the medium itself, the photographic emulsion, or the television camera, and the lighting in a studio is extremely "contrasty," in many cases, and very different from the way the film records it. What you see in the studio would not look at all good if you were to reproduce that same thing on the screen. In the processing of the film, however, many changes occur which add to its beauty and, you might say, to its audience acceptance.

MR. MINER: I think there is not very much question about the validity of that statement, if people are judging television by its present performance. Certainly all of us have been suffering from a reasonably inferior performance up to now. We have reason to be extremely optimistic about what it will be in the future. But I think there will be perhaps some misapprehension about the quantity of things which television can presumably do, in order to achieve many of the effects which are now achieved on film in the laboratory and in developing processes.

In the first place, it is possible to exercise electronic control that can change the quality of high light and shadow. It is possible with proper lighting—and I have checked this and tested it—it is possible even under present conditions to get a picture on television which can compare extremely well with the average type of light quality that you get on the average 16-mm film at the present time. I am not saying that I have seen anything on television up to the best of 35-mm, but there is an infinite opportunity to go much further than has been demonstrated at the moment, simply because there have been to date no absolutely efficient lights designed or built for television purposes, and the result is that a great many studios have had to operate with faulty equipment. However, having made one experiment under fairly limited conditions but with rather good equipment, I can assure you that you would be quite surprised at the number of gradations in the gray scale, and the quality of depth that appeared on the end of that television screen.

It can be done, and furthermore, it can be electronically controlled by the control room engineer, who will become as adept in his profession as the average laboratory engineer is in the development of film.

MR. COOPER: My experience has been that the quality of a picture on the television screen from even 16-mm is probably a little better than the average television shot. I say "average television shot" and I am also quite conscious, as Mr. Miner is, of the fact that not all the television shots you see are the best possible shots that can be made.

MR. HYNDMAN: I think this problem resolves itself into one fundamental principle in current circumstances. Judgment can be based only by the currently available material in motion pictures and in the television field, whether it be equipment, processes, or film.

Unless the television system is greatly improved, to the best of my knowledge

the problem is one of latitude and definition of the television system which is not now capable of giving high-quality tone reproduction or photographic quality. In motion picture production it is possible to have a latitude of 1 to 100 or, in exceptional cases, of 1 to 200 when photographing outdoor shots. This latitude can be recorded on the film because the film is capable of accepting it in terms of tone value and it is also possible to secure a high definition. The print from this negative does not have a latitude of the above-mentioned magnitude, but it is not necessary that it should because the screen upon which it is projected is not capable of accepting such a great latitude. A very high-quality motion picture screen when properly illuminated will give latitudes of from 1 to 30 to perhaps as high as 1 to 35. Most of us have become accustomed to this range of latitude and find it fully acceptable in a motion picture theater.

From all the information that I have been able to gather, the television screen (the kinescope or receiving tube) is supposed to have a latitude of 1 to 20 at its very best, and yet, most engineers who have made an attempt to measure the latitude doubt that it is over 1 to 15.

In these circumstances, it is impossible, therefore, to obtain a tone reproduction on current television equipment that approaches what may be obtained from 35-mm motion picture film during projection, or even 16-mm motion picture film during projection.

If we consider amateur motion picture film (the reversal type of 16-mm motion picture film), then the latitude is less than that of the films comprising the classic negative-positive process. It should be appreciated that 16-mm motion picture films obtained by reduction from 35-mm motion picture film have a latitude that is equivalent to the original 35-mm films so there should be practically no difference in comparing them. There may be a slight loss in definition in the 16-mm reduction print, but at least from the standpoint of the picture, this is not noticeable to the average viewer. Furthermore, the latitude of the 16-mm screen and projection system can be conditioned to equal that of the 35-mm system provided sufficient illumination is available. An additional point is that the depth of focus obtainable on either 35-mm or 16-mm motion picture film is far beyond that obtainable with the current television system, especially when the images of all three are compared at equivalent magnification.

The combination electrical and electronic optical system in television is not capable of giving the depth of focus comparable to that obtainable in motion pictures. This is due to the fact that the high sensitivity of the motion picture negative film permits photography with the lens working at low apertures, whereas the low sensitivity of the mosaic of the iconoscope will not permit working the lens at a low aperture to provide equivalent depth of focus.

It is my belief that these factors definitely indicate that the motion picture equipment and the motion picture film do give an image of better definition and higher photographic qualities than is obtainable on the television system. The general public will eventually expect a photographic quality and definition in television comparable to that which is now available in motion pictures.

MR. MINER: I think that there is a slight misconception. There are 2 factors involved in television. One is contrast range, and the other is a sensitivity within various gradations of the gray scale. It is certainly correct that the average performance in television at the moment has a contrast range of approximately

15 to 1. There have been laboratory experiments even before the war began which raised that to 30 to 1. There is every reason to believe—and I cannot even quote you an exact figure—that that will be considerably higher. I will not say how much higher, but it will be raised considerably.

You have mentioned again the question of the depth of focus. That is without question a temporary problem in television. It is a factor involved in the size of the mosaic and the distance of the mosaic from the lens. As the smaller tubes are developed and a smaller mosaic is used which can be placed closer to the lens, there is no reason why the same depth of field cannot be achieved in television that can be achieved in any motion picture camera. The laws of optics apply identically, and it is only a question of the development of equipment which will supply approximately a duplicate of the size of, say, a 35-mm frame and place it as the mosaic within the camera tube itself.

Naturally, it is true that we are talking here in terms of the future, but I am not discussing anything which is not a very eminently foreseeable future.

MR. HYNDMAN: To avoid any misunderstanding, it should be emphasized that the fundamental problem is that a much greater sensitivity of the mosaic is desirable. This becomes very obvious if we will consider the mosaic as replacing the negative motion picture film in a camera. When the mosaic has a sensitivity that is comparable to current normal speed motion picture negative film, then it will be possible to operate the television camera lens at a much lower aperture opening which will increase the depth of focus and also allow the television cameraman leeway in the adjustment of focus for definition.

Unfortunately in some cases, it is general practice in the motion picture industry to purposely expose motion picture negative film of high sensitivity at a wide aperture opening so as to have in focus only the object of interest but, if it were desirable, the whole scene could be shot in needle-sharp focus by simply increasing the illumination of the scene and exposing at a much lower aperture, say, *f*5.6, or even *f*16. None of us doubt that with research and development progressing at its normal rate, the definition, depth of focus, and latitude of the television system will eventually be greatly improved over the present equipment and, when it is, it will open for itself numerous new fields to conquer.

MR. MINER: Yes. The problem there of sensitivity is again in the future, but there is considerable reason to believe that there will be a tube in the market for television, at not too distant a date, which will equal or even surpass the sensitivity of any motion picture film on the market. I will not say there will not be motion picture film to compete with it eventually, but it is not outside of the knowledge of engineers at the moment.

MR. OFFENHAUSER: I would like to supplement Mr. Hyndman's statement and say that all 16-mm film need not be considered amateur. I admit my prejudice.

MR. WAXMAN: From the viewpoint of a man who has a television set at home and sees these programs, I have always noticed that when we sit down to a play, the lighting, the definition, and everything else seem to be far superior than when they show films.

The question also comes up about using 16-mm film. We all know that 16-mm sound is limited to about 6000 cycles, and here we are trying to get high fidelity by adding FM to the sound which is supposed to go up to about 15,000

cycles. If we use 16-mm film with that 6000-cycle sound, we are not going to get very high fidelity.

MR. OFFENHAUSER: What you get on it depends on how well you work it in.

MR. WAXMAN: The best engineers in the motion picture industry say that it is 7000. They have admitted they cannot go much over 7000.

MR. OFFENHAUSER: I can sell him all the film he wants with 15,000 cycles recorded on it at $1^1/_2$ cents a ft, provided he gives us a triple *A* priority or a directive.

Possibilities in Artistic Effects

MR. PALMER: It is very interesting to me to hear the blissful confidence that has been expressed here tonight, that you can produce in a television studio anything which will compare at all with a motion picture in entertainment value. I assume that people are going to still want to hear Fibber McGee and Molly and see them at the same time. Anybody who can produce in a television studio the sequence of events that happens in a Fibber McGee and Molly half-hour program has to have more movable equipment than I ever saw put together in one place.

MR. MINER: I just happened to listen to Fibber McGee and Molly last night, and they never got out of the living room. I think we can get all around the living room.

I do not know; I think it is perfectly all right that *Casablanca* was a success, but so was *Oklahoma*, and there is nothing to say necessarily that television is going to have to use a vast amount of scope and freedom in time and space in order to create good entertainment. There is no rule to say that because you keep within rigid formalities necessarily you cannot create good entertainment.

There is also nothing to say that you cannot use entirely informalized scenery which may be sheerly indicative of location and create audience respect for that type of thing. It may make you put up a sign that says, "We are in the Sahara," and make them believe it. Just because pictures make them believe that they have to establish a set all over Burbank does not mean we have to do the same thing.

MR. PALMER: Well, I cannot agree with that. In the very early days of motion pictures they used to paint the window curtains on the wall, and they got away with it then, but you will never get away with that sort of thing now, when people are used to seeing *real* window curtains.

MR. COOPER: I agree with Mr. Miner that it is quite possible that a new technique may be developed in television whereby we may be able to indicate locations rather than actually show them. As a matter of fact, that technique has been used in motion pictures before, can be used again, and will be used again.

I do not believe that you can do Fibber McGee and Molly in their present type of show merely by putting any kind of camera on them and having them walk around, going through their stuff, alternating between medium shots and close-ups. It is quite likely that a very different photographic technique will have to be evolved for entertainment programs. For example, one of the things that everyone must be thinking about is the daytime serial. That introduces a considerable problem, because every daytime serial has a definite setting. It is quite possible that in the production of that type of television broadcast there

will be a considerable use of rear-projection process shots, with a great deal of the action in close-ups. It is also possible that a great deal of the action to be taken will take place with off-stage voices and possibly stock shots of some kind to indicate the action.

There is a good deal to be thought about in the development of a technique for television, either live or by motion pictures. We cannot arbitrarily photograph people going through a series of gag routines and expect to get a highly entertaining program. It is quite certain that for a television version of Bob Hope, or McGee, or what-have-you, we will have to evolve a completely new technique of our own which will partake partly of radio and partly of motion pictures.

Economic Factors

MR. SCHLANGER: With regard to the economics of the production of a picture, to make it economically possible to show a picture on television, I recall a question that I put to an exhibitor of motion pictures, a very successful single-run house, where the use of good short subjects would be a very welcome addition to the single feature. I said to him, "Why don't they make more good single features—that is, short subjects—that are condensed down to 8 to 10 min or 12 min, and which are produced very economically because of the clever ideas in them—the shortcuts that might be used by the art of motion picture production?"

The answer was that if they got these good ideas, they would stretch them into a 5-reel feature, they need them so badly.

Getting back to television, if you could produce a clever short by virtue of the art of the motion picture that has been developed and clever directing, you would not need stars, expensive stars, from Hollywood. Here is a chance to develop stars. So in the cost of your live talent, you could use all the shortcuts known to the motion picture art, and you could produce shorts for television which I believe would be economically in the right category.

MR. PALMER: I think there is one thing that television might learn from the motion picture industry, and that is that they could use a lot of repeat action. When Walt Disney makes a duck waddle across the screen, he only has to make one waddle, and he can use that all the way across the screen.

MR. FRANK: In Mr. Miner's talk, discussing the economic factors of televison, he stated a lot of figures and quickly dismissed them by simply saying that it was too expensive. As I see it, in television there are 3 different types of programs that might be considered: One might be a sponsored program for pure entertainment purposes. One might be a sustaining program, and one might be an advertising program. Those of us who were privileged to hear the speech that Mr. Joyce of RCA made last week on the use of television as a selling tool were impressed about the possibilities of using it for advertising purposes.

Were you, Mr. Miner, dismissing these figures as being too expensive on the basis of any one of these 3 uses of television, or were you doing it simply on the basis of sustaining programs for entertaining purposes?

MR. MINER: No, I dismissed them on the basis of any type of television, because when you have taken the cost of any film that I have ever heard of, and

you add line charges and other expenses involved in distribution to a network, the rental of the film is but a drop in the bucket compared to what some of the other costs are going to be. Consequently, it is not the total cost; I know no rate charges that will stand the cost of a good Hollywood *A* production, which is $100,000 a quarter hour. I do not think there is any advertiser who can possibly foot that bill—it does not make much difference who he is.

MR. PALMER: When Chesterfield cigarettes puts on a program in a Broadway theater, they fill it with people. Perhaps a production on film, after it is shown in television, could be distributed and exhibited in theaters throughout this country or the world, thus making it economically possible to spend larger amounts on the original production.

MR. KEITH: I think perhaps another thing which might be added there is that the cost of the film is going to be divided up among a number of projections, assuming that you did not have to have instantaneous projection. Would that not be the case?

MR. MINER: That certainly is the case, unless you are dealing with a network show which is presumably covering its major audience in one showing. Possibly you could get away with two. Nobody has really studied or experimented with that problem. There are those in England who made some checks which showed that audiences would not mind a repeat showing within a fairly reasonable length of time. But I think that when you have had 2 showings within a month, you have probably exhausted the network audience for any practical purposes commensurate with the cost which is involved.

MR. COOPER: As far as this question of cost is concerned, I think we should pay particular attention to this: Television motion pictures do not need to be of the Hollywood variety. They do not have to be produced at Hollywood costs. They do not even have to be produced at the costs of ordinary commercial motion pictures—that is, advertising pictures.

One of the things that makes Hollywood films cost an awful lot of money is lack of adequate preparation. With a tight organization of television film production, and with enough attention paid at the beginning to the preparation for making the film, a lot of lost motion is going to be eliminated.

Also, there are not going to be any of the tremendous write-offs that sometimes occur in Hollywood productions, because, as some of us may know, somewhere in the budget of $300,000 or $400,000 for an *A* picture is occasionally a $20,000, or $30,000, or $50,000, or $100,000 charge that belongs to the working title of the picture which was purchased a long time ago and is written off in the total cost of the production.

I think that by careful attention to all the details of preliminary work in producing films for television, the over-all budget can be cut way down. It is also possible that in our conception of what advertisers will pay for television broadcasts, we may be a little wrong in comparisons. It is quite possible that when we get around to commercial television broadcasting we may find that the average cost of television broadcasting will be much more than the cost of the regular radio broadcast. However, by careful attention to details and holding things down to the minimum, I do not think it will be too far out of line to make them possible commercially.

MR. SCHLANGER: One idea that may be of help is the narration idea, the splic-

ing in of narration to cut down the amount of pictorial stuff. During the narration period a stock geometric pattern of harmless and pleasing type could be used, and the cut-in of the narration could reduce the production costs considerably.