

1954

# The use of films by business management

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BOSTON UNIVERSITY  
SCHOOL OF BUSINESS ADMINISTRATION

Thesis

THE USE OF FILMS BY BUSINESS MANAGEMENT

Submitted by

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## Chapter I

### INTRODUCTION

Charles Kettering of General Motors said, "You can send a message around the world in one seventh of a second, yet it may take years to force a simple idea through a quarter inch of human skull."

Visual aids are a modern and progressive vehicle of expression. They present information in ways that are readily understandable and acceptable. Before dealing with the direct use of visual aids in a specific program, it will be well to define the term visual aids; and to know the types and kind of material to be used, as well as the techniques involved.

Visual aids are forceful supplemental tools which aid powerfully in imparting knowledge to all kinds of people in any type of meeting. These tools of communications cannot do the job alone, nor do they replace the teacher or lecturer, or even compensate for the less capable instructor. They will, however, when made a part of a well planned program, increase the audience's interest as much as forty per cent, impart twenty-five per cent more knowledge, and leave the observer with a greater and more lasting understanding of the subject presented.

Visual aids should be used on a scale in keeping with the magnitude of the problems. There will be a variety of objectives because of the diverse needs of specific organizations, but this paper will endeavor to show the uses of 16mm films by management, externally; in such areas as advertising, public relations and sales. However, the emphasis will be placed on the internal use of films in the employee induction, safety and job training areas.

The film cost situation will then be explored. The highlight of this chapter will be the section which points out the various methods of measuring the return of a film. The greatest obstacle to the use of films in industry is built largely around misinformed opinion. There still are managements who believe that the cost of motion pictures is too high for the benefit derived. This conclusion is usually reached without a thorough investigation of the possibilities of benefits inherent in a well planned and executed film program and the actual dollar and cents cost of successfully operating a program. Too often it is not the film itself that is at fault, but rather the techniques employed in the use of the film that are neglected or overlooked.

The foregoing outline of the general uses of films by business management will then be narrowed down to case studies of film usage by five large electronics industries. From this background of film application the writer has attempted to become specific, in order to answer the problem of how films can be profitably used at Raytheon Manufacturing Company of Waltham, Massachusetts. Raytheon has grown from a few hundred people to 22,000 people in a period of twenty-seven years. This company is still in the "growing pains" stage in many areas, one of which is the production and use of films. Raytheon has produced two films and has two more in production.

Although this paper is aimed at the profitable use of films at a specific company, the management of other concerns might obtain information which could be advantageously applied to their individual situations.

## Chapter II

### History of Commercial Films

#### A. When were commercial films first used?

Sixty years ago this coming April, in a converted shoe store at 1155 Broadway in New York City, the world's first commercial exhibition of motion pictures was presented to the public.

Although the potentialities of motion pictures as a means of communications in business and education were slow in attaining general recognition, it is interesting to note that the early scientists who developed the process envisioned its future exclusively in the fields of science and education. Thomas Edison said that in ten years films would replace textbooks. Primarily the use of motion pictures in industry and schools is the same in that they both aim to convey an idea.

#### B. Where were commercial films first used?

The earliest recorded experiments in giving motion to photographs were made at Palo Alto, California in 1872. Here Dr. Eadweard Muybridge succeeded in making a series of photographs on glass plates recording movements of a horse's legs. This was accomplished through use of a series of cameras taking pictures at split intervals. He later developed a method for producing visual duplication of live action by projecting individual photographs on a screen in rapid succession. Ten years later a Frenchman, Dr. E. J. Morey, invented the first camera capable of taking, through a single lens, a series of photographs at intervals short enough to create the illusion of motion. The invention of photographic film by Eastman in 1888 and its use in Edison's Kinetoscope the following year were the practical beginnings of motion pictures. The projection of

a moving photographic image at Koster and Bials Music Hall on April 23, 1894 really marked the beginning of motion pictures as we know it today. A few enterprising publicists saw great advertising possibilities in the motion picture, and they erected an outdoor screen on a building overlooking Herald Square in New York City where in 1897 the first sponsored motion pictures made their debut. The first advertisers were Haig and Haig Whiskey, Maillards Chocolate, and Milwaukee Beer. From dusk until midnight the pictures were shown on the high screen. The traffic was blocked in the area, and after three days the police called a halt to the public showings.

The United States Government was one of the first to recognize the advantages of motion pictures for dispensing information. The Government showed film at the Jamestown Exposition in 1907 on the subject of United States Reclamation Service. Some of the companies that experimented with motion pictures in this era were International Harvester, Swift and Company, National Association of Manufacturers, and United States Steel.

During World War I sixty-two informative films were made by United States Army and Navy.

One thing retarding the progress of motion pictures was the fact that all the film in use was 35 mm (millimeter), and this size was quite costly. Also the film was highly flammable and therefore rather dangerous to use. The marketing of a 16 mm film in 1923, and the decision to make this a non-theatrical standard by producing it only on inflammable stock, were the factors which were responsible for the full utilization of films in education and industry. A vast new home industry

was established. Prints could be produced at one-third the price of the theatrical size, the fire hazard was eliminated, and the projectors could be easily carried from location to location. The modern era of visual communication had begun. Sound was introduced to the motion picture films in the late nineteen twenties.

Films of the United States Steel Corporation were shown to 450,000 people in 1928, and to 1,339,316 in 1933.\* The introduction of Kodachrome in 1935 and the perfection of the duplicating process in 1938 added to the artistic and thought-conveying powers of motion pictures. By 1940 there were about 25,000 sound projectors in use for non-theatrical purposes in America.

Every industry needed war workers in their plants during World War II. The demand on the home front was for workers and more workers to meet heavy production schedules. A good percentage of the new help was untrained in the physical skills in factory mass production work, so a huge training program had to be instituted quickly. Speed and quantity were the main factors to be considered in establishing such a program. The first fifteen films that the government made available to industry to aid them in their training problems dealt with the lathe, milling machine, vertical boring bar and precision measurement, and were released in November 1941. Between January 1941 and June 1945 the government produced a total of four hundred and fifty-seven sound motion pictures. More than sixty thousand prints of these four hundred and fifty-seven sound motion pictures have been purchased and are now in use in this country and abroad.\*\* World War II was a wonderful testing ground for

\* 3, P. 45

\*\* Training Manual 13, P. 10

visual aids. In 1941 the factories stopped their civilian production lines and changed over to war weapons. During this interim while awaiting new blueprints the men saw the films on shipbuilding, and worked with pieces of scrap steel. They tried out the demonstrations they saw in the motion pictures on scrap steel and thus ironed out a lot of the kinks in the production line ahead of time.

The Government produced a wide variety of films. Some sound tracks were translated into Spanish, Portugese, and French. By 1945 the catalog of training films for the United States Navy, Marine Corps, and Coast Guard listed approximately nine thousand films available for use.

In the two years between July 1, 1943 and June 30, 1945 there were over four million two hundred thousand separate showings of films to soldiers and civilian employees of the Army in the United States alone. Adding an estimate for the other forces there was a total of over eight million film showings in the two-year period by the armed forces, and the average attendance per showing was one hundred and twenty.\* The training films produced by the United States Government had to be versatile as they were intended to be accepted by both industry and educators universally. The films had to be understood by mechanics who were inexperienced as teachers to aid them in training people of all levels of intelligence. Each picture produced by the United States Government was based on an actual job. This gave the picture validity and reality as well as continuity which was not possible by other treatment. There were far from enough experienced teachers in vocational schools or in industry to cope with the training problem. Craftsmen were given the job of becoming instructors, and due to their inexperience as teachers they were not making the best use of films.

\* Movies that Teach 5, P. 50

Film strips and teachers manuals were developed to assist these craftsmen in the use of films. As the result of the motion picture each trainee gained a clear-cut, forceful, and overall impression of the nature and importance of the new skill to be mastered. Along with this a slide film, keyed to the basis motion picture, showed how the trainee also could accomplish the job steps he had previously seen performed by experts. The manual gave instructions to teachers concerning the utilization of the motion pictures and film strips. The motion picture, the film strip, and the teaching manual all went to make up the visual aid unit.

C. Extent of present day use.

Today, more than 20,000,000 students and adults are viewing business sponsored films every week.\* There are 5,000 business concerns using movies for industrial relations and training. Business organizations expect to spend two hundred million dollars on their moving picture program this year, or three times the amount spent in 1946.\*\* It is estimated that today there are 365,000 16 mm sound film projectors in use by business, unions, schools, fraternal organizations, and travel associations. The demand for industrial pictures far exceeds the supply. Modern Talking Pictures Service, one of the largest of industrial film distributors in the country, booked about 400,000 showings last year, and expects to increase that number to 600,000 this year.

The major business concerns are delighted and amazed at the growing demand for industrial films. General Motors loaned out films for 241,000 showings last year with an attendance of 13,400,000 persons. More than 73,000 requests came to the Company for films. The American

\* 14, P. 5

\*\* 14, P. 6

Telephone and Telegraph Company last year had an employee audience of 1,000,000 and a public audience for its films of about 70,000,000 people. In 1947 seven hundred per cent more 16 mm film was manufactured than in 1940. The above facts and figures illustrate how the sponsored motion picture industry has grown from Edison's novel Kinetoscope to a mass media of communication for business management.

## Chapter III

### The Use of Films by Industry

#### A. External use.

A good example of the uses which are being made of films as an aid to business management is found in sales management. An estimated one hundred thousand motion pictures and slide films on the topic of selling have been produced in the last thirty years. Recently their use has increased to the extent of about twenty million persons who now see commercial movies every week.\* That is more than one-third of the nation's weekly attendance at films produced solely for entertainment.

#### 1. Company Salesmen

Many large companies use films to train their sales forces to become familiar with the product they sell. The more the salesmen know about the product they sell the more convincing their sales talk will be. Films can be shown at sales meetings to create interest in the product. Pertinent facts can be repeated over and over again in films, for in salesmanship it is usually not so much lack of knowledge as the lack of application of that knowledge that results in failure to reach a predetermined sales peak. Retail sales clerks can be shown films on the manufacturing process involved in the making of the product they sell to create interest and the "sugar coating" required to sell their product more effectively. Firms like the Fuller Brush Company with six thousand agents in the field couldn't very well bring all these agents back to the plant in Hartford, Connecticut and acquaint them with their products, so they show them a film which enables the agents to get the "feel" of the organization. This type of film forms a link between the company and its salesmen. Another category of sales films consists of those used by the Cater-

\*19, P. 63.

pillar Company. These products are so large that it is impossible for salesmen to carry samples around with them, so films are produced with a dual purpose: to show the power and performance of these big machines to prospective customers and to train their own salesmen.

An interesting fact was brought to light in a recent sales managers magazine, that the cost per salesman's call of eighty-seven industrial companies in 1952 was \$9.02 (mean average), and today it is \$16.31.\* Talk no longer is inexpensive. The rising cost of personal calls emphasizes the importance of supporting salesmen with catalogs and visual aids so that he can spend more time in closing orders.

Films can also be used to recruit salesmen to fill jobs. Two examples, one a slide film, the other a motion picture, are:

- (1) The Jewel Tea Company's slide film "His Own Business", and
- (2) National Cash Register's sound movie "The Bell Heard Round the World".

The Jewel film shows a route salesman at work, and is designed for showing as part of a hiring program to make perfectly clear to the applicant what sort of work is expected of him. "The Bell Heard Round the World" film takes an applicant through a tour of the company's headquarters, the museum, the factory, the laboratories, the shipping department, and the recreation center. The newcomer is accompanied by an older employee, who during the tour outlines the company's history, policies, markets, and plans for the future.

\* 18, P. 30

## 2. Consumer Sales

Service salesmen in many industries are supplied by the home office with sound slide films, and sometimes with motion pictures, to help them in their contact work. An oil burner maker may provide motion pictures for the dealers' sales-service men to show in the owner's homes to promote regular and better service of his equipment. Some food companies consider proper display and handling of their products under the head of service to both retailer and consumer, and consequently supply to their salesmen and route men motion pictures dealing with these subjects.

Westinghouse Electric and Manufacturing Company has eight pictures all produced by Roland Reed Production at Culver City, which were originally intended to inspire dealers and their salesmen into action, but are actually enticing consumers into the stores. Every listed audience deemed suitable for these films by the distributor is likely to receive a colorful mailing piece which directs the booking request to the sponsor. In this case the distributor serves as the sponsor's own film department in handling the individual booking orders through a nation-wide film exchange network. A typical picture in the current series is "Dinner at Six", a consumer sales film on Westinghouse ranges. The film promotion extends into a very complete library of television commercials prepared especially for local dealer tie-ins by J. Gilbert Baird, Sales Promotion Manager.

Many business organizations, although they sell basic products, like to promote themselves as "service organizations", the word service being used in these cases to indicate service to the users of their products instead of service for the products themselves. A good example is

"Cities Service Oil Company", which sells gasoline oils. Here the word service is used to imply more than gasoline and oil products, - it is interpreted in terms of lubrication and fuel service for motorists. Thus many large industrial and transportation companies are "service organizations" in the true sense of the word. These companies produce films to promote their products in the form of service to their clients and customers. An outstanding example of this type of film is "Opportunity - the Story of the Best Location in the Nation". This film was produced for the Cleveland Electric Illuminating Company by the March of Time and was made as a "service" to promote Cleveland as an ideal location for business. If only one reasonably large manufacturer was attracted to Cleveland as a result of seeing this picture the sponsor would have a new customer.

### 3. Dealer Sales

Most of the effectiveness of films used in this field of merchandising activity depends on the proximity of the sponsor to his wholesale outlets and the degree of control he exercises over their general operations on behalf of his products. In cases of exclusive distributorships companies are frequently justified in spending the money necessary to produce special informational films for this somewhat specialized use. Most such pictures are produced primarily for the distributor, but with a secondary purpose also provided in the script. For example, these pictures are most often introduced at general sales meetings, involving company salesmen, distributors and dealers. The picture thus combines the basic elements of sholesale and retail merchandising of the products illustrated, plus details of manufacture and announcement of new products.



RAYTHEON MANUFACTURING COMPANY

EQUIPMENT SALES DIVISION

138 RIVER STREET • WALTHAM 54, MASS.

Dear Sir:

One of the best opportunities available to you to promote the sale of Raytheon Marine Products is to work with your local yacht club, power squadron, fishermen's group or cooperative group.

Nearly everyone in these groups is interested in the subject, "Marine Electronics," and a number of dealers have taken advantage of this interest by offering to put on a "Raytheon Night" at these club meetings. As entertainment, these dealers demonstrate and explain various Raytheon Marine Equipments, discuss subjects of interest to boat owners and show interesting and entertaining marine films.

Along with this letter, we are sending you a file folder with suggestions as to how to arrange for meetings of this sort. Included also is a suggested outline to follow and a listing of marine films which are available on a free loan basis.

Remember, when you talk to marine groups, you have before you a high concentration of potential customers. Ideal circumstances!

Very truly yours,

RAYTHEON MANUFACTURING COMPANY

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Donald W. Tait  
Manager of Sales Promotion

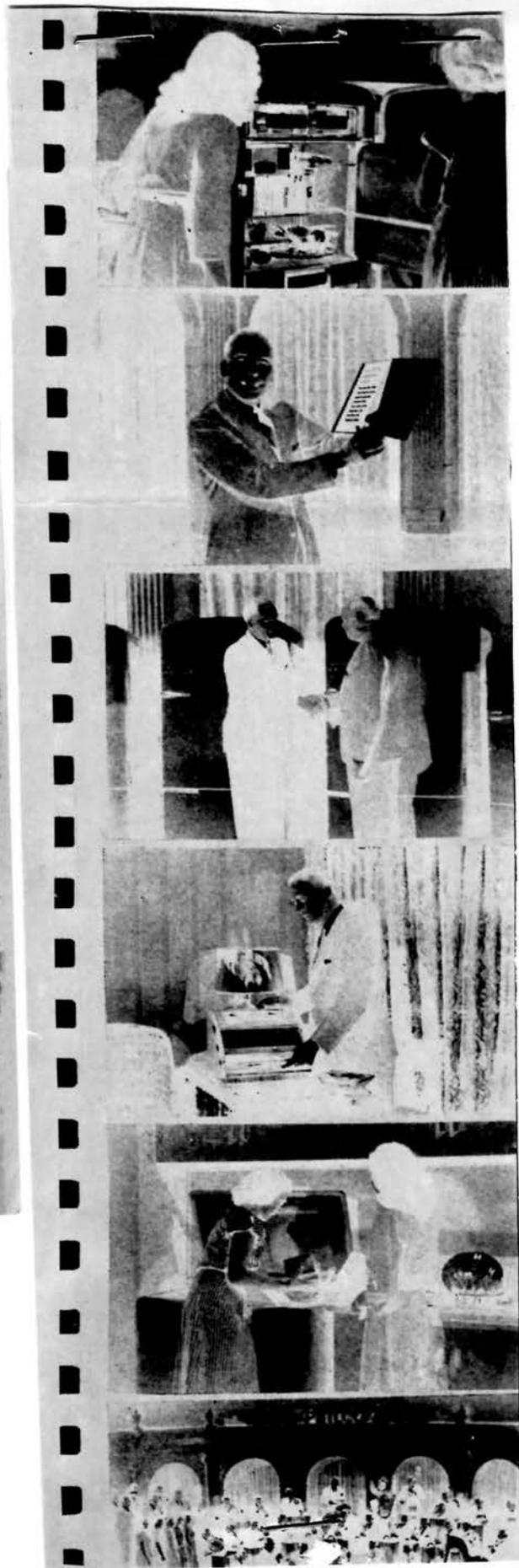
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*Excellence in Electronics*

Raytheon Manufacturing Company puts out a packet containing a letter to the dealers, reminding them that the best way to promote sales of Raytheon Marine products is to work with their local yacht club, power squadron, fisherman's group or cooperative group, a suggested program for arranging a "Raytheon Night" at Marine Group meetings, and a catalog of "Free Films Available for Showing at Marine Group Meetings". The catalog contains listings of instructional films, salt water fishing films, motor boat racing films, water skiing films, and miscellaneous films.

The Coca Cola Company, for instance, has produced many films to encourage their licensed bottlers' service representative to teach soda fountain attendants how best to serve "cokes", and the proper way to maintain their equipment. An oil burner maker may provide slide films for the dealers' sales-service men to show in owners' homes to promote regular and better service of his equipment. Some food companies consider proper display and handling of their products under the head of service to both dealer and consumer, and consequently supply to their salesmen and route men slide films dealing with these subjects. Outstanding among organizations using films of all types to promote better service are automobile companies. The Dodge Motor Corporation sends service slide film kits to their dealers showing every detail of the Dodge engine, clutch, brakes, transmission rear end, and show mechanics how to repair them.

A good example of how the motion picture can be used to expedite the acquainting of company salesmen, dealers, and prospective customers with the product of the industry is the manner in which the Philco Corporation handled this situation. A convention-on-film was staged by the



Philco Corporation in 1946. It helped to obtain advance orders for one hundred and ten million dollars worth of Philco products, and in a condensed form trained many thousands of retail salesmen to sell those products to consumers. Before World War II the Philco conventions were noted for their color, life and sparkle, and when V-J Day came they started planning a Victory Convention to celebrate their return to peace time business. Prior to the war they had separate dates to introduce new radio and refrigerator lines, and each convention lasted two and a half days. The object this time was to present, all at the same time, freezers, air conditioners and other products, in addition to radios and refrigerators. As the Philco Corporation was in the middle of reconversion they wanted to show all these products in one single day. To complicate matters even more the Philco Corporation wanted to have all their twenty-six thousand Philco dealers present, to give every Philco distributor and dealer top executive talks on company plans, and to show them the research laboratories and manufacturing plants where Philco products are designed and built. The Company not only wanted to talk about plans for expansion, but also to present concrete proof that this huge expansion program was under way.

The solution to all these problems of the Philco Corporation was a convention-on-film. The final film, which replaced five days at least of the old style normal convention, lasted over five hours. There were thirty-two reels of 35 mm sound film with color for the closing sections. More than an hour of the film was allotted to the introduction of the complete radio line consisting of forty-three different models. These new lines were introduced by company executives as the actors in the film. Scenes were taken of the laboratories in the Philco plants :

all over the country. The world premiere of the motion picture convention was at Atlantic City before an audience of Philco distributors from all over the world. The project was kept a secret until the last minute. Many in the audience did not realize until well into the presentation that the whole convention was on film. The distributors said they had never seen new merchandise so effectively demonstrated. The distributors also said that they had obtained a background on company policies, research, and manufacturing facilities which would have been difficult to obtain in any other way. Evidence that the motion picture was a success was the one hundred and ten million dollars in orders for new merchandise received by the company at Atlantic City. Just what proportion of this large order can be attributed to the film showing is very difficult to determine.

To supplement the film the Company had a large display room for the new models of their different products with the modern improvements. As a follow-up to this Atlantic City showing for wholesale distributors twenty prints were made to present the same story at meetings for retail dealers. After both of these groups had seen the films, it was decided that, rather than inactivate such a valuable film, it would be condensed and used for training retail salesmen to sell Philco products. More than seventy prints were prepared on 16 mm films, and the running time was reduced to two hours and eight minutes. The films showed the features of each model to the salesmen, and simultaneously showed them how to sell the product to the customer.

The Audio-Visual Aid Department of the Boston Public Library in September of 1953 announced a new service to the sales departments of business and industry. This Department now loans, free of charge, films deal-

ing with the techniques of selling to industries in the Boston area which are interested in this type of visual aid. The Sales Managers Club of Boston contributed five hundred dollars toward the purchase of these salesmanship films for the film collection at the Boston Public Library. "The Importance of Selling" was the first gift film given to the Library on October 26, 1953. The purpose of this joint program of the Library and Sales Managers Club is to make available films showing the place of selling in the community, and to offer to Boston business firms motion pictures to aid in training their sales personnel. A committee representing the Sales Managers Club send for sales films they think might interest them, and if the films are approved by the committee, after previewing, they are bought and placed in the Film Library.

## SALES MANAGERS CLUB PRESENTS FILM GIFT



Left to right: Donald Segal of S. Cupples Envelope Company, Inc., President of the Club; John Adams, Jr. of the Central Mutual Insurance Company, Chairman of the Club's Film Committee; Director Milton E. Lord, who accepted the gift; and John J. Canavan of the Credit Bureau of Greater Boston, Inc., a club member.

The Sales Managers Club of Boston has announced the offer to contribute \$500 toward the purchase of salesmanship films for the film collection of the Boston Public Library during its Centennial year. This gift will form the nucleus of an important collection of sales films which will be available without charge to Boston groups and organizations through the Library's Audio-Visual Department.

*The Importance of Selling*, the first gift film to be received, was presented on October 26.

The purpose of this joint program of the Library and the Sales Managers Club is to make available films showing the place of selling in the community, and to offer to Boston business firms motion pictures to aid in training their sales personnel.

A committee, representing the Sales Managers Club and the Library, is pre-viewing all available sales films. This committee will compile an informational list of such films, including those films selected for the Library's collection.

#### 4. Advertising

Advertising motion pictures, "spot movies" or "minute movies" as they are sometimes called, are usually shown in theatres or on the television, and are intended to sell goods or services. Of the nation's 18, 351 active theatres 12, 219 accept advertising movies. It is possible to reach a total audience of about 50,256,000 people weekly in these theatres. This audience is divided as follows: 54% women and children, 46% men. Weekly circulation costs will average between 4/10 and 5/10 of a cent per person.\* This figure does not include production costs of the films themselves.

Advertising pictures have been in use for more than fifty years. They were first shown on Herald Square, New York City in 1897, but it has only been in comparatively recent years that the distribution of these playlets has been thoroughly organized on a national basis. Advertisers who do not distribute their products nationally can employ this medium without waste circulation because they can confine "spot movie" selling to the actual sales territories served by their local plants or distributors. As an example, a baking company such as Ward can confine its screen advertising to the cities and suburbs where its bakeries are located and where the product is distributed. An automobile manufacturer can use the medium in a sales territory where registrations are considered lower than they should be in relation to the population and competitors' registrations. "Spot movies" are comparable to magazine or newspaper advertising, with the added values of light, sound and motion. "Minute movies" are usually produced in a series of 3, 6, 13 or 26 units

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3, p. 30

and scheduled for showing in theatres on an "EOW" (every other week) basis, so a series of 13 pictures would provide a theatre with a new picture every two weeks for a period of half a year.

"Minute Movies" or "Spot Movies" are most effectively used as a supplemental promotion medium in areas of high sales resistance where an extra, powerful merchandising aid is needed. This medium can be aimed directly at a single city or town, country or territory, or it can be used on a wider scope to broadcast from theatre screens the sponsor's message in many communities at the same time.

It would seem that most of the advertising films are prone to repeat the sponsor's name too many times and to be obnoxious in content to the average viewer or listener.

#### 5. Public Relations

The importance of using films for public relations purposes is second only to their use in marketing and industrial training. To attach so much importance to films as a public relations medium is logical and completely in keeping with the growing recognition of the significance of advertising in general as a means by which management may communicate with its customers, prospective customers, and employees. Many business executives have come to believe that mere product promotion in advertising does not take full advantage of all effective media. Therefore, motion pictures are being recruited to further the interests of many large organizations. The public relations film is not designed to sell goods or services directly, but to promote the idea of the use of goods and services, and to demonstrate the strength of the organization behind these products. This type of picture also helps to build em-

ployee morale and strengthens wholesaler and retailer relationships.

The American business man must not only fully understand his social responsibilities to the public, but he must also recognize the importance of informing the public of his social obligation. Unless this is done by the business leaders public relations will fail, and there will be little opportunity for the motion picture medium. Considering the cost of production of the average business film (about \$1000 per minute of running time) it will take a great deal of persuasion to sell the ordinary business man on the idea of making a picture, and especially when the results are difficult to measure. The business man would have to be convinced that he needs what he is buying, and that it is worth what he has to pay for it. The future of the motion picture as a public relations tool hinges on this recognition by business leaders of the need for effective communication of ideas which is possible through motion pictures.

#### 5a. Attitude Changing

Quite often expressions of doubt concerning the social benefits of private enterprise has thrown business men on the defensive, and public relations is frequently directed to correct a bad impression. As a result of this and also of the unsubtle attempts to "sell" the public "free enterprise" the remarks of business are more and more regarded as "propaganda" and subject to doubt in the public's mind.

To take a specific example which indicates why the profit system is at present under suspicion, why the general public believes that private profits lead to social abuses, and why the statements of business corporations are questioned. This example may indicate also why constructive public relations programs are needed badly, and how motion

pictures might play a significant part in assisting business to meet its social responsibilities. The example is the lumber industry. We read frequently in the papers, magazines, etc. that the rate at which we are wasting our forests is a national scandal. We are told that our timber reserves already are below the danger line, and at the current rate of cutting they soon will be exhausted. You, as a citizen, would find it hard to deny that this wasteful cutting of our forests for private profit is hurting the nation's welfare. But if you had seen the motion pictures put out by Weyerhaeuser Lumber Company entitled "Trees and Homes" and "Green Harvest" you would have a conflicting viewpoint. In these public relations films it is shown how one of the Nation's largest lumber companies, by selective logging and replanting, is maintaining its timber reserves. These films show that sound logging is sound business. Therefore, these films should accomplish two things:

- (1) demonstrate to the millions who see them that wasteful logging practices are not inherent in all private lumber operations; and
- (2) set a good example of progressive methods for other forest owners to follow. This example viewed by men motivated by a desire for long-run logging profits could contribute to the elimination of such wasteful practices which are depleting our timber reserves.

Although the above two motion pictures are considered successful public relations pictures, they fail to face the fact that private logging has resulted in practices which are incompatible with our social welfare. "Green Harvest" leaves with the audience the very definite impression that as long as Weyerhaeuser and many other lumber companies are harvesting trees as a crop we need not be fearful about the future of our forests. In direct contrast to this film we have the

editorial in Life Magazine entitled "The Vanishing Forest". This editorial says:

"The Department of Agriculture took time out to warn a joint Congressional committee that we are running out of trees. It is a long, sad story whose ending approaching a lot faster than most of us expect will be made happy only if a radical about-face on practices and attitudes of the past. And the over-all forest wastage continues at about 35%. On that basis the Forest Service figures we will be at the bottom of the national woodpile in 20 years."

It would have been better to have avoided doubt by facing the fact, in the film, that our lumber reserves are reported to be vanishing. Also, it could have been pointed out that a continuous supply of lumber could be assured if such similar practices as those used by Weyerhaeuser were followed by more lumber companies. According to the Forest Service one of the principal reasons for wasteful cutting, and failure to take care of the forests is that small land holders who own most of our private forests simply do not know any better. As much as 70% of the cutting by owners of small tracts of timber is classified as badly done. Therefore, the Forest Service concludes that an immediate educational program is needed to teach these private forest owners how to cut trees, how to protect them from disease, insects and fire, and how to replant.

It would be nice if the lumber men solicited the support of related industries to carry out an educational program for these private owners. Here is an excellent place for the use of a motion picture as a medium of education. There are about four million owners of small forest tracts in the United States, so it would mean group instruction in many communities. Many of the owners of small landholdings probably couldn't assimilate information in printed form, and pictures would be an excellent way to present it to them. Due to the number of people involved and the

speed required to educate them, the motion picture along with other instructional material would be quite capable and appropriate to perform this job at the lowest ultimate cost. Analysis of the above facts would show that faith in the system of free enterprise can be restored only through positive programs which eliminate those abuses for which that system is held accountable. There are some business leaders who are already using motion pictures in an effort to correct unsound business practices and to promote a better understanding of the specific benefits the profit system has to offer. A good example of this is the motion picture "Two Way Street", sponsored by the U. S. Rubber Company, to assist those who are seeking the removal of trade barriers which prejudice our prosperity as well as the recovery of countries devastated by war. General Mills film shows how a private corporation, in seeking to advance its competitive position through research, is making positive contributions to the common good by the discovery of ways to make more healthful food for human consumption, and better feeds for animals. General Electric Company also has a film which is impressive in the way it graphically displays the Company's financial report to its stockholders and workers. The motion picture "Clear Waters" sponsored by General Electric Company has been a big success in pointing out the dangers of pollution of drinking water, and also in demonstrating methods of prevention. These are just a few examples of how a motion picture can be a positive influence in eliminating anti-social practices and in dispelling doubts concerning the advantages of our system of free enterprise.

A good example of an excellent public relations program where films are used effectively as a tool in their program is the Aluminum Company of America (Alcoa). Alcoa's use of motion pictures dates back

to 1938 when the first concerted effort on the part of the company to use this medium as a part of a package took place. This one was an educational package. Before this time several pictures were made by Alcoa, but they were not organized into a definite program. At the present time the company has sixteen pictures in distribution and one in production. The pictures of Alcoa are divided into four distinct types: (1) Documentary dramatic action picture - a public relations type of picture; (2) Educational type of picture - an over-all type of picture, showing how aluminum is made and fabricated; (3) Training picture - how-to-do-it picture; (4) Sales picture - question invoking or come-on type. Probably the best public relations picture put out by this company, or any other company of its type, is "Unfinished Rainbows". This picture is done in technicolor and portrays the human history of aluminum. "Unfinished Rainbows", made in 1941, played to 16,077,561 people in five years. It shows the reason behind "Alcoa's" expansion; shows how Alcoa considers itself a public service; traces through fifty years on the screen the growth of Alcoa's only desire, - to sell aluminum ingots to all who would buy as cheaply as possible for better living conditions everywhere.\* "Unfinished Rainbows", in the opinion of editors of Business Screen, has been one of the best salesmen Alcoa ever had. Shown throughout the United States in 16 mm, and released to most theatres as a 35 mm condensed short, "More Worlds to Conquer", it has cost an average of one and three-quarters cents per person per showing. Alcoa has built its film program on the premise that its industrial motion pictures may generally be divided into two types: (1) those designed for general audience appeal that blend entertainment and information; and

\*20, P. 21

(2) those designed as straight institutional films in which the interest of the audience is maintained by the knowledge of skills imparted through a combination of clear, concise narration, and the vivid portrayal of the action described on the screen. "Curiosity Shop" is ready for production, and this picture will show that Alcoa throughout its corporate history has endeavored to make aluminum more useful. It will sell Alcoa's research and development. Like "Unfinished Rainbows" "Curiosity Shop" will dramatize individual initiative and issue a challenge to youth. It, too, will be in technicolor, and one of the limited number of business films produced in technicolor in 1947.

Alcoa develops and supervises a production by one of the most thorough methods in industrial film work. During the planning and script preparation stage, as well as in the approval of the rough cut, the company operates through a committee, with the head of its Motion Picture Department serving as chairman. All the members of the committee are held accountable for the technical details in the picture, and the chairman reserves the right to pass on all matters of motion picture technique. A new committee is selected for every picture. All committee members are expert in their field in the company. For general pictures the members may be selected from a number of different departments, so that the activities of the various departments such as operating, sales, research, developing, and engineering can be coordinated. During all committee meetings on script preparation the distribution of the picture, as well as the audience for which the picture is intended, are major considerations. Probably the most important factor in the success of Alcoa's film program is the fact that the distributor is consulted at

the outset, and may sit in on a number of script sessions. Alcoa, like most of the large and picture-wise corporations, has not attempted to build a motion picture producing department of its own. A representative of the company works with the production crew at all times and serves as liaison between the company and the producer.

Well, suppose we have gone as far as to make a public relations motion picture, - can we relax then? How can we use this picture most effectively and in conjunction with the other tools the company supplies us with?

We could sit back and wait for someone to either call or write in requesting this picture. This would be the easiest way, but it does not build a worthwhile distribution program or keep the company's motion pictures off the shelf. This film we have sponsored probably cost us between \$6,000 and \$10,000 per reel in black and white, and four or five times that much if it was in technicolor, so it is up to us to get the best possible return on this investment. Let us examine our job as public relations head of an organization (Company X):

1. Primarily our job is to build good will for Company X, to ensure it better relations with the public.
2. Next, we might say, to acquaint the public with Company X and its products.
3. Then, we can see that we know the press in our communities and that the press knows us.
4. To help our employees as well as the employees in other industries using our products learn how our product is made into a useful commercial article.
5. To see that our employees know Company X.

## 6. To recruit and train labor.

These are only a few of the many reasons for industrial and public relations, but they are sufficient to illustrate our point. With analysis of our work in front of us it is easy to set down after each phase of our job the tools which will help us do our own individual jobs better. The answer is seldom, if ever, one tool. It is a combination, a package, which in the long run will answer our need for communication of ideas. Motion pictures as part of this package play a very definite and important role.

### 5b. Institutional

There is evidence that not hundreds but thousands of business firms and associations prepare materials which they regard as teaching aids and which they make available as such. The activity varies in intensity from that of the local, independent merchant who produces a single little leaflet for distribution within its own community to that of the large corporation or association that has numerous teaching aids, an active "school program", and a comparatively large staff to operate its educational department.

Whether the teaching aid is a two-page leaflet made available by a local business man or an elaborate film distributed by a large business association, there is considerable interest in several quarters as to the qualifications and motivations of the persons who prepare the material. For example: Educators, who generally assume that sponsored aids are prepared by persons who know nothing of education and its methods, would like to see preparation of sponsored materials done by individuals who have an understanding of and appreciation for curriculum content, teaching procedures, the aim and needs of education, and other

allied factors. Sponsors want materials prepared by persons who understand and appreciate the sponsor's problems, accomplishments, and objectives. There are indications, however, that business is also interested in individuals who combine the qualifications set forth by business and by educators.

From eighty-eight industries surveyed by Dr. Thomas Sinclair concerning what particular group in their company was responsible for preparation of teaching aids the following information was revealed: In seventeen companies the advertising department handled this task; twelve companies public relations department handled it; thirteen companies delegated the responsibilities to public relations distinct from advertising department; twenty companies had a school service division of public relations department. There were twenty-two "Other replies", and four "No replies".\*

A number of commercial companies and several other organizations are set up to help business in one way or another on planning, production, and distribution of free business sponsored teaching aids. The commercial companies include advertising agencies which differ from other advertising agencies only in that they are qualified to handle "school accounts". In addition to commercial firms offering counsel and services for a price, there are other organizations set up on a non-profit basis for the express purpose of serving the interests of business or education, or both. In this category are the Consumer Education Study of the National Education Association, promoted jointly by

the National Better Business Bureau and National Association of Secondary School Principals and the Committee on Consumer Relations in Advertising, which is supported by the Association of National Advertisers. Another example of a non-commercial organization interested in helping business prepare materials of increasing acceptability among educators is the National Science Teachers Association.

In June 1948 Wayne University announced the establishment of an audio-visual materials consultation bureau to assist companies and associations in the production of instructional material.

Many educators believe business should prepare materials for particular grade levels, and forty-seven of the eighty-eight firms and associations in Dr. Sinclair's survey made an effort to do so. Twenty-one prepared materials for specific grade or age levels, and twenty-six prepared materials for school divisional levels, as elementary, intermediate, etc. However, forty-seven business respondents reported that they prepared general material and left grading to the judgment of the teacher.

As for testing materials in advance, fifty-two firms in Dr. Sinclair's original survey have their materials evaluated and criticized by individuals or groups outside their organizations. Thirty-six rely wholly on the judgment and experience of their own people. Twenty-six try out their teaching aids in schools on an experimental basis. Thus more than half of the firms in this study test their materials in one way or another outside their own organizations in advance of quantity production, - thirty per cent of them on an experimental basis in schools.

In estimating the demand for a teaching aid prior to quantity production business depends largely on its own judgment and experience,

the latter consisting mostly of a knowledge of the nature and volume of inquiries and requests received.

Some of the direct uses of films in the school system are high speed cameras which are used to explain things which occur too rapidly to be grasped through normal vision. To photograph the action shown in "The Human Larynx" and "Vocal Cords" (silent, black and white, 20 minutes, Bell Telephone) cameras which "snap" pictures at the rate of 4000 per second were used. When these pictures are projected at the usual speed - 24 frames per second - the vocal folds function at a greatly reduced speed. But the viewer actually sees them and can study their structure and movement. The reverse is true when the camera records movement that is so slow that little or none of it is transparent. In the film "Plant Growth" (sound, black and white, 10 minutes, Encyclopaedia Britannica) single still pictures of a growing plant were taken at intervals of several minutes. Thus the plant's development over hours and days was recorded on photographs which, when projected at a rate of 24 frames per second, showed months of plant growth condensed into ten minutes of viewing time.

One way to see things too small for observation by our eye is to use an enlarging lens or a microscope. Today the camera and the microscope can be combined to record by motion photography things that are too small for us to see. This process is usually called photomicrography or microphotography. The home economics teacher who wishes to explain to her students the relationship of yeast growth to bread making can show a photomicrographic record, a motion picture of the growth of a colony of yeasts and molds, to her class. A 16 mm motion picture

"Mold and Yeast" (sound, black and white, 10 minutes, Encyclopaedia Britannica), and also "Microscopic Plant Life in the Bake Shop" (silent, black and white, 30 minutes, American Society of Bakery Engineers) enable every student to see yeast bud and form the carbon dioxide which "raises bread dough".

Through animation learners are able to investigate ideas which do not exist in concrete form. Animation is the process by which a concept is visualized. It is usually used to visualize a "hard to explain" concept. Abstract ideas can often be made concrete through analogy. A good example of film animation is offered by such films as "Jet Propulsion" by General Electric Company; "Gift of Green" by the Sugar Information Incorporated is another; "Nervous System" (sound, black and white, 11 minutes, Encyclopaedia Britannica); "Adventures of Junior Raindrop". The Bell Telephone film "Adventure in Telezonia" teaches children how to correctly use the dial telephone.

The two basic classifications of 16 mm films as used by school systems are: (1) Basic teaching films, and (2) Supplementary films.

Basic teaching films are usually made specifically for use in carefully designated curriculum areas. These films are planned and produced to improve teaching.

Supplementary films originate from many sources, and include such films as: (1) Documentary films. These can be extremely useful teaching instruments, particularly in social studies areas. Good documentary films can show students how people live, think, and act.

(2) Sponsored films. Since sponsored films are usually part of broad advertising or informational programs, it is generally

organized so as to carry its message to the widest possible audience. Because the schools are sought as part of this audience, and because more and more sponsored films are being produced each year, it is the responsibility of school people to understand this type of film and to accept the films which contribute to classroom learning and reject those which are of doubtful or no value. Some educators feel that sponsored films are entirely acceptable in helping to meet the educational objectives of local school systems. Others refuse to use them on the ground that the school could become a "captive audience" for films which are biased in favor of a sponsor's point of view.

There seems to be a growing insistence on the part of curriculum workers and qualified teachers that community resources must be used more and more. There is also a growing insistence that the selection and use of films in the classroom should depend on an analysis of the instructional needs. If this is so, and if the school wishes to investigate life, those best able to explain the community are the people who make up the community itself. Who is in a better position to explain telephone communications than the telephone company? Who is better qualified to explain the services of an international airline system than an airline company?

The most important question for a teacher to ask after previewing a film is: Does this film make a contribution to an instructional problem beyond what can be accomplished with the instructional materials already in use?

Classroom use of films has revealed many values. Pupil interest is heightened, more learning is accomplished, retention of learned material is more permanent, and interest in reading is increased. How-

ever, films should never be accepted as mechanical substitutes for teaching, but in the hands of an intelligent, well-trained, and understanding teacher the teaching film can be vivid, dynamic and a useful instrument of instruction.

Some of the criticisms by teachers of the business sponsored films are:

1. The films try to cover too many topics, thereby resulting in a hodgepodge rather than a few clear concepts about a specific topic;
2. Titles are frequently misleading and have no relation to the content;
3. Sponsors are unduly influenced by the entertainment film techniques;
4. Films usually are too long. Instruction films are usually one reel, whereas the sponsored films run two to four reels in length.

It has been said that business has produced much film and little theory as to how films should be made and used, whereas education has produced much theory and few films in accordance with the established theory.\*

As evidence that teachers want more business sponsored films of some four thousand teachers who responded to a questionnaire sent out by Hill and Knowlton, who were conducting a survey on behalf of American Iron and Steel Institute, 69% wanted more motion pictures from industry; 58% of the teachers wanted more slide films; and 34% could find use for more slides.\*\* According to the survey the teachers want

\*7, P. 522

\*\*21, P. 21

sponsored materials that will bring the children closer to everyday living, create interest in commercial world, provide up to date information not available in text books, enrich class discussion of business, labor and government, help students to learn a wide variety of information.

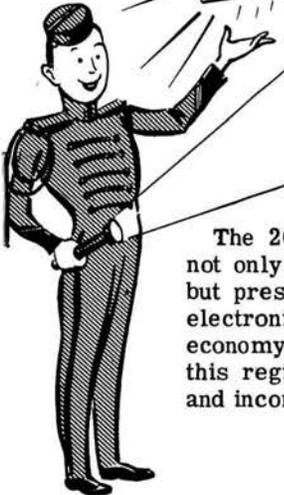
Writing about the value of visual aids as applied to vocational guidance, Gertrude Forrester states:

"Visual aids have opened unlimited possibilities for enriching and varying the study of occupations. They give reality to an occupation because they make a situation appear vivid, natural and lifelike. They clarify discussion. Close-up views supplement the visit or field trip and give views of workers unavailable for observation. The dramatic continuity of the motion picture is a potent factor contributing to its instructional value. The action and animation, as well as the device of sound, color, slow motion, and microphotography are admirably adapted to picturing men and women at their work." \*

#### 5c. Good Will Builders

One form of company public relations can be combined with labor relations by the use of motion pictures and sound slide films during company-sponsored social occasions in towns where the company has plants. Such programs are based on the fact that employees of a local plant are virtually "the company" in that community, and anything that the home office does to improve local social and living conditions will reflect credit on the entire organization.

At a "Family Day" sponsored by Pratt and Whitney Company of Hartford, Connecticut, a company film titled "Here's Where You Come In" was shown to about 35,000 people. This "Family Day", which extended over a period of four days from October 26, 1952 through October 30, 1952 was attended by the families of the employees of Pratt and Whitney



**SPECIAL SHOWING RAYTHEON MOVIE**

**YOU, YOUR FAMILY, AND FRIENDS ARE CORDIALLY INVITED TO A  
SHOWING OF THE NEW RAYTHEON MOVIE, "ELECTRONICS IN ACTION,"  
ON THE EVENINGS OF SEPTEMBER 22, 23, 24 and 25.**

The 20-minute sound film, in full color, tells not only the story of Raytheon's rapid growth, but presents a picture of what the mushrooming electronics industry is doing to aid New England's economy: showing what it means to the people of this region in terms of employment, security, and income.

Choose any of the four nights to bring along as many as the family car will carry...or take a bus and drop in between seven and nine P.M. The movie will be shown every half hour, beginning at seven, in the auditorium of the Waltham Boy's Club, 20 Exchange Street (just around the corner from the public library).

Admission, of course, is free

Company. The film "Here's Where You Come In" was shown to all the people visiting the plant, and followed a new employee starting at the employment office, explained why all the long forms were necessary, and why the physical examination was also necessary. The type of persons who work at the plant, young high school girls and grandmothers, was brought out by the film. It went on to show facilities such as cafeterias, credit unions, recreation rooms and advancement schools. The film described how wages were figured and adjusted, and the part the personnel department plays in insuring fair pay for a day's work in various skills, and physical requirements of the positions. This type of film apparently aids in promoting good will among people who live in the near community of the plant. The film mentioned above shows the role of the corporation in terms of human management. Also it could be a good morale builder for the employees.

#### Summary

An example of the uses which are being made of films as an aid to business management is found in sales management. Such external uses of films as: training the company salesmen to become more familiar with their product; a selling tool for the salesman where physically carrying a sample of his product is impossible; and recruiting salesmen, help us to evaluate films.

Service salesmen in many industries are supplied by the home office with sound slide films, and sometimes with motion pictures. Many business organizations, although they sell basic products, like to promote themselves as service organizations, - service to the users of their products instead of service for the products themselves.

Most of the effectiveness of dealer sales films used in this field of merchandising activity depends on the proximity of the sponsor to his wholesale outlets and the degree of control he exercises over their general operations on behalf of his products. Raytheon Manufacturing, like many other companies, put out packets to their dealers suggesting to them programs whereby they can best promote sales of their products.

A good example of how motion pictures can be used to expedite the acquainting of company salesmen, dealers and prospective customers with the products of industry is the manner in which Philco Corporation handled their convention-on-film program.

Advertising pictures have been in use for more than fifty years, but it has only been in recent years that the distribution of this type of film has been thoroughly organized. It would seem that most of the advertising films are prone to repeat the sponsor's name too many times, and to be rather obnoxious in content to the average viewer.

The importance of using films for public relations purposes is second only to their use in marketing and industrial training. The public relations film is not designed to sell goods or services directly but to promote the idea of the use of goods and services, and to demonstrate the strength of the organization behind these products.

The American business man must not only fully understand his social responsibilities to the public, but he must also recognize the importance of informing the public of his social obligations. The future of motion pictures as a public relations tool hinges on the recognition of business leaders of the need for effective communications of ideas which is possible through motion pictures. Motion

pictures can be effectively used as a positive influence in eliminating anti-social practices and in dispelling doubts concerning subjects such as the advantages of our system of free enterprise.

A large number of business firms and associations prepare and produce sponsored teaching materials for distribution to schools. Whether the teaching aid is a two-page leaflet made available by a local business man or an elaborate film distributed by a large business association, there is considerable interest as to the qualifications and motivations of the persons who prepare the material. A number of commercial companies and several other organizations are set up to help business on planning, production, and distribution of free business sponsored visual teaching aids. In estimating the demand for a teaching aid prior to quantity production, business depends largely on its own judgment and experience based on nature and volume of inquiries and requests received.

Many of the physiological limitations of man's ability to observe can be overcome by 16 mm sound picture film by use of slow motion or fast motion pictures, photomicrography, direct photography, and animation. The two basic classifications of school system films are: (1) basic teaching films; and (2) supplementary films which include documentary, and sponsored films. It is the responsibility of school people to understand sponsored films, and to accept the films which contribute to classroom learning and reject those which are of doubtful or no value.

According to a questionnaire sent to four thousand teachers 69% of them wanted more business sponsored films, and 58% wanted more slide films. The most common criticism by teachers of business sponsored films were: titles misleading, films try to cover too much area; too much entertainment techniques, and films are too long.

Telling people in the immediate community and families of employees about the human side of management, and just how the company works, helps to build good will. The versatility of public relations films appears to be obvious.

## Chapter IV

### Internal Uses of Films

Customer to sales organization relationship and public relations films are the most widely used by industry. Internal business films are less widely used and less heralded, but many organizations that have used both have found that dollar for dollar the internal type film obtains better results wherever it has been tried.

When a unit for production of internal business films is first organized they usually have a small number of personnel and the activities are few, usually related to selling activities, but when film production gets under way the scope of activity expands far beyond its original purpose.

In internal films it is the subject matter that is important. It need not be dramatized, and it is best presented in a straightforward expository style. The subject matter for internal films need not be created and staged, as there is plenty of material in the industrial processes, in the men, and in routines of organization. Most people are eager to learn how things are made, especially if it is made by their own company.

In large organizations, particularly, the loss of personal touch is a morale factor that should interest every business manager. Managers are very busy and the days are not long enough to maintain that desirable form of contact. A film outlining the organization of the company would reestablish the personal contact and also depict clearly the personalities of the men performing the various functions in the organization. This type of film can build morale and improve

the efficiency of the organization.

### 1. Employee Induction

Not so many years ago a man worked for a "boss", now he works for a company. Not too long ago in our manufacturing industries a workman was an artisan producing with his hands some finished article that he could point to with pride as something he himself had made. A great deal of the job satisfaction that an individual took home as pride in his craft has disappeared, and we have neglected to give him something to take its place. Industrial relations is an individual matter between a supervisor and each individual whose work he supervises.

We can learn much from fraternity or lodge experiences. Why do we have hazing of freshmen, fraternity and lodge initiations? We have hazing because a thing means much more to us if it is wrapped up in a little ceremony. There is not much ceremony in taking a new man into an office, sitting him down beside another fellow at a desk and saying, "Here, Joe, Bill is a new man coming in to help you with your work, show him what to do".

Getting an employee off to a good start on his job is one of the most important elements in any sound employee relations program. First impressions are difficult to change. Therefore, many organizations find that it pays to indoctrinate an employee into his new job with a carefully prepared motion picture or slide film. Although it is sometimes necessary to show such a film to an audience of only one or two new employees, many organizations find such a showing one of the most important phases of their entire employee-relations program. It plays up to an individual's ego to have such a showing, and if the worker is given an understanding of his contribution to the whole he will

take pride in his job no matter how lowly the screw that he turns. The American workingman wants to know the importance of his efforts, and the wise employer will make sure that the worker fully understands the relation of his task to the whole, and that he knows something of his company policy.

There are many kinds of orientation programs, but they all have one purpose. Companies should take enough time-paid time to make the new man feel at home, to tell him what he wants to know.

What are the bare essentials an organization should communicate to the new employee:

- A. (1) Who are you?  
 (2) What is the history of the company?  
 (3) Who owns the company?  
 (4) What does the company make?  
 (5) Where does the product go?  
 (6) Is the company making money?
- B. The terms of employment  
 (1) If you have an incentive plan, how does it work?  
 (2) When is pay day?  
 (3) What payroll deductions are made?  
 (4) What group insurance and other benefits are provided?  
 (5) What about sports, parking lot, and so on?
- C. Shop rules should be explained to the worker.
- D. Where is everything:  
 (1) Where are the lockers, time clocks, washroom, snack  
 (2) bar, first aid room?  
 (When are the rest periods?  
 (3) Where are the quick exit routes in case of fire or  
 bombing?
- E. What are the philosophies of the company?

Motion pictures help to interpret the spirit of the company to new employees, declares Thompson Products Incorporated. The film "Working Together", a thirty-two minute color movie, is shown daily to new

employees in small groups to welcome them into the company's ranks.

Raytheon Manufacturing Company in September of 1953 published for the first time a pamphlet entitled "Your Job and Raytheon", which was given to all new employees and also to all present employees regardless of their seniority in the company. Raytheon also shows the film "Electronics in Action" to all the new employees at the Tube Division location in Quincy, Massachusetts. The film is shown ever Monday, Wednesday, and Friday to as small an audience as three people by Mr. William Brown, Training Director of Tube Division. Mr. Brown also gives the group of new employees a lecture on safety practices, where they fit into the organization, and what is expected of them. Mr. Brown said that the reaction of new employees to the film showing was exceptionally gratifying to him. Many of the group never knew where the television division was located, or that Raytheon made such a diversified number of products. Also, new employees, as part of their orientation program at Raytheon's Quincy plant, tour the plant under the supervision of the Training Director.

The Quincy Tube Plant is the only division in Raytheon that has a formalized orientation program or anything that resembles an orientation program.

## 2. Employee Job Training

Films can serve both broad and specific orientation purposes; they can indoctrinate new employees not only in the over-all "feel" and policies of the company but also in certain specific departmental affairs and operations. Films can help create proper attitudes, teach skills, and impart knowledge, thus contributing to faster up-grading,

better and more efficient production.

Some authorities say that pictures reach their highest degree of utilization in the area of skill training. It is generally accepted that films speed training from ten per cent to seventy-five per cent in certain fields. The averages show that skill training is speeded up by at least twenty-five per cent when films are used.\*

Dr. Louis S. Goldman, formerly supervisor of the Audio-Visual Center, School of Business and Civic Administration, City College of New York says:

"The basic aim of audio-visual training as used in industrial plants should be to make the individual more efficient and better satisfied in his job. Audio-visual techniques offer assistance in much more than training for job skills alone. They also have fine potentialities for building morale which leads to greater productivity. By widening the employee's appreciation of his part in his company's total production, and even more, his appreciation of the importance of his company's product, they add to his interest in his job. It was found during World War II that the morale of employees in, say the ball bearing department of a tank plant, was greatly heightened by films showing how the tank was performing on the battle front.

"Such a concern as International Business Machines has found similar benefits in peacetime production through a program in which audio-visual aids broaden each employee's understanding of his role in the manufacture of the company's machines. IBM, in fact, has installed its own audio-visual department to produce films, filmstrips, and training manuals, not only for teaching training, but also for a general education program." \*\*

The fundamental aims to be considered in the use of audio-visual techniques in the training area is to make the individual more efficient and better satisfied in his job. Training techniques must be related to such broad considerations as employee selection, human relations, and incentives. These factors are just as important in the training situation as the methods used by the trainer.

\*10, P. 19

\*\*10, P. 20

Many business organizations, aware of the enthusiastic claims made for the training films, have spent large sums of money for them only to find that the results were disappointing. One industrial concern which had produced a motion picture at considerable cost, for instance, recently stated that the film "is not as instructive as had been supposed" and concluded that "it is not useful as a teaching aid". When it is considered that a professionally produced motion picture costs from five hundred to ten thousand dollars a minute, it is hardly surprising that the enthusiasm of many training directors has been chilled by such experiences. While extravagant statements concerning the results that can be expected from films and other visual aids must of course be discounted, the film medium does offer a superior method of teaching many subjects, and often represents an economical method of training. Although the high cost of film production precludes the use of this medium when the expense cannot be spread over a large number of trainees, some companies have demonstrated with impersonal logic of the adding machine that training films can pay for themselves by reducing the time required for training and by improving the quality of the training program.

Why, then, have many industrial concerns found the use of training films unrewarding? Very little is known about the specific types of information which can be learned better from films than from other teaching devices. Even less is understood concerning the instructional techniques which give films an advantage over other teaching methods. Because of inadequate information about the medium of films, expenditures for training films will entail considerable risk

for some time to come. Some of the disappointment is avoidable, however. Much of what is already known about the medium of films and the proven instructional techniques is not being adequately applied. Part of the reason for the ineffectiveness of many training films can be found in the films themselves. Not only have the planning and production of a number of films failed to conform with their training objectives, but also their production often has been undertaken when the subject matter called for other teaching methods. An even more common cause of disappointment can be attributed to the improper manner in which the films are used rather than to defects in the films themselves.

For training purposes slide films, both sound and silent, as well as movies, help accomplish training objectives quickly. This is particularly true when they are used in conjunction with models, actual parts and assemblies, equipment, and printed materials. Each has a specific use in the average training program.

The outstanding advantage of a silent strip film in this type of work is that the instructor may hold any picture on the screen as long as desired. The instructor can point out the part under discussion when the picture is on the screen and dwell on the subject as long as necessary.

In contrast, the sound slide film has a different value. This type of media is often used to convey more general information and skills which can be recorded, and can move along without interruption. The sound slide story should be simple, and used to teach relatively simple operations; for instance, how to operate a private switchboard, how to service a carburetor, how to assemble a gear box, how to care for a simple milling machine, have been taught to those who are expected to perform them.

Both the silent strip film and the sound slide film have one main function and that is to explain. They present more detail, and present it better than a motion picture. Slide films can deal with more complicated problems of instruction because they "move" at a slower pace and, in the case of a silent film strip this "movement" can be controlled by the instructor to conform to his pace and to the comprehension of the audience.

Slide films, of both silent and sound type, are best used for the following purposes in training in-plant classes:

1. Illustrating lectures.
2. Clarifying mechanical details.
3. Instructing artisans and mechanics.
4. Visualization of assemblies and plans.
5. Picturing product and its packaging.
6. Presenting distribution facts.
7. Presenting over-all details of company organization.
8. Presentation of all types of detailed instructions.

The motion picture also has a very definite place in the training class. To the layman it may seem that slide films and motion pictures are equally useful for these jobs, but that slide films are cheaper. It is true that slide films are much cheaper to produce and they do perform a very definite function in training employees, but slide films lack the impact of true motion which is very necessary for certain steps in training where motion is involved.

A good example of the proper use of motion in a training picture is the recently released RCA Victor twenty-one minute sound "movie"

"Your Surest Selling Job". This is a documentary film dealing with the fundamentals of retail selling. In this instance a moving picture was decided upon because the subject deals with RCA Victor's 45 R.P.M. automatic record changer and system. Motion as well as sound was needed to emphasize its selling points.

A new development is the stereoscopic or third-dimensional slide film which can now be produced in black and white or color, silent or sound. This technique gives the audience the impression of true depth on a two-dimensional screen. The value of this type technique in teaching mechanical subjects can most readily be evaluated by imagining a gear box, perhaps a tractor transmission, or a set of lathe gears, each pair of gears being painted in contrasting colors. If it is photographed in color and transferred to a three dimension silent strip film, the instructor can describe how each gear meshes with its opposite number, identified by color and position, to give a specific result in power transmission, and every student in the class will have the lasting impression of actually having the gear combinations in his lap.

The object of every training film must be to produce a certain effect upon the individuals in an audience. We have to understand this audience and know the training need (what will attract and hold their attention) before we can plan the training film. Every training film, to be effective, must be planned to fill a specific need for a specific audience. All United States Office of Education films are based on these audience assumptions:

1. That the trainee will want to learn how to do his job.
2. That a skilled instructor will use the film aspect of a planned program.

3. That trainee will see the film several times.
4. That a silent filmstrip and manual will accompany the film.
5. That each film will serve a specific, limited training purpose, alone or as part of a series.\*

These tenets were developed during World War II when many experts were involved in intensive thought, and skilled planning was devoted to each series of training pictures under pressure of grave necessity.

For many subjects films do a better job of teaching, and enable the trainee to retain the information longer. This generalization has been supported by tests conducted by psychologists and educators. For example, Phillip J. Rulon, Dean of Harvard College School of Education, in an experiment with the use of films in teaching general science has found that (1) in terms of the immediate trainee achievement the teaching technique employing the motion picture film is 20.5% more effective from the instructional standpoint than is the usual unaided presentation; and (2) in terms of retention the gain of the film group is 38.5% greater than that of the group not using films. Army researchers summarized tests on the effectiveness of military training films with a statement that "what films actually did was to improve the quality of the training offered in the allotted time.

Key punch operators at John Hancock Mutual Life Insurance Company, Boston, are increasing their efficiency by learning to read a series of numbers or letters in a split second. The Hancock training program is patterned after that given to Air Force and Navy pilots during World War II. At a hundredth of a second the Hancock students learn to record immediately on their adding machines a number consisting of six or seven

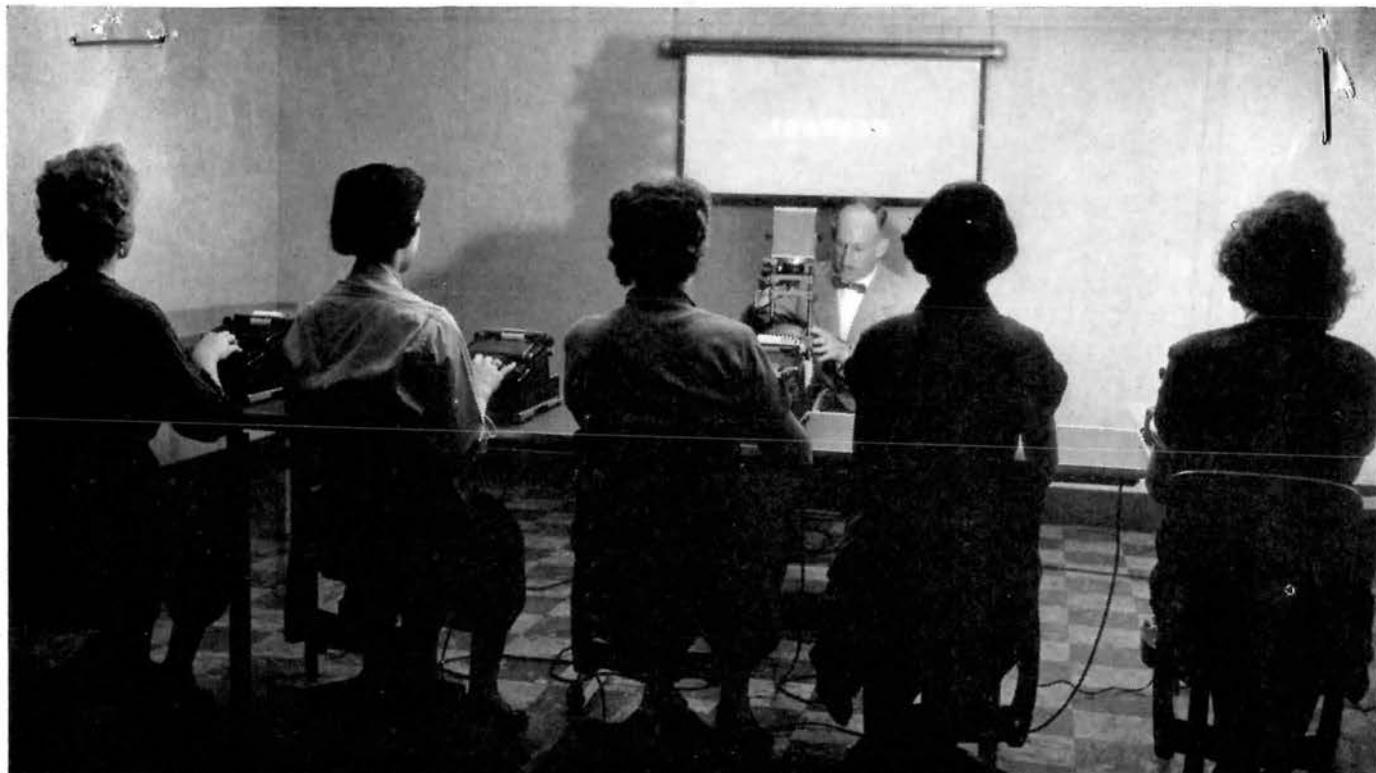
digits which is flashed on a screen by a machine called a Tachistoscope. The armed forces used the Tachistoscope in training pilots to recognize fast flying aircraft at a quick glance. Designed to increase perceptual span and thus make working with figures easier class sessions are held 20 minutes daily for a period of six weeks. During the early part of the course small number or letter combinations are shown, but as the training continues the number and word groups are enlarged. Gradually a worker's eyes and mind are trained to perceive and record large series, in less time than it takes for most cameras to click. "The course is beginning to show some fine results", according to John W. Rice, Personnel Assistant, who conducts the classes. "Evidence has come to light showing that members of the first group to be trained have produced a greater volume of work than others in their divisions who did not have the training. This happened in spite of the fact that the training was designed only to make their jobs easier. No one said anything to the students about increasing their speed. This they did on their own." \* The project was begun on an experimental basis last February 1953 with a series of carefully matched training and control groups of workers from various Hancock departments.

It should not be forgotten that we chiefly learn by doing. Any visual training program must be carefully integrated with actual on-the-job experience with the work demonstrated on the film. When it is necessary to recruit inexperienced help the problem of training is of course great, and opportunity for use of films is broad. However, the majority of films for such basic training need not be specially produced. Stock films are available in great variety for use in the develop-

\*16, P. 17



John W. Rice, Personnel Assistant for Hancock Mutual, operates Tachistoscope used in training keypunch operators to read numbers and letters flashed at a hundredth of a second. After training, workers are more efficient than similar employees not given the training.



Keypunch operators at Hancock Mutual record seven-digit numbers flashed on screen at a hundredth of a second.

## Workers Learn to "See" Faster

ment and improvement of basic skills.

Raytheon Manufacturing Company has a problem of high spoilage as a result of welding tube types. After careful study it was found that the operators of the resistance welding machines were poorly trained. Welding engineers suggested that the operators, supervisors, mechanics and foremen have a good indoctrination course in the theory of resistance welding. The reasoning was that the more the people knew about what happened when they put their foot down on the pedal that welded the parts together the better job they would do. A small group (45 people) have been shown, to date, the film "This is Resistance Welding" (color and sound, - also animated) which was borrowed from General Electric Company on a free loan basis. This film gives a good background education to welding, and even though it is technical in nature the animation in the film makes it easily understandable. William Brown, the training director at this Receiving Tube Plant, says the film has definitely helped in cutting down spoilage by teaching the people the theory behind what they are doing. According to Mr. Brown the spoilage rate has been reduced approximately 65% in the one department where the training program has taken place.

Some training directors claim that a poor film properly used is superior to an outstanding film which is simply thrown at an audience in a slipshod manner. This could be argued pro and con, but the fact remains that proper use can greatly increase a film's effectiveness. An Army study disclosed that trainees learned 58% more from a film properly introduced than from the film used alone.\* No definite formula for use can be given, for the most important element in film utilization is

\*13, P. 648

gearing it to the specific needs of the audience. However, the following approach has produced good results in industrial organizations, and can well be used with suitable modifications to suit the time and place:

1. Short introduction by speaker explaining the importance of the film to the audience, and why it is being shown at this time. Give an incentive for close observation of the film by throwing down a challenge to see who can remember the most, and announce that an open quiz and discussion will follow the film.
2. Show the film. Make certain that proper preparation permits the showing of the film by the mere throwing of a switch without attaching wires, fidgeting with the focus, and experimenting with the sound.
3. A review quiz, from especially prepared questions. Have copy of script handy for reference. Lead a discussion of ideas suggested by film.
4. Adjourn to shop or office to drill immediately in new techniques, - "learn by doing".
5. Show the film again after a day or two of practice, and preface its projection by a discussion of fine points to watch for.

An Army study conducted during World War II disclosed that trainees learned about 33% more new material from a film when they knew they were to be tested on its contents.

## Training Program in Quality Control Attracts Personnel from Other Divisions

A new type of training program has been put into effect recently in the Equipment Manufacturing Division. This program, currently underway in the Operational Test Departments of Quality Control, has the threefold purpose of training newly hired employees in the techniques and methods of the department, experienced employees in specialized techniques, and all employees in new methods and the operation of new equipment.

The program was initiated by Arthur E. Gagnon, manager, Operational Test Departments, and has been developed by Armand F. Wood, testman group leader, who now serves as director of the training school. Wood is especially qualified for this assignment because of his instructing experience at radar schools while serving with the United States Navy.

Training methods presently in use in the school include lectures by qualified engineering personnel of the Equipment Engineering Di-

vision. Some of the subjects covered are meters and measuring equipment, indicator and resonant circuits, hydraulics, synchro systems, FM and TV receivers, sonar and radar principles. To supplement the lectures, specialized training films are used. In addition, Director Wood issues training bulletins on departmental standards and specifications in order to keep employees alert to the necessity of maintaining top quality in Raytheon products.

While the training program was originally intended for personnel of the Operational Test Departments, it was soon realized that many of the subjects covered were also of value to personnel of other departments. As a result, employees throughout Equipment Manufacturing are being invited to attend those lectures which are related to their work.

In addition, the program has been made available to employees on the afternoon and night shifts by means of tape recordings of the day lectures.



Dr. Ellen Fine, senior electrical engineer, addresses a lecture meeting of the Operational Test Training School. A specialist on antennas, she spoke on "Microwave Antennas." Standing is Armand Wood, director of the training school.

Films should not be too loaded with details, nor should they be lengthy. Twenty minutes is about maximum length for a training film, and the closer the running time is kept to ten minutes the better the results are apt to be.

The organization of a training film is extremely important to its success. This organization, although the prime responsibility of the producer, should be carefully checked. To check the organization of a film before sound is finally combined with it, project it in silent form. If ideas flow smoothly without necessity for words you can be certain that it is organized in an orderly manner. The chief requirement for a success production of training films is to keep them simple and to the point.

The best film will fail if it is not shown under favorable conditions. Lack of proper projection equipment sometimes precludes effective use of the film. Also, showing of the training film has been handicapped in many business organizations by the lack of a suitably equipped classroom. A film projection room must be equipped with devices for darkening, and also must be well ventilated.

### 3. Employee Safety Training

The importance of industrial safety cannot be overstressed. In the year 1952 the occupational accidents cost American Industry \$45 per worker. Fifteen thousand persons were killed and two million injured at work during 1952. The total time lost was two hundred million man days.\*

Management has a social responsibility to prevent injuries to its employees. While workmen's compensation laws in the forty-eight

\*23, P. 25

states provide injured employees or their dependents with some relief these laws in themselves do not reduce accidents in industry. Business management is expected to provide not only a fair return for a day's labor, but also a safe working environment. Because of humanitarian considerations, the high costs of accidents, and the importance of a low accident rate in employee and community relations, top management cannot disregard industrial safety. Since the achievements of industrial safety is impossible without top management's active participation leading executives must directly concern themselves with the problem.

Four basic courses of action by which industrial accidents can be reduced have been indicated: (1) proper selection and placement of the person for the job; (2) improvement in the design of machines and equipment; (3) improvement in operating procedures and practices; and (4) improvement in training methods. This section is primarily concerned with the fourth course of action. Little can be accomplished unless employees are trained in specific safe practices and educated to recognize unsafe conditions of work. Rules of safety must not only be known by employees; they must also be applied. Thus safety training includes both instruction and motivation.

The objective of safety training is to develop a group of employees who can work free of accidents. The heaviest responsibility for training rests with the supervisor who from day to day must instruct workers in safe performance, and make sure that his instructions are carried out. Informal safety training by supervisors is buttressed in many companies by more formal training meetings in which safe practices are given further emphasis. In these meetings, also, an attempt is often made to encourage employees to develop "an attitude of safety".

How can films be used to contribute to the attainment of a favorable safety record? From an instruction standpoint, the visualization of procedures which films provide equals, and in many cases exceeds, what one may learn from actually observing the operation in question. The power of films to motivate individuals is perhaps their biggest contribution to the cause of accident prevention. It is recognized that the achievement of a favorable safety record depends in part upon the development in each worker of a consciousness of safety. The problem is one of awakening a continuing interest in matters of safety, so that all actions are governed by a dominating awareness of the potential hazards that accompany one's job. Those who have studied films are cognizant of their power to condition behavior. In commenting on studies made of the influence of motion pictures on attitudes and behavior of individuals Franklin Fearing states:

"These investigations all yield evidence that films have measurable effects on attitudes, and that the effect is in the direction indicated by the film".\* What are some of the motivational qualities that films possess? In the first place, a well produced film, through its wide range of subject matter, plot construction, suspense elements, and character development can arouse interest in a subject. Secondly, a film can bring about a process of self-identification with the characters portrayed. Finally, in contrast to most other training media, the film can appeal to the emotions of the group. People usually are excited, depressed, amused, and otherwise emotionally aroused by films. Since to some extent a safe attitude has an emotional core, a training medium which can affect the emotions or bring about an emotional response is

\*24, P. 74

necessary. It is the exceptional industrial instructor who can make an emotional appeal to his trainees. Many safety directors feel that an appeal of this type is fundamental to the development of a safe attitude. For these reasons they look toward films for assistance in this motivational aspect of their safety training problem.

A sound motion picture "Grinding Wheel Safety", produced by the Norton Company, has proved to be useful in many factories for showing the proper way to use grinding wheels. For instance, the film was employed by a plant in Wisconsin recently. On the morning the film was shown to the grinder operators in the crank-shaft department four experimental grinding wheels had been broken. After seeing the film the operators stated that they had learned from it why the breakage had been occurring, and knew how to correct it. An insurance company reported an interesting experience with a sound slide intended to teach safe practices to electric utility company linemen. The film covered the hazards faced by linemen in the course of their work, and its final content was decided upon only after careful research and testing. It was made available to the seventeen electric utilities in the New England area insured by the company which made the film. The officials of all but one of these utilities decided to show the film to their linemen. It was shown to 1500 linemen in the sixteen companies in approximately thirty-five meetings, over a two-month period early in 1945. In none of these sixteen companies was there a lineman fatality during the year, although in New England electric utilities in general there were seventeen fatal accidents involving linemen. Sixteen of these fatalities occurred in companies to which the film was not available; the seventeenth fatality occurred in the one company whose officials chose not to use the

film. It would be absurd to conclude from the above evidence that simply showing a slide film is a guarantee that a company can eliminate fatalities to linemen. This is certainly not the conclusion reached by the insurance company in question. It is at least, however, an interesting coincidence. Moreover, it tended to justify the belief of the insurance company that the film, which had been so carefully prepared, was an effective training device.

In 1945, in connection with a plant-wide safety glasses program which had been developed, the Owens-Illinois Glass Company produced a motion picture entitled "Your Richest Gift", to be used as the spearhead in introducing the program to employees. A special effort was made to show the film to all employees prior to the time the glasses program was launched. An official of the company has stated that "we found that this film was perhaps the strongest factor in getting our people to wear proper eye protection". It should be mentioned that the film has been made available to over one hundred and twenty-five other large companies whose executives have expressed favorable comments on it to the sponsoring corporation.

Many safety directors agree that a variety of safety training materials are needed to keep the training constantly vital. Thus they caution against too intensive use of a film. The safety director of a steel company feels films should be used in only one meeting out of three; an oil company's safety director stated that the ratio should be one in four.

Prominent among the limiting factors in regard to film usage for safety was the difficulty of finding among available films those which were specifically related to a particular problem or operation

in a given plant. Part of the explanation for this lies in the unfortunate fact that to recover the cost of producing films it is often necessary to make them general in scope and thus, presumably, applicable to a large number of companies.

Underlying the problem of establishing a safety committee is the development of a broad safety program. While each company must develop a program consistent with its own problems, some help can be obtained from seeing what other companies have done. For this purpose several films are useful. "Blue Print for Safety", a motion picture produced by Westinghouse Electric, shows in an admirable way how a small motors division of the company organized for safety. An outstanding point of the film occurs in its closing minutes, when the responsibilities for safety at various levels in the organization are placed. The film points out that (1) it is the responsibility of top management to maintain safe working conditions, and put the impetus behind a safety program; (2) it is the responsibility of foremen to train workers to do their jobs safely, and then enforce the practices which have been taught; (3) it is the responsibility of the individual worker to maintain a personal attitude of safety consciousness, and recognize that in the end he is the man responsible for his own individual well-being; and (4) the credit for the success of the program goes to the people in all the above groups for making the blueprint for safety possible. A film which establishes a similar point of view is the P. H. Glaffelter Paper Company's motion picture "Plan for Safety". "More Profits Too", a motion picture made for the Auto Owners Insurance Company, also shows how an industrial safety program might be developed.

The subject of the indirect costs of accidents is a useful concept to get across to workers in the induction period. For this purpose The National Safety Council's slide film "Invisible Red Ink" gives a thorough coverage.

Certain subjects are indirectly related to safety, and are common to most plants. Among these are proper illumination and interior painting. Films presenting these subjects in a good manner are: "Let Us See", sponsored by the Illuminating Engineering Society, and "Color Conditioning", a film made by the DuPont Company. First aid is a subject indirectly related to safety, and Johnson and Johnson's motion picture "Help Wanted" gives as good a coverage on the subject as can be obtained in the time available.

The above-mentioned picture "Help Wanted" was shown October 26, 1953 at a safety meeting at Raytheon Manufacturing Company, Equipment Manufacturing Division. A questionnaire made out by the writer of this paper was given to the forty people present, and despite the film breaking down four times during the showing the results of the survey were as follows:

1. Do you like the motion picture as a means of putting across safety messages?

Answer: 100% of the audience replied "Yes".

2. Did you learn something from the film "Help Wanted?"

Answer: 100% of the audience replied "Yes".

3. Has this film made you want more films concerning safety?

Answer: 100% of the audience answered "Yes".

4. To what degree do you feel motion pictures are effective in helping you in your work at Raytheon?

Very effective: 98% replied to this degree.

Fairly effective: 2% replied to this degree.

Not effective: - - - - -

It might be noted that this was a captive audience in that the meeting was held on company time. The audience was composed of one or more representatives (some of whom were foremen) of various sections of the division such as the machine shop, welding shop, sheet metal shop, coil winding group, sub-assembly group, heavy assembly group, test group, and the company doctor. Some of the comments written at the bottom of the questionnaire form were: "What we can see is far more effective than what you hear"; "Yes, very effective, a picture is always better, as every one can see that subject, and does not get the wrong conception of what a person is discussing in terms of first aid"; "Motion pictures like this are very informative"; and "This is the best meeting I have been to". This was one of the first films shown at a safety meeting in the Equipment Division at Raytheon, and it seemed to be very well received.

Some of the limitations of currently available safety films are:

- (1) Films are too general in nature, - lack specific application.
- (2) Films divorce safety from production, when they should be very closely allied.
- (3) Many of the practices the films advocate are incorrect.
- (4) Narration not in workers' idiom, - canned or phoney speeches.
- (5) Many films are "dated".
  - (a) Old automobiles caused amusement.
  - (b) "War flavor" involving emotional appeals to patriotism dates film.

- (6) Many of available films "talk down" to employees by
- (a) Oversimplifying to experienced workers.
  - (b) Over use of humor.
  - (c) Negative examples presupposes men do things incorrectly.

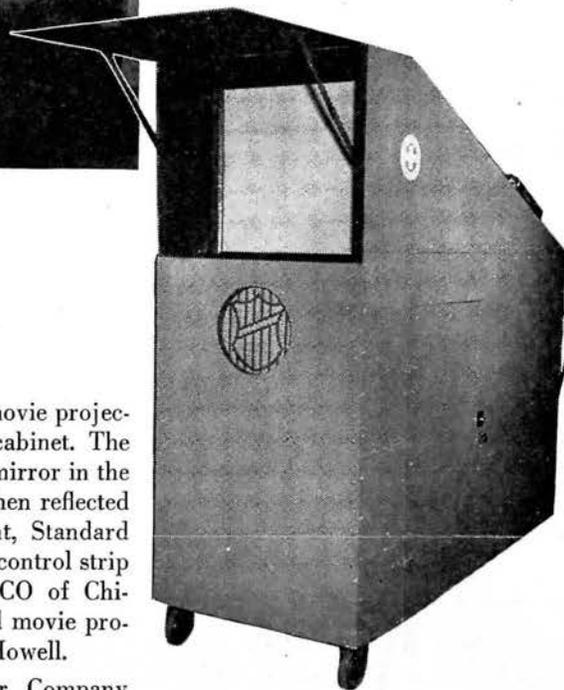
A rear projection unit which can be moved about the plant and plugged into any 110 volt light socket was developed and built by Melvin Pittman, safety director for Standard Register Company, in 1946. This device was mainly used to show safety films to workers at his own machine. Previously, Standard's program had provided for the foremen to see films, and then they were supposed to carry the message back to the men. This machine is about six feet high and seven feet long. It utilizes projection of both 35 mm slide strips, sound or silent movies, and 16 mm films. To keep up interest in safety Pittman makes the rounds of the plant every two months. In departments where there are more films of special interest, such as machine shop, showings are more frequent. The unit is equipped with a microphone so that the foreman can speak to the workers for a few minutes, tying in the subject of the film with the safety problems in their particular division.

Pittman contacts the foremen and sets up a schedule for showing his pictures. At the appointed time he pushes his projector into the section and plugs it in. The men gather around in groups of 25 to 30. A larger number has been found to be impracticable. The workers' machines are shut down. Only one film is shown, and it is of not more than fifteen minutes duration. From October 8, 1946 to May 20, 1947 the Standard Register Company had operated without any disabling injuries, a total of 1,700,000 continuous man hours. Visual education on-the-job is only one phase of an all-round program at Standard, but the company feels that is



*Watching a safety film on a rear-projection unit are a group of Standard Register pressmen.*

*Rear-projection unit used by the Standard Register Company to show safety pictures to workers. The unit stands about six feet high. Pictures are projected onto a mirror which reflects the image on the screen.*



## Visual Education Goes to the Job

**A**N INTERESTED group of workers gather around the cabinet in the aisle of their section of the factory. Their machines are shut down for a few minutes, but management feels that it is well worth it. For the time which the Standard Register Company in Dayton, Ohio, gives to visual safety education is paying dividends in the all-round safety program.

A portable projection unit utilizing either 16 mm. sound movies or 35 mm. sound slide films has solved the problem of getting safety information to the employee level—to the workers who have the accidents.

30 x 24 inches.

Any standard type of movie projector can be used in the cabinet. The picture is projected on a mirror in the back of the cabinet and then reflected on the screen. At present, Standard is using a remote electric control strip projector made by NATCO of Chicago and a 16 mm. sound movie projector made by Bell and Howell.

The Standard Register Company prints business forms and manufactures many autographic registers and platens to utilize the forms, so safety problems in the various divisions of the plant are somewhat diff-

it into the nearest light socket. The men gather around in groups of 25 to 30 — a larger number has been found to be impracticable. Machines

very effective and has greatly aided their program.\*

There seems to be four main appeals to the audience in safety films: the logical approach, the appeal to proficiency, the appeal to humor, and the fear approach. The effectiveness of these four appeals is difficult to evaluate. Also, regardless of the appeal which is emphasized there will still be an underlying current of fear in all safety training films. In general, it seems that the fear appeal should be avoided. An appeal to the employee's desire to be proficient, or a logical treatment of the subject matter, is a sounder approach to follow.

### 3a. Fire Safety Training

Closely allied to safety training is fire control training. films can do an important fire prevention or fire control education job. it is an individual problem for each company, and much depends on the skill of integrating the visual aids into the general plant fire safety education program. The chief value of films in fire prevention education as well as safety is that if they are properly produced and exhibited they have high audience appeal. The first step in teaching fire control (like any other subject) is to get your audience genuinely interested in the subject. It is rather a sad commentary on our present way of life that we have to constantly "sell" individuals on ways to save their lives and property from fire, but it is a fact and must be realistically faced in the fire safety program. The average person thinks that fire is always going to strike "the other fellow", - never him. So the basic problem in fire prevention is to drill into the consciousness of the individual what fire can do to him, to his family, and to his job. Any training film, while it may set up standardized procedure

of fire control, would have enough drama or human interest to stimulate the thought processes of the viewer to become conscious of his constant vulnerability to fire, and prepare him to act calmly and intelligently when faced with a fire emergency.

In the fire training classes at Raytheon the following films were shown: "Chemistry of Fire, "Stop Fires, Save Jobs", "Fire Department Response", "Causes of Industrial Fires", and "Know Your Extinguishers". These films were shown as part of a continuous fire control training program at Raytheon.

#### 4. Employee Entertainment

Employees provide the most available audience for films of any group. A motion picture communications program for employees can be tailored to fit the needs and pocketbook of any business company, large or small. Just recently there has been a marked growth in the number of film programs among smaller companies, with from twenty to several hundred employees. Many of these companies operate a low-cost program with regularly scheduled motion pictures, sponsored by other industrial companies, and made available free to them on payment of transportation charges.

In small companies it is usually easy to locate an area sufficiently large to accommodate all employees at one or two showings of a film. Assembling employee audiences is less difficult in relation to the elaborate planning and scheduling necessary in larger businesses to give every one equal opportunity to attend.

Larger firms, too, have found the film a convenient way to convey an identical message to all its employees. Many of them have their own films produced for this purpose. However, even the largest

## 175 Raytheon Men Join Fire Brigade At Training's End

Certificates were recently awarded to 175 Raytheon men upon completing an 11-weeks' course in fire fighting and first aid. These men, from the Waltham area, the Transducer Department in Boston and the Missile and Radar Division in Bedford, will be joining 500 other employees already taking part in Raytheon's Fire Brigade.

Since its inception in 1951, the Fire Brigade program has shown outstanding results in the prevention and control of fires. Volunteers are instructed by Capt. James Doherty of the Arlington Fire Department, and after their initial course of training, members receive advanced lessons monthly. Every company building is equipped with fire-fighting equipment and first aid units, and fire-brigaders have been instructed to detect potential fire hazards and to evacuate personnel in the event of fire or other emergencies.

The company's expanding operations have necessitated a correspondingly larger Fire Brigade staff. During this year, internal fire and evacuation alarm systems have been installed in every building not previously so equipped, and existing systems have been expanded where warranted.

Insurance figures show that 29,000 industrial plants are annually destroyed by fire. Raytheon's fire prevention program thus makes good sense not only to management, but to the employees for insuring both their personal and economic security.

The program is under the direct supervision of Safety Director Robert Bancroft. He is assisted by Fire Marshal John Powers and Edward Sherman and by a subcommittee made up of divisional representatives John Bibbo, Transformer; Robert Canfield, Power Tube; and Raymond Crosier, Equipment Production.

company cannot anticipate and provide every film subject for its own use, even if this were practicable. So large and small companies, alike, turn to already sponsored films to provide them with the film supply they need.

Noon hour film showings are quite popular among some industrial plants. For instance, Raytheon Manufacturing Company, Engineering Division, has a regular weekly noon time showing, beginning in September and continuing through the end of May. This program is in its third season (started in 1950), and the average audiences today (about 200 people) are approximately the same in number as they were in 1950. This program was originated by the employees in the drafting department when they decided they wanted to learn more about the processes and products they were dealing with on the drafting boards. The program is still completely managed by the employees, with Mr. S. Ruggiero doing the procuring of films. The films (usually two) are shown for a period of three-quarters of an hour between the twelve to one o'clock lunch hour. There is no budget allowed for this program, so therefore the selections are restricted to free films obtained from the following sources: Bureau of Mines, Association Film Incorporated, Cinema, RKO, Ideal Service, The United States Navy, The Army Base in Boston, General Motors Company, Telephone Company, Ford Motor, and General Electric Company.

The audiences at these film showings consist of approximately:

Draftsmen	50%
Machine Shop Personnel	20%
Engineers	20%
Miscellaneous	10%
(a) Technicians	5%
(b) Clerical help	5%

Besides showing films such as "Fishing for Fun", "Whistling Wings" (Duck hunting), "Sugar, U.S.A." (Beet sugar industry), "Masters of Molecules" (Refining of petroleum), films made by Raytheon "Electronics in Action", "Nothing to Argue About" (selling film on television", and "Ready for Sea" (film on testing of radar) are also shown. A variety of films are shown to hold the interest of the group. Technical, semi-technical, general interest, travelogues and sports are the types of films which are shown on these programs. From a questionnaire prepared in May 1952 by Mr. S. Ruggiero, Program Director, there were sixty people out of sixty-four surveyed who said they wanted the program continued, one said "No", and three made no comment. These films are shown in the drafting room (large open room) and many people have to stand. Only about 5% of the total number of employees of Raytheon have access to noontime motion pictures.

Noon hour showings are often especially acceptable because of their voluntary aspect. In some places this has been found an answer to union objections to showings on company time. Such showings are also popular because of their regularity, - the same day and time every week. One employer who said his plant was too busy to arrange for scheduled showings reached a solution by installing an automatic motion picture projector in the recreation room where employees can enjoy the movies during their off hours.

There are four areas which the employees seem to want to know more about:

1. Where do the raw materials and parts which you (the company) purchase come from? How are they procured or made? If your suppliers have sponsored sales films they will probably tell these very

# "Ready for Sea," Color Movie, Shows Testing of New Radar for Small Boats

## Film Was Produced by An All-Raytheon Team From Photo Department

"Ready for Sea," the company's second color movie, was released this month and is now being scheduled for public showings. The film features Model 1500 "Mariners Pathfinder" radar and the performance tests required of Raytheon products in the Environmental Test Laboratory in the Equipment Production Building.

The 13-minute film is itself a Raytheon product. It was directed by Lee A. Ellis, manager of the

Photo and Publications Sections, from a script written by A. Newell Garden, his administrative assistant. Photographers George Meyers and Richard Wright filmed the scenes, while Mark McCann, Jr., cut and edited the production. Former radio announcer Arthur F. Vaughn, now employed in the Purchasing Section of the Equipment Engineering Division, narrates the film.

Tailored to the needs of the joint sponsors, the Equipment Division and International Operations, "Ready for Sea" was planned to serve several objectives. Aimed at both potential customers and general audiences, the film visually demonstrates the rigid test procedures Raytheon marine products

(See "READY FOR SEA," Page 4)



Charles Little, Environmental Test Lab technician, plays his real-life role of testing new electronics equipment in the new company movie, "Ready for Sea." In this scene, he shares a shower with Model 1500 "Mariners Pathfinder" radar which is undergoing the "drip test" to check its water-resistant design.

## "Ready for Sea," Color Movie

(Continued from Page 1)

undergo to assure top quality and performance before they are put on the market. The star of the movie is Raytheon's new small boat radar, Model 1500, which offers smaller boating craft all the advantages of "Big Ship" radar for less money, less installation cost and lower power requirements.

Opening with scenes showing shipboard preparations for sea, the movie goes on to show the many tests employed at Raytheon before a marine radar is released for production and ultimate service at sea. Products are put through their paces in the Environmental Test Lab to record their endurance to extremes in temperatures, accelerated life, inclination, air hammering, impact, vibration, drip and salt spray. Also tested are product components such as wires, transformers, resistors, meters, paints and shipping crates, all of which must meet specifications.

Location scenes were filmed in the M.I.T. Wind Tunnel, on board the Eastern Steamship Lines' S. S. *Yarmouth*, along the Boston waterfront and on Raytheon's test boat, the *Alan*, to complete the testing story and to show the varied uses

of the radar.

"Ready for Sea" is available for television use by Raytheon dealers and distributors who may wish to sponsor local 15-minute programs. Like "Electronics in Action," which has now been shown to over 50,000 people in the United States, Europe and South America, "Ready for Sea" is available for showing, through the Photographic Department, to dealers and distributors, sales conferences and conventions, marine groups and clubs, civic and social clubs, schools, the armed forces and other interested groups.

things. This should be a fruitful field. In introducing new equipment to your employees, also, the sales film describing the new equipments' advantages should be of special interest to your employees who will use it.

2. What do other departments do? There are films showing the work of many skills, from stenographers and clerks to moulding a plastic product. These should be of special interest to people who work in these or related fields. But more than that your other employees will find them a revelation of how the work of people in seemingly unrelated occupations affects them, from the payroll clerk making out checks to the purchasing agent trying to solve a production supply problem.

3. What happens to the products they make? If you are a supplier for a larger company perhaps this company has a sales or employee motion picture showing the assembling of their product. This in turn may show your people how the results of their work fit into the larger production. If yours is a consumer product, and you have made a sales film, show it to your employees. The employees will be proud to hear how you praise their work to your customer.

4. What about your company's future? Your talk about the company's future outlook may be supported by films explaining the part of advertising, sales, and research in assuring future business and your employee's job security. Films which explain the functions of product advertising are available, and many companies have included the part played by their research in their films. Your explanation of what your company is doing along the above lines will be much more effective when the employees have seen in films that other companies also find these practices good investment for the future.

The National Association of Manufacturers publishes a list of suggested films for an employee noon-hour series to aid interested companies.

#### 5. Solving Production Problems

Industrial films are proving themselves to be increasingly versatile as a means of locating kinks in production processes. Time-lapse photography is one of the newer angles for keeping the camera at work in the production shop. A camera is set to take pictures at intervals of a minute or so, and kinks in materials handling or manufacturing steps are clearly depicted on the projection screen a short time later.

One company, for example, was having trouble with its materials flow. The production department charged with scheduling lift trucks moving materials about the building claimed the elevators were at fault. The building department, in charge of elevators used by the tow trucks, claimed the production department did not know how to schedule its tow trucks. In the absence of proof each department blamed the other. Then an engineer planted a movie camera with electric drive in front of the elevators. The camera, operating automatically, took one picture, or frame, each minute. After eight hours the film was developed; production and building departments could tell to the minute how long trucks had to wait for the elevators, or vice versa. The result was that both the production and building departments made some scheduling changes. The cost of the whole study was the price of one roll of film and processing.

A repair firm, concerned about the time workmen spent at the stock room window waiting for parts, installed time-lapse equipment. A

picture every minute told how long each workman had to spend waiting at the window. The stock room decided its methods of delivery needed an investigation.

A large jet engine manufacturer uses a time-lapse movie camera to check jet engines under test. The camera records instrument readings on thirty different gauges simultaneously at intervals of one to four minutes. These records are then run off on a film and studied after the engine has been removed from the test bays.

For best results time-lapse photography requires two special camera attachments, an electric drive and a timing mechanism, available at about \$175. A 16 mm motion picture camera, with standard attachments, costs from \$300 to \$700.\*

High speed photographic equipment is well known in industrial use, and has been used to study the action of machine tools, circuit breakers, and other equipment which move at high speeds. This type of photography special cameras cannot, as a rule, be used for other purposes.

Mr. E. Flynn, of the machine shop methods section at Raytheon's Equipment Manufacturing Division, states that he intended to run a film once a week for the purpose of showing the employees working on punch presses, brakes, and welding information on the metals they were working with, as well as allied processes. Several films such as "3 Taps in 1" (Greenfield Tap and Die Corporation), "The Formica Story" (Formica Insulation), were shown to a group of foremen and workers. A program of films was set up for the future, but due to the poor conditions under which they had to be shown such as obtaining weekly permission from management, and the inconvenience of procuring and setting

\*25, P. 723

up a projector, the program initiated by the methods man (Mr. E. Flynn) was discontinued.

The room in which the above-mentioned group was shown the films was about eight feet wide by fifteen feet long. Just outside the window, on one side, was a railroad tracks, and on the other side of the only door in the room was a large noisy shearing machine. There was no means of cross ventilation, and the heat was excessive during the summer when these films were being shown. Mr. Flynn said that during the course of the proposed program the employees would have been shown the application of the particular piece they were making. The purpose of this was to show the employees why the tolerances had to be adhered to. A basic conception of electronics was to be imparted to the employees by the use of films so that they would have a better conception of the over-all picture in regard to their operations or functions. There seemed to be an active interest in this program on the part of the employees, but unfortunately, due to the obstacles presented by management, the program was discontinued.

#### Summary

Internal business films are less widely used and less heralded, but many organizations that have used both have found that dollar for dollar the internal type film obtains better results whenever it has been tried. Getting an employee off to a good start on his job is one of the most important elements in any sound employer relations program. Therefore, many organizations find it pays to indoctrinate an employee into his new job with a carefully prepared motion picture or slide film. The American working man wants to know the importance of his efforts, and the

wise employer will make sure that the worker fully understands the relation of his task to the whole, and that he knows something of his company policy.

Films can serve both broad and specific orientation purposes; they can help create proper attitudes, teach skills, and impart knowledge, thus contributing to faster up-grading, better and more efficient production. Some authorities say that pictures reach their highest degree of utilization in the area of skill training. The fundamental aims to be considered in the use of audio-visual techniques in the training area is to make the individual more efficient and better satisfied in his job.

While extravagant statements concerning the results that can be expected from films and other visual aids must be of course discounted, the film medium does offer a superior method of teaching many subjects, and often represents an economical method of training. A common cause of disappointment in the use of training films can be attributed to the manner in which the films are used rather than to defects in the films themselves.

For training purposes slide films and movies help accomplish training objectives quickly. Each has a specific use in the average training program.

A new development is the stereoscopic or third dimensional slide film which gives the audience an impression of true depth on a two dimensional screen.

Every training film, to be effective, must be planned to fill a specific need for a specific audience.

By the use of a Tachistoscope, key punch operators at John Hancock Mutual Life Insurance Company are increasing their efficiency by learning to read a series of numbers or letters in a split second.

Any visual training program must be carefully integrated with actual on-the-job experience, with the work demonstrated on the film, but the best film will fail if it is not shown under favorable conditions.

Management has a social responsibility to prevent injuries to its employees. Improvement in safety training methods is one of the four basic courses of action by which industrial accidents can be reduced, and includes both instruction and motivation. The objective of safety training is to develop a group of employees who can work free of accidents. The power of films to motivate individuals is perhaps their biggest contribution to the cause of accident prevention. Many safety directors agree that a variety of safety training materials are needed to keep the training constantly vital, so they caution against too intensive use of films. There seems to be four main appeals to the audience in safety films: (1) the logical approach, (2) the appeal to proficiency, (3) the appeal to humor, and (4) the fear approach. In general, it seems that the fear appeal should be avoided. An appeal to the employee's desire to be proficient or a logical treatment of the subject is a sounder approach to follow in safety films.

Films can do an important fire control education job. The chief value of films in fire control work is, if they are properly produced and exhibited, that they have high audience appeal. The basic problem in fire prevention is to drill into the consciousness of the individual what fire can do to him, to his family, and to his job, and careful instruction, with the right emotional balance, will do this.

Employees provide the most available audience for films of any group. A motion picture communications program for employees can be tailored to fit the needs and pocketbook of any business company, large or small. Noon-hour film showings are quite popular among some industrial plants. A variety of films are usually shown for this type program to hold the interest of the group.

Industrial films are proving themselves to be increasingly versatile as a means of locating kinks in production processes by using time-lapse photography.

## Chapter IV

Film Costs

The first question management asks in contemplating the production of a film is "How much will it cost?". When he is unable to obtain a direct answer to his question he is apt to be impatient and sometimes unreasonable. The business man does not realize that a slide film or a motion picture is a made-to-order product, and that there are no cost standards. An analogy might be for a person to ask a contractor how much a house would cost, giving him only the briefest outline of its size.

To judge the cost factors that face a producer of even a simple motion picture the following list of rigid cost factors are involved:

Survey of sponsor's current problem	Raw stock-positive
Creative work on script and research	Cutting and editing work print
Time of staff devoted to contact	Optical work
work with sponsor's employees	Matching negative
Studio rental	Recording
Set and scenic designs	Music
Set construction and dressing	Re-recording
Investment in or rental equipment	Copyright fees and clearances
Electrical consumption bill	Sound effects
Salaries and wages of stage crew	Library shots
Salaries of acting talent	Titles
Rental of locations	Animation or trick photography
Transportation to and from location	Weather
Living expenses of every one on location	Illness of members of cast
Costumes (location)	Retakes
Make-up man	Sound royalties
Still man	Narrator's fee
Cost of raw stock-negative	Duplicate negative for insurance
Negative processing	Insurance
Overhead	Properties*

The foregoing detailed list indicates the things the average producer of the average film has to consider in his cost estimate and the average buyer has to pay for, plus a profit to the producer. If the picture

script has unusual effects, of "tricks", the cost factors will be increased by the following:

Name narrators	Stop motion
Extra narrators	Fast motion
Specially composed music	Stroboscopic motion
Overtime	Stereoscopic
Night shooting	Model building
Photomicrographs	Unusual sets
Air shots	Unusual art work*
Slow motion	

The above is quite an imposing list of cost factors, but all of these must be considered by the producer when the sponsor asks "How much will it cost?"

As a rule the cheapest productions are the newsreel type in which existing action is photographed. Narration is recorded in the studio after completion of the photography. The prices will vary with the difficulty of obtaining the photographs, the number of locations, and the lighting equipment required. The sound could prove expensive if name narrators, specially composed music, and unusual sound effects are used. The most expensive productions are the Hollywood type, where actors and sets are required, and dialogue is recorded at the same time the picture is taken. Between the newsreel and Hollywood type of film lie many variations which can be produced to result in extreme differences of price.

Some producers will make a low original estimate and then charge every change and alteration as an "extra". Others will estimate on the high side, and there have been cases where money has been returned to the sponsor.

The current rule-of-thumb is that a film will cost about \$15,000



*How to make your own*  
**SLIDE FILM PRESENTATION**  
*for under \$20<sup>00</sup>!*



COLOR TRANSPARENCIES + TAPE RECORDINGS = EFFECTIVE LOW-COST PRODUCTIONS!



Companies of every size are faced with a universal problem: how to carry an important story or an idea in clearest, most effective form to its salesmen and employees. It is generally agreed that pictures and sound do one of the most effective jobs, but their use is often not considered because of the time and expense involved.

Yet now—with color transparencies and tape recording, companies both large and small, can in a few short hours and at an expense not exceeding \$20.00, make

their own slide-film presentations. No expert or specialist is required. All that is needed is an ability to sight and snap a "candid" camera and operate a tape recorder. And as a bonus for the effort you receive hours filled with real fun and the sense of accomplishment.

Yes, here's the simplest way yet devised to put together a full color slide-film presentation complete with "sound track" It is ideal for use by companies of every size in difficult sales training work, introduction of new prod-

ucts to the sales force, employee indoctrination.

This method is *not* intended for use in dealer or distributor sales meetings or as a sales tool in calling on the customer. Generally speaking, a professional, well-polished presentation is required for this purpose. There are many competent studios throughout the country specializing in producing professional-quality slide-film presentations.

However, the company-produced slide-film has many

advantages over the professionally-produced film, provided it is geared for internal use. Through the medium of slide-film, company experts—the men with the product knowledge and know-how—can address themselves directly to a company audience. These men know the products of your company and can, if properly directed, offer detailed information that is fresh and interesting. There is no loss of many of the small but important details through interpretation by a third party. There is a definite air of realism and authenticity rarely ever

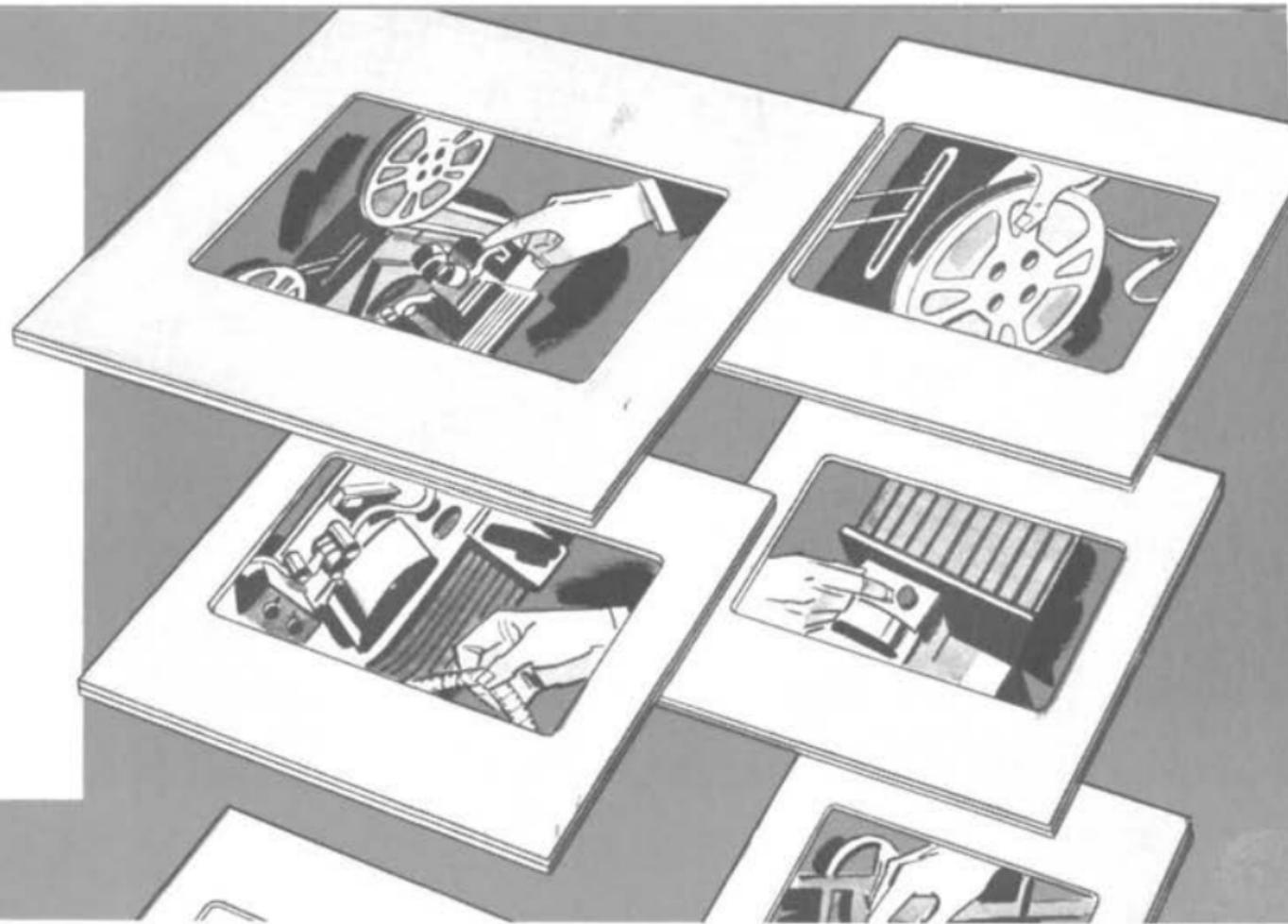
achieved by professional productions. *For the first time, for example, the laboratory can be brought out into the field for the salesman's benefit. Or a new product can be explained in detail by the men directly responsible for its development.*

**Here are just 5 simple steps that  
give you an informative, well-paced presentation  
at the lowest cost possible:**

1

## Make a “WORKING SCRIPT”...

Write down the sequence of the pictures you will require to illustrate the process, product, or idea on which your presentation is to be based. A new industrial process, for instance, would require a step-by-step illustration of the process itself, together with before-and-after shots of products involved.



**ADDITIONAL  
TIPS ON  
STEP  
NUMBER 1**



In determining the number of pictures needed, remember that for greatest effectiveness, no presentation should last more than 20 minutes. To keep your audience's attention, no individual picture should remain on the screen more than 15 or 20 seconds. This may be increased to 30 or 40 sec-

onds when detailed material is being presented.

You would thus need 35 to 40 pictures to illustrate a 15-minute presentation, and 55 to 60 for a 20 minute show. Take a few more shots than you think you'll need to provide flexibility. A wider selection of photographs means a better production.

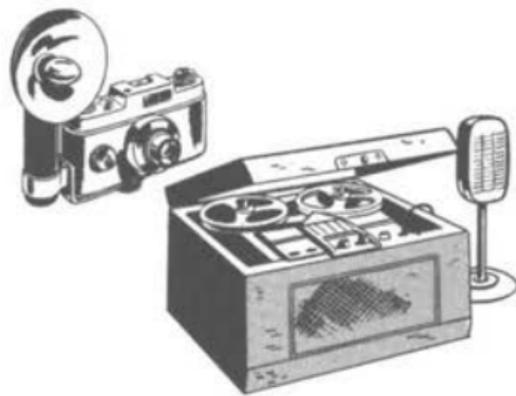
## 2

### TAKE PICTURES

You will save considerable time by setting up props in advance, lining up plant personnel to act as models, making sure the desired locations will be free for picture-taking at the time you plan to shoot. In planning schedules and release dates, allow approximately 10 days for processing the exposed film.



ADDITIONAL  
TIPS ON  
STEP  
NUMBER 2

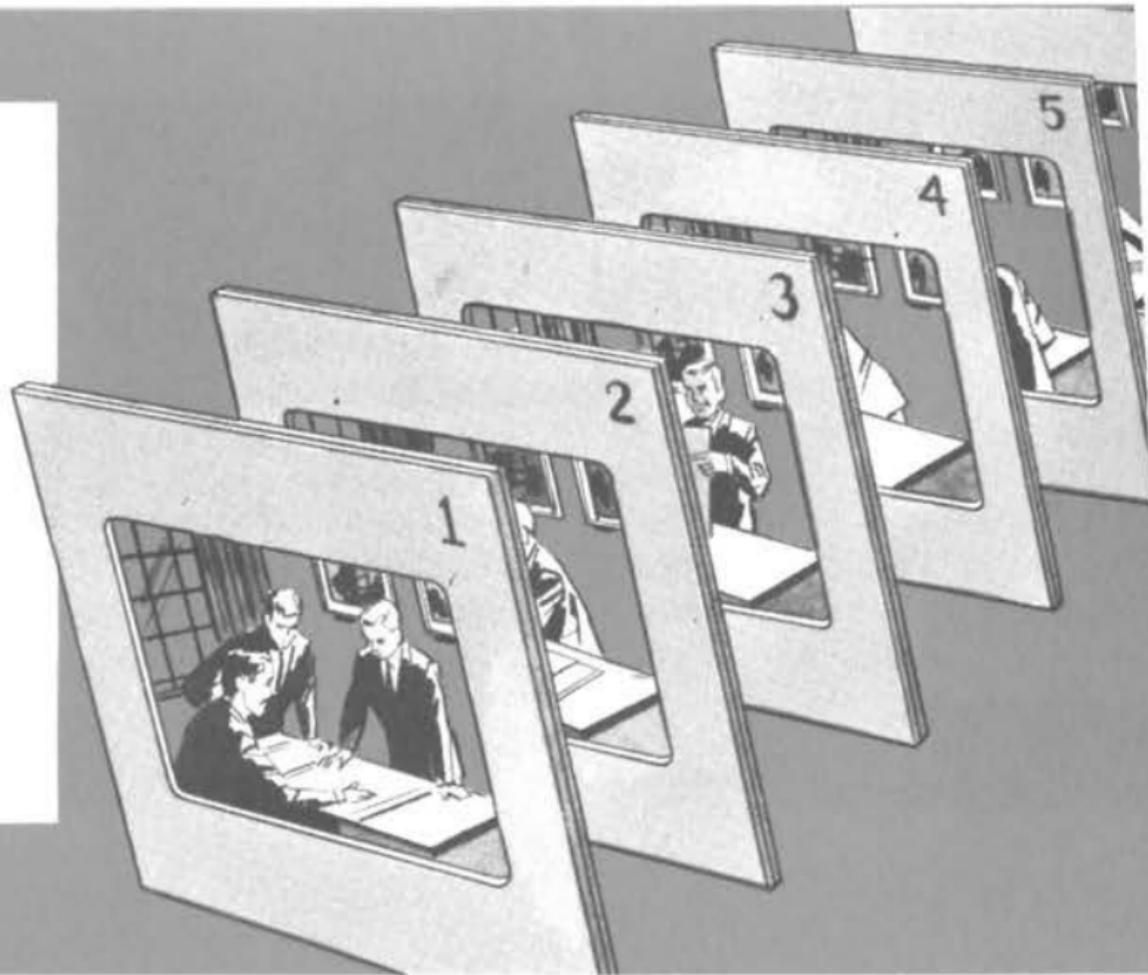


Pictures are taken on 35 mm. film with a miniature, or “candid”, camera. Color transparencies add interest and realism, and are fairly inexpensive (about \$5.50 for a 36-exposure roll, including developing. For indoor shots allow 13¢ apiece for flash bulbs. The cost per picture is thus about 28¢). Black and white is somewhat less costly

# 3

## ORGANIZE SLIDE SEQUENCE...

Select the finished transparencies that best illustrate your story and arrange them in order, with each slide in correct position for insertion in your projector (upside down and with the dull side facing the operator). Then place a sequence number in the upper right corner of each slide. By keeping these numbers in that same position as slides are inserted, you will avoid getting slides in upside down or backwards.



**ADDITIONAL  
TIPS ON  
STEP  
NUMBER 3**



An easy way to number slides is to ink numbers on white paper which is fastened in place with "Scotch" Cellophane Tape.

You can instantly detect a slide that's out of sequence if you ink a diagonal line across the tops of the slides.

Your pictures are returned from the processor, mounted in cardboard frames, ready for projecting. However, if they are to be used a great deal, your photo dealer can bind them in glass for your protection.

## ARRANGE RECORDING SESSION

Assemble 3 to 4 key company people who are familiar with the process you are describing. Give assurance that an informal atmosphere will be maintained. *No advance preparation or script is necessary. Emphasize the recording session will be fun.*

Group discussion panel around table. Have your equipment ready: projector and screen set up; slides in order, ready

to be screened, tape recorder plugged in with the microphone in a central position. Each person should be seated so that he will talk into the microphone with the same approximate volume level—18 to 24 inches from the microphone. The microphone should be set on padded material to deaden distracting room noise, scraping of feet, etc.



ADDITIONAL  
TIPS ON  
STEP  
NUMBER 4



Your tape recorder should be equipped with a “hold switch” or foot control so that you can start and stop the recording instantly. This enables the average person who is not a public speaker to start and stop at will.

Check in advance to be sure the tape recorder microphone is placed where it will pick up all voices well.

Screen the slides when your people are assembled and organize their commentary.

# 5

## RECORD THE COMMENTARY...

As you flash each slide on the screen, ask the experts present to explain the operation shown. Discuss carefully what to say and who will say it. Then record their remarks. The experts should be encouraged to interrupt one another, maintaining a relaxed roundtable atmosphere. Let one person serve as commentator or moderator to identify speakers and keep the talk moving. *In order to keep the commentary conversational no scripts are used.* The only advance preparation that may be necessary is the gathering of technical data or exact figures.



ADDITIONAL  
TIPS ON  
STEP  
NUMBER 5

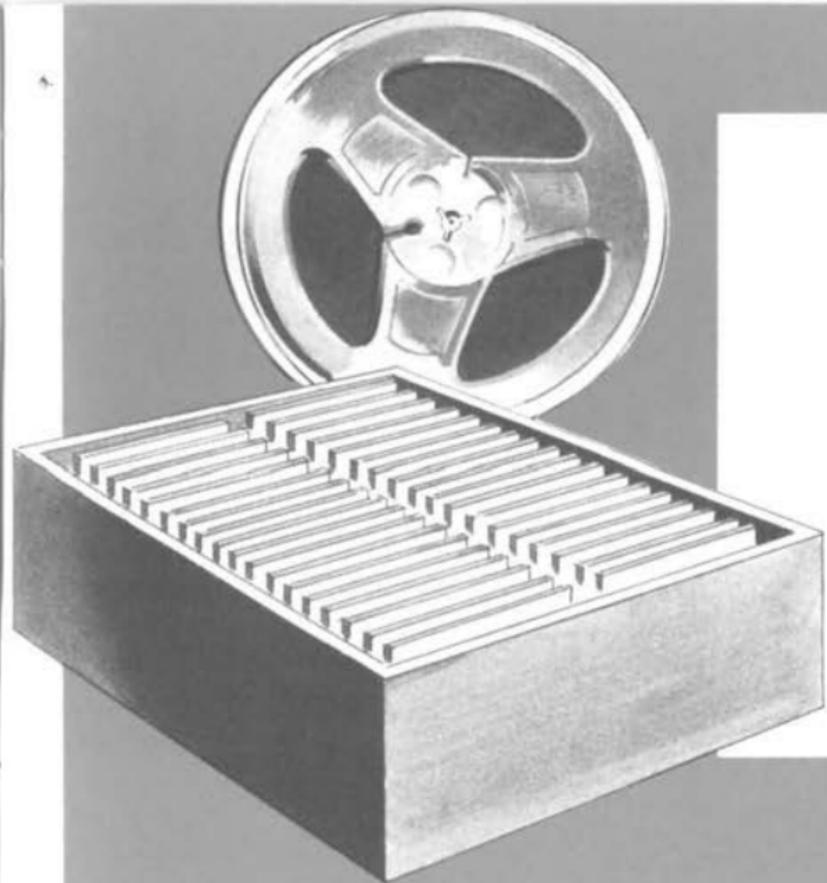


Listen back to the commentary covering each picture before proceeding to the next slide. Remember that tape recording, with instant playback and erase features, enables you to go back and re-record any part of the commentary (each recording automatically erases the preceding one). Remember, too, that with a pair of scissors and "Scotch" Splicing Tape No. 41, you can quickly remove any undesired portion of the finished tape.

Keep the commentary flowing and con-

versational. It is better not to work from a script in this type of presentation. Remember to record "change-slide" signals; merely ring a bell, press a buzzer or snap a toy cricket.

Additional copies of the slides can be obtained through your photographic dealer. You can make your own duplicates of the recording tape or you may have it professionally duplicated. For a listing of firms in your area commercially duplicating sound recording tape write Minnesota Mining & Manufacturing Co., St. Paul 6, Minnesota.



**Now your slide-film presentation is completed**

In a small bundle of slides and a compact reel of "Scotch" Brand Sound Recording Tape you have a program that gives each viewer an intimate look at the process being described. The presentation itself will have a relaxed atmosphere. Actually it will get its ideas across more fully than a smoothly polished, rapid-fire production. The informal nature of this method enables the commentators to provide bits of background information and unusual details that add much to the effectiveness of the presentation.

A  
WORD  
ABOUT  
COSTS

Your presentation can be made as elaborate or as simple as you wish. By taking all pictures yourself and using plant personnel as models, you can keep the entire cost of the production under \$20, including enough 35 mm. color film to take pictures and a full half-hour reel of "Scotch" Brand Sound Recording Tape.

Remember, all equipment purchases required can be treated as capital expenditure from a tax accounting standpoint.



Tape Recorder

Candid  
35 mm. Camera  
with  
Flash Bulb  
Attachment



*Here's the equipment you'll need...*



SCOTCH  
Sound Recording  
Tape



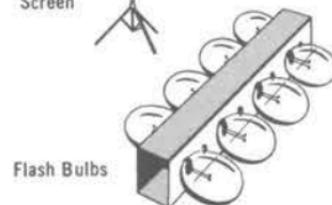
Slide-Film  
Projector



Film



Screen



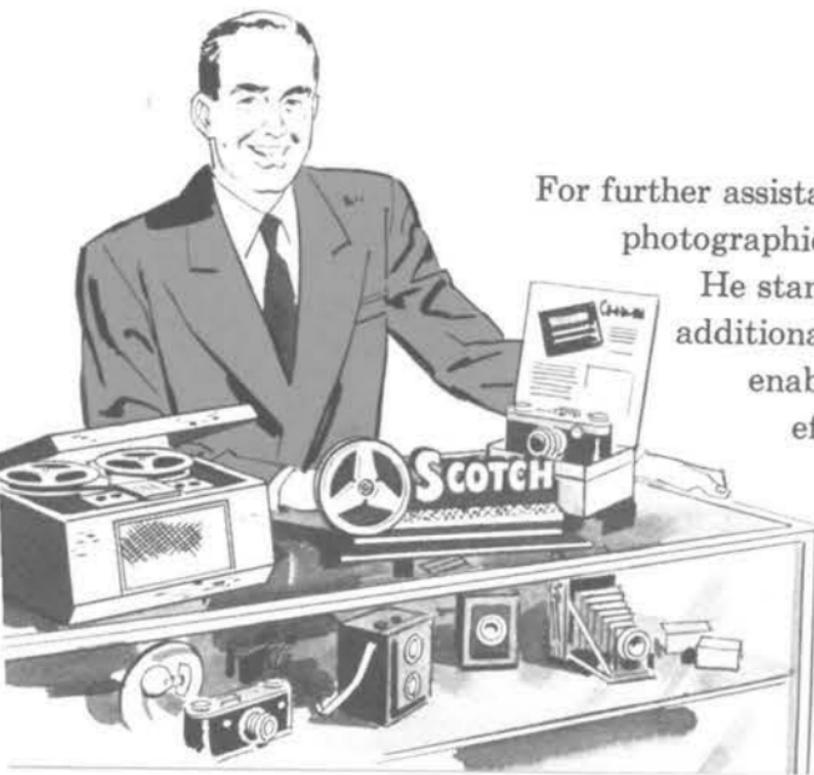
Flash Bulbs

**ADDITIONAL EXPENDITURES THAT  
ARE WORTHWHILE INCLUDE**

**SOUND EFFECTS**—Your local record store or radio station can furnish you with stock recordings that may be dubbed onto your tape sound track. Or you may wish to add a musical background to some parts.

**TITLE CARDS**—Impressive-looking artwork is always a good investment.

**TEXT SLIDES AND DIAGRAMS**—These are most useful when the subject is a technical one or the audience is unfamiliar with it.



For further assistance and help, see your local photographic or audio-visual dealer

He stands ready to offer you any additional assistance needed to enable you to produce your own effective sound slide-films.

*For faultless  
sound reproduction,  
always insist on*

MADE IN U.S.A.  
**SCOTCH**  
BRAND  
**Sound  
Recording  
Tape**

Professional sound recording engineers use more "Scotch" Sound Recording Tape than all other brands combined. Here's why:

- Lower noise level than any other tape.
- Greater sensitivity, better uniformity than any other tape.
- Erases cleaner than any other tape.
- No curling or cupping—always lies flat on recording head.
- Lubricated for longer head life.



per reel if no unusual complications are involved, if it is to be produced by a unionized and reliable organization with a reputation of doing a professional piece of work. With this figure as a base he can estimate that his two-reel black and white job will cost him between \$20,000 and \$40,000. Once the script is approved he will have a much more reliable estimate. If the picture is to be produced in color add 25%.

Cost estimates for slide films involve some of the problems estimating motion pictures costs. Usually the cost is direct relation to the number of frames in the strip. The following scale of prices are fairly accurate: black and white frames, \$15 to \$30 each, silent; add \$5 per frame for sound narration; add \$10 to \$20 per frame for color.

Contractual relationships for pictures are usually on the following terms:

- 25% payable on signing contract
- 25% payable when script is approved
- 25% payable on delivery and acceptance
- 25% payable when photography is completed

The sponsor should be sure that his contract includes a clause that gives him ownership of original negative, and that adequate liability insurance clauses are included.

Mr. Dephoure, of the Dephoure Studios, Boston, Mass. said that there are two methods he uses to figure costs on films:

1. Daily basis, - where the crew go out on a job, and labor, material, and "know-how" are charged on a time-spent-in-productions basis.
2. Flat price. Mr. Dephoure goes to the company, and after looking over the subject and situation thoroughly, he gives a flat price for the whole job.

There seems to be a trend, according to Mr. Dephoure, for the

sponsor to do all the photographic "shots" and write the script; then Mr. Dephoure "dresses it up" by adding sound trap, title, editing it and any other minor work to be done, for about \$300 to \$800 per reel. The Dephoure Studios do all types of films such as medical, documentary, public relations, and television at costs from \$3,000 to \$50,000, and over. Mr. Dephoure said that he had been in business over twenty years, and that every customer he had made a film for has returned to him for a revision or a new film. Ninety-five per cent of Mr. Dephoure's pictures are done in color and sound. Color films cost about one-third more than black and white, according to Mr. Dephoure. The Dephoure Studios make films in several languages, and some films they made have gone around the world. This studio makes films for such companies as Dewey and Almy, Westinghouse Electric Company, General Electric Company, Salvation Army, First National Stores, and many others. The average number of prints per film is usually ten, but they have made as many as one hundred prints for sponsors. The Dephoure Studios have five people on the regular staff as technicians, and then they have two artists on "call" when they need their services.

#### 1. Life of Film

People living in the year 4000 may be able to see and hear today's history in the making through the film media. Although a Hollywood chemist estimated the maximum life of a motion picture film at twenty-five years, government scientists said no apparent limit has yet been found. The Bureau of Standards recently completed "accelerated aging" tests which films in six months went through effects of fifty years storage in a cool, dark room. These tests showed that cellulose, or explosive films would last from fifty to a hundred years. The never safety

or acetate films may be preserved for much longer periods, unofficially the scientists put the life of a film "several hundred years".\*

1a. Film Maintenance Cost

Increased use of 16 mm film has brought into existence hundreds of new film libraries. Those responsible of maintenance and supervision of these libraries are extremely interested in maintenance costs of 16 mm films over an extended period of time. At institutes, conferences, and workshops the question often arises: "How much does it cost to maintain a 16 mm film in satisfactory condition over a period of from five to ten years?" An answer to this question also makes it possible to plan amortization schedules, including the original cost and maintenance expenditures.

The Audio-Visual Center of Indiana University has maintained an accurate inspection record of all films accessioned after July 1, 1942. Recently it was decided to make a study of all prints of films purchased during the fiscal year of July 1, 1942 to June 30, 1943, to determine the maintenance costs of all those prints that were still in active use. Of the 282 prints purchased during the period between July 1, 1942 and June 30, 1943, 192 prints were in continuous circulation till July 1, 1950. Accessioning print control, inspection and booking cards were studied and analyzed for each of the 192 prints. By checking the book-keeping records for each of the 192 prints it was found that they were used a total of 18,149 days for an average of 94.5 days per print.

Eighty-three of the 192 prints were damaged to the extent that replacement footage was needed. One hundred and ten different replacement parts were added, requiring a total of 5,264 feet of replacement film.

\*15, P. 10

All of the films except one were black and white. The cost of replacement parts amounted to \$476.36; the average cost of replacement footage per print amounted to approximately \$2.50.\*

Although this preliminary study is in no way conclusive, it does indicate that for this particular group of prints maintenance costs for replacement footage alone amounted to approximately \$2.50 a print over a seven-year period. It is assumed that replacement costs will vary, depending upon these variable factors: (a) the number of bookings per print; (b) standards of maintenance; (c) comparative number of black and white and color prints; and (d) the cost of replacement footage.

#### 1b. Film Wear and Tear

One of the most important factors influencing the maintenance cost of 16 mm films is the care given the films during the period they are used by the customer. Each film library has a responsibility of keeping its prints in the best possible condition. To do this requires a systematic inspection of each print each time after it has been projected.

Recently a detailed study was made of all film damages that occurred during a full year of operation. As a result of this analysis it was possible to study the factors which brought about the film damage, and to chart a course of action in attempting to decrease future damages.

A few of the damage types are listed below:

1. Chipped sprocket holes.
2. Teeth marks between sprocket holes, tears into frame.
3. Teeth marks on sound track.
4. Chipped sprocket holes, tears into frame.
5. Teeth marks between sprocket holes.
6. Chipped sprocket holes, single breaks to edge film.
7. Teeth marks between sprocket holes, single breaks to edge of film.
8. Chipped sprocket holes, teeth marks between sprocket holes.
9. Nicks on frame side of sprocket holes.
10. Teeth marks in frame.

11. Tears into frame from sprocket holes.
12. Teeth marks in frame and on sound track.
13. Chipped sprocket holes, nicks on frame side sprocket holes.
14. Chipped sprocket holes, teeth marks in frame.
15. Chipped sprocket holes, pleats across frame.
16. Missing footage.
17. Teeth marks between sprocket holes on frame.
18. Claw marks between sprocket holes.
19. Film broken across frame in many places.
20. Pleats across frame.
21. Single breaks from sprocket holes to edge of film.
22. Chipped sprocket holes, teeth marks on frame between sprocket
23. Buckled film. (holes.)
24. Breaks from sprocket holes toward edge and toward frame.
25. Sprocket hole edge of film snagged at intervals.
26. Nicked in outside corners of sprocket holes.
27. Edges of film pinched.
28. Sprocket hole edge of film shaved off. \*

The damage of teeth marks on sound track is no longer as serious as in former years. This may be due to increased use of silent projectors or the amount of training given to projectionists. Attempts have been made to include leaflets with film shipments warning the user of the consequences of threading sound film into silent projectors.

Were it not for the constant practice of keeping each film provided with a five-foot leader and credit title of appropriate length, the reported damages would be much more numerous. On many occasions various films were saved from damage by the fact that the leader and credit title served as the necessary margin of warning to the operator to stop the machine when the film did not feed correctly. Evidence seems to support our contention that the training of projectionists is not done systematically. It appears that every year October and February are the periods of greatest relative film damage from schools. During these months new operators are assigned to serve as projectionists. Many damages suggest that the operator did not understand the proper threading of the film. Failure of proper loop formation, for instance, accounted for many of the numerous damages at the beginning of films. It is deemed

advisable to assign to each projector one lone hundred-foot roll of practice film, so that each projectionist has an opportunity to practice prior to the use of the films. On the basis of the total number of films circulated it is impossible to predict with any great degree of accuracy how many damages to expect during a given month.

Although eight-hundred-foot films comprised approximately 26% of the prints in the University library only 17% of the partial damages and 17% of complete damages were in eight-hundred-foot films, which helps to support the belief that these require proportionately less maintenance time.

## 2. To Show

After you have selected your film subjects you must next make certain that you will be able to secure them whenever you will need them. Motion pictures are distributed on a closely integrated schedule, whether in the theatrical field or the 16 mm circuit. For this reason films must be scheduled well in advance.

In order to obtain a film booking you will usually need to take several very definite steps:

1. Decide for what date or dates you will want the motion picture.
2. Determine possible alternate dates if your first choice is impossible.
3. Look up sources for the film you want, and decide which source to try first.
4. Apply for your booking date, giving information on any alternate dates you will accept.

Suppose you want National Association of Manufacturers film "The Price of Freedom". You may find from a catalog or from your local film information center that it is available from five sources as fol-

lows:

1. The NAM's motion picture department in New York--free loan or sale.
2. Your nearest NAM regional office--free loan or deposit.
3. Your state manufacturers association--free loan.
4. Your State College film library--rental charge \$1.50 per show.
5. Your local film library--rental charge \$2.50 per day.

Local film libraries are either commercial libraries, frequently conducted by visual education dealers, or non-profit libraries conducted by school systems, colleges, public libraries, religious organizations, and business associations. Rental fees range from 50¢ to \$3.50, or in some cases higher. These charges are usually justified by the expense they incur, and the value to any community of having such a library handy.

John Ladd Visual Service, on Stuart Street in Boston, is a typical rental library. This service is affiliated with the national concern Modern Talking Pictures Service, Incorporated of New York. This national company has 30,000 bookings a month, and covers five New England states. Companies such as General Electric, Westinghouse, and New England Telephone and Telegraph Company use the John Ladd Visual Service, and they are guaranteed an audience of 150 to 175 per showing. International Business Machines recording records, in New York, keep accurate customer reaction and total audience attendance. The Ladd Service is reimbursed from the New York office according to the number of people seeing the films. For instance, Monsanto Chemical Company's film "Decision for Chemistry" has been in general distribution only since September 1953, and the cost per booking through Modern Talk-

ing Picture Service is \$2.70, and total bookings to date 860, or total cost of about \$2,322.

In some cases you will not be able to secure a print when you want it, either loan or rental. In this case you may:

1. Have a substitute in mind which will be suitable, or
2. Consider purchasing a print.

Not all films are for sale, of course, nor will it be practicable to purchase a print unless you will have more than a single use for it.

You might consider purchasing a film:

1. If you need it for a series of showings over a period of weeks or months which will justify the cost.
2. If you anticipate meetings where you will like to use it at irregular intervals, or meetings which cannot be scheduled in advance. In either case a distributor would not be warranted in extending you a free loan for the period you want it.
3. If you want to present the film to a local non-profit film library operated by a school system, a business association, or club.

It is difficult to describe a film fully in a catalog or in promotional material, so it is wise to preview a film before purchasing it. You can usually secure a sale print on approval.

Industries such as the Ford Company, Shell Oil, Raytheon, New England Confectionery Company loan films out to schools, clubs, and business organizations, if they will pay the postage one way (usually return). These industries are interested in the name of the organization showing the film, number of times it was shown, total number in the audience, condition of the film, and, most important, audience reaction. Advertisements in magazines, and flyers, are two frequently used methods of promoting the film by the sponsor.

## 2a. Projection

Up to now, perhaps you have found your local audio-visual equipment dealer very helpful. He has been glad to take the details of any projection off your mind. Perhaps you have a film library which is a convenient source of films, but now, with your more frequent use of film equipment, you may decide that you should have your own equipment handy for whenever you will need it.

Assuming you have purchased the equipment you need, - who is going to run the projector? Projection is the most important aspect of picture making and picture use. A film is certainly of little value if no one sees it, and it can be damaging to the sponsor's reputation and promotional hopes if it is poorly projected. Every reasonable precaution should be observed to insure projection success. If you are really embarking on an extensive program of motion picture use, a trained projectionist is a great help and will relieve you of many details of arrangements. He can leave you free to concentrate on larger program problems.

The projectionist can also relieve you of many details of handling the projection equipment. The projectionist should have his equipment set up in the room far enough in advance of scheduled meeting to test thoroughly. Although the care and handling are easy to learn, 16 mm motion picture projectors do require modest regular attention. They should be stored in a closet or other dust-protected place. They must be cleaned, and adjustments must be checked to avoid film damage each time they are used. Finding a projectionist should not be difficult. In your organization there is probably a 16 mm hobbyist who will

be glad to add this to his new field of endeavor.

When you find your projectionist let your equipment dealer instruct him. Provide him with an "Audio-Visual Projectionist's Handbook". Make him responsible not only for the equipment, but for all physical details of putting in a show, - the arrangement of the room, placement of speaker and screen, choice of lens, and checking the film.

As your use of films increases some one will have to keep the records straight to avoid conflicting dates for the same film. Some one will have to check film prints in and out, check their condition, find out details of where and when showings are to be made.

## 2b. Projection Equipment

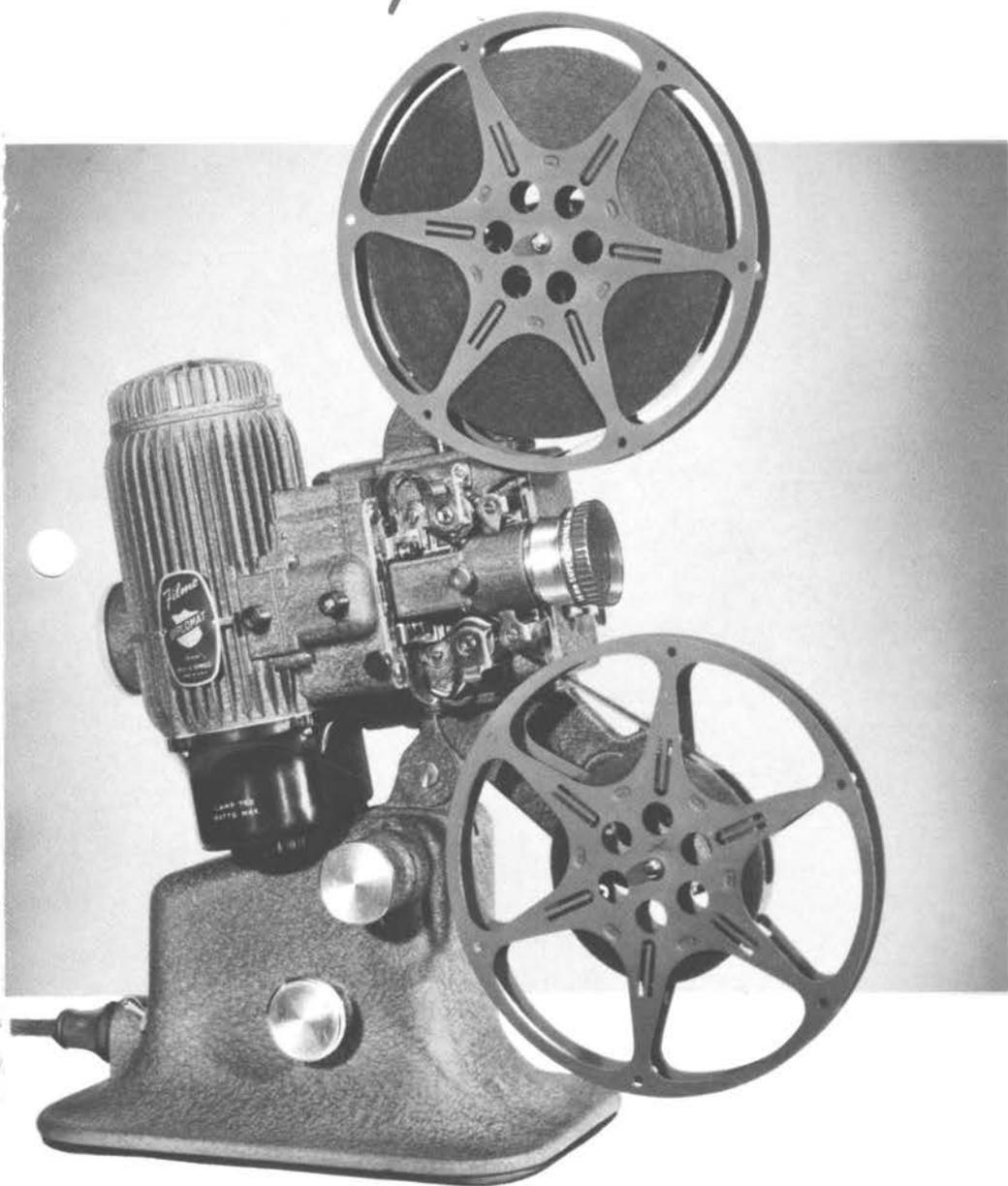
### 1. Motion Picture

Film projection equipment varies all the way from the giant interlocked 35 mm theatrical motion picture projectors, as installed in Radio City Music Hall, to slide viewers for children. This range includes portable carbon-arc 16 mm motion picture projectors, "regular" 16 mm sound-on-film portable projectors of 1000-watt, 750-watt, or 500-watt power; silent motion picture projectors, both 16 mm and 8 mm, sound slide film projectors, silent slide film projectors, glass slide projectors, and models that combine all three. The most commonly used motion picture projector is portable and has either 500 or 750-watt power, and the most commonly used slide film projector is a combination unit.

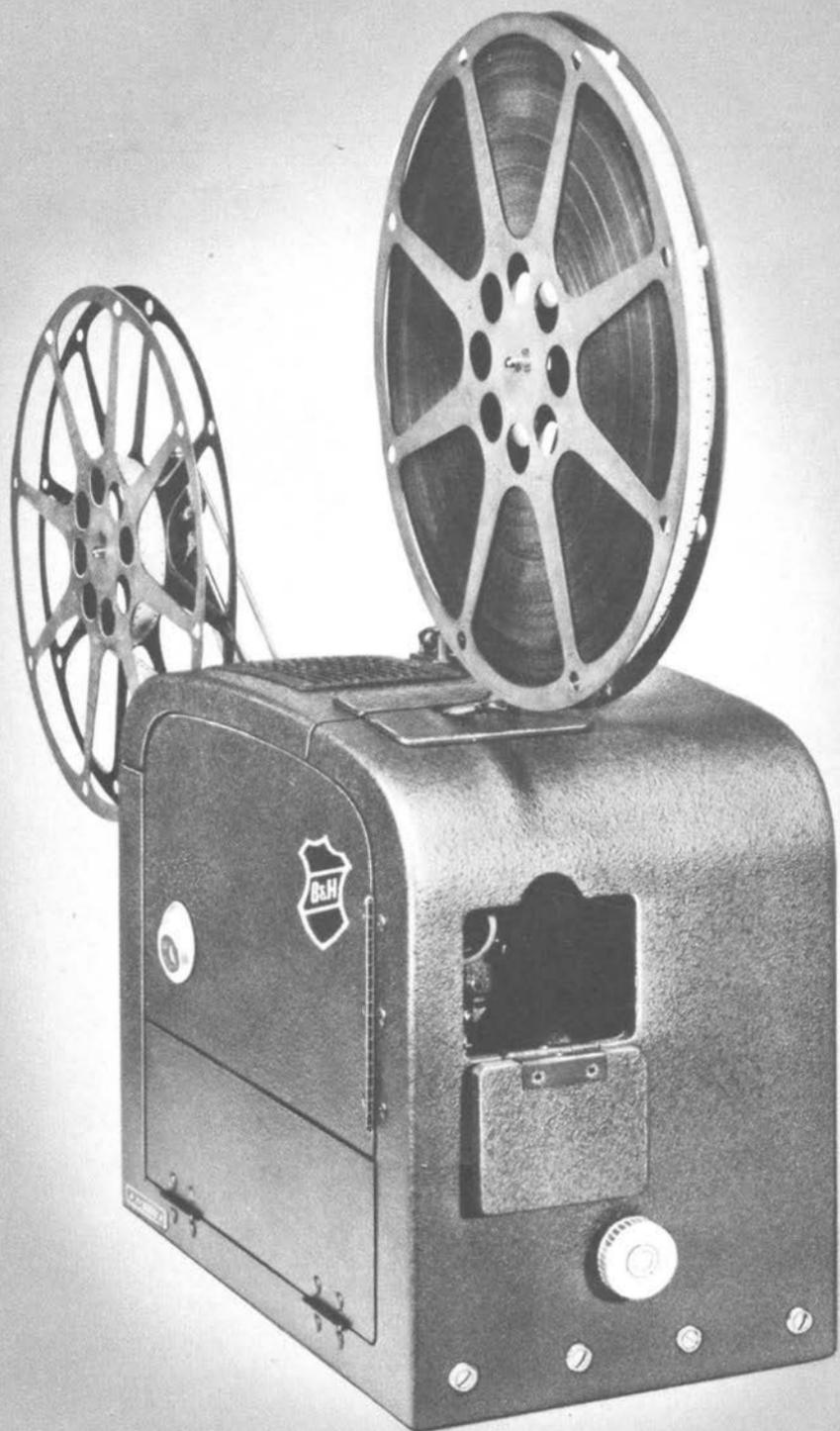
Most modern 16 mm motion picture projectors will accommodate up to 1600-foot reels, and some models will take up to 2000 feet and thus can project a continuous show of forty-five minutes length. They are readily portable, their operation can be learned in a few minutes. They suffice for audiences up to 300 or 400 people under reasonably good pro-

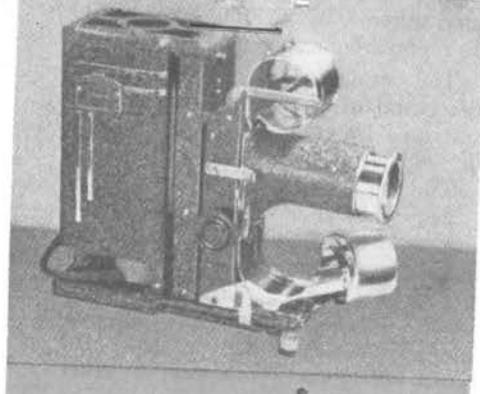
**Bell & Howell**

# *Diplomat*



Easy to operate, compact and lightweight, the Diplomat 16mm projector is ideal for home use. You can enjoy a full quarter hour show without interruption, your pictures always projected at their brilliant best. Smooth, dependable operation with greatest protection for your film is assured with the Bell & Howell Diplomat.





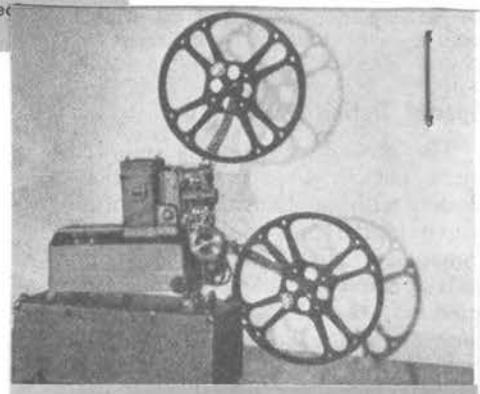
Slide-film projector.



Glass slide and opaque projector.



Sound slide-film projector.



Slide-film projector.

jection conditions. Alternating current and direct current models are now available, which make converters unnecessary. Many also feature dual speeds for projecting both sound and silent film. Although any of the better makes of 16 mm sound motion picture projectors will undoubtedly "throw" a picture and perform satisfactorily, and most of them are in a price range that averages \$500. There are a number of points that should be investigated by a prospective purchaser who has a definite problem to solve, or at least a fairly definite method-of-use pattern in mind.

One question might be: Is the projector to be moved by a salesman practically door-to-door every day, or is it for use in a semi-permanent location? Some lines now contain very light weight models featuring aluminum housing and cases, but usually they have less power and flexibility than heavier models. What is the average size audience likely to be? Will the machine get hard or relatively little usage? How carefully will the machines be maintained, and who is going to do the maintaining?

The price range for silent movie projectors is approximately \$290 to \$315. Radio Corporation of America manufactures two models of 16 mm Projectors, the 400 Senior and the 400 junior. Both projectors are designed for use with either sound or silent film. The Senior is a two-unit model with the projector in one case and the speaker in the other. The Senior sells for \$560 retail, but can be purchased at \$319.20 for use within the company. The 400 Junior will not compare with the Senior, but is very satisfactory for small groups. It is a single case model which sells at \$475 retail, and can be purchased for \$270.75 for use within the company. Other machines are manufactured by

Bell and Howell Company, DeVry Corporation, and Eastman Kodak.

## 2. Slide Projectors

There are a great many different makes and models of slide projectors on the market today. However, many of the different makes have comparable features. For instance, most makes are available in sound and silent models, and most makes are available with or without cooling fans. Many models also can be operated effectively in a semi-darkened room, and some operate well in a normally lighted room.

The American Optical Company and the Society for Visual Education Incorporated make models which will project single and double-frame film strips and 2 x 2 slides. These models range in price from about \$67 to \$175, depending on model and lens. These prices are exclusive of sound equipment. Other 2 x 2 silent projectors are available approximately from \$30 to \$105. Other silent filmstrip projectors can be purchased from about \$40 to \$100.

The Selectroslide, manufactured by Spindler and Sauppe, is a 2 x 2 projector with several important advantages. This machine has a magazine which, when loaded, can be set to change automatically at a given time, or can be changed by remote control with a push-button switch held in the hand. These features allow the speaker to stand in front of the room and face his audience. The remote control feature is also used on at least one other slide film projector made by the Dunning-color Corporation. This projector is called "Animatic" because the speed with which the frames can be changed creates a resemblance to motion pictures. The "Animatic" comes in two models, priced at about \$170 and \$200.

Another unique feature is the automatic frame changer on two

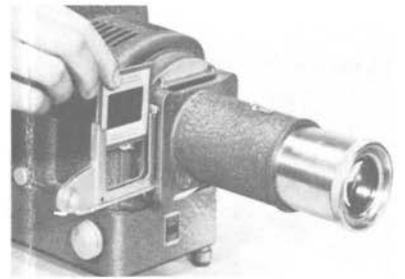
2" x 2"

SLIDE PROJECTOR

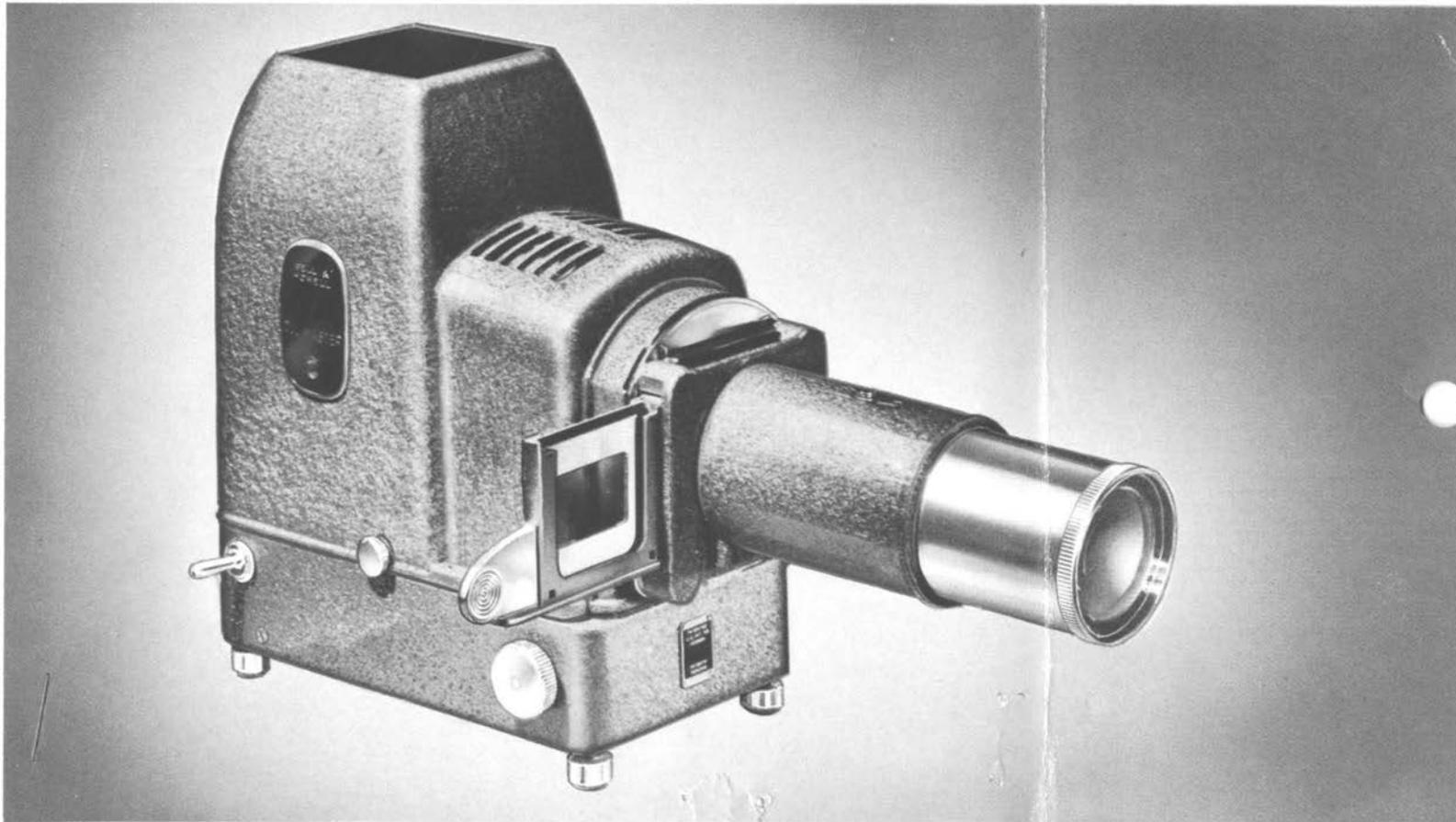
**Bell & Howell**

# Duo-Master

The Duo-Master features sharp, bright, uniformly illuminated slide projection. Sturdily built, but lightweight for easy portability. Handsomely styled, with brown crinkle finish and satin chromium trim. Accommodates glass or paper mounted slides.



● **Easy to Use**—Quick focusing, loading and removing of slides. Operator can concentrate on oral presentation of subject matter. Accurate slide placement always.



of the sound slide models produced by the Operadio Manufacturing Company. The picture on these models changes automatically from an inaudible signal on the record. The price range of these models is approximately \$180 to \$260.

The Vu-Graph is a variation of the slide projector with several advantages. The Vu-Graph works on an overhead projection principle and can be operated at a distance of four to six feet from the screen. This allows the speaker to face his audience and operate the machine. In addition drawings, printing, or calculations can be made on plastic sheets and projected on the screen. These sheets will appear on the screen much the same as a blackboard is used. The projection can be either in black on white, white on black, or in color. The Vu-Graph has the added advantage of use in a room with ordinary lighting. An attachment can be purchased for the Vu-Graph to project slidefilms or 2 x 2 slides. The price range on the models of the Vu-Graph are about \$260 to \$285. The Vu-Graph is made by the Charles Bessler Company, 60 Badger Avenue, Newark 8, New Jersey.

### 3. Accessories

Projection screens are manufactured in two basic designs, the tripod and the hanging models. The tripod type is available in models from 30" x 40" to 72" x 96". The price range on the tripod model is from about \$15 to \$95. The price on the 60" x 60" screen is around \$45. The hanging models are available in sizes from 30" x 40" to eighteen feet square. The price range is from about \$11 to \$275. The price on a 72" x 96" is around \$70. The leading makes of screens are the Radiant and the Da-Lite. Either of these screens can be purchased from most projection equipment dealers.

Electric pointers are an interesting accessory for all still projections. The speaker holds the electric pointer in his hand and projects an arrow or circle of light upon a screen, chart, or semi-dark room. With the pointer the speaker can focus the attention of his audience on any portion of the screen without moving. The pointer is available in at least three models. One of the models operates on 110 volts. A second is smaller in diameter, and about 17" long. It operates on pen light batteries. The prices of these models are about \$35 and \$25 respectively, and are made by the Algonkin Company of Mansfield, Massachusetts. A third model operates on ordinary flashlight batteries. This is distributed by Williams, Brown, and Earl Company of Philadelphia, Pennsylvania.

### 3. Cost Total

#### Estimated Cost per Showing

1. A quick and simple way to estimate probable approximate attendance to be attained by an average distribution program for industrial sponsored pictures circulated through theatres is by the following this tabulation of average attendance:

<u>Number of Theatres</u>	<u>Average Attendance per Theatre</u>
First 1000	2000
Second 1000	1600
Third 1000	1200
Fourth 1000	900
Fifth 1000	600 *

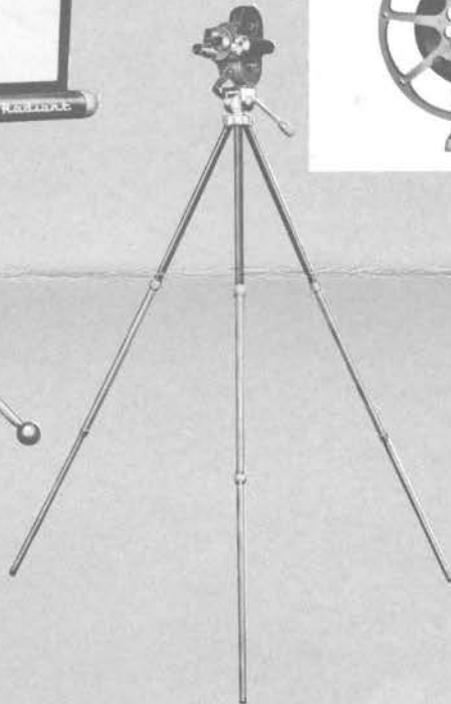
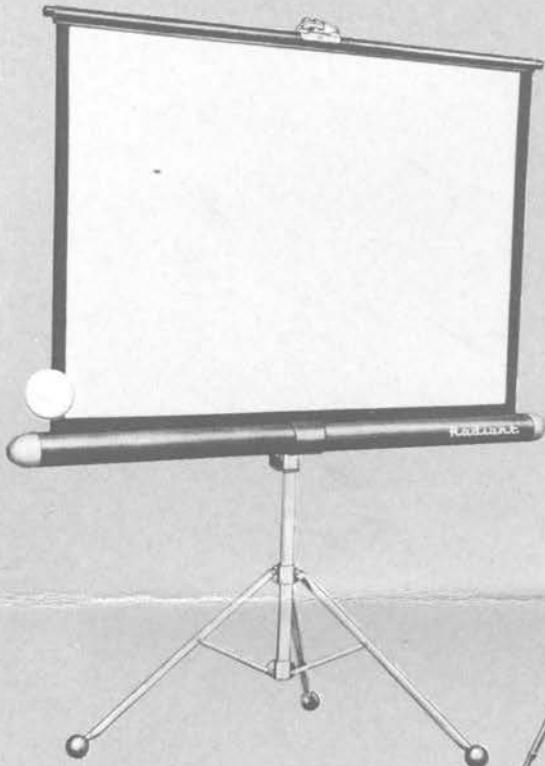
The cost of theatrical distribution for this type of picture is not excessively high. It varies, of course, theatre by theatre, but will average about one-third to one-half cent per person in the audience. The theatre's own accounting of the number of people who paid admissions during the "play date" must be accepted. However, a seating capacity

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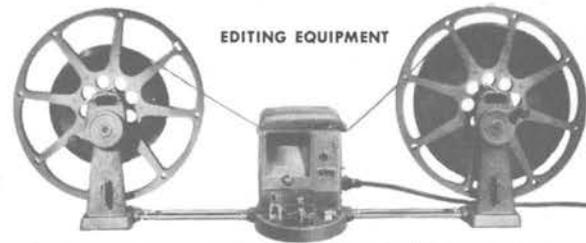
# Bell & Howell

# Accessories

Designed to permit you to extend your movie-making adventures into fascinating new fields, Bell & Howell accessories are built to the same high standards as B&H cameras and projectors. A complete line of lenses, lens caps, filters, cleaning materials, focusing devices, tripods, screens, film reels and cans, carrying cases and editing equipment is available. Bell & Howell camera and projector accessory catalogs are yours for the asking at your B&H dealer



FOCUSING DEVICE



EDITING EQUIPMENT



ACCESSORY CAMERA LENSES



ACCESSORY PROJECTION LENSES



REELS AND CANS



CANDID AND COMBINATION CARRYING CASES



AUXILIARY SPEAKERS



PROJECTION LAMPS

of theatres is reported to industry trade papers, and it is a fact that a theatre must sell eight times its seating capacity per week to stay in business, so the advertiser knows his production was seen by at least eight times the seating capacity of the theatre in which it appeared. Usually a print will "play" a theatre  $2\frac{1}{2}$  days to one week, and average six to seven showings daily. It is then returned to the local exchange where it is cleaned and checked for possible damage, and then sent by that exchange to the next theatre.

It is unlikely that a sponsored picture will appear on the screens of many "first run" or premier theatres. However, one representative of 8000 first run theatres will accept industrial pictures running from one minute to eight minutes if the subjects meet typical theatrical standards. This organization can deliver from 25,000,000 to 40,000,000 total audience at a cost of  $1\frac{1}{2}$  cents per person, billing strictly based on box office receipts to prove attendance figures accurate. The cost is from \$10 to \$15 per thousand, depending on number and location of selected theatres.

The average theatre audience before which sponsored subjects may appear will be made up of approximately 54% female and 46% male, the proportion of children running as high as 30% at some performances. Average theatre attendant's age is 19 plus, according to a Gallup audience survey.\*

2. Although motion pictures for non-theatrical distribution may run up to five or six reels it is wiser, if they are to be professionally distributed, to hold the over-all running time under a half hour, and not more than two and one-half reels, or about one thousand feet of film.

The twenty-minute to half-hour running time makes the picture sufficiently flexible to fit into almost any organized group program, whether it be school, college, church, fraternal, service club, or trade association lunch hour showing. The same length picture is also best suited for most luncheon and social group meetings.

There are several non-theatrical professional distributors of commercial motion pictures, including Modern Talking Picture Service, Incorporated, The Institute of Visual Training, Association Films, Incorporated, Castle films Service, and Jam Handy Organization. Although there are variations in their organizations they are all having the same objective, - to lift the burden of none-theatrical motion picture distribution details from the shoulders of the sponsors of films.

Of course, many manufacturers are in a position to distribute their pictures through their own organizations, but to outline the general pattern of professional distribution we will trace the progress of one print of one picture as handled by Modern Talking Picture Service, Incorporated.

The number of prints available will determine the total size of the audience reached and the speed of coverage. The average minimum would be 80, maximum 500 prints. Showings arranged through the exchanges and the home office currently run about 35,000 per month, which means that each print is exhibited about 3.5 times per month. These average about 200 school showings to every 100 none-school showings. Average cost per showing is \$2.50 if exhibitor has equipment, but if equipment and operator must be provided by the exchange charges start at \$17.00.

With the exhibitor's bill for exchange services rendered at

the end of the month the sponsor also receives a recapitulation sheet which lists bookings completed during the period. These figures are broken down by state, city, and town, and the number of men, women, boys, and girls who attended each showing.

A question frequently asked is: "What is the average attendance at a non-theatrical movie exhibition?" This is similar to asking "How long is a house", because audiences, like houses, come in considerably different sizes. It is, however, possible to average audiences. The average general non-theatrical audience for a motion picture showing consists of 113.6 people, and is made up of 56 men, 48.6 women, 12.7 boys and 1.3 girls.

To figure the cost of a film or other visual aid the following components must be considered: Cost of producing or renting visual aid, cost or rental of projection equipment, salaries of training staff in charge of visual education program, and loss of time by employees viewing films. Total this cost, and divide it by the potential audience during the life of the film; this will give you some idea of what it costs to reach each employee with your message. On a cost-per-person-seeing basis the Aluminum Company of America's picture "Unfinished Rainbows" the cost has been between one and three and one-half cents and one and three-quarters cents. "Unfinished Rainbows" has approximated ten million viewers to date (1954).\*

#### 4. Measurement of Return

After the prospective sponsor has received an estimate of the cost of his proposed film his next question is usually: "How can I be sure that I will get my money's worth?" This is even more difficult to

answer than the cost question. The opinions of many training directors have not thus far provided a measure of the effectiveness of films in terms of the dollar return from the investment necessary to use them.

Measuring the return of films depends on the purpose of the film. For example, indoctrination films may be designed largely to mold the attitudes, feelings, and emotions of trainees; system training films usually are designed to teach a procedure; merchandise training films present a series of facts and some supervisory sales training; and human relations films are designed to acquaint the trainee with certain existing problems, so that he will consider his actions in terms of these problems. Each of these general types of films needs a different combination of instructional techniques in order to gain the maximum returns.

In Chapter IV of this paper a good example of measurement of return is illustrated by showing how the scrap was reduced through education of welders at Raytheon Manufacturing Company. In the above same chapter the two control groups mentioned in the training of keypunch operators at John Hancock Mutual is another method of measuring the return.

The superintendent of safety of a large railroad stated that he is "thoroughly convinced that safety films are a satisfactory medium for conveying a desirable message quickly to a large number of employees, and we intend to continue this method of safety education."\* His opinion might be considered typical of those which other safety directors offered, and while these are "opinions" they seem to be convictions as a result of years of actual experience with films. In a subsidiary plant of a large steel corporation the film "To Live in Darkness" proved to be

useful. In this particular plant there had been a number of eye injuries, and the problem was to get employees to wear protective equipment. In the six months before the film was shown at their subsidiary plant there had been eight disabling eye injuries, including one loss of an eye and innumerable first aid cases. Following the showing of the film (in the first part of March 1948 until January 1949) not a single disabling eye injury occurred, and first aid cases on eyes were reduced about 60%. Undoubtedly luck had a lot to do with the reduction of injuries, although the safety director observed: "I am inclined to discount the factor of luck because it has been my personal observation that the men are more conscientious in the wear, care, and use of their personal eye protection." "If luck was a factor our good luck has certainly been coincidental with the showing of the film." \*

Another example of how films can help to obtain the desired results was related by another steel corporation. This time the problem was heat sickness. The corporation produced a motion picture to introduce the program that had been developed to combat heat sickness. The film was shown to employee groups to stimulate interest in the program, to initiate discussion of it, and to get employees to follow the practices recommended in the film which were designed to prevent heat sickness. The result of the program, which utilized also employee instruction booklets and posters, was a reduction of the cases of heat sickness from 2,575 in 1942 to 428 in 1947.\*\*

It should be brought out that favorable results were not obtained by use of films alone in the above cases; films were simply an important part of well-conceived programs. Few people would claim that

films should be used to the exclusion of other training media. The examples cited do suggest, however, that the addition of a film to a program may result in its success, whereas without it the response to the program may be only apathetic.

An example of the effectiveness of films in the discussion type of meeting is indicated by the experience of a west coast manufacturing company. The safety director of this company was concerned about the large number of accidents which were occurring in his plant. By March of 1947 the accident frequency rate had reached 17.4. The safety director thought that the most telling way to attack this high frequency rate was through the supervisors, so he developed a training course with the National Safety Council supervisory films as the foundation. A series of ten discussion meetings was planned, and extensive material for the use of the discussion leader was developed. The program was inaugurated on April 1, 1947 and was completed around the 15th of June of the same year. Following are listed the accident frequency rates in the plant following the course for foremen. In the opinion of the safety director, the marked reduction in accidents was directly the result of the supervisory training program.

<u>1947 Accident Frequency Rate</u>	<u>1948 Accident Frequency Rate</u>
January	8.4
February	4.1
March 17.4	2.7
April 13.4	2.0
May 12.1	3.2
June 9.9	2.7
July 8.9	4.7
August 8.1	
September 7.2	
October 6.5	
November 5.9	
December 5.5	*

Business sponsors of public relations films have generally measured the effectiveness of their offerings by two criteria: (1) quality of the film, largely based on their own opinion, or the audience reaction reports; and (2) quantity of audience. With this yardstick any picture which receives generally favorable reports from adult audiences or school teachers who fill out the customary forms, and which runs up a sizable audience, is usually conceded to have been an effective and successful tool in the sponsoring company's public relations program.

There are several fallacies in this system of measurement which have been apparent to most sponsors for some time, but it is still frequently offered as the best, or even only method of gauging a picture's value to the company. ("A million people saw it, and they all said they liked it.")

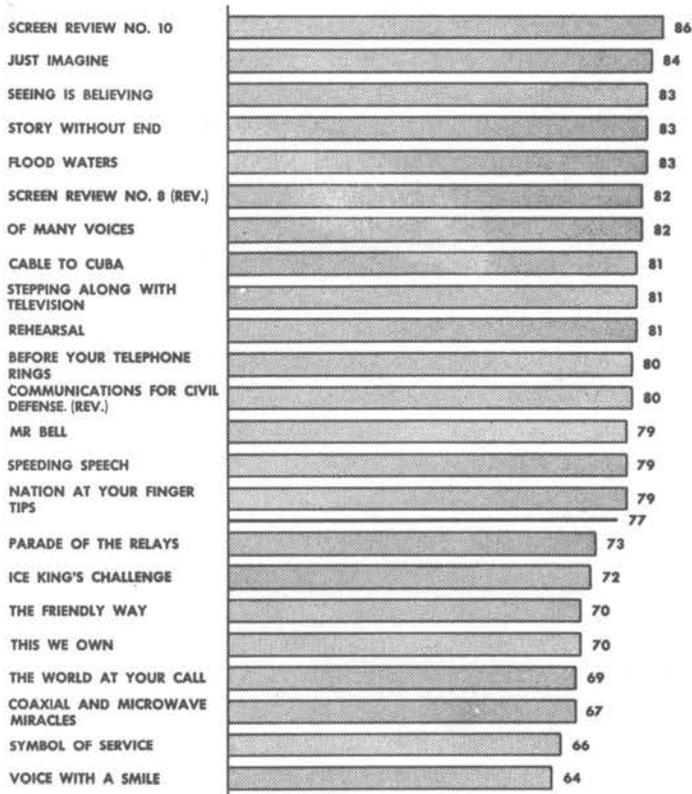
The methods of measurement used by other media do not apply in most cases to films. Film distribution is largely non-competitive in that the audience, once seated, may not register disapproval by turning a page or twisting a dial. Reaction reports sent in by the leader of a group may not be too reliable as an indication of the actual disposition of individuals in the audience to the film. It is possible that a seemingly "good" picture reaching a large audience is a boomerang doing more harm to the sponsor than good, despite surface evidence to the contrary. The problem of measuring audience reaction has been foremost in the thinking of many business film sponsors for some time.

One solution to a useful attitude measurement system, and perhaps the most extensive conducted to date, is the series of tests just completed by the Schwerin Research Corporation for the American Telephone

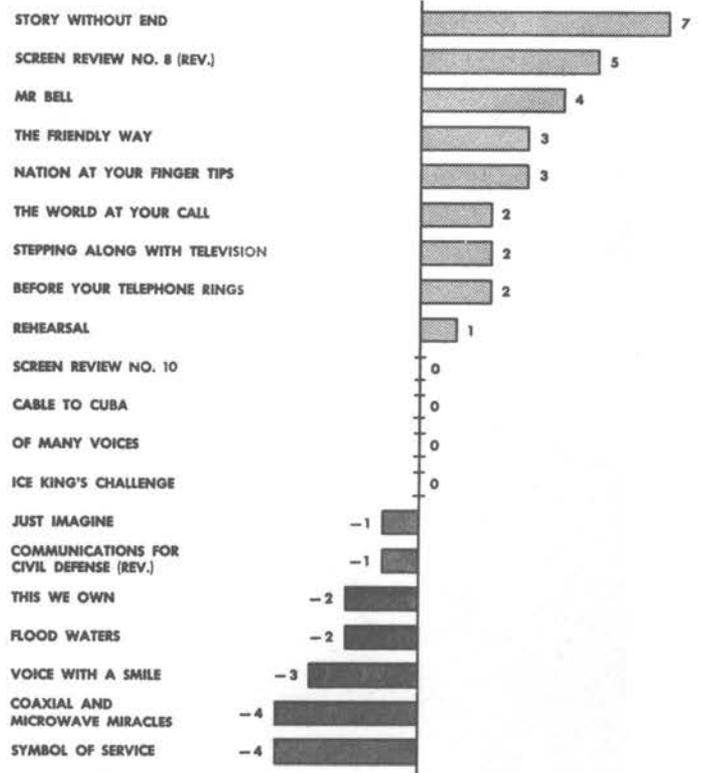
# Survey Results for Telephone Company

made by Schwerin

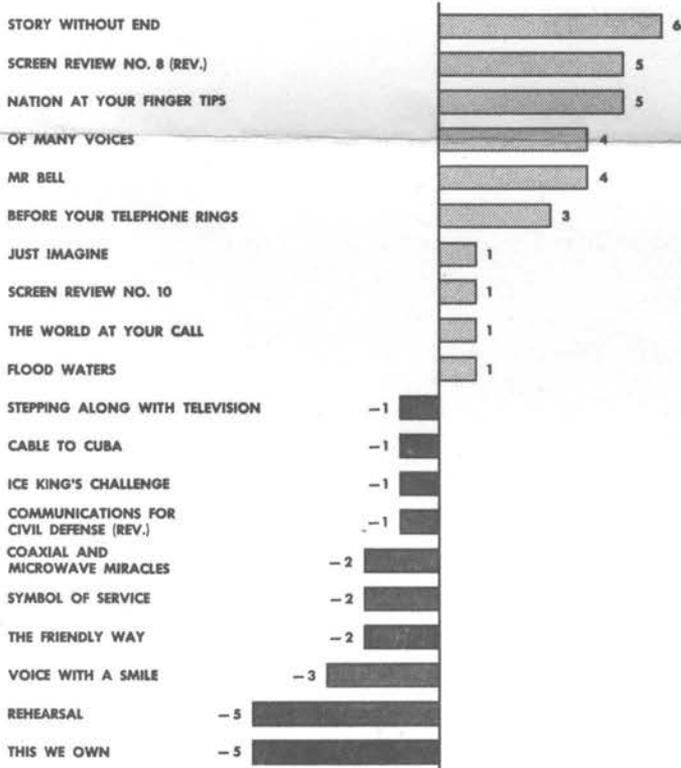
## INTEREST SCORES - BELL SYSTEM FILMS



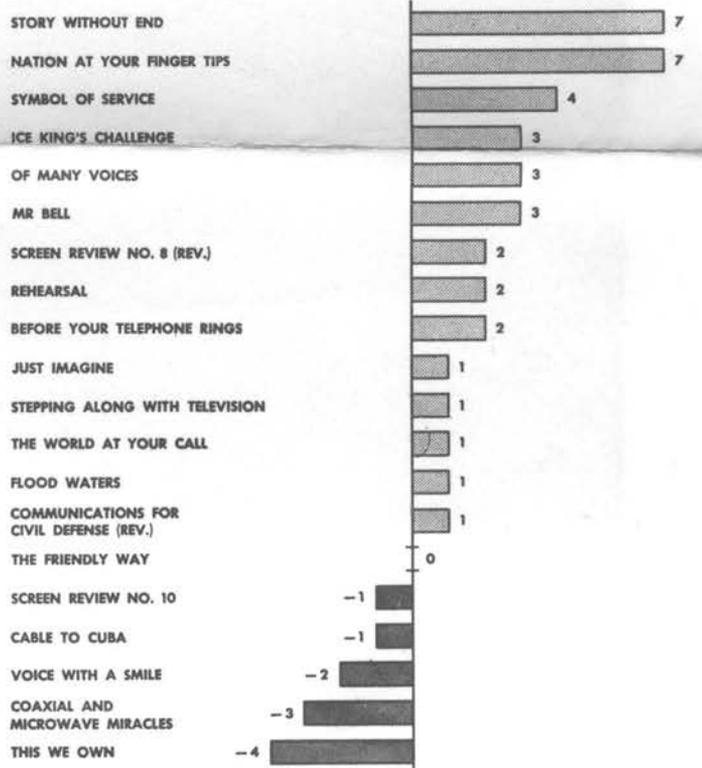
## COST ATTITUDE INDEX DIFFERENCES



## SERVICE ATTITUDE INDEX DIFFERENCES



## COMPANY ATTITUDE INDEX DIFFERENCES



and Telegraph Company. The Schwerin and the Telephone Company project was a joint undertaking to devise a sound methodological technique for the testing of films.

Two reports were made. One on four Telephone Company motion pictures, and a second also on four films, including one from the first group. In the first group were "Telephone Screen Review Number 8", "Before Your Telephone Rings", "Just Imagine", and "Rehearsal". These four films were each tested both in New York City and in Wisconsin rural communities to a total of about 8,000 persons. Reactions of urban and rural audiences were thus obtained and compared. One important result was the revealing of two unfavorable effects that otherwise would have gone unnoticed. In the case of "Screen Review Number 8" there was an increased feeling on the part of the audience that all the mechanical equipment shown in the film would cause loss of jobs among telephone company employees. An unfavorable effect created by "Just Imagine" was an increase in the feeling that the company was not doing all it could do to provide service for every one who wanted it, perhaps because the film showed a type of modern instrument that many viewers wanted but did not have.

Women liked the films better than men did, and older people liked them better than did younger adults. Other rural people liked the films better than farmers did.

The results of the second Schwerin report for the Telephone Company brought out the following findings about films tested: (1) The revisions made in the narration of "Screen Review Number 8" definitely made that film more effective than it was in its original version: (2) The most important effect of the changes was to create a favorable im-

pression regarding technological unemployment, since the films revised version made it clear that machines mean more, not fewer jobs. In general, the impression and attitude studies of these films revealed the extreme sensitivity with which films affect opinions. Inferences unpredictable in advance can be drawn from seemingly innocuous statements in the script, and can negate much of the favorable influence a film would otherwise have had. These findings underline the desirability of testing and whenever possible pre-testing such films.

The American Telephone and Telegraph Company has been working with various research organizations for several years in connection with the audience measurement testing of films. They have to date (November 27, 1953) tested about thirty films, and they feel that the lessons learned warrant continuing with the experimentations, according to Mr. E. Palmer of the Public Relations Department.

As a striking example of return on investment, if the Bell systems could, through instruction via visual aids to school children (which they are doing) decrease incorrect dialing by 1%, they would be able to save three million dollars a year.\*

Practically every sponsor sends along with his film, when it is requested by a group, a card asking for audience attendance, and also audience reaction. Analysis of these records could indicate trends in interest or disinterest. Also, continual or repetitious negative remarks could be a warning that possibly the film message is not serving the purpose for which it was designed. The fallacies in this system is that perhaps the group leader is not reflecting the attitude of the entire group when he records the audience reaction on the card.

Even though it is difficult to measure the returns of a film because of its intangible nature there seems to be some very good reasons, as illustrated, why films are considered profitable "tools" of management.

#### 5. Your Own Film - or Not?

At some given point you, as a manager or training director, may decide that there is no motion picture which does the job you want done, and therefore you begin thinking about making your own motion pictures, or sponsoring a film.

There are many questions to be considered before a decision to sponsor a film is to be reached, such as:

- (1) What do I want to accomplish by the proposed motion picture?
  - a. To inform people of something they don't know?
  - b. To provide them with an experience difficult for them to acquire otherwise?
  - c. To persuade them to an opinion or course of action?
  - d. To entertain them and win their good will?
- (2) Whom do I wish to reach with this motion picture?
  - a. What is the principal group or primary market, to whom will it be directed?
  - b. What secondary markets may this film reach?
- (3) Can I state in one sentence the film's theme?
- (4) Is this motion picture to stand alone? Or is it part of a program of which the film's main purpose is to stimulate interest or discussion?
- (5) Is the message one of long or short duration? Will the proposed film be useful one year, three years, or ten years from now? If the film subject will be out of date in a few months, perhaps a motion picture is not the right medium.

- (6) What will the picture cost? If a company is to make their own films they should have a budget of \$45,000 to \$50,000 a year. Mr. Lytle of Raytheon says: "A nine-man operation producing one film a month and getting distribution of two million per year costs \$125,000."

Most picture sponsors find that distribution of a good film will continue for years beyond original expectations, adding dividends of results not readily foreseen. At times, however, some overlooked item, such as styles, will quickly make a film out of date. In the end, the decision to sponsor must rest upon the importance of the objectives mentioned in questions 1 and 2, and the suitability of a motion picture to that objective. One company is reported to have been completely satisfied with a \$15,000 film after a half-dozen showings. It reached and influenced important key persons whose decisions meant millions of dollars in business to the sponsoring company.

How should you go about making a film? Sponsors buy motion pictures from producers who handle all details direct, or through advertising agencies, public relations agencies, or a film advisory service. Some hire free lance script writers, and submit the script to several producing companies. In rare instances, a company executive has served successfully as his own producer, hiring only technical assistance.

Most sponsors will undoubtedly deal directly with the producer who will handle all details. The painfully acquired knowledge and experience of the good producer pay off in both economy and in more effective films. The commercial producer contributes two kinds of services to the preparation of the film:

- (1) Technical "know-how", - selection of capable personnel and suitable equipment.

- (2) Understanding of the problem which the sponsor wants to resolve with a motion picture, and the creative imagination necessary to come forth with a solution which will be effective when translated into a film.

For the majority of companies, perhaps, the best advice is to find a good producer who understands your problem and objectives, and with whom you find it easy to work. In selecting your producer make certain he is:

- (1) Financially sound.
- (2) Reliable. Does he have a list of satisfied customers who have given him repeat business?
- (3) Capable. How good are the films he has made? Get other people's opinions.
- (4) Your kind. Can you work well with him? Producing a good film takes understanding between producer and sponsor.
  - a. Agree upon a fixed price for preparation of a script.
  - b. Advise your producer your maximum budget allotted to accomplish the specific objective through film.

### Summary

The first question management asks in contemplating the production of a film is: "How much will it cost?" The business man does not realize that a slide film or a motion picture is a made-to-order product, and that there are no cost standards. The current rule-of-thumb is that a film will cost about \$15,000 per reel if no unusual complications are involved. If the picture is to be produced in color add 25%.

Mr. Dephoure, of the Dephoure Studios in Boston, said that there are two methods he uses to figure costs on films: (1) Daily basis; and (2) Flat price. Mr. Dephoure said that he had been in business over twenty years, and that every customer he has made a film for has returned to him for a revision or a new film.

Although a Hollywood chemist estimated the maximum life of a film at twenty-five years, Government scientists said no apparent limit has yet been found. The newer safety or acetate films may be preserved for much longer periods, - unofficially the scientists put the life of a film several hundred years.

The average cost of replacement footage per print amounted to about \$2.50 over a seven-year period on eighty-three films at the Audio-Visual Center of Indiana University being tested for maintenance costs. It is assumed that replacement costs will vary, depending upon these variable factors: (a) The number of bookings per print; (b) Standards of maintenance; (c) Comparable number of black and white and color prints; and (d) The cost of replacement footage.

One of the most important factors influencing the maintenance cost of 16 mm films is the care given the films during the period when they are used by the customer.

After you have selected your film subjects you must next make certain that you will be able to secure them whenever you will need them. The John Ladd Visual Service in Boston is a typical rental library, and it is affiliated with the national outfit Modern Talking Pictures, Incorporated. This national company has 30,000 bookings a month, and guarantees an audience of 150 to 175 per showing. Industries such as Ford Company, Shell Oil, and Raytheon loan films to schools, clubs, and business organizations if they will pay the postage one way (usually return). Advertisements in magazines and flyers are two frequently used methods of promoting the sponsored film.

Projection is the most important aspect of picture making and picture use. A trained projectionist is a great help, and will relieve

you of many details of arrangements. A projectionist should be responsible for not only equipment, but all the physical details of putting on the show.

Film projection equipment varies all the way from giant interlocked 35 mm theatrical motion picture projectors to slide viewers for children. The most commonly used motion picture projector is portable, and has either 500 or 750-watt power, and the most commonly used slide film projector is a combination unit. The average price range of 16 mm sound motion picture projector is \$500, silent movie projectors \$290 to \$315, and slide projectors from \$67 to \$175. One of the most popular type of projector is the 2" x 2" slide projector, which sells for from \$30 to \$105. The selectoslide and the Vu Graph are two variations of the slide projector, and they both have their individual advantages, depending upon the purpose for which they are to be used. In regard to accessories, projection screens are manufactured in two basic designs: (1) the tripod; and (2) the hanging models.

The cost of theatrical distribution for sponsored industrial films varies theatre by theatre, but will average about 1/3 to 1/2 cent per person in the audience.

Many manufacturers are in a position to distribute their pictures through their own organizations, but many others use non-theatrical professional distributors of commercial motion pictures such as Modern Talking Picture Service, Incorporated, The Institute of Visual Training, Association Films, Incorporated, Castle Films Service, and Jam Handy Organization. In return for the services of these organizations the sponsor receives a recapitulation sheet which lists total bookings completed during

a certain period, and gives detail figures broken down by state, city, and town, the number of individual showings of each booking, number of men, women, boys, and girls, who attended each showing. To figure the cost of a film or other visual aids the following components must be considered: cost of producing or renting visual aid, cost or rental of projection equipment, salaries of training staff in charge of visual education program, and loss of time by employees viewing films. Total this cost and divide it by the potential audience during the life of the film, and this will give you some idea of how much it costs to reach each employee with your message.

After the prospective sponsor has received an estimate of the cost of his proposed film his next question is usually: "How can I be sure that I will get my money's worth?" Measuring the return of films depends on the purpose of the sponsor had in mind when he made the film. Possible methods of measuring the return on film use are: (1) control groups where the progress of the group shown films is compared with progress of groups which did not have the advantage of film showing as shown in example of the John Hancock Insurance Company key punch operator training program; (2) actual reduction of scrap through use of motion pictures in education of employees; (3) opinions of numerous training directors after long use of films; (4) reduction in number of injuries as reflected in declining frequency rate where motivation of safety consciousness was created by safety films; (5) measuring sample groups for interest, cost service, and company attitudes either prior to or after films have been released for public showing, in order to determine or predetermine audience reaction; (6) another measurement is the indication of increase or decrease in number of people viewing the film as obtained from attend-

ance records; and (7) remarks on the cards sent back after a group has shown the film may or may not give an indication of the effectiveness of the film.

## CHAPTER VI

Case Studies on Use of Films by Electronics Industry1. Westinghouse Electric Company

Westinghouse has been using films for about eight years. The majority of their production concerns itself with product, or "nuts and bolts" type of films. They attempt to produce either one or two institutional films a year which encompasses public relations and advertising.

The operations of the company's film program are solidly founded. When a division such as the Transformer Division decides upon a visual presentation of its story, or a promotion of a new product, a meeting is arranged between a representative of that department and the Film Division.

First, the best means of presentation is determined: motion picture or slide film; scripts are written; the film produced, and prints are distributed to the company's eight district sales promotion offices for a period of six months. Thereafter the production is released for general distribution through Westinghouse Film Library. Westinghouse no longer distributes to schools. Films strictly institutional in character are usually distributed by Westinghouse Film Library in seven district regions. The bookings of the film library are controlled through headquarters, in that they make all promotions and arrange for all showings. The film library is also a "clearing house" for all motion pictures and slidefilms. The average audience for all groups is 75. Westinghouse films in 1951, which were handled by Modern Talking Picture Service, were:

"Adventures in Research"	"Vera Has Her Way"
"The Dawn of Better Living"	"What is Electricity"
"Electronics at Work"	"Your Ticket to Better Buying"
"On the Air"	

Free loan to organized groups is general policy of Westinghouse.

A group or organization desiring extended use of a print may purchase it at cost. Calls for prints come not only from every state in the United States but also from many foreign countries.

The Westinghouse films are grouped in three sections of their catalog: (1) General interest films; (2) Product information films; (3) Training films and instruction courses. There are 51 motion pictures, 24 of them in color, and 16 slidefilms listed in their catalog. Recently (1952) Westinghouse had a film made to train some 30,000 salesmen as part of a 12 million dollar sales promotion. This film cost \$250,000 and was shown at one hundred meetings, based on a full movie program aimed at training salesmen to sell eight company products.

The majority of Westinghouse films run ten or eleven minutes, and the principal reason underlying this policy is that a great percentage of their product films are used through their districts by the salesmen. "The greatest selling aid in the visual aid field for salesmen in Westinghouse," according to Mr. Day, "has been the table top projector" (16 mm sound and self-contained unit).

The average cost of a Westinghouse motion picture is between \$10,000 and \$25,000, with color averaging \$1500 per minute and black and white \$1000 per minute. More than half (about 2/3) of the films at Westinghouse are black and white. Majority of customer meetings or films will be in color, and all internal films are in black and white unless the subject naturally lends itself to color for complete understanding.

Westinghouse does not have an annual budget for films as such.

For the purpose of making institutional films a certain amount is set aside by General Advertising each year for this purpose.

Westinghouse has made approximately two hundred films in the last five years. Also, they have made upwards of 50 slidefilms a year and about 3500 glass slides a year for internal meetings, customer showings, etc. Mr. Day says: "If the past five years is any criterion of what the next five years will bring, we will probably produce approximately the same number of films that we produced in the past."

## 2. Hytron Radio and Electronics Company

The main offices of Hytron are in Salem, Massachusetts and was founded in 1921. In 1948 Hytron started thinking seriously of instituting an audio-visual program for both personnel training and community consumption. Over the past five years improvement has been made in the one field of personnel training. The company has neglected films for various communities until they felt that their personnel problems were sufficiently stable.

Hytron manufactures television tubes. They are doing a great deal of business with both the Government and private industry. Until just a few years ago the training of personnel consisted of a three-hour orientation course covering the very basic knowledge essential for working with electronic tubes. Turnover was very high, absenteeism was very great. The management decided that their training program was faulty. The company tried extending the orientation program to six hours and they gave each new employee a booklet on electronics to study, but neither of these methods resulted in success. In desperation the man-

agement decided to show motion pictures of the work that employees would be doing. However, the results were not good. Finally management instituted the use of film strips with a specialist, whose job was the subject in the film strips, to speak and follow each step in accompaniment with the strip. The results were satisfying. Turnover and absenteeism declined, but they felt that they could do a better job if they instituted a definite program of audio-visual aids. Management, while recognizing the good results gained from the use of visual aids, was slow in allotting money from the budget for such an operation.

There are at the present time ten people employed for the handling of audio-visual aids. However, it must be noted that while their main job is in the audio-visual department, they also are the men who put together and edit the plant magazine. So Hytron actually gets double service from their people. The method of determining which aids to purchase is in the hands of one man who has had experience in the industrial film field. This one man has complete authority over which films are used and which films are left out.

A large scale program is anticipated this year whereby separate offices completely furnished with the necessary equipment will be allotted. In Hytron's film library at the present time are three films which deal with training of personnel in electronic assembly line methods. They were purchased in 1952, at the total price of sixty-four thousand dollars.

Hytron plans to have produced, in their various plants, a film telling the story of their company. They feel very strongly that this will be a wise move, because they rented a film which dealt in very general terms about the electronics industry; the film was distributed in

turn to a number of schools and clubs in the neighboring towns, and the results were excellent. The people who saw the films requested that Hytron send them any other films which could be used for the same purpose. For these reasons Hytron feels that a film about their company would be a good investment, in their community relations program. Hytron has actually seen the possibilities of audio-visual aids in action.

The plans of the Audio-Visual Aids Department are fairly concrete for future operations. It is their plan to have two men whose job it will be to travel wherever the films are to be shown, whether in churches, schools, or any other organizations, for the purpose of running the projectors, and also for a commentary on the subject of the film. They also plan to effect a trading agreement between the various electronics companies in the area concerning any films that can be used by the company.

The subject of money is very important to the new Audio-Visual Aids Department at Hytron. While management recognizes the value, they find it hard to realize that money will be saved by the proper training of personnel and by good relations with various communities. Since Hytron has recently been made a sub-division of Columbia Broadcasting System these plans look brighter.

The past experience that Hytron has had with audio-visual aids has been comparatively limited, but the important point to note is that they realize the value of such aids, both within their plants themselves, and also in the several communities in which their plants are located.

### 3. General Electric Company

The General Electric Company has a complicated overall film system. Each of the six divisions are responsible, for the most part, for their film programs.

a. Public Relations Services Divisions

This operation is divided into two distinct parts: (1) theatrical shorts, and (2) educational non-theatrical films. The 35 mm theatrical shorts are made available nationally to commercial motion picture theatres free of charge through their theatrical booking agent. The 16 mm non-theatrical films are distributed nationally by General Electric's 14 film libraries to schools, civic and social clubs, and other groups. This division is concerned solely with films which have a broad public relations value, and therefore do not deal directly with consumer products. The public relation division does not coordinate the film activities of the various other divisions, but are occasionally called upon to offer advice in matters of production or distribution.

b. Employee Relations Division

Mr. Ted Lisberger, head of Education and Training Departments of this division, said that this division had one main film produced by the Company and several films produced by various other divisions. The average attendance per film for internal showings has been about 10,000. This division loans and sells their films to other companies. Their annual budget runs greater than \$50,000 a year. Less than half of their films are in color.

Mr. Lisberger states: "In my opinion films are a very effective medium for delivering a message as compared to paid advertising in magazines and newspapers."

The Employee Relations Division has made three films in the last five years, and expects to make five in the next five years. The purpose of using films in this division is mainly for employee relations, but they are also used for developing supervisors. The films are shown to

executive personnel, manufacturing force, clerical staff, local community, customers, and students in this division. These films are shown in the offices, factories, churches, colleges, conventions, meetings, clubs, and sometimes on television. Slidefilms and slide motion films are also used. This division has only been in operation five years.

c. Carboloy Division

Mr. Mason, General Manager of this division, states that they have only one film, and this is of the public relations type. This film cost about \$50,000 or \$1,250 a minute, and runs for about thirty minutes. Average attendance per film is 200,000 to date. Average audience per showing is 40 to 60 people. This division does not have an annual budget for films, but expects to make one film in the next five years. The purpose of the picture is institutional good-will, and it is shown to executive personnel, manufacturing force, customers, and prospects. This film is shown at factories, groups, meetings, conventions, and school and colleges.

d. Lamp Division

The Lamp Division has nine films in its library: (1) six selling films; (2) two training for salesmen; (3) one advertising. They produce 20% of their own films, and the average cost is between \$1000 and \$5000. This division has been using films for twenty years. Distribution of films is eight directly, and one through an agency. Mr. P. Moyer states: "We have no fixed budgets for films, but we make them as the need arises." Mr. Moyer feels that films are effective compared to other mediums such as newspapers and magazines for delivering message.

The Lamp Division has made five films in the last five years, and expects to make five more in the next five years.

The nine films in this division are shown to manufacturing force, distributors, wholesalers, local community, customers, and prospects. These films are shown in offices, factories, clubs, individuals, groups, meetings, conventions, television, and schools and colleges.

E. Advertising and Sales Promotion Division

Mr. Robert Fegley says that he has been using films in this division since 1910, or for 43 years. There are 67 available films which, broken down, include:

- 33 Customer Selling
- 8 Training (Worker) films
- 3 Training films for salesmen
- 23 Public Relations films

The Advertising and Sales Promotion Division produce about 20% of their films, and the costs range from \$1,000 to \$125,000. Average running time of films is about twenty-two minutes. More than half of the films are in color, and the annual budget for films in this division is greater than \$50,000.

Mr. Fegley states, in regard to the question of effectiveness of films for his purpose as compared to other mediums: "It is a matter of selecting the proper medium for the communication job at hand. Usually movies and space advertising are both used in a mutually supporting effort."

The Advertising and Sales Promotion Division has made more than twenty films in the last five years, and intend to make over twenty in the next five years. For coordinating executives, teaching factory

workers, instructing clerks, and stimulating dealers, Mr. Fegley normally uses cheaper slide films for this purpose.

Mr. Fegley states: "Most of our films are directed either to customers or the general public. Internal distribution is usually secondary. We seldom shoot at 'average cost' or 'average audience', - we determine the right cost and audience for each job."

#### 4. The American Telephone and Telegraph Company

The New England Telephone and Telegraph Company does not have a specifically named department of audio-visual aids. However, it does have a number of audio-visual activities, which are all coordinated by Public Relations Department of the company.

As early as 1933 the company had been engaged in making films for the training of personnel, but it was not until two years later that this particular section of the company's overall activities was extended to include a customer-company relations program.

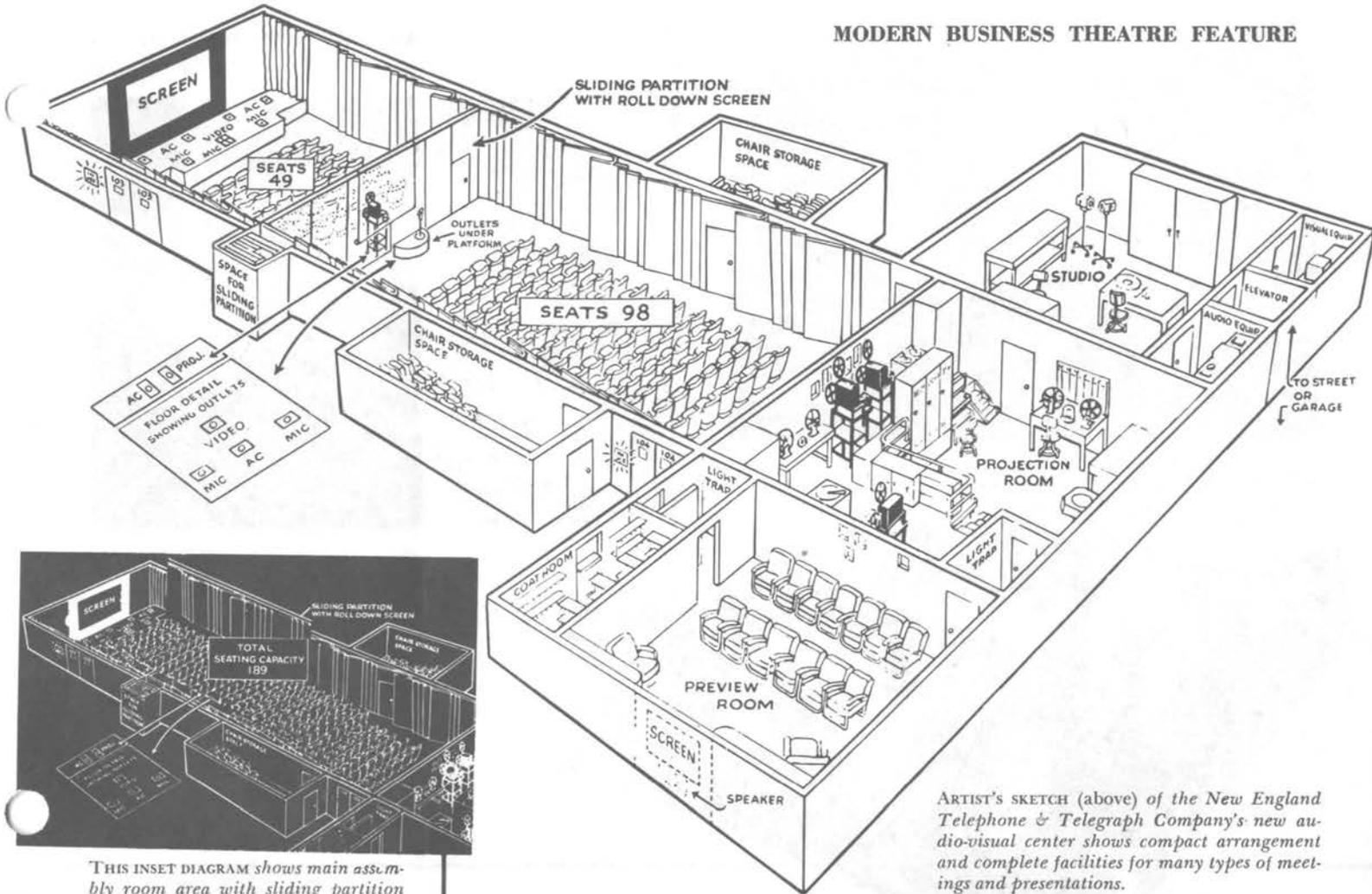
The audio-visual section of the New England Telephone and Telegraph Company may be regarded as one of the big tools of the company's public relations design. But, independently, this particular section renders the following services:

- (1) Film showings
- (2) Planning of Open House Talks
- (3) Demonstrations (lecture)
- (4) Shows and Fairs
- (5) Plant Visitations
- (6) Exhibits

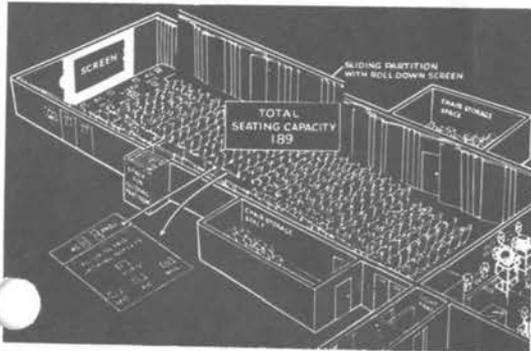
These services are done by other employees within the company, under the supervision of audio-visual section.

For a company which serves more than two million people the audio-visual section of New England Telephone and Telegraph Company is

## MODERN BUSINESS THEATRE FEATURE



ARTIST'S SKETCH (above) of the New England Telephone & Telegraph Company's new audio-visual center shows compact arrangement and complete facilities for many types of meetings and presentations.



THIS INSET DIAGRAM shows main assembly room area with sliding partition removed to provide seating capacity for 189 persons.

# A Model Audio-Visual Center

NEW ENGLAND TELEPHONE & TELEGRAPH COMPANY SHOWS FACILITIES

BELOW: HEADQUARTERS and Long Distance Center of New England Telephone & Telegraph Company in Boston, Mass. Audio-visual center is at far left on street level.



**A**N AUDIO-VISUAL CENTER, where every square foot of space is designed for double and in some cases triple duty, is a feature of the new Long Distance Center and Headquarters Building of the New England Telephone and Telegraph Company in Boston, Massachusetts.

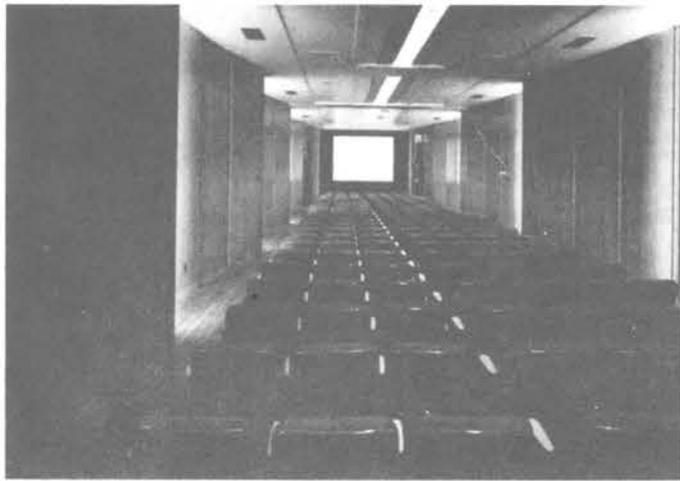
Incorporated in a minimum of space is every type of visual and audio device which has proved usable in the extensive public and employee information program which the Company conducts in the five northern New England States.

Flexibility, with minimum operating expense, is the key to this installation. A preview room that doubles as a sound studio, a projection booth which projects films and slides in two directions yet doubles as a film library and editing room, an assembly room seating 189 people for employee training purposes which can be turned into two rooms within twenty minutes, with complete audio-visual

facilities in both, are only a few of the unusual features of this audio-visual center.

Like so many of the new developments in the audio-visual field, this unusual center was born of necessity. A training film program for 35,000 employees in five states and an extensive system of informational film distribution to the public necessitated adequate headquarters facilities. However, closely budgeted floor space and limited funds for construction made inspired planning imperative.

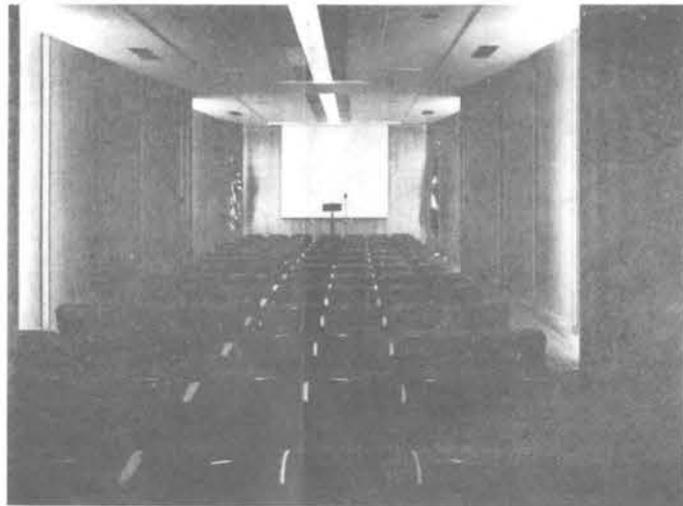
Three years of testing equipment and designing layout preceded construction. The space allotted comprised a "T" shaped area with the vertical of the T measuring 110 feet long by 18 feet wide between columns. The horizontal bar of the T measured 30 feet by 18 feet. The artist's sketch shows how this area was utilized. A central Western Electric amplifying system serves the entire area. A master film and record library are within easy (CONTINUED ON THE FOLLOWING PAGE)



LARGE ASSEMBLY ROOM seats 189 when folding doors shown below are removed as in this general view toward screen.

**TWO VIEWS OF DUAL PURPOSE ASSEMBLY ROOMS**

BELOW: the rear assembly room is created by removable folding doors.



LEFT: TELEPHONE SUPERVISORS LISTEN to a speaker before a film showing (Inset) these floor outlets are provided on stage in front room and at front of rear room for mikes, video and power, so that meetings can be held in each of the two assembly room areas when they are separated by the easily removable folding door partition.



(CONTINUED FROM THE PRECEDING PAGE)

reach of the one projectionist who operates the entire system. RCA 16mm incandescent motion picture projectors were selected after extensive tests, and GoldE combination projectors were installed for strip films and slides. Incandescent projectors were necessary because

of the additional expense involved in providing flues for arc projectors to the roof of a twenty story building as required by local building codes. Presto turntables with Western Electric sound heads and Webster automatic three-speed changers completed the record playing installation.

Two big questions about the design of this center remained unanswered until construc-

tion was completed. Could a top-grade color image be projected 100 feet with incandescent projectors? How could perfect sound reproduction be achieved in a long narrow room without destroying illusion?

The projection equipment provided a satisfactory answer to the first question on the first test. The answer to the second questions was provided by the Bell Telephone Laboratory sound engineers, who designed the walls so that no echoes can develop and then specified sixteen Western Electric baffled speakers mounted in the ceiling in pairs so that the volume for each pair could be adjusted readily. When a film is shown, volume on each pair of speakers is reduced progressively so that while the rear speakers have a low level, those nearer the screen emit higher levels which produce the illusion that all of the sound is coming from the screen. For dancing or general sound, a flick of the wrist returns the speaker levels to normal and then there is no directional quality to the sound at all.

Incorporated into this center are most of the modern aids to film distribution, editing and minor production. There are few trimmings and no heavy investment in production and recording equipment because the Company makes a practice of using commercial producers for film and recorded training aids.

COMBINED ASSEMBLY ROOMS are shown in use for exhibit area of Bell System progress.



SOUNDPROOF FOLDING DOORS which create two rooms are easily handled by one man.

Every effort was made to anticipate future requirements in the audio field. Shielded wires in conduit lead to loud speakers in cafeterias and employee lounges for music and speech distribution if desired. Coaxial cables are in place with wall and floor outlets for television viewers when this media comes into general use. Convenient outlets for mikes, AC current, and television are provided in booth, assembly rooms and preview room.

But, even to the uninitiated, a tour of the center would reveal unusual features not yet in general use in the industrial field. On entering any of the three doors to the center, an illuminated "IN USE" sign, controlled from the booth, warns a visitor if a show is in progress. In the assembly rooms, guests would be delighted with the comfortable chairs, which utilize an unusual interlocking feature to assure rigidity, but can be moved quickly to other locations. These chairs are designed to supply the same degree of sound absorption

FILM EDITING FACILITIES are maintained in one corner of lower level of projection booth.



empty as full. The entire area is air-conditioned for year-round comfort and is lighted by instantaneous fluorescent tubes on the ceiling and in coves on the side walls.

The projection and editing booth incorporates several novel features to conserve space and improve efficiency. Constructing the booth on two levels permitted projection above the heads of audiences, provided additional storage space under the platform, separated the projection and editing sections and placed projectors, turntables, radio, and film libraries within easy reach of the operator. A bank of three Western Electric amplifiers provides any desired combination of sound systems. To a visitor, the amplified panels seem complicated. However, use of the numerous switches and knobs which provide the essential flexibility of the system has been simplified by numbering knobs and developing a chart which permits quick easy settings for over two hundred combinations. Monitoring from either amplifiers or speakers separately is provided, while a separate Teletalk system provides monitoring for cues and announcements in all three rooms. The booth measures only 18' by 18' yet contains all necessary equipment for efficient editing and projection.

**PROJECTION ROOM**

(Three views at right, top of bottom) dual 16mm projectors and turntables serve both assembly room areas. (Center) Projection booth showing dual level construction. Lower level for editing, shipping, etc.; upper level for projection and sound distribution to preview and assembly rooms. (Bottom) Preview room projection facilities shown in this view.



★ The New England Telephone and Telegraph Company, together with the other Bell Companies has pioneered the use of industrial films for public information. It has been showing industrial films since the early twenties. Since the end of the war, while the public information side of the job has continued, extensive developmental work has been carried on in the field of employee information, job and attitude training by means of films. At the present time, over 300 films are in active use in the training library and over 100 infor-

mational film subjects available to the public.

The Public Relations Department of the Company coordinates all audio-visual activities and the staff operating this section is extremely small for a film program that reaches an audience of nearly two million persons annually. Thomas M. Hennessey is Vice-President in charge of Public Relations; Robert W. Stokes, Public Relations Methods Supervisor, directs the film program and the staff com-

prises Edward W. Palmer, Information Assistant; Shirleyann Holt, Film Distribution Supervisor; and George Janes, Projectionist.

The opportunity to build proper facilities for an industrial audio-visual center, from the ground up, comes to few companies. The completion of this center in Boston, however, gives a graphic illustration of what can be accomplished when specialists in the field are given time to plan, architects and contractors apply knowledge and experience, and the entire field of audio-visual equipment is scanned.

**THE PREVIEW ROOM**

Entrances to the Assembly and Preview Rooms.

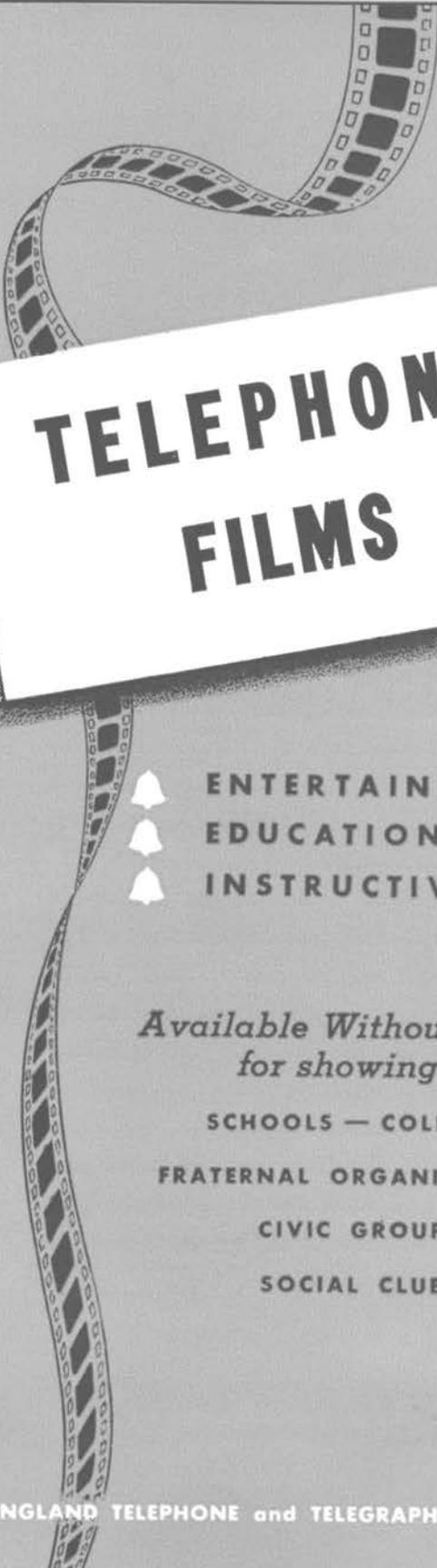
Front view of smaller Preview Room setup.



Supervisors preview an operator training aid.



This is a list of the films from which bookings are made.



# TELEPHONE FILMS

▲ ENTERTAINING  
▲ EDUCATIONAL  
▲ INSTRUCTIVE

*Available Without Charge  
for showing by*

SCHOOLS — COLLEGES

FRATERNAL ORGANIZATIONS

CIVIC GROUPS

SOCIAL CLUBS

NEW ENGLAND TELEPHONE and TELEGRAPH COMPANY

# HOW TO ARRANGE SHOWINGS

THE 16m/m sound motion pictures described in this booklet are available for showing to school, college, civic, social or technical groups and fraternal organizations.

The purpose of these films is to reveal in an interesting and dramatic manner some of the little understood and seldom seen developments of telephony that have built and are building the telephone system in America.

To obtain these films, just call or visit your local telephone business office. The manager will be glad to assist you in selecting an appropriate program and will make all the necessary arrangements. *There is never any charge for Telephone Company film showings.*

If you have 16m/m sound motion picture equipment and an experienced operator, the manager will arrange to lend you any of these films.

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20	This We Own	17
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Running  
time  
17  
minutes

### ADVENTURE IN TELEZONIA

**Teaching children how to correctly use the telephone.**

Bobby, a ten-year-old boy who has lost his dog, Bounce, is transported to "Telezonia" where animated puppets help him find Bounce by using the telephone correctly. This film is part of a teaching unit available to elementary schools and covers both dial and manual telephones. Other parts of the unit include practice telephones, practice directories, teachers manual and a color filmstrip.



Running  
time  
14  
minutes

### BOTTLE OF MAGIC

**Birth, Growth and Use of Electron Tubes**

The wonders of the electron tube are told in layman's language as this film dramatizes the vital function vacuum tubes perform in telephony, movies, radio, television, and national defense.

The achievements of pioneers De Forest, Fleming and Edison in the electron tube field are clearly and interestingly explained. This educational film tells the what, how and why of electron tubes.



Running  
time  
17  
minutes

### BEFORE YOUR TELEPHONE RINGS

**The invisible essentials of telephone service.**

Telephone men and women create through the eyes of the camera the invisible essentials which make your home telephone service complete. Hundreds of operations must be completed before your telephone can be used. Wires must be placed, your number listed at information and in directories, repair service notified and accounting records established.

The fascinating account of this process makes an educational and interesting picture story



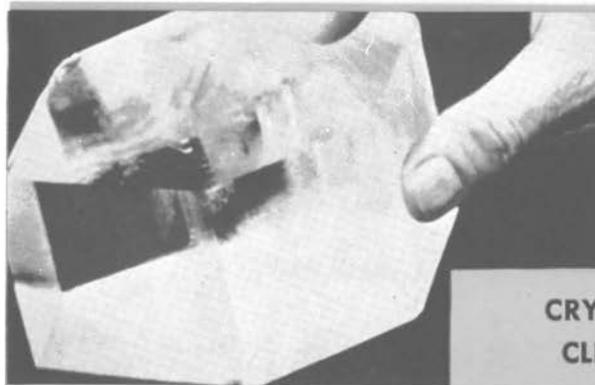
Running  
time:  
30  
minutes

### COMMUNICATIONS FOR CIVIL DEFENSE

**Attack Warning in CD**

Opening with a dramatic scene in a Control Center during a simulated bombing raid, the film outlines the telephone plan to ensure continuity of essential services in the event of disaster.

Designed to acquaint Civil Defense personnel and the public with the communications plan being readied for use during enemy action, the film dramatically portrays functioning of Civil Defense operations before, during, and after a disaster.



Running  
time  
10  
minutes

### CRYSTAL CLEAR

#### Growing Synthetic Crystals (in full color)

Fascinating color scenes show how science has stolen a march on Mother Nature by "growing" quartz crystals commercially. Nature's way takes thousands of years. Science does it in hours. This scientific wonder is shown step-by-step from the tiny "seed" crystals to the final large clear bar. These crystals permit sending hundreds of simultaneous conversations over one communication path.



Running  
time  
27  
minutes

### ECHOES IN WAR AND PEACE

#### "Sonar" "Radar" explained

Based on information now released from "Top-Secret" category, this non-technical film presents the wartime development of Sonar (the underwater echo) and Radar (the airborne echo) and the use of these echo principles in peacetime.

Lively sequences dramatically show how underwater sounds from a submarine disclose its position and how enemy planes can be spotted through fog and darkness.



Running  
time  
20  
minutes

### DIAL COMES TO TOWN

#### The Dial telephone and how to use it

"Gramps" has mental reservations about things new and the modern dial telephone service being installed in his community is no exception. This film shows why he finally accepts progress.

At a community meeting, Gramps and his family hear Telephone Company representatives explain the advantages of the new system and demonstrate how easy it is to use dial telephones.



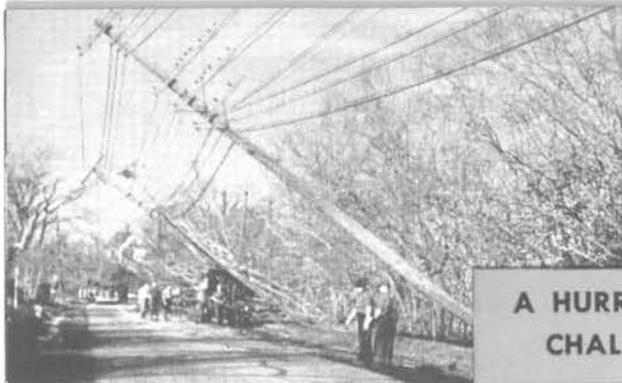
Running  
time:  
10  
minutes

### FLOOD WATERS

#### Swirling waters challenge the telephone team

The communication lines of the Middle West are turned into a tangle of poles and wires as rampaging waters bury great areas of Kansas, Missouri and Oklahoma in the great floods of 1951.

Dramatic scenes show flooded cities and farm lands emerging from the sea of mud left by receding waters as telephone crews from all over the nation slough through the tangle of debris to restore the speech-ways.



*Running  
time  
18  
minutes*

### **A HURRICANE'S CHALLENGE**

#### **The telephone army fights disaster**

As a hurricane swept over the Northeast on September 21, 1938, unparalleled devastation leveled the communications of this densely populated section of the country.

This film dramatically pictures the mobilization of men and women from all parts of the Bell System as they accomplished an unbelievable job of reconstruction. Truck convoys of supplies and men from the West and South soon brought order out of the chaos.



*Running  
time  
23  
minutes*

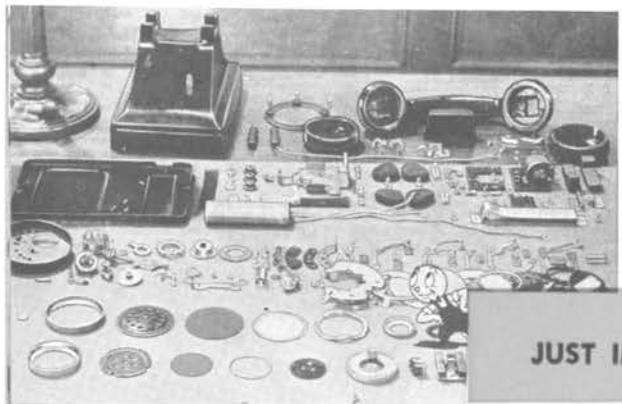
### **A MIRACLE FOR MRS. SMITH**

#### **The ABC's of the telephone**

Though taken pretty much for granted, a telephone call is "truly an industrial miracle."

This film gives a glimpse of the research behind telephone equipment, the precision in manufacture, the trained skill required for installation.

The miracle of today's telephone becomes a reality as this film takes you behind the scenes of a routine call from Mrs. Smith, a typical housewife, to her butcher.



*Running  
time  
10  
minutes*

### **JUST IMAGINE**

#### **The 433 telephone parts in comedy relief**

Tommy Telephone, a little cartoon character, steps out of an advertisement to acquaint the audience with the raw materials of a telephone handset.

With the help of movie magic, Tommy creates the 433 needed parts, and to the strains of martial music he marches them into position in a telephone handset.

"Just Imagine" brings the popular film, "Getting Together," up-to-date.



*Running  
time  
32  
minutes*

### **MR. BELL**

#### **A portrait of a great American**

The dramatic story of the birth of the telephone as portrayed through the life of Alexander Graham Bell, amid the flavorsome historic setting of hoop-skirted Boston in the nineteenth century.

A screen portrait of the inventor as he looked, talked, thought and worked to give his great dream to the world: a universal system of voice communication that would overcome the barriers of distance.



Running  
time:  
10  
minutes

### THE NATION AT YOUR FINGERTIPS

#### Long Distance Neighbors

This film shows how telephone users in Englewood, New Jersey, dial directly to other telephones located in thirteen large areas of the United States. This newest marvel of communication carries one step further, the steady improvement in speed and quality of long distance telephone service.

The film shows an Englewood resident dialing three digits followed by the telephone exchange number, then talking across the nation in a matter of a few seconds, as easily as she calls a next-door neighbor.



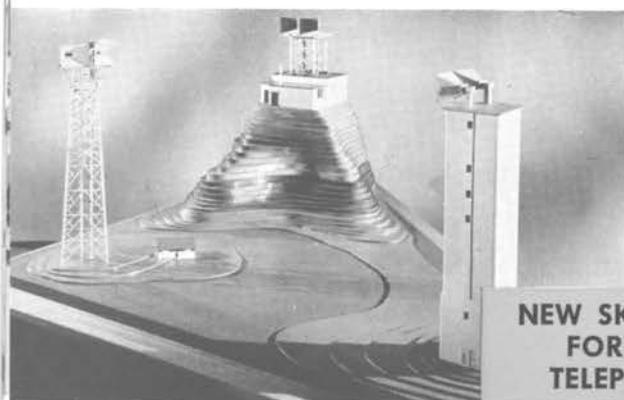
Running  
time:  
35  
minutes

### OF MANY VOICES

#### The telephone grows with the nation

Told in terms of the life story of four principal characters, the history of the telephone, since its invention in 1876, rolls dramatically across the screen. As a background, great world events that have occurred since the turn of the century cut in and out of this saga of men and women inspired by an idea.

Here, in thirty-five minutes of entertainment, are the stories of a young nation and a young communications system growing great.



Running  
time:  
10  
minutes

### NEW SKYWAYS FOR THE TELEPHONE

#### Beamed words across the nation

In ten minutes of news pictures and animated sketches the completion of the trans-continental radio relay system unfolds.

Narrated by a television announcer, this story of cross-country communications via clipper ship, pony express, railroad, telephone wire, coaxial cable and radio relay, graphically portrays a dramatic phase of America's growth.



Running  
time  
15  
minutes

### PARTY LINES

#### The "Good Neighbor Policy" in full color

Colorful marionettes relate what can happen when party line users forget the value of neighborly cooperation.

You'll love the humor and subtle appeal of the knights who duel over a shared bridge and the miniature fire apparatus which arrives too late.

But the marionettes learn that good telephone service and personal satisfaction result when "Do unto others" is put into action.



QUARTERLY REPORT OF  
OPEN HOUSES, TRADE SHOWS, FAIRS AND EXHIBITS

Name of Company	Period Covered					
I Activity	This Quarter		Year To Date		Estimate For Year	
	No.	Attendance	No.	Attendance	No.	Attendance
1. Open Houses						
a) Central Office Visits					XX	XXXXXX
b) Open Houses . . . . .						
c) Family Nights . . . . .					XX	XXXXXX
2. Trade Shows . . . . .						
3. Fairs . . . . .						
4. Special Exhibits . . . . .					XX	XXXXXX
5. Permanent Exhibits						
a) Museums . . . . .						
b) Other . . . . .						
II Schedule For Next Quarter			Location			Date
<u>Open Houses</u>						

**New England Telephone and Telegraph Company**  
**CUSTOMER RELATIONS ACTIVITY SUMMARY**

\_\_\_\_\_  
 Company, Area, Division or District

Number of Accounts \_\_\_\_\_  
 (from Current Commercial Collection Report)

\_\_\_\_\_  
 Month

\_\_\_\_\_  
 Year

TYPE of AUDIENCE	1 Talks		2 Demon.		3 Talks- Films		4 Demon.- Films		5 Film Showings		6 C.O. Visits		7 Open Houses		8 Family Visits		9 Shows & Fairs		10 Exhibits & Museums		TOTAL		
	No.	Att.	No.	Att.	No.	Att.	No.	Att.	No.	Att.	No.	Att.	No.	Att.	No.	Att.	No.	Att.	No.	Att.	No.	Att.	
A. Civic—Service																							
B. Women's Organizations																							
C. Social, Religious, Fraternal																							
D. Trade, Business, Technical																							
E. Schools—Youth																							
F. Colleges- Educators																							
G. Employees																							
H. Other																							
<b>TOTAL</b>																							
I. Theaters & Drive-Ins*																							
J. Radio																							
K. Television																							
<b>GRAND TOTAL</b>																							

See other side for instructions.  
 \*Leave this LINE BLANK.

SUMMARY - INFORMATIONAL FILM DISTRIBUTION

CHANNELS OF DISTRIBUTION:

1. COMMERCIAL AGENCIES

Contractors	SHOWS	ATTEN.	SPOWS	ATTEN.
(With Spk. )		240,527	C	
(Without Spk. )			E	
			R	
			S	
			T	
			W	
			O	
Projected	SHOWS	ATTEN.		
Rented				

2. RENTALS & LOANS

	SHOWS	ATTEN.	SHOWS	ATTEN.
Association Film		52,000	C	
Boston Public Library		18,000	E	
Boston Public Schools		7,400	R	
Cinema		8,131	S	
Community Film Center		18,000	T	
Dept. of Education		15,000	W	
Farm Film Foundation		2,185	O	
Ladd Visual Service				
University of Maine		13,000		
University of Mass.		8,370		
University of N. H.		4,620		
University of Vermont		10,000		
				----- 1952 - 100,000

	SHOWS	ATTEN.	SHOWS	ATTEN.
Rentals			Projected	
Loans			Rented	
			Loaned	

3. THEATERS

Bay State	SHOWS	ATTEN.	
	2,611,936		(At no cost to the theatre owners.)

<u>GRAND TOTAL</u>	SHOWS	ATTEN.
	3,010,006	

127

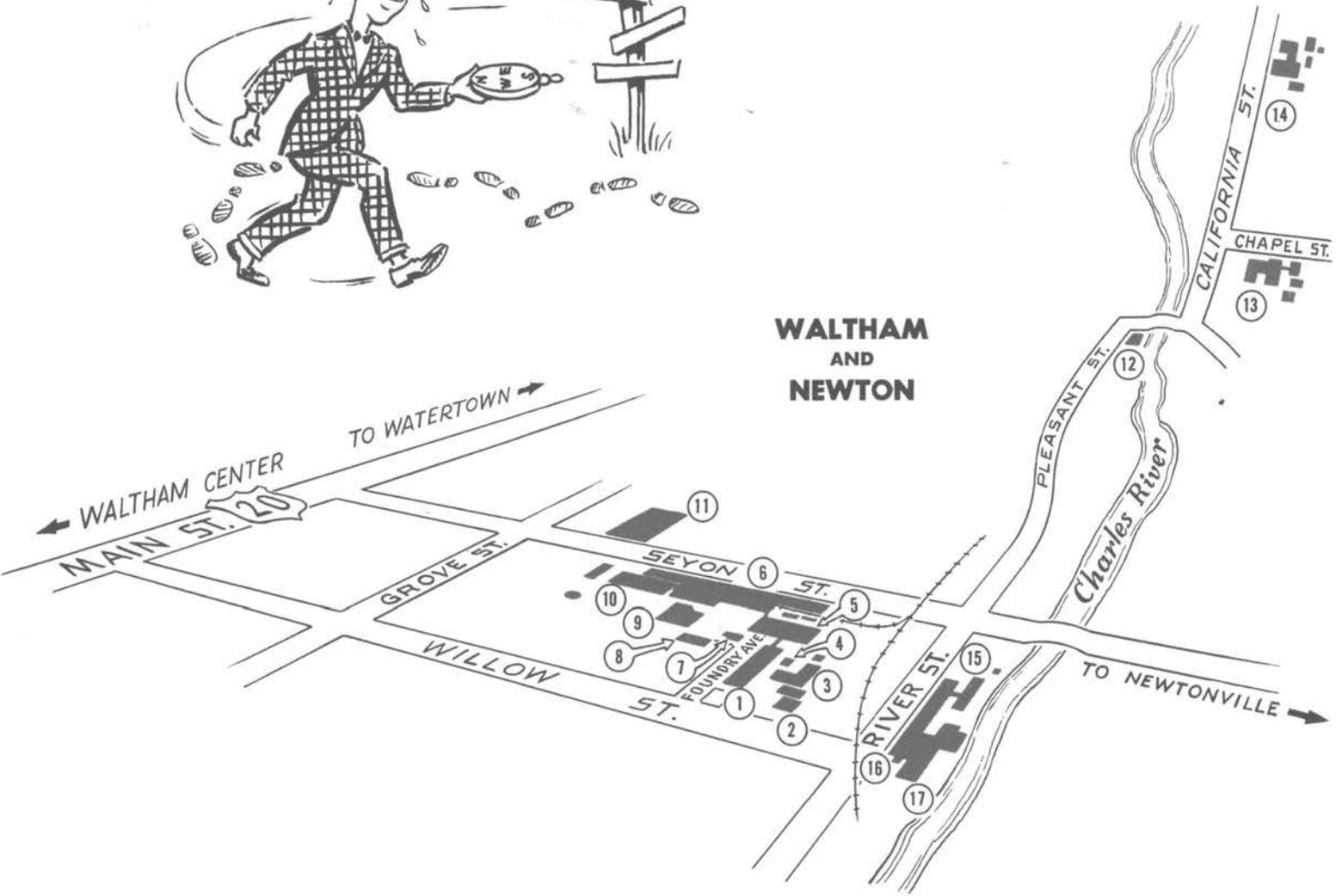




# LOCATION OF PRINCIPAL PLANTS



## WALTHAM AND NEWTON

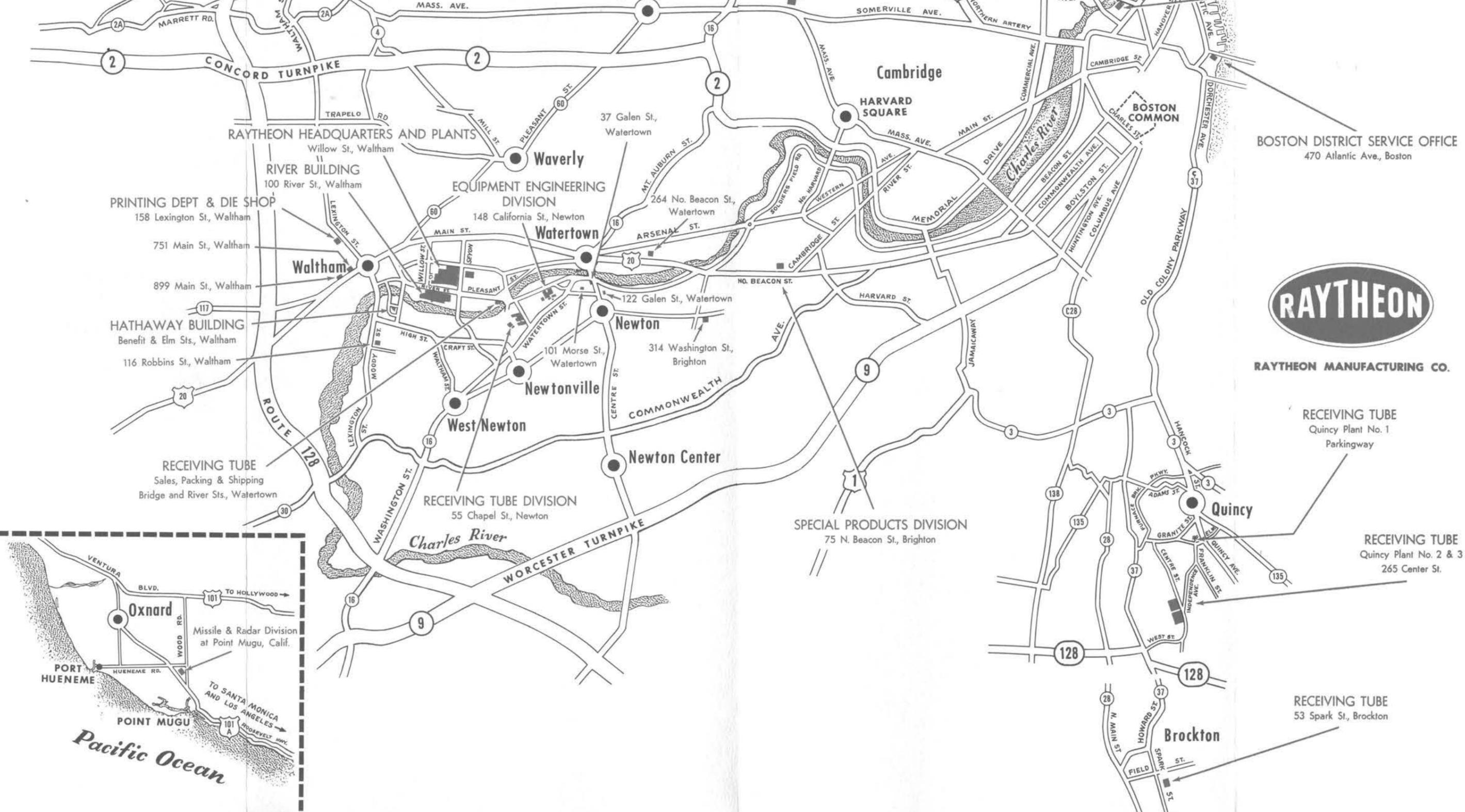
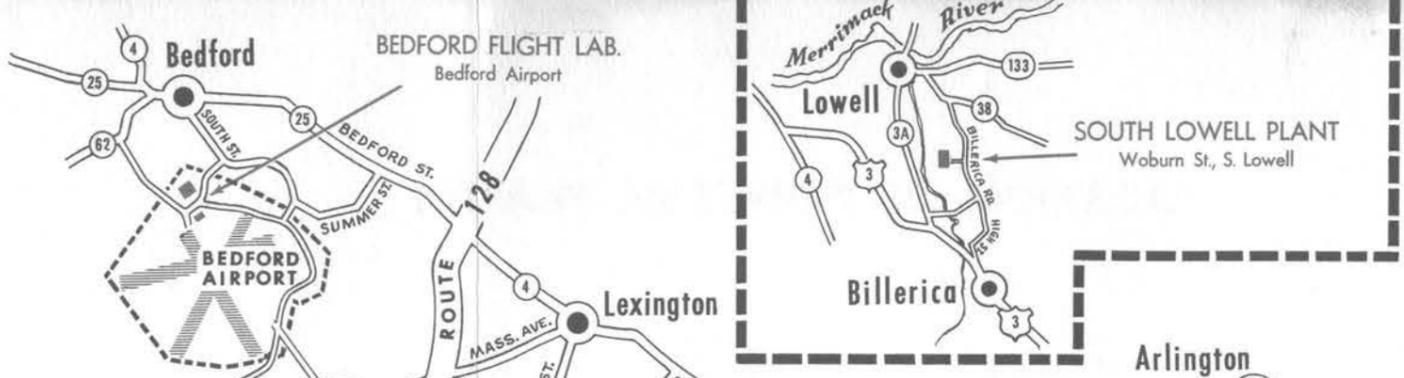


- 1 Administration Bldg.
- 2 Personnel Bldg.
- 3 Transformer Bldg.
- 4 Credit Union Bldg.
- 5 Power Tube Bldg.
- 6 Equipment Production Bldg.
- 7 Services Bldg.
- 8 Publications Bldg.
- 9 Cafeteria
- 10 Final Test Bldg.
- 11 Seyon Bldg.
- 12 Bemis Bldg.
- 13 Receiving Tube Plant
- 14 Equipment Engineering Bldg.
- 15 Lab 30
- 16 River Bldg.
- 17 Lab 16

If your building  
isn't on this page,  
look for it on  
the following  
pages.



In addition to the locations shown on this map, Raytheon also maintains plants in Chicago, Illinois and Oelwein, Iowa — and service offices or facilities in many big cities and major seaports of the world.



RAYTHEON MANUFACTURING CO.



very small. There are only five people responsible for the audio-visual section: Mr. Thomas Hennessey, Vice-President in charge of Public Relations; Mr. Robert Stokes, Public Relations Methods Supervisor, who directs film programs and the staff; Mr. Edward Palmer, Information Assistant; Miss Shirley Holt, Film Distribution Supervisor; and Mr. George Jones, Projectionist.

There is no fixed budget for the audio-visual section. The size of the project determines the size of the budget.

Depending on the kind of project, the entire staff decides what medium to use. If the aim of the project can be achieved without action then filmstrips are used. If color is not considered necessary then motion pictures in black and white are preferred. In other words, the staff studies the project with great deliberation, and always decides to use the best medium for the making of the project, considering factors such as money to be spent, time, and efficacy or vice versa of each medium.

The Telephone Company also has a very modern model audio-visual center in the Headquarters building in Boston. This center has complete facilities for many types of meetings and presentations, particularly for employees training purposes.

The New England Telephone Company has three main avenues of film distribution: through the local business office, which will utilize a commercial agency; through rental and loan associations, which accommodate educational institutions throughout the New England area; and through the Bay State film agency, which is integrated with the theatres.

There are additional films which the Telephone Company uses within their own organization. These films are designed for the Bell System

Employee Training, but they may be loaned for the use of non-telephone organizations and business concerns upon request to the local Telephone Company Business Manager.

The Telephone Company has a teaching package which is used for lecture demonstrations purposes, and is designed to help teachers to instruct elementary school pupils in proper telephone usage.

All of the presentations of the Telephone Company must be evaluated by the Department of Motion Pictures and Audio-Visual Aids. The local offices submit monthly reports that show the compilation of "Attendance and Showings" of individual film subjects. The main films available to the public are listed to minimize the work of writing, and also to improve methods of computation when these forms arrive from the various areas and states.

The local business offices throughout the five New England states submit the respective forms for progressive evaluation of the quantity and quality of the complete program. These reports are sent at stated intervals to the Boston office, where a summary report is made of each particular activity, so that interpretation of the program will be more readily understood. They also provide a portion of the annual report that must be submitted to the American Telephone and Telegraph Company in order that they might determine the value of the program on a Bell System basis, which is nation-wide. From these reports they are able to supplement the existing program, or implement additional ones.

##### 5. Raytheon Manufacturing Company

Raytheon Manufacturing Company does not have an audio-visual department, as such, but most of the activities along this line come under the Photographic Department. This department, which was

started in 1940, has a staff of twelve people headed by Mr. Lee Ellis, and assisted by Mr. Newell Garden. The staff of the Photographic Department includes:

- 2 Clerks
- 1 Copy camera specialist
- 2 Contact printers
- 1 Enl
- 2 Wash and dry men
- 4 Photographers

The building which houses the Photo Department is shared with the Publications Department. This building is an old three-story home which has been remodeled for the use of the two departments. The Photo Department occupies two stories of the building, which includes a small previewing and projection room in the basement. There is a dark room and some offices on the second floor.

The Photo Department, through the cooperation of the Public Relations Department, convinced management that they would be justified in trying a film program. The latter part of 1952 production was started on the film "Electronics in Action". The purpose of this documentary type film was to build good-will, or as a public relations tool. The film was produced in eight months entirely by the Photo Department; directed by Mr. Ellis, script written by Mr. Garden, and all the scenes taken in or around the Raytheon plant. There were no actors hired, and all the personnel were employees at Raytheon. The film cost \$10,000 to produce and approximately 50,000 people have seen the film in the course of seven months. Mr. Ellis said: "We plan to show this film for a period of two years in order to realize our cost of investment." Mr. Garden said: "At this time (November 1953) we figure the unit cost of showing the film is about \$1.00 per person, but at the end of two years the cost should be down to a few cents per person." Two more films are in process

of production, - "Marine Collision" and "Microwave Relay Equipment". The former is a customer relations film, and the latter is strictly a sales film. The film "Ready for Sea", based on the testing procedures involved in getting a radar unit ready for installation on a ship, was released in December of 1953. This is a customer relations film and was inspired by a visiting Italian scientist, who was amazed at the testing techniques Raytheon used and suggested that his countrymen would like to know more about this phase of manufacturing.

Films are also used in the time motion studies sections of the manufacturing division at Raytheon. Mr. Lytle, of Laboratory 16, has a \$6000 dark room, and he takes high speed films on reactions of tests. Mr. Lytle also takes films on progress of equipment on a day-to-day basis and then puts them together. This division also prepares canned speeches for its scientists on film to be used at clubs, churches, and other outside organizations. This division prepares and shows techniques of experiments and reports results of achievements all on film. Most of the work of Laboratory 16 is highly confidential or secret in nature, as they are doing about 85% Government contract work. Mr. Lytle has made two films for the Navy of highly technical nature. Laboratory 16 also shows noon-time movies on such subjects as safety, travelogue, machining techniques, new equipment, and sports. The average audience is about thirty-five people, and most of the films are obtained free from the Ladd Visual Aid Service in Boston.

The Engineering Division in Newton, Massachusetts also shows noon-time motion pictures as was pointed out in Chapter IV, Section 4 of this paper.

The Photograph Department does not have a definite budget, but

it is directly related to the film in production. Both of the films produced thus far, and the two in production are all external type, but "Electronics in Action" has been shown to practically all the employees desiring to see it. This film has been shown as part of the orientation program at the Quincy Plant and at "Family Night". Raytheon handles all distribution of films to schools, clubs, or other organizations.

The Photo Department has five Bell and Howell 16 mm sound machine projectors which can be borrowed internally by any group desiring to show film. Each group is responsible for obtaining their own films and physically transporting the equipment to a pre-reserved area. The projector and mechanics of film showing is left entirely up to individuals in the groups desiring a film showing.

"The Photo Department would like better studio facilities and more room than it has now in order to operate more effectively", said Mr. Garden.

## CHAPTER VII

Conclusion

Good results from the use of business films are certainly no accident. Awareness and execution of the proper techniques of film usage is very important in deciding whether or not film showings are profitable to an organization. Raytheon Manufacturing Company seems to be lax in the application of the techniques as outlined in this paper. Every individual group obtains its own films, and projection techniques are left up to inexperienced individuals. Organization of the audio-visual activities among different divisions are not coordinated. For example, some divisions have noon-time movies, but 90% of the employees are not aware of these facilities. Laboratory 16, a large division, has equipment that the Photographic Department does not even know exists in the company. Each individual division carries on its own film processes unaware of duplication in efforts or availability of material in other departments of the company.

Raytheon has made two films and has two more in production, and all of them are public relations, customer relations, or external type. These films are aimed at building up good-will outside the plant, but it would seem that more return per investment could be obtained from internal use of film in the areas of safety and training. In many divisions of the company, such as Engineering and Equipment Production, the employees themselves started film programs because they wanted to improve their knowledge of their jobs, and this interest should be encouraged. With the exception of the Tube Division in Quincy, very little planned research has been done on training problems and the part the film could play as an aid. Mr. Brown, Training Director of the Quincy Plant,

has effectively applied films as a medium of instruction for employee operators to reduce scrap. Also, there is very little use of film to motivate employees to an awareness of safety (it is costing Raytheon thousands of dollars a month for industrial accidents). The use of film for orientation has had satisfying results at the Quincy Plant, according to Mr. Brown.

The main reason given to the author of this paper by training and safety leaders, at Raytheon, for the lack of the use of films in their areas was that there was not sufficient relative film material available. The electronics industry is a specialized and technologically dynamic field, and therefore there are few standard films on this subject matter.

Another apparent weakness in the techniques of film use is the lack of a suitably equipped classroom for showing the films to a group of people in their individual divisions. Employees in Raytheon, as well as most other companies, seem to want to know more about the company they work in. Because Raytheon is so physically scattered and so large, it is very natural for an employee in Building "A" to want to know how he fits into the Raytheon "family". Then he might want to know what is the function of the Newton Plant, and how does it tie in with the operations of Building "A" in Waltham, "where I am working". Another question perhaps close to his interest is "How do I get paid, and what are the company wage incentive policies?" All these and many more questions premost in the old or new employees' minds could be incorporated in an internal film. This film need not be an elaborate Hollywood production, but perhaps even an inexpensive slidefilm would suffice. The film "Electronics in Action" is a general and overall view of the company's prod-

ucts, but an internal film would have to be much more specific and limited in scope. Possibly a program where a film about each division consolidated into one (with the expense shared from the overall budget of each division) could be worked out.

There seems to be a large gap in films jointly sponsored by union and management. Perhaps a film showing a mock bargaining meeting, or a mock grievance meeting could be made to show the solidarity of the union-management relationship at Raytheon. Another gap in film subjects is the film sponsored by management giving credit to the union for its overall contribution to the smooth, strike-free running company.

The foregoing are merely a few suggestions for possible subjects for internal films. I am sure there are many more avenues which could be profitably explored by Raytheon in the field of internal films.

#### Summary

There seems to be three areas where Raytheon Manufacturing Company is not using films profitably, and in their order of importance they are:

##### 1. Organization:

(a) A motion picture or audio-visual department should be organized which would control all audio-visual material made or used by the company. This would standardize equipment, and also act as a "clearing house" for material used. This department would be a good security measure in regard to films made for speech making purposes.

##### 2. Film Material:

(a) There should be an intensive survey made within the company to determine specific subject matter, with the possibility in mind of producing some good internal films on employee training, safety, or

orientation. This would seem to be a more profitable approach than producing all public relations films.

3. Techniques of Use:

(a) Each division should have an area well-lighted and ventilated for showing films or holding classes.

(b) A film Library should be organized.

(c) Personnel should be trained as projectionists, or a projectionist should be assigned to the audio-visual aids department.

(d) Better distribution by putting films in the hands of a professional film service.

(e) Definite maintenance program for visual aids equipment.

Raytheon Manufacturing Company has only recently begun to use films as a medium of communication, so it is especially important at this time to consider the objectives and profitable use of this powerful tool of management in this company, as well as any other company contemplating film usage.

## APPENDIX A

Language About 16 mm Motion Pictures

Like any other field, the motion picture has its own terminology. For the beginner the following vocabulary may be helpful.

- Animation:** Cartoons or technical drawings which are "animated" or made to move on the screen.
- Camera:** Machine used in taking original photography.
- Cutting continuity:** Printed version of actual words on sound track of motion picture as finally released.
- Direct recording:** Sounds accompanying pictures recorded at same time as photography.
- Documentary:** A term loosely and variously used, but typically a motion picture commenting on a single subject in the social scene through dramatic selection and treatment of realistic photographic sequences; music is usually restrained and narration subordinated to screen presentation.
- Documentary-type:** Usually refers to motion picture in which off-screen, or voice-over, narration on sound track ties photographic material together.
- Dubbing:** Laboratory process in motion picture production by which recorded sound is introduced into a sound track recording previously made, as the dubbing of a studio recording of a narrator into a direct recording of dialogue; also synchronization of sound track with screen image.
- "Dupe":** Duplicate of master negative, used to insure against damage to the original in printing process.
- Featurette:** Short photoplay.
- Frame:** Single picture in a motion picture sequence.
- Kinescope:** Photographic and sound recording of television show made for re-telecasting.
- Leader:** Blank film at beginning or end of a print which is not a part of the motion picture.
- "Lip sync":** Production process of synchronization of sound track with lip movements of screen image.
- Master:** Master negative; original film material in final version or a duplicate of it for printing purposes.

- MM:** Millimeter, for designated width of film. Three standard widths are: 8 mm (home movies); 16 mm (club circuit movies); 35 mm (used largely in theatres).
- Musical:** Type of motion picture which, in the tradition of the operetta, typically emphasizes the light and humorous with part of all of dialogue in music; or a motion picture in which vocal or instrumental music provides larger part of film's appeal.
- Newsreel:** Short motion picture, usually with several narrators and a number of film subjects, all with newsworthiness at the time made; often includes humorous or human interest subject matter also.
- Off-screen:** Refers to person or thing which does not appear in the photography but which may be indicated by sound track or otherwise.
- Out of Sync:** Lack of synchronization.
- Photoplays:** Type of motion picture which presents a dramatic story such as most theatrical feature films do, usually produced with professional actors and dialogue.
- Print:** A film printed from master to be used for projection.
- Projector:** Machine used for exhibiting film.
- Reel:** Spool on which film is wound (16 mm reels come in 400 ft., 800 ft., 1200 ft., and 1600 ft. sizes referred to as one-reel, two-reel, three-reel and four-reel lengths; also, unit of measurement of films length (e.g., two-reel film is 800 feet, or approximately 22 minutes long).
- Re-winding:** Transferring film from take-up reel to feed reel in position for another projection.
- Scenario:** Synopsis of motion picture with scenes, situations and limited directions.
- Screen editorial:** Type of motion picture which presents a point of view but depends largely on a narrator on the sound track, with photographic material from real life as illustrations.
- Script:** Typed or mimeographed manuscript giving cast, scenarios, dialogue and all necessary detail prepared in technical form for director's use.
- Sd:** Sound, indicating that the film is not silent and must not be used on silent projector.

**Silent speed:** 16 frames per second, rapidity of projection for silent films, available generally on both silent and sound projectors; see sound speed.

**Slide motion picture:** Slide film material produced in motion picture form, often with a feeling of motion being imparted by clever movement of the camera or the material.

**Sound speed:** 24 frames per second, rapidity of sound projection, cannot be obtained on silent projector.

**Sound track:** Photographic record of sound on a motion picture film which activates a projector sound unit.

**Sponsor:** Company or individual who directs that a motion picture be made for a specific purpose, who controls contents and distribution plan and who pays for the production.

**Sprocket holes:** Carefully registered holes in film by which projector moves film, found on two edges of 35 mm and silent 16 mm films, but only one edge of 16 mm sound or 8 mm films.

**Stop motion:** Production technique of imparting mobility to inanimate objects by stopping camera and moving the objects between exposures.

**Story board:** Rough sketches of key scenes in a proposed motion picture, arranged in sequence to help the sponsor visualize the finished film.

**"Sync":** Synchronization.

**"Synchronization":** Correct timing of sound track to visual image. In projecting a film the film passes through the sound unit after passing the lens aperture. Incorrect looping of film on projection will cause lack of sound synchronization. See also "lip sync".

**Throw:** Distance from projector to screen; also refers often to the maximum distance at which a projector can place an acceptably sharp picture on the screen.

**Tails-up:** Not rewound, applied to film print which must be reversed endwise before another projection.

**Track:** Sound track.

**Travelog:** Type of motion picture describing a particular locale or series of locales whose chief appeal depends upon beautiful scenery, exotic customs or interesting people and structures shown.

**Treatment:** Written statement in non-technical language of the theme and method of development of a proposed motion picture as a basis for discussion and consideration.

**Voice over:** Voice explaining pictures on screen, coming from a narrator who is not shown; off-screen narration.

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