INSTRUCTIONAL FILMS AND FILM STRIPS

FOR

INDUSTRIAL ARTS CLASSES

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A Report

by

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C. M. R.

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CHAPTER I

THE PHASES OF THE STUDY

The field of industrial arts is well suited to the use of visual aids in its teaching. The demonstrations which are a necessary part of its instructional procedures are a form of visual aid. Among the newer visual aids in common use among teachers of industrial arts are the motion picture films and the film strips. These aids have been developed since the beginning of the century and are not as well used as they should be. Many instructors do not know the true value of these aids, nor the correct methods for their use. Part of this lack of knowledge is due to the more or less haphazard way in which the materials are provided that are necessary for this important phase of teaching. Teachers have not been trained in the use of these aids. Films are tools for instruction and like other tools, may require different procedures in the performance of different operations. (9, page 7)

The projection equipment may be adequate and available, but too often the source of film information is inadequate for the situation. This report is for the purpose of providing some additional information on the use of these visual aids and includes a list of motion pictures and film strips under the proper subject headings in industrial arts. Although some of the lists appear quite lengthy, they in no way completely cover the subject.

Origin of the Study: This study of visual aids was prompted by the writer's duties as visual aids director in his school. He was chosen by his superintendent to aid the other teachers in the handling and operation of the visual aid equipment. One of the chief problems was in obtaining films suitable for use in the various departments, as well as in

the industrial arts subjects. The greatest problem was in the proper presentation of the film to the pupils. Too often it was only a show, and little was done to follow it up in an educational manner. The writer determined to learn more about the methods of presenting motion pictures and film strips in the classroom. This study was the result.

Need For The Study: At the present time there is an almost unlimited supply of films of all kinds available for school use, but the problem is in selecting the proper ones to use and correlate with the class work. Some of the newer films are being produced with the idea of correlation with particular subjects and textbooks, and we can find a number of industrial arts films in that classification. Many film producers issue their own catalogs and film lists. Organizations such as the Educator's Progress Service, provides a "Guide To Free Films," which is of value to the user of films. The great number of catalogs and lists which are available tend to make another problem, that of studying and selecting the films that can be used.

Few of the catalogs have films listed under the specific subject headings for industrial arts. Usually the description included with the listed films is short, but the main idea in the picture can easily be interpreted. The great need is for a more complete listing of the related film subjects, according to subject matter. This study includes a list of industrial arts films, selected from a number of sources and arranged according to the specific subject matter. It was not possible to list all films that are available, but only ones which appeared to be of prime importance.

Method of Study: The matter of making up a list of available industrial

arts films involved the study of many catalogs and film lists, from various sources. The latest issues possible were obtained so as to have a large number of new films. Of course many of the older educational films are as good now as ever. In some instances the commercial types of films have been remade, or revised to keep them up-to-date. These catalogs were obtained from the state film depositories that provide most of the school films, from the commercial firms who sponsor films, and from the producers of educational films. Books and magazine articles concerning visual education were searched and studied for additional information concerning the use of visual aids in industrial arts.

Definitions of Terms: When the term "Visual Aids" is mentioned, many people interpret it as synonymous with motion pictures. This situation is due, in all probability, to the extensive advertising of films, which, in turn, has had educators film conscious. Weaver and Bollinger say: (21, page 1)

> A visual aid, however, is any specifically prepared drawing, illustration, model, motion picture, film strip, or other device that will expedite learning through the sense of vision.

Dorris also says: (7, page 6) Visual instruction simply means the presentation of knowledge to be gained through the "seeing experience."

Another similar definition is given by Roberts. (16, page 6)

> Visual education is a method of imparting information which is based upon the psychological principle that one has a better conception of the thing he sees than of the thing he reads about or hears discussed.

Dent (6, page 1) defines visual-sensory aids as:

> All materials used in the classroom, or in other teaching situations, to facilitate the understanding of the spoken or written word.

In short, these aids are supplementary devices by which the teacher, through the utilization of more than one sensory channel, helps to clarify, establish, and correlate accurate concepts, interpretation, and apprecia-

tions. (16, page 6)

Since the types of visual aids to be studied in this report are motion pictures and film strips, we need to know the meaning of each of them.

> The motion picture is a series of separate and distinct still pictures projected upon the screen at a rate to produce a smooth continuity of the still pictures and give the sense of motion. The silent motion picture is projected at the rate of sixteen frames per second while the sound motion picture, also 16mm in width, is projected at the rate of twenty-four frames per second in order to be synchronized with the sound. (6, page 102)

> The film strip is a type of projected still picture. The individual pictures are printed in series on 35mm safety film. The pictures on the film may be single frame or double frame. The pictures on the film are in fixed sequence, but it is possible to move forward or backward three or four frames with ease. (Ibid., page 84)

Review of Previous Studies: In preparing to write this study a review of several previous studies was made. The previous studies are in the field of visual aids as they pertain to the subject of Industrial Arts and the purpose in reviewing them was to determine the extent to which they discuss films and the recommendations made for their use in industrial arts.

The Charters Study: The earliest similar study listed in the Oklahoma A. & M. College Library is the Charters Study. It is not a thesis but a small publication which reports the findings of a number of investigations. It was written in 1933 and is entitled; Motion Pictures and Youth. (4)

This study covers an investigation into the effect motion pictures have upon young people. The motion pictures upon which the study was based were theater entertainment films, rather than educational films. The effects were classified under: information, attitudes, health and

conduct. Several pictures were viewed by superior adults and children ranging in age from five to ten years. The amount of information retained by the two groups is given in percentages. It shows that young children retain 50 to 60 per cent of what they see.

The attitudes of the children were influenced by the type and frequency of shows. They tried to duplicate many of the things they saw on the screen. The emotions of the children were affected quite noticeably. The younger children were affected by horror scenes and were not affected by pictures pertaining to love. Youth of fifteen to nineteen years were influenced by love scenes. The older persons were not affected as much by influences in the pictures.

Fulton's Study: W. R. Fulton, in 1939 completed a thesis entitled, Problems in Administration of Projected Visual Aids Based on Industrial Data. (12) His study included a survey of the projection equipment in Oklahoma high schools. His findings are; (1) a lack of finance, (2) a lack of competent operators, and (3) a lack of knowledge on the part of the school boards and superintendents concerning many uses of films in school work.

Companies and agencies that distribute visual aids and equipment are listed. Costs, sizes and purposes of various machines are given, with recommendations for each.

Most of his information was obtained by means of a questionnaire addressed to county superintendents, high school superintendents and presidents of institutions of higher learning.

The Barefoot Study: Olen G. Barefoot completed his study in 1939 entitled Audio-Visual Aids in Public Schools. (1) In this study, 8,806 schools and school systems were surveyed. His survey showed that these schools

owned 37,671 instruments for projection of pictures, 11,501 radio receiving sets, a thousand centralized sound systems, three quarters of a million phonograph records, and more than three million glass slides. A short history of the use of the phonograph record for instructional purposes, and of the radio and its place in the schools was given. He discussed the use of sound films, slide films and projectors and stated that the wide spread use of motion pictures had been retarded because of the lack of variety and quality in educational sound films.

The writer summarized his thesis with the factors to be considered when purchasing a sound motion picture projector. They are the following:

1. Intensity of illumination
2. Safeguards against film damage
3. Steadiness of the picture projected
4. Quality of sound
5. Ease of operation
6. Portability
7. Durability
8. Accessibility to repair services
9. Accessories
10. Cost

The Ledbetter Study: James Luther Ledbetter completed his thesis in 1941 with the title; Visual-Aids Furnished by Commercial Firms for Use in Industrial Arts Classes. (15)

The study was made by contacting firms which provide free or nearly free items that can be used in industrial arts classes. The aids obtained from these firms were studied and evaluated by the writer. The items are classified and listed as to industrial arts subjects. The apparent

teaching value of each aid is also indicated.

Two hundred five addresses of companies sending material are listed as well as more than five hundred teaching aids. These aids are classified as:

a. Catalogs of supplies, tools and equipment

b. Information booklets, pamphlets, periodical literature, etc.

c. Wall charts, pictures and posters

d. Samples of products

e. Demonstration materials

f. Visual aids

Ledbetter concludes that visual aids are becoming more widely used and commercial teaching aids are particularly valuable because of the ease and economy with which so many of them can be obtained.

In addition to the theses and reports that have been written concerning visual aids in industrial arts classes, there are now many books on audio-visual aids. A number of them have been written especially for use as textbooks, others for reference material. The information on the use of visual aids in industrial arts is somewhat meager. There is considerable more information to be found on the subject in the educational periodicals of interest to industrial arts teachers. Several magazines devoted entirely to audio-visual aids are now being published. The catalogs of motion picture films and film strips include all the information that is necessary for ordering films. They also contain directions for the care of the film, and instructions on the mechanics of projection. (19)

Predicted Views of the Results of This Investigation

It is the desire of the writer that future studies on the subject of visual aids in industrial arts continue the listing of suitable motion

picture films and film strips. As more information is gained concerning their use, and more films are produced to correlate with the subjects of industrial arts, we need to be informed about them. Film strips are being correlated with the motion picture and serve as a method of review when used following the motion picture film. They should become more important as industrial arts teachers use them properly and recommend that more acceptable films be produced.

Analysis of The Plan for Presentation of Film Lists

The films in this report have been arranged alphabetically and according to the subject which shows the closest relationship. As much information is given about each film as was deemed necessary for a shop teacher to be able to choose the films that will aid him in his teaching.

The title of the film is given in capital letters. The number of reels, length of running time (for most films), whether black and white or colored, whether sound or silent, follows. The description of the picture is next, followed by the name of the distributor or firm from which it is available, and the rental or sale price. The address of the source may be obtained by referring back to the complete list of addresses preceeding the film section. All of the motion picture films listed are 16mm in size. Those films listed as free do not carry a rental charge, but the exhibiter is usually required to pay the transportation charges and insurance both ways. Some require that the user pay only the return charges. A card for a showing report often accompanies the film and it should be filled out and returned to the distributor. Producers and sponsors know by the reports how their films are being used.

The 35mm film strips are listed at the end of the motion picture list in each subject, except where the strip film accompanies the motion

picture film, then it is listed with that film.

The use of visual aids in education is increasing. The motion picture film and film strip are becoming more important, and their proper utilization by trained teachers will be of benefit to all concerned. More studies are being made to determine their value and to improve their use. Industrial arts teachers can develop more effective programs by including the best of the visual aids in their plans. The following chapter includes a brief history of the development of visual aids and a report on the film situation of today as it affects educational institutions.

CHAPTER II

THE DEVELOPMENT OF VISUAL AIDS TO EDUCATION

Education is as old as man himself. When man first began to learn how to live he was being educated. Visual and auditory aids were his only methods of learning as he learned only by experience. As knowledge increased, man developed new methods of imparting that knowledge to others, but in the process of developing educational methods, he abandoned some of the most effective means of educating the child. The use of visual aids was more or less pushed into the background and the textbook and lecture became the most important item in education. In recent years, however, the importance of visual and auditory aids has become apparent and we again find that they are coming into prominence in the progressive schools.

Early History: The thing we call a motion picture, which is not a picture of motion at all, has been in existence for countless ages. That is, the principle of the motion picture has been known to mankind for three or four thousand years. Historical records indicate that in ancient China there were devices which produced the effect of motion perceptible to the eye. One of these devices has been explained as being a dark box, in one end of which was a small peephole and in the other end a hole about three inches square. Some enterprising Chinese artist had painted similar pictures in sequence on a strip of silk, and this strip of silk was pulled past the large opening while another person placed his eye at the small hole to see these marvelous pictures of action.

Psychologists tell us that an image on the retina of the eye remains there approximately one-twelfth of a second after the object itself may disappear from view. This is known as "persistence of vision." If we

can arrange to remove one picture, and substitute another while the vision persists, we can view the pictures with a feeling of continuity, just as we view the motion pictures of today. (6, page 101)

European History: The development of the educational picture in the United States was paralleled to a certain extent by similar developments in the European countries. Many of the European nations are applying the motion picture to educational problems in a very effective manner. It is rather safe to state that motion pictures are being used for educational purposes in every civilized country as well as in many countries or localities which may not have achieved that rating.

The Russians, who were faced with the problem of combating illiteracy and training groups who could read very little or not at all, found the motion picture and other projected aids to be highly effective. They purchased and produced large numbers of projectors and films and carried their training program by train, by truck, and other means into the far reaches of the U.S.S.R.. At the beginning of the World War II, reports indicated that all types of visual aids were being more widely used in that country than in any other.

Reports from Germany near the beginning of World War II have varied, but indicate that approximately 40,000 motion projectors were being used among the schools and adult education groups to teach the fundamentals of Nazism. The effectiveness of this teaching can be judged in some measure by the fanatical adherence of young and old to Nazi doctrines preceeding and throughout the war. (Ibid., page 103)

History in America: One of the first attempts at producing motion pictures was made by Leland Stanford late in the nineteenth century. He was

interested in determining whether or not a certain horse actually raised all four feet from the ground at any one time. He had a series of twenty-four cameras placed along the track and separate pictures were photographed as the horse passed these points. The experiment answered his question, but a young engineer by the name of Issacs was given the task of devising an apparatus which would produce a continuous record of the action of the horse. To him is credited much of the early development of the process for recording motion pictures. Thomas A. Edison invented the Kinetoscope in 1872, by which tiny pictures mounted on a cylinder were viewed as in motion. This machine was invented for the purpose of showing pictures in connection with phonograph records--pictures of the recording artists. (Ibid., page 102)

Eastman invented the roll film to be used in the Kinetograph, the film being moved along by sprockets. C. Francis Jenkins, a clerk in the Treasury office, invented the motion picture projector and his basic ideas are still used in the modern machines. He exhibited his first motion pictures in Richmond, Indiana in 1894. The first public showing of an Edison made motion picture was in New York City in 1898. The picture was shown with the Vitascope, the name given by Edison to the projector developed by Jenkins and Thomas Armot. In the early 1920's the sound motion picture was developed and color film was introduced in the early 1930's. The stereoscopic motion picture is a possibility of the future. (14, page 5294)

The first intensive application of the motion picture to educational procedure was immediately before and during the first World War, largely for propaganda and general training purposes. They were found to be so valuable an aid in education that the close of the war brought into ex-

istence many types of educational films and film producers. Industries produced films for use in training their workers and for informing the public about their products. Educational films were produced, but without the assistance of educational leaders, so that they often proved of little value in the schoolroom.

The period of enthusiasm for motion pictures in education from 1914 to 1920 took a decided slump and did not revive until some years later. Certain experimental work was done and the values of the motion picture and possible uses of it in education proved an incentive for the production of educational pictures. Weber, Freeman, Johnson, Roach and McClusky found that there were certain values to be expected from the proper use of the motion picture of the proper type. These findings were instrumental in causing larger and more stable organizations to undertake the production of strictly educational films. Industries, also came into the field again, producing picture stories of their products and the methods of manufacture. Many of these commercial films were made with the advice of educators and are valuable teaching aids. Especially in the field of industrial arts the commercial film is important. It provides information about the industry in such a way that students can get ideas of the possibilities in a variety of industries.

The Current Situation: At the present time there are very few of the large cities of the United States which do not have directors of visual aids, who coordinate the use of motion pictures and film strips into the teaching plans of all the schools. Many of the smaller cities have appointed full or part time directors who are responsible for coordinating the acquisition and utilization of appropriate motion pictures and other training aids. (6, page 104)

The United States Office of Education has recently established a Visual Education Division to offer advisory service to schools and others interested in making the most effective use of motion pictures, film strips and other teaching aids. The office sponsored the making of a large number of motion picture films with accompanying film strips for war training purposes. They were proved of great value to the armed services during the war, and the same films may be purchased now for public school use. A number of them will be found in the film list of this report.

There are at present about five hundred commercial film dealers in this country, an even larger number of educational film libraries connected with universities, colleges, and agencies of state and local government and museums, and more than fifty public libraries having film collections. There is almost no consistency among or between these agencies as to area served, prices charged, quality of prints, size of collection or type of advisory service. Some cities have many film-lending agencies. Others have none. Some states have a statewide agency. Others do not. It is an extremely confusing picture.

Industry-sponsored films are as a rule distributed through an organization such as Modern Talking Picture Service, which guarantees an audience to the sponsor at so much, usually a few cents a head. In other words, the sponsor pays to get his film seen. Then the agency deposits prints with schools, libraries, and dealers, who may use or lend them free of charge provided they report on numbers of showings, size of audiences, and other factors. Some corporations, however, are setting up their own film libraries for distribution to outside groups, either directly or through the company's local dealers. General Motors, Inter-

national Harvester, Chrysler, and Standard Oil have done this.

Most school film producers distribute their own films. The usual one-reel black and white print sells for $45.00 and rentals are $2.00. Some, such as Encyclopedia Britannica Films, employ sales agents throughout the country who work on a salary "plus" basis. Others, such as McGraw-Hill, sell mainly through the mails. Very often films are sold to film dealers and libraries for rental, as well as to school systems.

Educational film libraries vary as much as commercial dealers do. Some are attached to state universities, some to public libraries, some to museums, some to public school systems, some to state departments of commerce or education, and some to county libraries.

Most of the largest educational film libraries are operated by university extension departments, which probably circulate more films than all other distribution agencies put together. Most university extension departments have an audio-visual division which supplies films to schools and other organizations in the state. There is great variation in the size and the policies of these film libraries. Some must support themselves from rental fees; others receive generous appropriations from the university budget. In some states the extension division also has responsibility for in-service training of teachers in the use of audio-visual material; in a few states this is done by the state department of education.

Estimates indicate that university film libraries serve some two or three million adults every year with nontheatrical films. A few of these libraries are highly selective collections emphasizing one or more types of films. Most are fairly well-rounded collections of educational films. Some buy any film for which there is a demand. Some are operated by the

the university as part of an over-all audio-visual center which handles film production, distribution, research, and training. Some are simply operating libraries or are attached to special departments. Most of them have done noteworthy pioneering in the use of films among both school and adult groups.

Three principle problems, then, emerge from the distribution maelstrom: (1) more prints are needed in more film libraries so that they may be readily available to film users without costly and inefficient cross-country shipping, (2) an information and guidance service is necessary in every community where films can be useful. Even small communities that are unable to support a commercial or educational film library should have access to film information and film service. (20, page 84)

Production of Educational Films: The production of classroom films is a matter of reconciling several variables. The educational film producer will ask himself (1) whether there is sufficient demand for a curriculum film on the subject he has in mind, (2) whether there is authoritative research on which to base the film, and (3) whether such a film can be made on the low budget on which he operates. Most classroom films are based on a concrete piece of research and are produced in collaboration with an authority in the field. (Ibid., page 70)

If educational films are to exercise the same powerful influences in the orderly development of mind, motive, and conduct in the school curriculum, that they exercise through the theater in a possible disorderly, inconsequential, or even unwholesome way, they must be made so as to compete on a professional basis with theatrical films, even though the subjects treated in school films are necessarily very remote from many of the subjects treated in the neighborhood movies. The solution of this

problem--and it is a real problem--lies not in making educational films purely entertaining, but in adapting the techniques of the entertainment film in order to make educational films more truly educational. (13, page 81)

Research in the field of audio-visual education will no longer be devoted solely to determining the effectiveness of audio-visual materials since the experiences of World War II have confirmed without question, their value as tools of education. It is more than probable that considerable time and effort will be directed to means of developing more effective ways of seeing and hearing. The teaching of students to see and hear efficiently is as important as learning the content to be seen and heard.

There is a need to develop better techniques in the use of visual materials. Consequently departments of educational research will attempt to develop the proper psychological approach to their uses. Teachers, at the present time, have at their disposal various teaching aids, but they fail to secure maximum educational return from them because of a lack of the proper utilization.

It is safe to predict that educators, film producers, and non-profit agencies will co-operate in this effort to produce teaching aids that will meet more fully the needs of education. The American Vocational Association has already appointed a committee to compile lists of needed teaching aids in industrial education, home economics and vocational agriculture. This group not only made a comprehensive list of teaching aids that was wanted but submitted suggestive specifications for their construction. The object was to encourage manufacturers to produce teaching materials as part of their public relations or advertising programs

and in accordance with the educators needs and use of the materials. (21, page 371)

The supply of films today is large, but the industrial arts teacher must make a more or less continual study of the available films in order to eliminate the inappropriate ones. New films are added to old lists and there may be duplications, due to different agencies producing films along the same subject matter lines. Old catalogs should be discarded and only the latest used in ordering pictures, as the producers usually revise their lists, but the final revision is left to the teacher.

CHAPTER III

A PHILOSOPHICAL HISTORY OF INDUSTRIAL ARTS AND THE USE OF FILMS FOR INSTRUCTION

Man is responsible for many changes that have taken place on the earth's surface. He is endowed with the ability to think and to reason, and in addition, he alone of all living creatures, has highly developed hands. These endowments have enabled man to acquire nature's gifts and change them into products that make for better and more convenient living.

Few of the materials which we use in our daily living are usable in their raw condition. Man must change those raw materials into a form in which they can be more conveniently used. Through the ages man has added to his knowledge and passed that knowledge on down to the next generation by means of education. A great part of the early education of the youth was in the home, where they learned the trade or vocation of the parents. Later the boy might go out to study or work for another craftsman, as an apprentice. The trade was taught by example and practical experience. As our modern day industry developed and craftsmen became mere laborers in a factory, the education of the youth was left entirely to the schools. The schools were often unable, or sometimes unwilling, to shoulder the burden and so our young people grew up with little or no practical experience to take with them into our complicated society. Today, in all sections of the country, the schools are attempting to meet the need for well-rounded education by making industrial arts an important subject at all grade levels. If children are to receive an education that will be satisfying to them in their future living, educators must supply those subjects that will lend themselves to the all-around growth of the individual. Industrial arts is an important part of general education for

boys and girls. (17, page 1)

Historical Development of Industrial Arts: The savage learned handwork by unconscious imitation of his parents. The barbaric peoples learned manual skills through conscious imitation of others, with still no theory or system in teaching. The early Jews taught religion to all children from the very earliest age and as early as possible each parent taught his child a trade or vocation by which to live. In Homeric Greece, handicraftsmen were merely mechanical and were looked down upon by the upper class. Greek youth of upper class had no manual arts teaching. Apprenticeship among the lower classes continued the handicrafts and produced goods for the non-workers. Martin Luther said that boys should attend school two hours daily then spend the other part of the day at home learning a trade. In the seventeenth century John Comenius believed that instruction in words and things should go together. He has been called the "Father of modern pedagogy." One of the contributions of Comenius is of special interest to the student of Industrial Education in his exposition of the "methods of the arts." If shopwork and drawing had been included in his scheme of education, he would doubtless have recommended that they be taught according to his "method of the arts." In England, in the same period, Sir William Petty proposed to connect handwork with the school, though he never put his plan into practice. He recognized the great value of drawing as a means of expression--as a language, and in some cases considered it superior to written language. Therefore he would give drawing, also, a place in the schools. It is noticeable that Petty's chief aim in placing things and handwork in the school was to further general education and not to produce artisans. John Locke, 1697, became the chief exponent of the idea that education should fit a boy for practical life,

whether it be in a trade or a profession. In Europe during the 18th century two important steps forward were taken; (1) a few schoolmasters took the manual work into the school and began to use it as a means in education, though more of them used it for economic reasons; and (2) at least one writer, Rousseau, in his EMILE, came nearer than any previous writer to estimating the manual arts at their true educational value. Rousseau's recognition of the manual arts as a means of mental training marked the beginning of a new era in education. John H. Pestalozzi has been called the "father of manual training." He said there were two ways of teaching, "either we go from words to things or from things to words, mine is the second method." (2, page 11)

In the early part of the eighteenth century the idea of schools for teaching industrial occupations along with the usual academic subjects of the time was taking root in the United States. In 1745 a group of Moravian Brethren came to Pennsylvania and set up a colony. At twelve years all boys were instructed in the particular trades or arts they were intended to pursue. (Ibid, page 120) Wilhelm Froebel, in 1829, outlined a school plan in which he would place handwork at the very center of the educational system.

The Manual Labor movement began in America during the years 1825 to 1830, reached its height about 1834 and in less than ten years more had spent its force as an educational movement. In certain schools, however, it left a type of work which grew and became permanent. In the manual labor schools the emphasis was always upon the physical exercise value of labor and upon labor as a means of earning board and academic schooling. (Ibid., page 182)

The industrial school idea began in America in the homes for orphans

and poor children. One of the first was the Farm and Trades School in Boston. Nearly a dozen trades and occupations were taught in the school. (Ibid., page 242)

The first important Mechanics Institute came into being in the year 1820 when the General Society of Mechanics and Tradesmen of the City of New York opened a library for apprentices and established a "mechanics school." (Ibid., page 317)

The first American school to combine theory and practice--scientific reasoning and shop experience--in the mechanical engineering field was the Worcester County Free Institute of Industrial Science. Since 1887 the school has been known as the Worcester Polytechnic Institute at Worcester, Massachusetts. Ichabod Washburn provided money for establishment of a trade school with instruction in the principles of science added. Thus it came about that a new type of mechanical engineering course was made possible--a course which combined experience in a shop "run upon a commercial scale and producing articles to be sold in the market" and a theoretical course in applied science and engineering. The important difference between this shopwork and that of most of the earlier manual labor schools was that in this school shopwork was done in order to learn how to do it in the best way, and no pay was received for the work, while in the earlier shops the work was done for the benefit gained through the supposed physical exercise involved in it or in order to earn a part or all of one's living expenses. Im the manual labor schools little or no value was placed on instruction in the mechanic arts or learning the processes of industry; in the Worcester school, from its beginning, the shopwork had a definite educative purpose behind it. It was intended to be just as educational as laboratory work in science. It was a substi-

tute for apprenticeship to be taken while pursuing a well organized course in mathematics, science, and engineering.

The success of the "Washburn Shops" of the Worcester school, which included a shop for general woodworking and pattern making, a small blacksmith shop, and a small drafting room as well as a large machine shop was due not only to the educational principles adopted but also to the inspiring personality and rare business ability of the superintendent, Milton P. Higgins. (Ibid., page 362)

The Imperial Technical School of Moscow, Russia, set up in 1830, developed the Russian system of teaching mechanic arts. The system was military in character and was operated in at least a semimilitary manner. It grew up under an autocratic and highly militarized system of government, and the same exercise pieces were required of all students and must be taken in a prescribed order; all students were treated alike, at least theoretically. Rules, orders, dictation, and inspection were quite at home in the system. But the outstanding fact concerning the system remains that it was the first to use scientific principles in analyzing the mechanic arts and basing courses in instruction on these analyses. (3, page 47)

Uno Cygnaeus established a normal school in Finland in 1863, based on Pestalozzian principles, the time of the student being divided between studies, domestic industries and work in the garden and field. Cygnaeus believed that handwork in the folk schools should lead toward future practical efficiency, yet such a school should not become a technical or trade school. The fundamental purpose of the handwork was to be an integral part of a well-rounded elementary education. And this being his view, he maintained that the handwork should be taught by the same

teacher who gave instruction in other subjects and not by a special teacher. The handwork was called sloyd, and had been developed in the homes as a means of supplying the needs for wood tools and utensils. (Ibid., page 58)

Otto Salomon studied the methods of Cygnaeus, then returned to Sweden where he developed what he called educational sloyd. The three outstanding characteristics of the educational sloyd as developed by Salomon are: (1) making useful objects, (2) analysis of processes, and (3) educational method. Salomon reduced the number of kinds of sloyd to one, that of wood-sloyd, because materials were available, it was clean to work, and the processes and materials allowed a variety of activities. (Ibid., page 66)

In no respect was there a greater contrast between the Russian system and the Swedish system as developed by Salomon than in the aim of the work. The Russian system was definitely devised to train skillful, intelligent mechanics. In modern terms, its purpose was strictly vocational. The Swedish, on the contrary, was for purposes of general education; it was considered valuable for every child. The Russian system was worked out by a government engineer and had little regard for the individual differences of the pupils. It was mass production system of special education. The Swedish system was worked out by an educator whose primary interest was the enrichment of the education of all children during the elementary-school period, recognizing individual capacities and individual speeds in learning; it was an individual-production system, not a mass-production system, of general education. In this latter respect, it was an important contribution to present-day ideals and practice in elementary education.

In 1876 Russia made an exhibit at the Centennial Exposition in Philadelphia. It included examples of the work done in the mechanic schools and made an impression upon many who saw it. Dr. John D. Runkle, president of the Massachusetts Institute of Technology, and observed that students who entered the mechanical engineering course, with a knowledge of shopwork, readily secured positions upon graduation, while the large number who had not had shop experience found it "difficult to enter upon professional work without first taking one or two years of apprenticeship." Dr. Runkle decided that the Russian system was the answer and he planned to build a group of shops for the Institute, to teach the mechanic arts. (Ibid., page 320)

Dr. C. M. Woodward of the Polytechnic School Washington University, in 1877 reported a discovery after studying the Russian system. His vision was of shopwork being placed on the same educational plane with other school subjects. He saw the mechanic arts analyzed, pedagogically organized, and taught under the guidance of the same principles that have influenced methods of teaching the sciences, mathemetics, and even the languages. The mechanic arts so taught were not to teach trades. The products were to have no market value; therefore the shop must be supported in the same way as science laboratories. (Ibid., page 337)

The earliest and also the most distinctive feature of the manual training movement in America was the Manual-training High School. It is a notable fact that this appeared in complete typical form in the very first institution of its class, the Manual Training High School of Washington University, in the city of St. Louis. Its establishment was due to the efforts of Professor Woodward who later said, "My educational creed I put into six words: Put the whole boy to school." (Ibid., page 362)

Among the first cities to give manual training a place in its public high school was Omaha, Nebraska. Beginning on the first of October, 1885, classes from the high school and the eighth grade were taught woodworking by A. Baumann, a graduate of the St. Louis Manual Training School. Bench and tool equipment was provided for twenty pupils in a class. The hour and a half of instruction was given on the student's own time, and he carried a full quota of academic subjects. The superintendent was impressed enough by the results after one year that he planned to reduce the number of academic subjects required and make manual training an integral part of the public-school work. (Ibid., page 392)

Along in the early part of the twentieth century the term "industrial arts" came into use to describe work being done in the kindergarten. In October 1904, Professor Charles R. Richards suggested in an editorial in the "Manual Training Magazine" that the term "industrial arts" be substituted for the term manual training. He contended that, owing to a change of viewpoint, "we are rapidly leaving behind the purely disciplinary thought of manual training...Now we are beginning to see that the scope of this work is nothing short of the elements of the industries fundamental to modern civilization."

In 1913, Frederick G. Bonser, professor of education at Teachers College, Columbia University, contributed an article to the "School Arts Magazine" that expanded the conception of industrial arts in the elementary school. It considered it as both a subject and a method--an end and a means.

Accepting the philosophy of Dewey, Bonser sought to help in reforming elementary education. In doing so, he made full use of industrial arts. He asserted that industrial arts, when considered as a school sub-

ject, must justify itself on the same basis as other subjects. (Ibid., page 452)

While the term "industrial arts" was first used to designate work that developed as a reaction against the formalized courses inherited from Froebel, the term has become so popular in the United States that it is coming to include all instruction in handicrafts for general education purposes, whether formalized or not. Its meaning is essentially the same as the term "manual arts," though its connotations are different. In the term industrial arts, the "industrial" is emphasized; while, in manual arts, the "arts" is historically the distinctive word and, in the term manual training, "manual" is the important word. (Ibid., page 455)

Industrial arts is an essential part of general education. It is conceived as an answer to the problem of educating boys and girls to live in a world which may be accurately characterized as industrial and technological. From a nation which was largely agrarian and in which industries were simple and widely decentralized, we have moved rapidly to a position of world leadership in industrial development. Children and adults are now living in a civilization that has surrounded itself with mechanical devices which must be understood and used. At the same time, industry through increasing centralization has been removed from the everyday experience of the average individual. This very complexity makes difficult a comprehension of the organization, products, processes, and occupations in industry. Hence, it becomes a function of the schools to give every student an appreciation and understanding of our industrial civilization as a vital segment of American life. (22, page 1)

Current Beliefs:

Industrial arts is a curriculum area from grade one through college,

emphasizing construction with tools and machines, understanding of industry, drawing and design, consumer education, handy-man activities, objectification of learning, crafts for leisure and social understanding, with adaptations to meet the needs and interests of the different grade levels. (17, page v)

Life is too short to permit us to learn all that we need to know either by first-hand doing or first-hand viewing. We are compelled to get much of our information and experience "second-hand." Among other methods, we must turn to indirect observation for learning; and as twentieth century citizens we are fortunate in having so useful a means of indirect observation as motion pictures and film strips. Through them we are able to see what the camera has recorded on film anywhere and everywhere in the world. (5, page 182)

These two visual aids can be used as a means of direct instruction in processes or they may be used in the development of appreciation for our industrial activities.

Definitions:

In a broad sense industrial arts may be defined as follows; Newkirk and Johnson. (17, page 5)

> Industrial arts is the study of materials and of the desirable changes made by hand or by the several manufacturing processes from the raw state into products designed to meet the consumer's needs and comforts for daily living.

Industrial arts is also explained by Friese. (11, page 7)

> Industrial arts is one division of the "practical arts" with character and purposes associated with general education. To the extent that the exploratory or occupation-finding aim is emphasized, it is a much-needed prerequisite of vocational industrial education. Each must complement the other in the selection of and preparation for entrance upon wage-earning trade and industrial pursuits. It also has other important contributions to make toward the general education of all students irrespective of their future vocations.

In the Oklahoma state course of study for hand woodworking, there is the following definition of industrial arts. (18, page 1)

> Industrial Arts, as a school subject, may be defined as a study of processes, tools and machines by means of which the forces of nature are utilized and the raw materials of nature are changed by man to make them more valuable and pleasing. It includes an understanding of the native qualities or raw materials and of the natural forces, together with a knowledge of the methods and practices of utilizing and changing these materials and forces. It is also concerned with the social and economic problems incident to these changes.

Since industrial arts is considered to be an important part of general education, we need to provide a meaning for general education. Wilber (22, page 3) summarizes a number of statements of the purposes of general education as;

> (1) to transmit a way of life, (2) to improve and reconstruct that way of life, and (3) to meet the needs of individuals.

Objectives:

The major purpose of industrial arts as a school subject is to develop in the student the abilities of thinking and acting in relation to the material things and natural forces of the world. These abilities are realized through analyzing, planning, and performing mechanical tasks in the drafting room and in the shop. Stated in terms of changes in the pupil, the specific achievements which may be expected from an industrial arts program are indicated by the following brief sentences.

1. Academic knowledge is applied practically.
2. Interests are developed and aptitudes are discovered.
3. Opportunity is provided for creative activities.
4. Integration of physical and mental processes is achieved.
5. Avocational interests may be cultivated.
6. Consumers' knowledges concerning the products and services of modern industry are acquired.

7. Appreciation for work and the worker are made possible.

8. Personal qualities of self-control, self-confidence, industry, cooperation and leadership are developed.

9. A knowledge of home mechanics and some skill in the maintenance of the home and its furnishings are gained.

10. Basic knowledge and skill usable in the later vocation are acquired.

11. Desirable attitudes toward health, safety, and accident prevention are developed in industrial arts courses.

12. Definite experiences in good workmanship are provided through planning and making one or more projects of considerable complexity and artistic design.

13. Practices in making and reading working drawings result in a good understanding of industrial drawings.

(18, page 2)

The objectives of general education might be considered as the seven cardinal principles of education. Ericson (8 , page 256)

1. Health.

2. Command of fundamental processes.

3. Worthy home membership.

4. Vocation.

5. Civic education.

6. Worthy use of leisure.

7. Ethical character.

8. World mindedness might be added.

The purposes for which visual aids might be used in the instruction of children in school have been summed up by Dorris, (7, page 34)

> All means of education which add to the pupil's interest, econimize time, and increase the efficiency of learning should be brought into modern school procedures. Visual materials are of value in stimulating thinking, in clarifying the factors involved in the solution of a problem, and in rendering more thorough the mastery attained.

Boys and girls are endowed by nature with impulses which give them a readiness for industrial arts instruction. They enjoy using tools and materials and find real satisfaction in the results of their work. When visual materials such as motion pictures and strip films are used in connection with the instruction in industrial arts learning should be more enjoyable and effective. So many things may be experienced through these mediums that cannot be learned otherwise.

Using Films in Teaching Industrial Arts:

One cannot help but develop the feeling that our schools need to furnish new and interesting types of instruction. Our industrial world can provide us with the many physical needs we have acquired through education. Education, then, must provide a means of appreciating the necessities of life. Industrial arts is one school subject which can fulfill the requirements of modern education. As an aid to the teaching of industrial arts, audio-visual materials are indispensible. The motion picture film and film strip have gained tremendously in importance as aids to teaching, because they make situations natural and lifelike, students remember motion picture material for a long time, the teacher can present a great deal of material in a short time and students of lower mental capacity are aided greatly. (16, page 153)

The motion picture:

The motion picture experience, unlike the field trip, unfolds with a compression of time and space. All the experience is not there. But this loss in directness and this compressed experience has compensating advantages. The motion picture can omit unnecessary and unimportant material and concentrate upon a few selected points. For example in a field

trip to a pottery we usually see the entire process from beginning to end. But a film on pottery making can quickly pass over certain less important processes and emphasize the more significant ones. Besides, the mechanical devices for slow motion enable us to sharpen up the key ideas. With slow motion, of course, we expand space and time.

Let us not forget, however, that we are spectators before a motion picture. We are some distance from touching, tasting, feeling, from directly experiencing. We are no longer participants in the event. Neither do we get a direct or contrived experience. We are merely watching an event--perhaps seeing other people do things--and through an edited version of their experiences, in which time and space have been altered.

This is another way of saying that motion pictures present an abstracted version of the real event, with subsequent losses as well as gains. It may be easier to understand than a more direct experience. A deliberate and contrived order has been imposed on the material, different from the reality itself. We can, if desirable, see the finished vase at the start of the picture and then go back to the steps involved in arriving at this result.

The motion picture can also dramatize events so effectively that we feel as though we are present at the reality itself. This is a great educational boon. (5, page 44)

Method of using motion pictures for teaching:

Although there is considerable evidence to prove that effective use of teaching films increases learning, there is less certainty as to what constitutes "effective use" of teaching films. Certainly it is not measured in terms of the number of films shown to the class. Merely showing pictures is not teaching with films.

Films are tools for instruction and like other tools, may require different procedures in the performance of different operations. There are, however, certain fundamental practices and some of these principles of teaching with films, follow.

ALWAYS PREVIEW: Preview the film before showing it to the class. You would not use a textbook unless you had at least skimmed through it. Take a few notes so that the high points of the picture may be directed to the attention of the pupils.

USE THE MANUALS: When an instructor's guide or manual accompanies a film, it is to your advantage to use it. It has been prepared to make it easier for you to do a better job of teaching. You should adapt the material to the class needs and make use of that which applies.

PLAN YOUR INSTRUCTION: Each step in your procedure should be planned in advance. Decide how you will introduce the film to best correlate it with the lesson. Look for ways to vary the presentation of the film to increase its effectiveness.

Plan your follow-up discussion.

PREPARE FOR THE SHOWING: Do not handicap a teaching film by poor showmanship. The projection room should be one that can be darkened quickly. The projector should be threaded and focused on the screen. Before starting, the amplifier should be turned on to warm the tubes, and be ready to start quietly and not "blast" the ears of the listeners. The room should be ventilated and not too warm.

INTRODUCE THE FILM: The class is to see the film for a purpose, so make certain each member understands what that purpose is. A short synopsis of the content may be given. The class may be quizzed about key points to be seen. If a quiz is to follow the film, it may be advisable to inform the class of this. A few minutes of well planned preparation

aids the learning process.

SHOW THE FILM: As a general rule, a teaching film is presented in its entirety at the first showing. Several devices may be used to vary presentation following the first showing. A motion picture can be presented by sections. With a sound film, the sound can be turned off and discussion carried on as the action progresses. Students and instructor should both take part in the discussion.

FOLLOW-UP: This is one of the most important steps in teaching with films. Most instructional films are excellent devices to encourage discussion and the instructor must not fail to take advantage of this opportunity for learning. The discussion may follow an objective quiz and the instructor should be the leader who keeps the conversation rolling in the direction of the desired goal.

REPEAT FILMS AS NECESSARY: After seeing a film once and discussing it in class, a learner may "see" more during a second showing of the film than during the first showing. Films used to teach specific skills may be shown to one group as many as three times; (1) to introduce the skill, (2) to help in mastering the skill, and (3) to review the operations.

ENCOURAGE ACTIVITY: One outcome of a good instructional film is an eager desire on the part of the learners to "try their hand" at what they have just seen. If they have observed a skilled operator at work on a lathe, they are anxious to imitate just what they have seen. Impressions are most vivid soon after received. Do not handicap learning by delaying the opportunity for action.

ONE FILM AT A TIME: If an instructor does a thorough job of teaching with films it is unlikely there will be a need for more than one film during a class session. A film of approximately fifteen minutes length is

preferred by experienced users of motion pictures. This length film allows time for the introduction, showing, discussion and repeated showing, if necessary.

WE CAN'T HAVE EVERYTHING: Lets assume some things. It's true the films do not tell all. An instructional film on lathe operation may show an operator receiving work that has been centered and drilled. The film has to begin somewhere and so we can assume the centering and drilling of the piece, although the operations are not shown. The test of a film is the amount of information it conveys during the time it consumes. (9, page 7)

Advantages of Motion Pictures:

1. The moving picture has the unique advantage of depicting action or behavior, with its irresistible illusion of life and reality. It is, however, an expensive visual aid and for that reason should be resorted to only when necessary to (a) portray activity, which no other pictorial aid can actually show, and (b) to provide such vicarious experiences as may be brought to us because we cannot get them in any other way.

2. The film has proved valuable to scientific workers by enabling them to reproduce processes and analyze motion and movements for detailed study.

3. The film has value in presenting popular nontechnical phases of the subject to those who have relatively little knowledge regarding it.

4. By means of the motion picture and the animated diagram, one can visualize the invisible.

5. The motion picture is very effective in publicity, drives, campaigns for social betterment and similar forms of propaganda.

6. The film is the best visual tool when the continuity of a process involving movement is to be seen.

7. The film is advantageous for purposes of vivid summary or general survey of a broad topic.

8. The film is unique in revealing, for the first time in the history of human learning, things which move too slowly or too rapidly to be seen by the human eye.

Limitations of Motion Pictures:

1. The motion picture, with its rapid-fire method of projection sometimes must be shown a second or a third time if any real study and analysis of the content is to be achieved.

2. Some moving pictures have a tendency to relegate the teacher to the background.

3. Continuity is definitely established. This may not fit the teaching plans, but is not a serious problem to the teacher who is trained to use motion pictures effectively.

4. Films are perishable and do not stand wear and tear like some other visual aids.

5. The film, to be effective in the classroom, should be previewed by the teacher and followed by definite study. Sometimes the teacher cannot get the film when it is needed most.

6. The film is used too often as a substitute for, rather than a supplement to, other methods of presentation. (6, page 108)

Advantages of the Film Strip:

1. The still picture is a valuable aid when it is not desirable to show motion.

2. The film strip is unusually economical to purchase.

3. Film strips are easy to store as they require little space.

4. The equipment necessary for projection is much less expensive than motion picture equipment.

5. Rather inexpensive film strips may be prepared by the teacher himself.

6. Individual pictures may be left on the screen as long as necessary for explanation and discussion. (Ibid., page 87)

Limitations of the Film Strip:

1. The older type projectors do not give an extremely bright picture as the lamp power must be reduced to prevent damage to the film. New projectors, though, have efficient heat filters and cooling fans.

2. A minor limitation is that the pictures are in a fixed sequence. Most modern projectors can be used by resourceful instructors for moving the film backward and forward as needed.

3. Some older film strips have more pictures than needed for effective presentation of the subject.

4. Many current film strips contain pictures only, with the information in a manual. The teacher is expected to use the material as background for a commentary to follow the film strip. If the manual is read to the class, the group may become disinterested. Most users of film strips prefer those with most or all of the necessary explanatory and continuity titles on the film. (Ibid., page 89)

Evaluation of Films:

There are certain matters which should be considered in connection with the use of films. It is well to ask first whether or not motion is necessary to present the message. Certainly a motion picture of the Capitol Building in Washington, D. C., would present no advantage over a projected still picture of the same building, unless there is some action in the picture which is important. A good plain still picture can be left on the screen as long as desired for discussion purposes. Motion is desirable, of course, in any situation where the natural motion, slow motion, faster than normal action or animation are needed to give a clear impression of the topic under discussion. A simple rule to follow, therefore, is to use motion only where motion is necessary.

Another simple rule which is becoming more and more important to visual instruction workers is that the film should not be used unless it makes a definite contribution to the teaching of the subject. There are many films posing as educational subjects which should never enter a classroom. In some cases the information contained in them is irrelevant and in others, it is incorrect. There is never a logical excuse for bringing into any classroom a visual aid which is untruthful or incorrect in any way.

As suggested above, there are many so-called educational films but

a more limited quantity of films which are truly educational in their makeup. There are many subjects which are semi-educational and some of these can be applied at the proper time and place with reasonably good results. Also, there are many industrial films which have certain educational values. The films of the mineral industries produced by the United States Bureau of Mines; the films of various industries, such as those produced by the General Electric Company; the films of the agricultural industry produced by the United States Department of Agriculture; the films on electronics provided by the Radio Corporation of America; films made for the United States Office of Education, and similar educational subjects can be used to good advantage if they are selected carefully and presented properly. Too many times schools which use industrial films simply order them for any available date and attempt to make use of them when they arrive. This is just as unsatisfactory a procedure as it would be to use other educational films when they do not fit into the schedule. (Ibid., page 115)

The instructor who thinks the use of instructional aids such as the motion picture and film strip are going to make teaching easier is doomed to disappointment. These devices may make teaching better if properly used, but not easier. Like any other instructional tool, they form only a part of the teaching process and cannot be expected to do the whole job. The instructor must intelligently fit their use into his plan of teaching, knowing fully just what part of the lesson is being served and carefully integrating that part into the whole plan. (10, page 14)

CHAPTER IV

LISTS OF FILMS FOR USE IN INDUSTRIAL ARTS CLASSES

The following film list has been compiled from various motion picture and film strip catalogs but should not be considered a complete listing of the films available for school use. Additions are being made at all times, and in order for one to keep posted on new films, the teacher should be on the mailing list of many sources. Films are listed under fifteen industrial arts subject headings, with film strip titles following each section of motion picture films. There are 343 motion picture films and 267 film strips in the list. The addresses of seventy-eight sources precede the film lists.

The films that are sponsored by the United States Office of Education are distributed through Castle Films. They are among the best of the educational pictures as visual aids to instruction. Other producers of strictly educational films are The Jam Handy Organization, Coronet Films, and Encyclopedia Brittanica Films, Incorporated.

In ordering films it is usually advisable to consider the cost and that includes transportation costs. The free films are not always the cheapest to obtain, as the exhibitor pays the transportation at least one way and generally both ways. It is often cheaper to obtain the same film from a closer source and pay a rental or service charge.

There are many items to consider in using films as an educational aid and the main one is the correlation of the film with the subject matter.

A LIST OF COMPANIES AND FILM LIBRARIES THAT SUPPLY FILMS AND FILM STRIPS ON INDUSTRIAL ARTS SUBJECTS.

1. Aetna Life Affiliated Companies, Public Education Dept., Hartford 15, Conn.

2. Allegheny Ludlum Steel Corporation, Mr. C. B. Templeton, Manager Sales Promotion, 522 Oliver Bldg., Pittsburg 22, Pa.

3. American Automobile Association, Traffic Engineering and Safety Dept., Pennsylvania Ave., at 17th. St. Washington, D. C.

4. American Society of Bakery Engineers, Department of Visual Education, 208 Third Ave., Southeast, Minneapolis 14, Minn.

5. American Type Founders Sales Corporation, Department of Education, 200 Elnora Ave., Elizabeth, New Jersey.

6. American Walnut Manufacturers Assn., 666 North Lake Shore Drive, Chicago 11, Ill.

7. Army Air Force, Hq., Oklahoma City Air Material Area, Tinker AFB, Oklahoma City, Oklahoma.

8. Association Films, Inc. (formerly Y.M.C.A. Motion Picture Bureau) 3012 Maple Ave., Dallas 4, Texas.

9. Association of American Railroads, Transportation Bldg., Washington 6, D. C.

10. Audio-Visual Center, Indiana University, Bloomington, Indiana.

11. Bailey Films, Inc., 2044 N. Berendo, Hollywood 27, Calif.

12. Brandon Films, Inc., 1700 Broadway, New York 19, N.Y.

13. British Information Service, 39 South LaSalle St., Chicago 3, Ill.

14. Bureau of Mines, United States Dept. of Interior, Washington, D. C.

15. California Redwood Assn., 405 Montgomery St., San Francisco 4, Cal.

16. Carborundum Co., The, Niagara Falls, New York.

17. (Castle Films) United World Films Inc., 1445 Park Ave., New York 29, N.Y.

18. Champion Spark Plug Co., Toledo 1, Ohio.

19. China Films Enterprises of America, Inc., 132 W. 43rd. St., New York 18, N.Y.

20. Charles A. Bennett Co., Inc., (Formerly Manual Arts Press) 237 North Monroe Street, Peoria 3, Illinois.

21. Cincinnati Milling Machine Company, Advertising Dept., Cincinnati 9, Ohio.

22. Cleveland Twist Drill Company, 1242 East 49th St., Cleveland 14, Ohio.

2. Allegheny Ludlum Steel Corporation, Mr. C. B. Templeton, Manager Sales Promotion, 522 Oliver Bldg., Pittsburg 22, Pa.

3. American Automobile Association, Traffic Engineering and Safety Dept., Pennsylvania Ave., at 17th. St. Washington, D. C.

4. American Society of Bakery Engineers, Department of Visual Education, 208 Third Ave., Southeast, Minneapolis 14, Minn.

5. American Type Founders Sales Corporation, Department of Education, 200 Elnora Ave., Elizabeth, New Jersey.

6. American Walnut Manufacturers Assn., 666 North Lake Shore Drive, Chicago 11, Ill.

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21. Cincinnati Milling Machine Company, Advertising Dept., Cincinnati 9, Ohio.

22. Cleveland Twist Drill Company, 1242 East 49th St., Cleveland 14, Ohio.

23. Congoleum-Nairn, Incorporated, Kearney, New Jersey.

24. Coronet Films, Coronet Building, Chicago 1, Ill.

25. Curtis Publishing Company, Motion Pictures and Speakers Bureau, Independence Square, Philadelphia 5, Penn.

26. The Daily Tribune, Royal Oak, Michigan.

27. The Dallas Morning News, Public Relations Department, Dallas 2, Tex.

28. DeWalt Incorporated, 201 Martha Ave., Lancaster, Penn.

29. DoAll Company, 254 North Laurel Ave., Des Plaines, Ill.

30. Douglas Fir Plywood Association, 1707 Daily News Bldg., Chicago 6, Ill.

31. Eberhard Faber Pencil Co., 37 Greenpoint Ave., Brooklyn 22, New York.

32. Eberle Tanning Co., Westfield, Pennsylvania.

33. Thomas A. Edison Incorporated, Advertising Dept., Storage Battery Division, 1902 Continental Bldg., St. Louis 8, Missouri.

34. Educational Film Library Assn., 1600 Broadway, New York 19, N.Y.

35. Employers Mutual Liability Insurance Co., Engineering Department, Wausau, Wisconsin.

36. Encyclopedia Brittanica Films, 1750 Wilmette Ave., Wilmette, Ill.

37. Ethyl Corporation, Chrysler Bldg., New York 17, N.Y.

38. Films of the Nations, Inc., 62 West 45th. St., New York 19, N.Y.

39. Fisher Body Craftsman's Guild, Detroit 2, Michigan.

40. General Electric Co., 1801 North Lamar St., Dallas 2, Texas.

41. General Electric Co., Nela Park, Cleveland 12, Ohio.

42. General Motors Corporation, Department of Public Relations, Film Section, General Motors Bldg., Detroit, Michigan.

43. Gladding, McBean & Co., Advertising Dept., 2901 Los Feliz Blvd., Los Angeles 26, Cal.

44. Handy and Harmon, 82 Fulton St., New York 7, N.Y.

45. Harmon Foundation, Division of Visual Experiments, 140 Nassau St., New York, N.Y.

46. Harvill Corporation, Los Angeles 54, Cal.

47. John H. Humphrey, 11216 S. Howard Blvd., Los Angeles 44, Cal.

48. Institute of Visual Training, 40 East 49th. St., New York 17, N.Y.

49. International Film Bureau, 6 North Michigan Abe., Chicago 2, Ill.

50. The Jam Handy Organization, 2821 East Grand Blvd., Detroit 11, Mich.

51. Johns-Manville Sales Corporation, 1000 Market Place, St. Louis 1, Mo.

52. K and S Films, Inc., 50 N. West St., Indianapolis, Ind.

53. Lenox Incorporated, Sales Promotion Dept., Trenton 5, New Jersey.

54. Lincoln Electric Co., 12818 Coit Road, Cleveland 1, Ohio.

55. Mahogany Association, Inc., 75 East Wacker Drive, Chicago 1, Ill.

56. Carl F. Mahnke Productions, Des Moines, Iowa.

57. Meehanite Metal Corporation, Pershing Square Bldg., New Rochelle, N.Y.

58. Modern Equipment Co., Port Washington, Wisconsin.

59. Modern Talking Picture Service, 2010 North Field St., Dallas 1, Texas.

60. National Electrical Manufacturers Assn., 155 E. 44th. St., New York 17, N.Y.

61. National Bible Press, Film Loan Library, 239 South American St., Philadelphia 5, Penn.

62. The Norton Company, Publicity Dept., Worcester 6, Mass.

63. Oklahoma A. & M. College, Audio-Visual Center, Division of College Extension, Stillwater, Oklahoma.

64. Pittsburg Plate Glass Co., Public Relations Dept., Grant Building, Pittsburg 19, Penn.

65. Plomb Tool Co., Advertising Department Box 3519, Terminal Annex, Los Angeles 4, Cal.

66. Portafilms, 418 N. Glendale Ave., Glendale 6, Cal.

67. The Protectoseal Co., 1920 South Western Ave., Chicago 8, Ill.

68. Shell Petroleum Co., Shell Building, Houston 1, Texas.

69. Simonds Saw and Steel Co., 127 S. Green St., Chicago 7, Ill.

70. L. S. Starrett Co., Athol, Mass.

71. South Bend Lathe Works, South Bend 2, Indiana.

72. Southwestern Institute of Technology, Extension Division, Weatherford, Oklahoma.

73. Tanners Council of America, 100 Gold St., New York 7, N.Y.

74. Timber Engineering Co., 1319 Eighteenth St., Northwest, Washington 6, D.C.

75. University of Oklahoma, Department of Audio-Visual Education, Extension Division, Norman, Oklahoma.

76. The Warner and Swazey Co., Sales Promotion Dept., 5701 Carnegie Ave., Cleveland 3, Ohio.

77. Western Pine Association, Yeon Bldg., Portland 4, Oregon.

78. Young America Films, Inc., 18 East 41st. St., New York 17, N.Y.

MOTION PICTURE FILMS AND FILM STRIPS FOR INDUSTRIAL ARTS CLASSES.

ARTS AND CRAFTS FILMS

ART IN ACTION WITH DONG KINGMAN 2R 22min si colored
A brief study of how one of America's leading water-colorists interprets the things he sees and feels in life. In this film Mr. Kingman, a Chinese-American, demonstrates his painting techniques.
Harmon Foundation, sale $175.00 rent $8.00

ARTS AND CRAFTS OF MEXICO 1R sd b&w
EBF
Native craftsmen in their home workshops. Spinning sheep's wool, the weaving of serapes, basketmaking, glassblowing, and pottery making, each is treated in detail. Display and discussion of Mexico's famous Guadalajara pottery.
Oklahoma University, $1.50

A STORY IN SILVER 2R sd col
A fascinating story of the crafting of sterling silver woven around distinguished handmade antiques from the days of General Lafayette to modern reproductions; climaxing in striking full color table settings for homes of today. Its broad appeal entertains both young and old and reaches not only those interested in the art of home making, but is educational for classes in arts and crafts.
Association Films, free

BUILD TO YOUR DESIGN 2R 17min sd color
This film was designed to present the 1948 Guild Model car competition for boys from 12 through 19 years of age. It gives boys a good insight into model building, shows what other boys have done in Guild competitions, explains the new competition awards. It ends with sequences from the 1947 Guild National convention.
Fisher Body Craftsmen's Guild, free

CHINESE JADE CARVING 1R 10min sd color
Shows the five fundamental steps in jade carving, as art as old as China itself. Magnificent jade examples are exhibited in close-ups. Also expresses the fundamental attitude of the Chinese master craftsman, "That the combination of human faith, patience, and perseverence, is the only way to the world of beauty."
China Films Enterprises of America, Inc., sale $85.00 rent $5.00

HANDS 1R 10min sd b&w
In spite of the encroachment of machines upon manual labor, our hands still play an important part in our daily life. An unusual example of pictorial expression.
Oklahoma University, 50¢

HAND INDUSTRIES OF MEXICO 1R 10min sd color
Coronet
Working in their own homes or backyards, often in family groups, pains-

taking Mexican craftsmen carry on traditions of many generations of Spanish and Indian ancestors, producing articles world famous for their beauty and color.
Oklahoma University, $3.00

HANDICRAFTS OF BELGIUM 1R sd b&w and color
D.P.M. Productions, Inc.
Shows in detail the Belgian handicrafts of making lace, pottery, and glassware. Includes an explanation of the strips involved in the blowing and completion of a single glass.
Films of the Nations Inc., sale b&w $26.00 color $80.00
rent b&w 1.50 color 3.00

HANDWROUGHT SILVER 1R sd b&w
Handy and Harmon

HOPI ARTS AND CRAFTS 1R 10min sd color
Coronet
The arts and customs of the Hopi Indians; their tools and knowledge handed down from their ancestors--weaving ceremonial sashes, robes and baskets; collecting materials and making turquoise jewelry. Details of pottery making, from the molding of the clay through the drying, polishing, painting and finally the firing of the objects.
Oklahoma University $3.00

THE HOPI INDIAN 1R 10min sd color
Coronet
The land of the Hopi, near Grand Canyon in Arizona; home life, agriculture and other activities. The Hopi women do most of the hard work and own all the property. Hopi weaving is done by the men.
Oklahoma University $3.00

NATURE OF PLASTICS 2R 18min sd color
Bakelite Ltd. 1949
The character of a plastic is determined by its molecular pattern and this film shows how, by creating specific arrangements of molecular chains, the various characteristics of steelhard plastics, fibres or rubber, can be made from the same basic materials.
Bakelite Ltd. sale $100.00 rent $5.00

ORIGIN AND SYNTHESIS OF PLASTIC MATERIALS 1½R 16min sd b&w
U.S.O.E. No. 466
Shows the organic origin of plastics and resemblance of synthetic compounds to natural substances; syntesis of plastics from natural substances, difference between thermosetting and thermoplastic compounds; compounding plastics to provide desired properties in product; forms in which plastics are produced, and typical plastic products.
Castle Films Sale $27.88 film strip $1.00

PANAMA BAZAAR 1R sd color
The arts and crafts of the southern republics, as elaborately displayed in an exhibition at the famous Macy department store in New York.
Association Films $1.50

PLASTICS 2R 16min sd b&w
Young America Films
Describes the use of plastics in war, in the home, and in industry.
Oklahoma University $2.50

PLASTIC ART 1R sd b&w
EBF
Well known sculptor conceives and executes a bronze statuary group interpreting the theme, "Progress through man's confidence in his fellowman."
Oklahoma University $1.50

SCULPTURING IS FUN 1R sd b&w
Describes and shows clearly how simple it is for untrained persons to carve lovely things from an ordinary cake of soap.
Castle Films free

ARTS AND CRAFTS FILM STRIPS

The following film strips may be purchased from Brandon Films, Inc.

1. NAVAJO SILVERSMITHS - $3.00

2. PUEBLO POTTERY - $3.00

AUTOMOBILE MECHANICS FILMS

ABC OF AUTOMOBILE ENGINES 2R 21min sd color
This film is a continuation of the film, "ABC of Internal Combustion." It uses the same characters representing Fuel, Air, and Ignition and shows how these elements are controlled in the automobile engine to produce automotive power.
General Motors Corp., free

ABC OF THE DIESEL ENGINE 2R 20min sd color
In a simple primer book language, this film shows how the Diesel Engine works. Animated drawings enable the audience to see right inside the engine and three cartoon characters; Air, Fuel and Ignition entertainingly go through their paces working together to produce power. They learn how the engine can operate without a carbureter, what the two-cycle principle is and how it helps the engine turn out so much power.
General Motors Corp., free

ABC OF INTERNAL COMBUSTION 1R 13min sd color
One of our most numerous and common sources of power is the internal combustion engine. This film shows what makes it run. It demonstrates how a piston, connecting rod and crankshaft harness and the expansive forces of combustion. The fourstroke cycle is clearly illustrated, followed by explanations of valve operation, carburetion, and ignition timing.
General Motors Corp., free

AUTOMOBILE LUBRICATION 1R 10min sd b&w
Research to develop and test suitable lubricants for modern high-speed, close-fitting engines. Gives recommendations for proper time to lubricate motor. Explains by animation effect of harmful conditions on car parts. Shows old lubricant being removed from differential by flushing; special lubricants for hypoid gears; and chassis and other parts being lubricated regularly.
Bureau of Mines, free

AUTOMOTIVE SERVICE 1R 11min sd b&w
Vocational Guidance Films
Photography and narration used to explain the requirements and advantages of automotive service as a prospective vocational field for boys. Development of automobiles reviewed in pictures. Various specialized shop jobs also shown.
Oklahoma University, $1.50

BASIC PRINCIPLES OF LUBRICATION 2R 25min sd b&w
This film explains the principles and functions of proper lubrication and its vital importance in keeping motorized equipment rolling.
General Motors Corp., free

THE BATTERY, IGNITION, AND ELECTRICAL SYSTEM 3R 26min sd b&w
U.S.O.E. No. 462
Shows how to check and service battery; how to check the starting motor and generator; how to inspect low tension wiring; how to check the lighting circuit and electrical instruments; how to test the voltage and current regulator; and how to check and test the ignition system.
Castle Films, sale $38.75 Film strip $1.00

CARE OF A TRACTOR 2R sd b&w
Castle Films
Shows the day by day operating care of a tractor, the importance of periodic check-up and the operations necessary for daily, weekly, monthly, semi-annual, and seasonal check-up for the parts of the tractor, including the cooling system, fuel system and the ignition system.
Oklahoma University, $2.50

THE CLUTCH AND HAND BRAKE 1R 12min sd b&w
U.S.O.E. No. 482
Shows how to determine the amount of clutch pedal clearance or "lash" how to correct abnormal clutch pedal lash; how to check condition of pull back spring; how to check clutch for slipping, grabbing or drag; and how to adjust the hand brake.
Castle Films, sale $22.15 Film strip $1.00

DIESEL ENGINE FUEL SYSTEMS 4R sd b&w
Castle Films
Fuel systems in different types of diesel engines.
Oklahoma University, $4.50

DIESEL, THE MODERN POWER 2R sd b&w
Bureau of Mines

Details of construction and operation of the diesel engine.
Oklahoma University, $1.50

DRILLING WITH PORTABLE DRILL MOTORS 2R 17min sd b&w
U.S.O.E. No. 138
Shows how to use a portable electric drill motor; how to select a drill and check it for size; how to insert a drill in a chuck; how to check a drill for true running; how to avoid damage to parts while drilling, and how to install and use a special attachment for drilling.
Castle Films, sale $29.29 Film strip $1.00

THE ENGINE ASSEMBLY 2R 19min sd b&w
U.S.O.E. No. 463
Shows how to check the cylinder head and block, intake and exhaust manifolds; under chassis parts, valve mechanism and adjusting tappets; vents, screws, and air filter; oil filter, and oil lines; and cylinder depression.
Castle Films, sale $30.74 Film strip $1.00

FITTING AND SCRAPING SMALL BEARINGS 2½R 24min sd b&w
U.S.O.E. No. 36
Shows the scraping of split and solid bearings; the laying out and chipping of oil grooves, and fitting shaft to the bearings. Shows form of hand scrapers used for scraping curved surfaces and explains why bearings must be relieved to aid lubrication.
Castle Films, sale $32.16 Film strip $1.00

HACKSAWS 2R 18min sd b&w
1943
Includes the proper selection of blades for various materials.
Plomb Tool Co., free

HARNESSING LIQUIDS 1R 12min sd b&w
Hydraulics are explained simply and graphically in this popular, scientific film. It presents an interesting account of one of the many ways man, through his understanding of a natural principle, makes nature work for him.
Shell Petroleum Co., free

IGNITION AND SPARK PLUGS 2R 20min sd b&w
Revised 1949
This film shows the relation of a spark plug to the ignition system of a gasoline motor.
Champion Spark Plug Co., free

INDUSTRIAL REVOLUTION 1R 10min sd b&w
EBF
Describes the efforts of primitive man to do work chiefly with his own and animal muscles; compares methods of work from the time of the first steam-powered loom to the modern diesel-electric-powered locomotive. Animated photography. Cause and effect relationships had on their social economic relations.
Oklahoma University, 50¢

INTERNATIONAL HARVESTER DIESEL 3R sd b&w
International Harvester Company
Operations of the International Harvester Diesel, cutaway views of working parts and precision manufacture.
Oklahoma University, 50¢

KNOW YOUR CAR 1R 15min sd b&w
U.S.O.E. No. 486
Shows construction of a car chassis; how the engine converts gasoline into power, the function of the clutch, transmission, and rear axle; how brakes stop the car; how the electrical and cooling systems function; and what the tell-tale gages on the instrumentpanel indicate.
Castle Films, sale $26.43 Film strip $1.00
A. & M. College $1.50

LEVER AGE 2R 20min sd b&w
A history of mechanical progress through applying the principle of the lever is presented in this film. Having learned to move heavy objects with less effort by use of the crowbar, man used his basic principle to develop more efficient methods. The windlass came into being, and from it developed the toothed wheel and iron cog wheels. Finally the machine age of steel was born.
Shell Oil Co., free

LUBRICATION 3R 30min sd b&w
Bureau of Mines
Descrives the theory of friction and practical application of lubricants to the various mechanical elements connected with every day life. Demonstrates varying degrees of friction and illustrates useful friction.
Oklahoma University, 50¢

MAKING A V TYPE ENGINE 2R sd b&w
A complete story of the making of the Ford engine from the unloading of the ore, through the smelting, making of steel, the foundry, finishing of parts, and the assembling of the complete engine.
Bureau of Mines, free

MICRO INSTRUMENT BALL BEARINGS 2R 22min sd b&w
This film shows the infinite care taken by New Departure in all phases of production to insure faultless, smooth running, quality ball bearings. The film stresses the fact that if users continue to give them good care, nothing will impede their smooth running qualities.
General Motors Corp., free

ONLY A GASKET 3R 30min sd b&w
This film explains the various types of gaskets and their uses. It shows the methods of manufacture of metallic gaskets, asbestos metal gaskets and explains in detail the use of automatic and semi-automatic machinery in the manufacture of these gaskets.
Johns-Manville Sales Corp., free

PETROLEUM AND ITS USES 4R 40min sd b&w
Bureau of Mines
Portrays in easily understood terms the manner in which petroleum products

are obtained and their application in family and industrial activities.
Dialog and narration.
Oklahoma University, 50¢

PLIERS AND SCREWDRIVERS 2R 17min sd b&w
Shows how and how not to use these tools.
Plomb Tool Co., free

POWER WITHIN 2R 20min sd b&w
Bureau of Mines
Story of the internal combustion engine; made in co-operation with General Motors Corporation. All parts of an automobile engine explained. Importance and operation of brakes and steering gear illustrated.
Oklahoma University, 50¢

PUNCHES, DRIFTS AND BARS 1½R 15min sd b&w
Shows the types and sizes to use for various jobs.
Plomb Tool Co., free

SCRAPING FLAT SURFACES 1½R 14min sd b&w
U.S.O.E. No. 35
Shows the operations and procedures used in hand scraping flat surfaces to a surface plate. Shows five common forms of hand scrapers, and the operation and care of the flat scraper in detail.
Castle Films, sale $25.71 Film strip $1.00

SERVANT OF INDUSTRY 2R 18min sd b&w
In 1885, John Hyatt, developed the roller bearing in perfecting a machine to extract sugar from cane. Because this device was needed in other industries, the Hyatt Roller Bearing Company was formed. Through this device was made possible mass production of today's machines. Photography and animation show the efficiency of the various types of roller bearings and their production.
General Motors Corp., free

SMOOTH STARTS 1R 10min sd b&w
This film contains a complete explanation of the workings of the clutch and the transmission of the automobile.
American Automobile Assn., free

STOP THAT CAR 1R 10min sd b&w
This film explains the structure of automobile brakes and how they operate.
American Automobile Assn., free

STORAGE BATTERY POWER 2R 25min sd b&w
This film describes and illustrates why Thomas Edison invented and perfected the nickel-iron-alkaline type of storage battery. It presents a tour through the factory of West Orange, New Jersey, where the battery is manufactured, and then a tour through the industries in which the battery is used.
Edison Incorporated, free

STORY OF A STORAGE BATTERY 2R 20min si b&w
Bureau of Mines

History of early discoveries and complete process of making a storage battery.
Oklahoma University, 50¢

STORY OF OIL 1R 17min sd b&w
Young America Films
The story of how oil is obtained from the wells of Turner Valley in Alberta. Oil is found in deposits of limestone and sandstone, and with the seismograph, records this type of earth's structure, drilling operations begin to locate the oil.

STORY OF A SPARK PLUG 3R sd b&w
Uses and theory of sparkplugs, materials used in their manufacture, parts and how they fit together, the assembling of a plug and the proper method of installing and checking for proper operation, are shown in this film made in cooperation with the Champion Spark Plug Company.
Bureau of Mines, free

THE LONG ROAD 2R sd b&w
In this picture you will see how primitive man discovered the wheel, what happened when James Watt took a second look at a teakettle, how Parliament, in 1865 felt about self-propelled vehicles, development of automobiles between 1892 and 1912. This film tells the story of the search for a way to eliminate fuel knock.
Ethyl Corporation, free

THE PERIODIC CHECK-UP 2R 18min sd b&w
U.S.O.E. No. 489
Shows the necessary steps in the periodic check-up of a car, including tuning up the engine, servicing the brake system, inspecting the steering system, and inspecting chassis and body.
Castle Films sale $30.01 Film strip $1.00

THE STORY OF GASOLINE 2R sd color
Animation and live sequences tell what gasoline is, how it is made, and how it acts. Storing, distillation and scientific balancing of gasolines is shown. Volatility differences shown and antiknock qualities demonstrated.
Bureau of Mines, free

THE STORY OF LUBRICATING OIL 2R 22min sd color
The film depicts the latest types of lubricating oils refining processes and equipment. Animated drawings are used throughout to explain the modern methods of refining. It is explained in simple, easy to understand terms.
Bureau of Mines, free

TRANSMISSION, DRIVESHAFT AND DIFFERENTIAL 1R 14min sd b&w
U.S.O.E. No. 485
Shows how to check the transmission gear shift mechanism; how to inspect the drive shaft and differential; how to check differential back lash; and how to test the running condition of the transmission, drive shaft and differential.
Castle Films, sale $25.71 Film strip $1.00

TRANSMISSION OF ROTARY MOTION 1R sd b&w
Young America Films
Explains how power is transmitted from one point to another by means of shafts, gears, belts and chains. Introduces gear ratios.
Oklahoma University, $1.50

TROUBLE SHOOTING YOUR CAR 1R 12min sd b&w
U.S.O.E. No. 490
Shows what a driver should do to locate and correct minor car troubles; how to follow and orderly and step by step procedure in checking why a car won't start, and how to recognize symptoms of impending troubles.
Castle Films, sale $22.15 Film strip $1.00

USE AND CARE OF HAND FILES 2R 20min sd b&w
Instructions on the correct positions and movements to be used when filing. Shows methods of cleaning and caring for files.
Jam Handy Organization.

WHERE MILEAGE BEGINS 2R 19min sd b&w
General Motors Corp.
Shows the workings of the gasoline engine. A stop motion sequence in which an engine completely assembles itself without the aid of human hands concludes the picture. Suitable for driver education and shop classes.
A. & M. College, $1.50

WRENCHES 2R 20min sd b&w
Includes the proper use of flat and socket wrenches and their attachments.
Plomb Tool Co., free

AUTOMOBILE MECHANICS FILM STRIPS

AUTOMOTIVE MECHANICS NO. 1

2829 photographs, drawings, cutaway sections and charts offer complete instruction on the mechanical principles and operation of the automobile. These film strips may be purchased at $3.50 each or the complete set at $99.00 from the Jam Handy Organization.

KIT A, The Fundamentals of the Internal Combustion Engine.

1. THE FOUR-STROKE CYCLE INTERNAL COMBUSTION ENGINE (Part I) 44 pictures

2. THE FOUR-STROKE CYCLE INTERNAL COMBUSTION ENGINE (Part II) 83 pictures

3. MULTIPLE CYLINDER ENGINES - 81 pictures

4. THE CARBURETER - 179 pictures

5. FUEL FEED SYSTEMS - 58 pictures

6. THE IGNITION SYSTEM - 85 pictures

7. ENGINE LUBRICATING SYSTEMS - 73 pictures

8. THE COOLING SYSTEM - 83 pictures

KIT B, Principles of Power Transmission

1. MECHANICAL LINKAGE - 58 pictures

2. THE CLUTCH - 54 pictures

3. THE TRANSMISSION - 66 pictures

4. THE DIFFERENTIAL - 41 pictures

5. COMPLETING THE TRANSMISSION OF POWER - 39 pictures

6. REAR AXLES - 57 pictures

KIT C, Mobility Factors

1. BEARINGS - 54 pictures

2. WHEELS, RIMS AND TIRES - 78 pictures

3. BRAKE DRUMS AND SHOES - 85 pictures

4. BRAKE OPERATING LINKAGE - 57 pictures

5. HYDRAULIC BRAKES - 66 pictures

6. POWER BRAKES - 92 pictures

7. SPRINGS - 103 pictures

8. SHOCK ABSORBERS - 52 pictures

9. FRONT AXLES AND STEERING GEAR - 79 pictures

10. WHEEL ALIGNMENT AND BALANCE - 135 pictures

KIT D, Electrical System

1. ELECTRICITY AND THE STORAGE BATTERY (Part I) - 97 pictures

2. ELECTRICITY AND THE STORAGE BATTERY (Part II) - 91 pictures

3. THE GENERATOR - 115 pictures

4. CURRENT AND VOLTAGE REGULATION - 110 pictures

5. THE STARTING MOTOR - 89 pictures

6. CHASSIS ELECTRICAL SYSTEMS - 42 pictures

KIT E, General Service

1. IGNITION TROUBLE - 126 pictures
2. ENGINE TUNE-UP (Part I) - 70 pictures
3. ENGINE TUNE-UP (Part II) - 106 pictures
4. POWER TRANSMISSION TROUBLE - 81 pictures
5. SAFETY FACTORS - 105 pictures

AUTOMOTIVE MECHANICS NO. 2

2209 pictures are organized to help train mechanics in the care and repair of passenger cars and trucks. These film strips may be purchased at $3.50 each or the complete set for $99.00 from the Jam Handy Organization.

KIT A, Servicing the Engine Assembly

1. ENGINE TUNE-UP - 32 pictures
2. THE ENGINE - 49 pictures
3. THE DOWN-DRAFT CARBURETER (Part I) - 58 pictures
4. THE DOWN-DRAFT CARBURETER (Part II) - 40 pictures
5. THE UP-DRAFT CARBURETER - 51 pictures
6. MODERN VALVE RECONDITIONING - 55 pictures
7. THE COOLING SYSTEM - 37 pictures

KIT B, Servicing the power transmission units

1. THE SYNCHRO-MESH TRANSMISSION - 151 pictures
2. THE 4-SPEED TRANSMISSION - 65 pictures
3. THE CLUTCH (Part I) - 51 pictures
4. THE CLUTCH (Part II) - 51 pictures
5. THE HYPOID REAR AXLE - 105 pictures
6. THE FULL-FLOATING REAR AXLE (Part I) - 38 pictures

7. THE FULL-FLOATING REAR AXLE (Part II) - 57 pictures
8. THE 2-SPEED REAR AXLE - 80 pictures

KIT C, Servicing the mobility factors

1. KNEE-ACTION (Part I) (Prior to 1939) - 27 pictures
2. KNEE-ACTION (Part II) (Prior to 1939) - 60 pictures
3. KNEE-ACTION (Part III) (1939, 1940, 1941) - 53 pictures
4. HYDRAULIC BRAKES - 68 pictures
5. VACUUM POWER BRAKES - 45 pictures
6. SHOCK ABSORBERS - 61 pictures
7. THE STEERING GEAR - 103 pictures
8. WHEEL ALIGNMENT (Conventional Axles) - 62 pictures
9. WHEEL ALIGNMENT (Dubonnet Type Knee-action) - 49 pictures
10. WHEEL ALIGNMENT (1939 Knee-action) - 52 pictures
11. WHEEL BALANCING - 69 pictures

KIT D, Servicing the Electrical System

1. THE WIRING SYSTEM - 44 pictures
2. THE IGNITION SYSTEM - 76 pictures
3. THE GENERATOR REGULATOR - 69 pictures

KIT E, General Service and Sheet-metal Repair

1. THE VACUUM GEARSHIFT - 72 pictures
2. CAB-OVER-ENGINE TRUCKS - 63 pictures
3. METAL BUMPING AND HOT SHRINKAGE - 52 pictures
4. MAJOR BODY REPAIRS - 67 pictures
5. TURRET TOPS (Part I) (Repair) - 59 pictures
6. TURRET TOPS (Part II) (Replacement) - 138 pictures

CERAMICS FILMS

COLOUR IN CLAY 1R 11min sd color
BIS
The story of modern pottery, a skillful combination of art and science. The film traces the process from the potters wheel to the decorating and glazing process.
British Information Service, free

CRAFTSMANSHIP IN CLAY--SIMPLE SLAB METHOD 1R sd color
Presents information on the production of attractive pottery pieces from clay.
Indiana University.

CRYSTAL CLEAR 3R 30min sd color
Fostoria Glass Co.
Besides showing the manufacture of table glassware, the film brings out the points to look for in buying glassware, the care and cleaning of fine glassware and shows several table settings.
Modern Talking Picture Service, free

FIVE TOWNS 3R 27min sd b&w
BIS
This film shows the great pottery industry as seen through the eyes of a young London girl who marries into a typical pottery family. It follows the whole process of making beautiful China from lumps of wet clay and shows that the skill of the modern potter is derived from generations of father to son instruction. Factory sequences are shot at the Crown Staffordshire Pottery and at Wedgewood Pottery.
Oklahoma University, $3.50

GLAZE APPLICATION 1R 10min sd color
Audio-Visual Center, Indiana University
Introduces glazing as an activity of pottery makers and demonstrates four methods of applying glaze; dipping, brushing, pouring and spraying.
Educational Film Library Assn., sale $75.00 rent $2.25

LETS PLAY WITH CLAY--PART II, BOWLS 1R 10min sd b&w
Another introductory film to clay work, shows how a simple, flat circle of clay is formed by pressing and pinching; then how this basic form can be manipulated to make a saucer, a cup, a pitcher, a bowl or a vase.

NEW ROMANCE OF GLASS 2R 20min sd b&w
Ball Brother's Co.
The many domestic uses of glass; manufacture of fruit jars by the Ball Glass Co.
Oklahoma University, 50¢

POTTERY MAKING 1R 10min sd b&w
EBF
Shows a professional potter at work; covers preparatory work of mixing clay to the finished glazed products.
Oklahoma University, $1.50

POTTERY FROM THE WHEEL 1½ R 15min sd color
Produced in cooperation with the Cinema Workshop of the University of Southern California. Directed to those students with previous pottery training who are now ready to enter into the art of throwing pottery on the wheel. 1948
Humphrey, John H., sale $105.00 rent $15.00

SAND AND FLAME 2R 21min sd b&w
General Motors Corp.
Quality of sand for finer grades of glass; miscellaneous materials employed to lower melting point and produce hardness and brilliance of surface. Art of glass blowing, hand forming and polishing and pattern cutting. Safety glass made, tests of optical properties of glass and breaking tests of glass plates.
Bureau of Mines, free

THE OLDEST ART 2R 25min sd color
The film traces the history and development of the making of earthenware and china from the earliest times to the present. A large portion of the film is devoted to modern manufacturing methods employed in a large plant. Three characters, a boy and girl teenager and their invisible guide, knit the story together, making the transition from ancient times to modern by means of process shots, showing the teenagers transported back into history. 1948
Gladding, McBean & Co., free

TRIP THROUGH THE LENOX POTTERY 2R 20min sd color
This film in full color, replaces a silent version of the same title. It shows the different processes in the making of fine China. 1948
Lenox Incorporated, free

DRAWING FILMS

ACCORDING TO PLAN--INTRODUCTION TO ENGINEERING DRAWING 1R 9min sd b&w
McGraw-Hill Book Co.
Aims to help the beginning student get started on the right track in thinking about engineering drawing. Modern production requires that many people work together on a simple project. To do this they need a common language--the language of drawing. Correlaged with textbook by French and Svenson.
Oklahoma University, $1.50

AUXILIARY VIEWS--SINGLE AUXILIARY 2R 20min sd b&w
McGraw-Hill No. 3
Brief review of orthographic projection and goes on to show that the three views obtained by projection of the three principal planes to not represent the true shape of the surface of an object with one or more slanting faces. This condition requires projection of the slanting surface on a plane parallel to it and is not one of the principal planes. Thus auxiliary projection is explained and defined.
Oklahoma University, $2.00

AUXILIARY VIEWS--DOUBLE AUXILIARY 1½R 15min sd b&w
McGraw-Hill No. 4
Brief review of orthographic projection on three principal planes and on auxiliary planes, then points out that a new condition is introduced if the object to be drawn has a slanting face not perpendicular to any of the principal planes. A single auxiliary view does not give an accurate picture of an oblique face. The theory of the double auxiliary described in detail, using visualization effects of combined animated drawings and animated models.
Oklahoma University, $2.00

BEHIND THE SHOP DRAWING 2R 20min sd b&w
Jam Handy
Pictures show the importance of shop drawings, a narrator discusses perspective drawings illustrating the points made. The method of making the drawing is shown step by step, pictured by animated lines, arrow, and transparent paper so that the reason for each line can be easily understood. Drawing of more complicated objects explained. Scale drawing. Finishes with a section devoted to blueprints.
Oklahoma University, $2.50

THE CIRCLE....1R 10min sd b&w
Knowledge Builders
The circle presents many problems to the geometry student; radii, diameters, chords, tangents, secants, arcs, and central angles.
Oklahoma University, $1.50

DRAFTSMAN 1R 11min sd b&w
Mahnke
Presents the graphic language of lines and symbols of the draftsman in the preparation of plans for a building. Heating, plumbing, wiring, air conditioning, landscaping, machine tool, automotive, and aviation construction all are based on the work of a draftsman.
Oklahoma University, $1.50

DRAWINGS AND THE SHOP 1¼R 15min sd b&w
McGraw-Hill No. 6
Describes relationship between the making of the drawing and various production operations in the shop and factory; reasons for certain drafting requirements; glimpses of the organization of modern production and how to operate basic machines.
Oklahoma University, $2.00

THE LANGUAGE OF DRAWING 1R sd b&w
McGraw-Hill No. 1
Attempts to provide a sensible and acceptable answer to the question, "Why study Mechanical Drawing?" and to stimulate the beginners interest in the subject. Through glimpses of many jobs, he is shown that before modern production workers can find out exactly what they are to do or give instructions to others, they must know something about Mechanical Drawing, the common language of the building world.
A. & M. College, 50¢

LINES AND ANGLES 1R 10min sd b&w
Knowledge Builders
Some of the uses of geometry through the ages. Emphasis is placed on angles-straight, right, acute, obtuse, and reflex.
Oklahoma University, $1.50

LOCUS...1R 12min sd b&w
Knowledge Builders
Visualizes and explains types of loci by a combination of photography, drawings and the spoken word.
Oklahoma University, $1.50

MEASUREMENT 1R 10min sd b&w
Coronet Films
Don, a boy of twelve, encounters everyday situations involving measurement; linear, cubic, weight, liquid, temperature, and time. The illustrations are simple illustrations such as making a ball diamond, counting money and measuring a room.
Oklahoma University, $1.50

ORTHOGRAPHIC PROJECTION 2R 17min sd b&w
McGraw-Hill
Objects as well as planes and lines look different from different points of view; these differences applied to projection of front, top and right side views of an object; the projections animated on horizontal and profile planes, each of which is shown to be parallel to the surface projected on it, and to be perpendicular to each other. On a single plane, these three projected views together shown to represent fully the three dimensional objects.
Oklahoma University, $2.50

PRINCIPLES OF SCALE DRAWING 1R sd b&w
Coronet Films

READING A THREE VIEW DRAWING 1R 10min sd b&w
U.S.O.E. No. 52
Shows how to use a blueprint to visualize the object; how to interpret a blueprint; and how to make a tool block according to specifications.
Castle Films, sale $19.28 Film strip $1.00

SECTIONS AND CONVENTIONS 1½R 15min sd b&w
McGraw-Hill
Sometimes important interior details of an object may show as a confused mass of dotted lines on regular exterior views. Sectional views formed by an imaginary cutting away of part of the object thereby revealing interior details remedies this. The meaning of special sign language used in sectioning is explained.
Oklahoma University, $1.50

SELECTION OF DIMENSIONS 2R 20min sd b&w
McGraw-Hill
The principles which govern the choice of dimensions based on two factors: (1) the functional characteristics of the object, and (2) the manufacturing methods used in making the object.
Oklahoma University, $2.50

SHAPE DESCRIPTION PART I 1R sd b&w
McGraw-Hill No. 2
Describes orthographic projection, utilizing animated diagrams and animated photography of specially prepared models to provide unusual three dimensional effects. Projections of an object's surfaces are animated on three glass surfaces representing the front, side, and top views, each shown to be parallel to the surface projected on it, and perpendicular to each other. On single plane, three projected views together shown to represent fully the three-dimensional object, and provide all information necessary to construct it.
A. & M., 50¢

SHAPE DESCRIPTION PART II 1R sd b&w
McGraw-Hill No. 3
Designed as sequel to Part I. Step-by-step procedure of constructing a drawing demonstrated, and reasons for each step explained. The film follows through on one drawing and establishes certain principles of procedure which the student can apply in making drawings of his own. Stresses the importance of clarity, accuracy, and readibility in all drawings.
A. & M., 50¢

SHOP PROCEDURES 1½R sd b&w
McGraw-Hill No. 5
Shows how finished drawings are used as detailed instructions in manufacturing. Drawings are seen going from the drafting room to the blueprinting machinery, and from there to the workmen using blueprints at their jobs. The operation of basic machines is demonstrated; the engine lathe, drill press, milling machine, shaper, planer and grinder.
A. & M., 50¢

SIZE DESCRIPTION 1½R sd b&w
McGraw-Hill No. 8
Uniformity in dimensioning practice is essential and depends on the observation of certain standards in the use and choice of lines, figures, arrowheads, etc., and in the theory of dimensions. Student must be able to choose correct dimensions, and placement of them, also placement of notes.
A. & M., 50¢

TWO CENTS WORTH OF DIFFERENCE 3R sd b&w
Story of drawing pencils.
Eberhard Faber Pencil Co.

VISUALIZING AN OBJECT 1R 9min sd b&w
U.S.O.E. No. 51
Shows how a blueprint is developed; how dimensions are shown by different views; how various kinds of lines are shown in blueprint and how special information is indicated on a blueprint.
Castle Films, sale $19.28 Film strip $1.00

DRAWING FILM STRIPS

TECHNICAL LETTERING-SINGLE STROKE GOTHIC

235 pictures in five film strips present well-formed letters for study and practice in beginning lettering. The first film introduces single-stroke gothic lettering. The subsequent films illustrate single-stroke gothic vertical capitals. These film strips may be purchased at $3.75 each or in the set at $18.00 from the Jam Handy Organization.

1. SINGLE-STROKE GOTHIC-INTRODUCTION - 42 pictures
   What is lettering?
   Analysis of lettering.

2. IHT LEF AVW - 40 pictures

3. MN YZXK4 OQCT - 45 pictures

4. 069 835 DUJ PRB - 61 pictures

5. 725& and SPACING - 47 pictures

SUPPLEMENTARY AIDS TO MECHANICAL DRAWING AND DRAFTING

1112 pictures cover basic and advanced geometric constructions mechanical drawing projects and appreciation of the uses to which drawings are put in the shop. These film strips may be purchased individually as priced or in the set for $55.50 from the Jam Handy Organization.

1.	MEASUREMENTS AND MEASURING (Part I) - 50 pictures	$4.50
2.	MEASUREMENTS AND MEASURING (Part II) - 64 pictures	4.50
3.	SCALES AND MODELS - 80 pictures	4.00
4.	ADDITION AND SUBTRACTION IN GEOMETRY - 51 pictures	4.00
5.	MULTIPLICATION AND DIVISION IN GEOMETRY - 48 pictures	4.00
6.	ANGULAR MEASUREMENT - 68 pictures	4.00
7.	CONSTRUCTIONS - 57 pictures	4.00
8.	"T" SQUARES AND TRIANGLES (Part I) - 31 pictures	3.50
9.	"T" SQUARES AND TRIANGLES (Part II) - 60 pictures	3.50
10.	GEOMETRIC CONSTRUCTION (Part I) - 43 pictures	3.50
11.	GEOMETRIC CONSTRUCTION (Part II) - 36 pictures	3.50
12.	DRAWING AN ANCHOR PLATE - 25 pictures	3.50
13.	LAYOUT WORK (Part I) - 112 pictures	4.50
14.	LAYOUT WORK (Part II) - 133 pictures	4.50

15. SLOTTED ANCHOR PLATE - 60 pictures $3.50

16. LAYOUT TOOLS AND MEASURING INSTRUMENTS - 96 pictures 4.50

17. PLOTTING GRAPHS - 62 pictures 4.00

18. ANALYTIC GEOMETRY - 36 pictures 4.00

ELECTRICITY FILMS

BASIC ELECTRICITY 2R 20min sd color
The title of this film is self-explanatory. It is particularly suited for students.
Army Air Forces, free

BASIC ELECTRONICS 1R 17min sd color
The title of this film is self-explanatory. It is particularly suited for students.
Army Air Force, free

BRIGHT PATH 3R 35min sd b&w
This film explains the details of generation, transformation, and distribution of electric power. Included are scenes of station operators carrying out their duties and maintenance crews repairing damage to power lines.
International Film Bureau, Inc., free

ELEMENTS OF ELECTRICAL CIRCUITS 1R sd b&w
EBF
Nature of electric currents and circuits. Electron motions, conductors, insulators, and factors affecting resistance are a few of the subjects explained.
Oklahoma University, $1.50

ELECTRICIAN 1R 11min sd b&w
Vocational Guidance Films
Shows and describes in comprehensive, rather than detailed, fashion the work of the electrician in three major fields--power and lighting, communication, and transportation. Many special jobs are shown and described, including work of the top-ranking graduate electrical engineer. Suggested sources of training are described while the interior of a trade school with students "learning by doing" is shown.
A. & M. $1.50

ELECTRICAL CIRCUIT FAULTS 2R 19min sd b&w
U.S.O.E. No. 375
Shows how to test for and locate common circuit faults; testing and locating grounds, resistance deterioration and interference in circuits.
Castle Films, sale $30.74 Film strip $1.00

ELECTRONS 1R 10min sd b&w
EBF
The hypotheses that electricity consists of unit elementary charges is

supported by observation of phenomena associated with the conduction of electricity in liquids, gases and vacuums. The fundamental unit of an electrical charge is the electron.
Oklahoma University, $1.50

ELECTRONS ON PARADE 2R 20min sd b&w
Radio Corporation of America
Shows the function of one tube, the careful testing of materials used in the making, the complete process of manufacturing and testing, and special applications of radio tubes.
Oklahoma University, 50¢

ELECTRODYNAMICS 1R 10min sd b&w
EBF
The fundamental principles of current electricity and electromagnetism. Galvani's discovery of current electricity; magnetic field about a current carrying wire; magnetic field of a coil; electromagnets; Rowland's experiment; magnetic hypothesis; recalscense; induction by a magnet; A.C. generator; D.C. generator; induction by an electric current; and transformers.
Oklahoma University, $1.50

EXCURSIONS IN SCIENCE No. 4 1R 10min sd b&w
General Electric
How the "electric eye" of the phototube controls drinking fountains, registers "camera finishes" at race tracks, operates doors of office buildings, etc. Explains how the phototube makes sound movies possible.
Oklahoma University, 50¢

FLOW OF ELECTRICITY 1R 10min sd b&w
EBF
Demonstrates the factors that affect the flow of electricity in a simple circuit and the application of such a circuit in the home.
Oklahoma University, 50¢

HOME ELECTRICAL APPLIANCES 1R 11min sd b&w
EBF
Animated drawings illustrate common heating and motor appliances in the home. Scientific principles of thermostatic controls, fluorescent lighting, and electric refrigerators.
Oklahoma University, $1.50

INSTALLING ARMORED CABLE 3R sd b&w
The film gives a complete demonstration of the armored cable system of wiring, showing where it is used, how it is made and how to install it. Every step of the installation is followed closely and thoroughly explained. It also illustrates the general principles for making an adequately wired installation.
National Electrical Manufacturers Assn.

INSTALLING CONDUIT 2½R 25min sd b&w
U.S.O.E. No. 381
Shows how to plan the job; bending electrical metallic tubing, installing tubing runs, bending rigid conduit, how to install rigid conduit runs,

and how to use flexible conduit.
Castle Films, sale $37.32 Film strip $1.00

JOINING SOLID CONDUCTORS 2R 22min sd b&w
U.S.O.E. No. 369
Shows how to remove insulation from wire, cleaning conductor; making Western Union, pigtail, plain wrap, "wrapped tap" or Brittonia, loop tap, and fixture joints; how to care for and use a blowtorch; how to flux and solder joints; insulating joints with rubber and friction tape.
Castle Films, sale $33.60 Film strip $1.00

MAGIC OF FLUORESCENCE 1R 17min sd color
Following a brief introduction to the principles of luminescence; fluorescent lighting is explained, and the manufacture of the fluorescent lamp is described. Successive steps show the construction of the phosphor-lined tube, the mounts as they are made and sealed to the ends of the tube, and the complete lamp being treated, seasoned and tested.
General Electric Company, free

MAGNETISM 1R 10min sd b&w
Coronet Films
Dramatizes magnetism, how it differs from electricity, and how it works. Presents types of permanent magnets; attraction and repulsion; making magnets, fields of force; electromagnets and their uses; everyday uses of magnets.
Oklahoma University, $1.50

NATURALLY ITS FM 2R 17min sd color
Using non-technical language, this film explains the difference between ordinary AM and FM radio receivers. The film tells how FM overcomes the disadvantages of static, interference, fading, and how it improves tone quality.
General Electric Company, free

PORCELAIN PROTECTED SURFACE WIRING 2R 19min sd b&w
U.S.O.E. No. 376
Shows how to make an electrical entrance to a building; need for fuse protection in a circuit; how to install wiring and porcelain fittings; how to support and insulate wires to meet requirements of the National Electrical Code; how to prepare and connect wires for service.
Castle Films, sale $30.74 Film strip $1.00

PRINCIPLES OF ELECTRICITY 2R 20min sd color
Using animation extensively, this film breaks down the structure of matter into atoms, and by the use of conventional symbols, shows the action of electrons within an atom. The principles involved in the flow of current are explained, and a volt, ampere, and ohm are defined. Magnetism and magnetic fields as applied to motors are also covered by animation. The film pre-supposes only a slight previous knowledge on the part of the student.
General Electric Company, free

PRINCIPLE OF THE GENERATOR 1R 10min si b&w
Young America Films

Uses animation to explain the elementary principles of electromagnetic induction in simple terms. These principles are then related to the operation of the generator which supplies electric current to homes and factories.
Oklahoma University, $1.50

RADIO AND TELEVISION 1R 11min sd b&w
Vocational Guidance Films
An analysis of the radio industry from the vocational guidance point of view; the qualifications needed, the future involved, etc., for the many jobs in the industry.
Oklahoma University, $1.50

RECEIVING RADIO MESSAGES 1R 11min sd b&w
EBF
Animated drawings clarify the principles of a radio receiver; tuning; the capacity of the variable condenser; the inductance of the coil; resonance; need of detection and how it is achieved by a crystal; the operation of the earphone; production of audible sound wave.
Oklahoma University, $1.50

ROUGHING IN NON-METALLIC SHEATHED CABLE 2½R 24min sd b&w
U.S.O.E. No. 373
Shows how to plan the installation of the runs, circuit run, switch run, wall receptacle run; locating of required runs; installing offset bar hanger and ceiling outlet box; roughing in circuit run, using non-metallic sheathed cable; making up connections for switches, receptacles and fixtures.
Castle Films, sale $36.59 Film strip $1.00

SERIES AND PARALLEL CIRCUITS 1R 10min sd b&w
EBF
Relationship between resistance, current, and voltage in series circuits and then in parallel circuits. Practical advantages and disadvantages of each circuit illustrated. A simple series-parallel combination described and explained.
Oklahoma University, $1.50

TELEPHONE AND TELEGRAPH 1R 10min sd b&w
Vocational Guidance Films
This film covers the many kinds of work required in installation and maintenance of equipment. The systems offer many specialized jobs, some of which require advanced education above high school. Mahnke Productions sale b&w $50.00, color $100.00, rental b&w $5.00, rental color $10.00

THREE-WIRE SERVICE ENTRANCE 2½R 24min sd b&w
U.S.O.E. No. 374
Shows how to mount and protect an outdoor meter box; mounting and connecting service control box; grounding a three-wire service installation and how to install concentric service entrance cable.
Castle Films, sale $35.89 Film strip $1.00

WATER POWER 1R 10min sd b&w
EBF

Potential power from water shown by the water cycle which furnishes a never-ending source of power. Traces the development of water power chiefly in the U. S. from the small mill of the early colonist to Niagara Falls, Boulder Dam, and the Tennessee Valley. Includes informative sequence on the transformation of kinetic energy through the hydro-electric plant.
Oklahoma University, $1.50

WHAT IS ELECTRICITY? 2R 20min sd b&w
Paramount
Shows the development of ideas concerning electricity, the theory of electricity and the means of producing it.
Paramount Picture Corporation

WIRE SIZES AND VOLTAGE DROP 1R 13min sd b&w
U.S.O.E. No. 372
Explains the factors influencing the ability of conductors to carry electron flow; the measurement of wire sizes, wire area in circular mils, voltage drop and Ohm's Law.
Castle Films, sale $23.60 Film strip $1.00

WORLD'S LARGEST ELECTRICAL WORKSHOP 3R 32min sd b&w
Internationally known Drs. Langmuir, Whitney and Coolidge are shown in their laboratories. Equipment ranging from giant turbines, to small domestic devices are shown in progress of construction.
General Electric Company, free

ELECTRICITY FILM STRIPS

1581 pictures are included in this complete kit. It is made up of the Basic Electricity Series plus additional films on special electrical subjects. Films numbered to 12 may be purchases at $4.50, the remaining ones at $3.50 each or the set for $73.25 from the Jam Handy Organization.

1. MAGNETISM - 56 pictures
2. STATIC ELECTRICITY - 91 pictures
3. CURRENT ELECTRICITY - 73 pictures
4. THE ELECTRIC CELL - 46 pictures
5. THE STORAGE BATTERY - 101 pictures
6. ELECTROMAGNETISM - 56 pictures
7. THE GENERATOR - 80 pictures
8. ALTERNATING CURRENT - 85 pictures
9. ELECTRIC MOTORS - 70 pictures
10. ELECTRIC METERS - 71 pictures

11. APPLICATIONS (Part I) - 63 pictures

12. APPLICATIONS (Part II) - 74 pictures

13. AIRPLANE IGNITION - 63 pictures

14. FLIGHT INSTRUMENTS - 112 pictures

15. ELECTRICITY AND THE STORAGE BATTERY - (Part I) - 95 pictures

16. ELECTRICITY AND THE STORAGE BATTERY - (Part II) - 91 pictures

17. THE STARTING MOTOR - 93 pictures

18. CHASSIS ELECTRICAL SYSTEM - 42 pictures

19. MAINTENANCE OF STORAGE BATTERIES - 55 pictures

20. THE IGNITION SYSTEM (how it works) - 55 pictures

21. THE IGNITION SYSTEM (care and repair) - 65 pictures

The following film strips may be purchased from Brandon Films, Inc.

1. RADIO (2 strips) - $6.00

2. TELEPHONE (2 strips) - $6.00

3. TELEVISION - $3.00

FOUNDRY FILMS

FLOW OF METAL INTO MOLDS 1R 15min si color
This film, in full color, shows how metal castings are made.
Meehanite Metal Corporation, free

LEAD MINING IN SOUTHEAST MISSOURI 3R 33min sd b&w
Bureau of Mines
Extensive survey of the lead-mining operations in southeast Missouri. Good commentator. Diagrammatic drawings of geological formations in the lead best. For use in mining, metallurgy and geology classes, or for those interested in industrial safety. Too much detail for most public school use.
Oklahoma University, 50¢

LEAD MILLING, SMELTING, AND REFINING 3R 30min sd b&w
Bureau of Mines
Ore flowing to drum-feeders and dropping into gyratory crushers; crushed ore passing on belt under electromagnet which removes ferrous material; recrushing, final crushing of over-sized ore in toll grinders; dry screening; transportation to storage bins; automatic weighing; sampling, etc.

Oklahoma University, 50¢

MAKING A SIMPLE CORE 1½R 15min sd b&w
U.S.O.E. No. 424
Shows how to prepare a suitable sand for core making, making a small cylindrical core in one or two pieces, baking cores; assembling a two piece core, locating a vertical core in a mold; and providing a suitable venting; and how core gases escape when a mold is poured.
Castle Films, sale $26.43 Film strip $1.00

MODERN DIE CASTING 2R 25min sd color
This film covers all phases of die casting, from the engineering to the actual casting of parts.
Harvill Corporation, free

MOLDING PART HAVING VERTICAL CORE 2R 19min sd b&w
U.S.O.E. No. 425
Shows how to mold the drag and cope halves; mold a gate and riser instead of cutting them; how to vent a mold so as to permit the escape of core gases; and how to locate a vertical core in a mold.
Castle Films, sale $31.44 Film strip $1.00

MOLDING WITH A GATED PATTERN 1R 11min sd b&w
U.S.O.E. No. 427
Shows what a gated pattern is and why it is used; how a match or follow board may simplify making a parting; how facing sand is prepared and used; and how and why some patterns are rapped through the cope.
Castle Films, sale $21.44 Film strip $1.00

MOLDING WITH A SPLIT PATTERN 2R 19min sd b&w
U.S.O.E. No. 426
Shows why split patterns are used; how ramming affects the permeability of sand in a mold; how to mold the drag and cope and how to reinforce a mold with nail; and how to patch a mold.
Castle Films, sale $30.74 Film strip $1.00

MOLDING WITH A LOOSE PATTERN 2R 21min sd b&w
U.S.O.E. No. 433
Shows how to identify and use common bench molding tools; preparation of molding sand; how to face a pattern, ram and vent a mold; how to roll a drag, cut a sprue, runner, gates and riser; how to swab, rap and draw a pattern; and by animation what takes place inside a mold during pouring.
Castle Films, sale $32.87 Film strip $1.00

POURING 2R 20min sd b&w
This film deals with the pouring of molten metal in the foundry.
Modern Equipment Company, free

STEEL: RAW MATERIALS 1R 10min si b&w
Bureau of Mines
Open-pit mining with steam shovel; crushing ore, and loading into cars. Underground mining; mining of limestone. Coal changed into coke; iron ore, limestone, and coke assembled at blast furnace where smelting operation reduces them to molten iron and slag.
Oklahoma University, 50¢

STEEL: MAKING AND SHAPING OF STEEL 1R 10min si b&w
Department of the Interior
Illustrates Bessemer process in the manufacture of steel. Closing scenes show removal of molds from ingots, and transfer to soaking pits to attain uniform temperature, ready for rolling.
Oklahoma University, 50¢

STEEL: PIPE AND TUBE MANUFACTURE 1R 10min si b&w
Bureau of Mines
Pictures and animation used to demonstrate manufacture of pipe and tubes.
Oklahoma University, 50¢

STEEL: BARS AND STRUCTURAL SHAPES 1R 10min si b&w
Bureau of Mines
The process of converting steel from the ingots into bars or rods of any desired size or shape. Use of sheet steel piling in dam construction, and of steel in such structures as bridges, stadiums, and buildings.
Oklahoma University, 50¢

STORY OF NICKEL 3R 30min sd b&w
Rothacker
A revised version of earlier "Nickel Highlights." A condensed summary of the three nickel subjects; the management of this world-wide organization has welded these immense plants into one single operation.
Oklahoma University, 50¢

VALVES--THEIR MANUFACTURE AND USE 2R si b&w
Bureau of Mines
Close-up views and cross sections of angle, globe, gate, and check valves. Making brass valves; mixing copper, tin, lead, and zinc, charging into electric furnaces; tapping; pouring into molds; making and assembling cores; breaking molds; sandblasting and cleaning castings; machining castings; and assembling valve.
Bureau of Mines, free

FOUNDRY FILM STRIPS

The following film strips may be purchased from Brandon Films, Inc.

1. ALUMINUM - $3.00

2. COPPER AND ITS USES - $3.00

3. LEAD - $3.00

4. ZINC - 3.00

5. MOLDING AND CORE MAKING - $3.00

6. PATTERN MAKING - $3.00

HOME MECHANICS FILMS

AMERICA'S FIRST SILVER PLATE 2½R 25min sd b&w
In 1847, electro-silverplating was perfected. The development of this achievement, and the use of silverplated ware are brought out. Scenes at the factory show how alloys are prepared, designs created, models and dies made, and how spoons, forks, and knives are manufactured, silverplated, tested, polished, and shipped. Animation shows the electroplating process. Teacher guide available.
Modern Talking Picture Service, free

ASBESTOS 2R 20min si b&w
Bureau of Mines
A complete story of the making and uses of asbestos.
Oklahoma University, 50¢

BEAUTY AND UTILITY 2R 20min sd color
This film was designed to be shown with the film "New Lives for Old," and illustrates in a more factual manner the use of linoleum wall coverings in the home.
Congoleum-Nairn, Incorporated, free

BRICK AND STONE MASON 1R 10min sd b&w
Vocational Guidance Films
Masons are shown laying all types of brick, tile, and blocks; tools of the trade are named; construction of small and large buildings is shown. Educational requirements are stressed, working conditions outlined and various steps in advancement are listed. There are many opportunities in this vocation and the film portrays its jobs in a fine manner.
Mahnke Productions, sale b&w $50.00 color $100.00 rent b&w $5.00 color $10.00

DAWN OF BETTER LIVING 1R 16min sd b&w
A Walt Disney Production 1946
This film presents the completely electrified home of tomorrow, and describes the progress of homes from the first log cabin, lighted with torches to the modern electrically-lighted dwelling. Tomorrow's home is shown room by room, completely equipped with labor-saving devices. In addition the film explains the need for adequate wiring to provide outlets and ample circuit protection. It shows how a circuit can be overloaded and what happens when it is.
Modern Talking Picture Service, free

MR. CRAIG HAS THE FLOOR 3R 30min sd color
In full color, this film demonstrates the advantages of Johns-Manville asphalt tile flooring, shows the research and engineering back of the product, and presents a tour of the factory, which shows all the steps in the manufacturing of it. It also shows many installations and demonstrates the method of applying the flooring.
Johns-Manville Sales Corporation, free

PROBLEMS OF HOUSING 1R 11min sd b&w
EBF
Standards for pleasant and healthful housing; simple, practical ways of

modernizing our homes. Stresses protection from weather, adequate lighting, safety, beauty, and freedom from insects.
Oklahoma University $1.50

STORY OF ROCK WOOL INSULATION 3R 30min sd b&w
Bureau of Mines
The theory of drafts and heat-loss and the causes of heat transfer in building walls. Manufacture of rock wool; cupola charged with rock and other materials; the molten mixture poured upon a jet of high pressure steam to make thread-like fibers which solidify; and the fabrication of these into house material. Procedure for insulating a building.
Oklahoma University, 50¢

THINGS YOU SHOULD KNOW ABOUT YOUR ROOF 2R 25min sd b&w
This film contains a clear demonstration of the actual method of applying an Asbestos Built-Up roof, both on new work and re-roofing. The fireproof, rotproof, sun resisting qualities of asbestos are emphasized as well as the importance of quality workmanship.
Johns-Manville Sales Corporation, free

WE DECORATE OUR HOME 3R 30min sd color
This film shows how a twenty year old house was completely remodeled, and redecorated by using much thought, some effort, much color and a bit of glass.
Pittsburg Plate Glass Co., free

LEATHER FILMS

ART OF LEATHER CARVING 2R 20min sd b&w
Joey Smith, a leading craftsman and teacher of leather art, demonstrates his skills by decorating an underarm bag with a floral design.
Portafilms

IF THE SHOE FITS 1R 15min sd color
This film was taken in a large shoe factory using the most modern equipment. Each step in the manufacturing of shoes is presented very clearly.
Institute of Visual Training, free

LEATHER WORK 1R 10min sd b&w
Handicraft Instructional Films, 1940
This film demonstrates the making of a coin purse and key purse.
Brandon Films, Inc.

MAKING SHOES 1R 11min sd b&w
Complete step-by-step process of shoe making.
Oklahoma University, 50¢

STORY OF MY LIFE BY MR. SHOE 2R 20min si b&w
Melville Shoe Corporation
The complete story of shoemaking with excellent close-ups of the expert handling of leather.
Oklahoma University, 50¢

STORY OF LEATHER 3R 33min sd b&w with some color scenes
The entire story of leather from cattle, through tannery, to completed products. 1947
Tanner's Council of America, free

STORY OF TIOGA OAK SOLE LEATHER 3R 35min sd b&w
This film portrays the many processes and materials necessary in the tanning and preparation of sole leather. 1948
Eberle Tanning Company, free

LEATHER FILM STRIP

The following film strip may be purchased from Brandon Films, Inc.

1. LEATHER, A TRIP THROUGH A MODERN PLANT - $3.00

MACHINE SHOP FILMS

A NEW ROMANCE OF INDUSTRY 2R 20min sd b&w
The Carborundum Company
Pictures the development of abrasives by Dr. Acheson. Present day methods of manufacture, the materials used in various grinding wheels made, and some of the industrial uses for grinding wheels.
Association Films, free

A STUDY OF METAL BAND SAWS AND FLAT GROUND STOCK 3R sd color
Simonds Saw and Steel Company, free

BASIC MACHINES--THE LATHE 1½R 15min sd b&w
U.S.O.E. No. 68
Explains that lathe is used to shape cylindrical work; how the work piece is supported between centers; application of power to rotate work piece; how spindle speed, position of cutting tool, and rate of feed may be varied to fit the job.
Castle Films, sale $27.15 Film strip $1.00

BASIC MACHINES--THE MILLING MACHINE 1½R 15min sd b&w
U.S.O.E. No. 69
Explains that the milling machine is used with formed cutters to cut an infinite variety of shapes in metal; shows how the cutter is supported on the arbor, application of power to rotate cutter, feeding of workpiece to the cutter; and how spindle speed, position of work piece and rate of feed may be varied to fit job.
Castle Films, sale $27.15 Film strip $1.00

BASIC MACHINES--THE SHAPER 1½R 15min sd b&w
U.S.O.E. No. 70
Explains that the shaper is used to produce flat surfaces on metal; how cutting tool is mounted and positioned; how work piece is mounted; and how length of stock, cutting speed and table feed are adjusted to fit the job.
Castle Films, sale $26.43 Film strip $1.00

BASIC MACHINES--THE DRILL PRESS 1R 10min sd b&w
U.S.O.E. No. 71
Explains that the drill press is used to produce round holes in metal; shows briefly the principal steps in operating a drill press; identifies parts and explains their function; shows different types of drill presses.
Castle Films, sale $20.74 Film strip $1.00

CENTERING SMALL STOCK 1R 12min sd b&w
U.S.O.E. No. 39
Shows how to locate the center of round, square, and rectangular pieces using; (1) a surface plate, V-blocks, and a surface gage, (2) hermaphrodite calipers, and (3) a center head and rule.
Castle Films, sale $22.15 Film strip $1.00

CHIPS 3R sd b&w
The film deals with the various conditions and operations connected with cutter grinding on the turret lathe, which affect the size, control, finish of a work piece and general efficiency of the producing unit.
The Warner and Swasey Company, free

CUTTER SHARPENER 1R 14min sd color
A typical tool and cutter grinding machine is first demonstrated, so that the operator may become familiar with its operation and its versatility. Shown in detail are operations of grinding some of more common types of cutters. No operation is omitted in setting up and sharpening.
Norton Company, free

CUTTING A TAPER WITH THE COMPOUND REST AND WITH THE TAPER ATTACHMENT
1R 10min sd b&w
Castle Films
Operations necessary to cut a sharp and slight taper on a gear blank. Considerable detail and emphasis given to the care and operation of the machine, the use of the compound rest for turning a sharp angle surface; the setting of a compound rest for turning a sharp angle surface.
Oklahoma University, $1.50

DIAMOND WHEEL, ITS CARE AND USE 2R 18min sd color
This is an entirely new film on the proper handling and care of diamond wheels, portraying not only the care and precision in manufacture at the Norton Plant, but also recommended precedure to obtain the greatest possible benefit from each diamond wheel.
Norton Company, free

DRILLING, BORING, REAMING 1R 10min sd b&w
Castle Films
Presents in considerable detail the centering of a gear blank in an independent chuck, the selection and setting of the tool for facing the gear blank; drilling, boring, and reaming with the tail center; and reviews the use of the taper attachment in the making of the taper bore.
Oklahoma University, $1.50

DRILLING IN METAL, WOOD, AND PLASTIC 2R 23min sd b&w
Castle Films
Demonstrates and explains the use of several types of drills suitable for

use in different metals, woods or plastics.
Oklahoma University, $2.50

FIRST PRINCIPLES OF GRINDING 4R 40min sd b&w
This film presents a trip through the plant of the Carborundum Company and the story of its different types of grinding wheels, showing their manufacture and the uses to which they are put in industry. Correct grinding procedures are demonstrated.
The Carborundum Company, free

FIXED GAGES 1½R 15min sd b&w
Castle Films
Detailed explanation and definition of the various forms of fixed gages; a demonstration of correct use and care of fixed gages, and their importance in modern mass production. Views in the inspection room of a modern factory demonstrates several types of common fixed gages in actual use.
Oklahoma University, $2.00

GRINDING AND USE OF BASIC LATHE TOOL CUTTER BITS 2R 20min sd color
This film shows how to grind cutter bits for various lathe operations, including rough and finish turning, facing and thread cutting. Many clear close-ups make it easy for the beginner to understand how to grind the correct clearance and rake angles. The adjustment of the tool post, and the action of the tool when taking a cut are shown. 1948
South Bend Lathe Works, free

THE GRINDING WHEEL, ITS CARE AND USE 2R 17min sd color
This film emphasizes that a grinding wheel is a multipoint cutting tool with thousands of tiny cutting particles. The wheel should be handled and used with the same care given any other cutting tool. Shows care in storage, mounting, balancing, truing, correct usage, safety precautions, and correct dressing procedure.
Norton Company, free

GRINDING WHEEL SAFETY 2R 20min sd color
This film emphasizes some of the more critical factors in the care and handling of grinding wheels and the more important causes of grinding wheel breakage. It shows how wheels are often damaged by careless and incorrect use, the hazard created by dropping a wheel or permitting it to receive a bump or blow, the danger in using unequal or worn flanges, and other demonstrations of hazardous practices.
Norton Company, free

HACKSAWS AND HOW TO USE THEM 3R sd color
Simonds Saw and Steel Company, free

HIGHWAY TO PRODUCTION 3R 30min sd color
This film tells of the part machine tools have played in man's quest for material comforts. Most of the film was photographed in the three plants and engineering offices of the Cincinnati Milling Machine Company, showing the building of milling machines, from the pouring of the iron to the final inspection.
Cincinnati Milling Machine Company, free

HOW TO MACHINE ALUMINUM 3R 32min sd b&w
Aluminum Company of America
Alloys of cast and wrought aluminum and effect of alloying, heat treating, and cold working on machinability of alloys. Instruction in use of hand tools. Cutting compounds explained, including roughing and finishing operations in lathe, planer, milling machine, and shaper, machine drilling, reaming, threading, sawing and grinding.
Bureau of Mines, free

MACHINE KNIVES IN INDUSTRY 4R sd color
Simonds Saw and Steel Company, free

MACHINE MAKER 1R 10min sd b&w
EBF
The setting and personnel of a machine tool factory. Demonstrates the operation and manufacture of lathes, millers, planers, drill presses, boring mills, grinders, and other machines. Reproduces worker's conversations on technical terms.
Oklahoma University, $1.50

MACHINIST AND TOOLMAKER 1R sd b&w
The film shows and explains the five ways of machining metals; employing the engine lathe, drill press, milling machine, planer, and grinder. The importance of the knowledge of being able to use measuring devices and blueprint reading are presented.
Association Films, $2.00

MANUFACTURED ABRASIVES 2½R 24min sd b&w
Carborundum Company
Discovery of Carborundum, its present method of manufacture. Aloxite and its manufacture. Making grinding wheels by the vitrified process. Numerous uses of manufactured abrasives. Making of sanding papers and cloth and their uses.
Bureau of Mines, free

METAL WORKING LATHE 2R 20min sd b&w
This film introduces the student to the standard Back-Geared Screw-Cutting Lathe by familiarizing him with the name of each principal part, its purpose and operation. It is ideal for beginners. After seeing the film the student may be allowed to manipulate the various lathe controls. A second showing would answer questions that student would have after running lathe.
South Bend Lathe Works, free

THE MICROMETER 2R sd b&w
Castle Films
Detailed explanation of the basic principles on which the micrometer works, correct care, use and maintenance of a micrometer; the various forms of the micrometer developed to measure outside lengths, inside lengths, and depths.
Oklahoma University, $2.50

MILLING MACHINE 1R 8min sd b&w
Castle Films

Demonstration of a plane milling machine; basic parts, control levers, action of the table longitudinally, vertically, and crosswise.
Oklahoma University, $1.50

PLAIN TURNING 2R 20min sd b&w
"Plain Turning" clearly illustrates all of the operations involved in the machining of a shaft held between the lathe centers. It teaches many of the basic procedures encountered in all lathe work. Among these are measuring with calipers and micrometers, locating and drilling center holes, selecting proper cutting tools, facing rough turning, and finish turning of the work piece.
South Bend Lathe Works, free

PRECISELY SO 2R 18min sd b&w
In this picture, modern standards of accurate measurements beginning with the crude instruments of the ancients, is told in a clear and entertaining fashion. Here you will see scientific instruments that measure time to the thousandth part of a second, gauge the weight of a pencil dot on a piece of paper, split a hair's breadth measurement into hundreds of parts. It is not technical.
General Motors Corporation, free

ROUGH TURNING BETWEEN CENTERS 1½R 16min sd b&w
U.S.O.E. No. 6
Shows how to set up an engine lathe for machining work held between head and tail centers. Emphasizes safety precautions in dress and in work, the necessity for constant reference to the blueprint, the lubrication of the machine, care of the centers and proper use of the various lathe controls.
Castle Films, sale $27.15 Film strip $1.00

SIMPLE MACHINES 1½R 15min si b&w
Eastman Kodak Company
Step-by-step combination of six simple machines using the common lever as a starting point into a complex machine. Promotes an understanding of operating principles of all complex machines.
Oklahoma University, $1.50

STEEL RULE 1R 10min sd b&w
Castle Films
Discusses in considerable detail the steel rule, emphasizing variations of the steel rule; type of scales found on them; their proper use; correct procedures in transferring measurement by means of calipers and dividers.
Oklahoma University, $1.50

THE TOOLS AND RULES FOR PRECISION MEASURING 3R sd color
L. S. Starrett Company, free

THE VERSATILE CONTOUR SAW 4R 48min sd color
This film gives solutions to many materia l cutting problems. It demonstrates the latest band sawing techniques and methods that can increase production, save material and reduce cutting tool cost. One demonstration shows how a handfile can be sliced lengthwise in a few seconds. Three dimensional contour sawing directly to a layout line is also shown and explained with other techniques.
The DoAll Company, free

TURNING WORK OF TWO DIAMETERS 2R 15min sd b&w
Castle Films
Emphasizes the care and operation of the machine; necessity for advance planning of the work, setup for the job, checking with blueprint, laying off and nicking the piece for machining rough and finish turning to close tolerances, rough and finished facing, and rough and finished turning of fillets.
Oklahoma University, $2.50

TURRET LATHES 4R 45min sd color
Gisholt Machine Company
"Turret Lathes" is a motion picture in color, showing the many operations which can be performed rapidly and economically on the modern turret lathe. It shows the method of setting up the machine for different types of cuts, as well as its operation in production work. Clear description, accompanied by many close-ups, gives much information to the experienced machinist, as well as the beginner.
Modern Talking Picture Service, free

USES AND ABUSES OF TWIST DRILLS 2½R 26min sd b&w
This film demonstrates the types, application and care of twist drills.
The Cleveland Twist Drill Company, free

MACHINE SHOP FILM STRIPS

SAFE PRACTICES IN METALWORKING-ENGINE LATHE

761 pictures visualize by clear photographs, drawings and diagrams the basic operations of the engine lathe. The lessons are planned to assist high school and trade school teachers present operations in engine lathe work with special emphasis on safety. These eleven film strips may be purchased at $4.50 each or in the set at $46.50 from the Jam Handy Organization.

1. KINDS-PARTS-SAFETY - 66 pictures
2. OPERATING SPEEDS - 58 pictures
3. CARRIAGE CONTROLS-FEEDS - 69 pictures
4. TURNING TOOLS - 97 pictures
5. CHUCKS--CHUCKING WORK - 68 pictures
6. CENTERS--SETTING TOOLS--FACING - 72 pictures
7. CENTER HOLES--MOUNTING WORK--FACING BETWEEN CENTERS - 57 copies
8. TURNING BETWEEN CENTERS--SHOULDERING - 66 pictures
9. RECESSING--CHAMFERING--FILING--POLISHING--KNURLING - 59 pictures
10. TAPER TURNING--THREADING - 85 pictures

11. COLLETS--FACEPLATE--RESTS - 64 pictures

BENCH WORK

874 pictures showing what to do and how to do it supplement the instructor's explanations and discussions of tools, equipment, procedures and methods. These ten film strips may be purchased at $4.50 each or in the set at $39.50 from the Jam Handy Organization.

1. HAND TOOLS - 140 pictures

2. HAND AND POWER HACKSAWS - 73 pictures

3. DRILLS AND DRILLING - 117 pictures

4. REAMING, TAPPING AND THREADING - 82 pictures

5. FINISHING ROUGH CASTINGS - 60 pictures

6. SCRAPING - 73 pictures

7. RIVETS AND RIVETING - 84 pictures

8. LAYOUT TOOLS AND MEASURING INSTRUMENTS - 96 pictures

9. LAYOUT WORK (Part I) - 112 pictures

10. LAYOUT WORK (Part II) - 133 pictures

INTRODUCTION TO MACHINING

701 pictures make up this series of discussional slide films designed to help train the beginner in the fundamentals of machining. These sixteen film strips may be purchased at $4.50 each or in the set at $53.50 from the Jam Handy Organization.

KIT A

1. THE MACHINIST - 50 pictures

2. MACHINE TOOLS - 62 pictures

3. MACHINE TECHNIQUE (Part I) - 85 pictures

4. MACHINE TECHNIQUE (Part II) - 67 pictures

KIT B

1. MEASUREMENTS AND MEASURING (Part I) - 50 pictures

2. MEASUREMENTS AND MEASURING (Part II) - 64 pictures

KIT C

1. DRILL PRESSES (Part I) - 41 pictures

2. DRILL PRESSES (Part II) - 64 pictures

3. GRINDING MACHINES - 52 pictures

4. LATHES (Part I) - 67 pictures

5. LATHES (Part II) - 52 pictures

6. MILLING MACHINES - 55 pictures

7. SHAPERS - 52 pictures

8. PLANERS - 39 pictures

9. SPECIALIZED MACHINES (Turret Lathes) - 35 pictures

10. OTHER SPECIALIZED MACHINES - 49 pictures

PHOTOGRAPHY

CAMERA MAGIC 1R 11min sd b&w
Castle Films 1946
Dozens of impossible camera feats are shown as you are taken behind the scenes of movie making to see many techniques and needs used in creating astonishing effects. Shown by the trick photographer are the headless bathing beauty, the human fly, Cindrella and the magic wand, and many others.
A. & M., $1.50

FACTS ABOUT FILM 1R 10min sd b&w
International Film Board
Proper care and handling of the 16mm film; reasons for damage and how to protect and repair film.
Oklahoma University, $1.50

FAMILY ALBUM 3R 30min sd color
Tells a simple and direct formula for lighting your home movies or still photos. Tells how many lamps to use and where to place them for best photographic results. The "triangle lighting formula" is as easy for amateurs as for professionals, according to the lamp experts.
General Electric Company, free

GOOD PHOTOGRAPHY IS FLASH PHOTOGRAPHY 2½R 25min sd b&w
Discusses shutter action, synchronizer and flashbulb characteristics. Mentions only G.E. bulbs, but is good teaching film.
General Electric Company, free

PHOTOGRAPHY 1R 10min sd b&w
Vocational Guidance Films
This film covers the phases of photography; portrait, commercial, news, and illustrative, as a vocation. Laboratory and darkroom techniques are

explained as is the training required for newsreel and movie cameramen.
Association Films, $2.00

PRINTING

BOOK OF BOOKS 1R 10min sd b&w
This shows the actual printing of the Bible, including the combination of mechanical and hand operations.
National Bible Press, free

HERE IS HOW WE PRINT 1R 10min sd b&w and color
Designed to show pupils printing with movable type. Three basic operations shown; selecting and setting type for a simple sentence, making and locking up type, printing from type on a small press.
Bailey Films Incorporated, sale b&w $45.00 color $90.00 rent b&w $2.00 color $3.50

JOURNALISM 1R 11min sd b&w
Vocational Guidance Films
A rapid, though detailed analysis of the newspaper business from the standpoint of vocational guidance. Scenes in a newspaper office show the varied lives of newspaper reporters, the processes of editing, setting up, and printing the paper.
Oklahoma University, $1.50

MAGAZINE MAGIC 4R 35min sd color
Here is the absorbing story of the preparation of five nationally known magazines; Holiday, Ladies Home Journal, Post. The film shows the planning of these publications, the artists and editors at work, and the presses that print a million copies a day.
Curtis Publishing Company, free

MAKING BOOKS 1R 10min sd b&w
EBF
Tells the story of book manufacturing from the author's manuscript to finished product. Type-setting, page forming, electroplating, printing, binding, and covering. Comprehensive but simple.
Oklahoma University, $1.50

MODERN LITHOGRAPHER 1R 11min sd b&w
EBF
Describes in detail the techniques of lithographic artists and the processes of duplicating black and white originals by means of direct and photo-offset lithography. The roles of commercial photographer and modern printing press in the mass production of attractive art prints, including advertising materials; relation of commercial art to problems of present day living. Thought challenging from the points of view of the artist, the technician, the social observer.
Oklahoma University, $1.50

PAPER MAKING 2R 20min sd b&w
Coronet
Shows in complete detail the processes involved in converting trees from

the forest of the United States and Canada into paper; its use in publishing a magazine.
Oklahoma University, $1.50

PAPER 1R 10min sd b&w
EBF
Story of modern paper making; pictorial exposition of modern technology at a child's level of interest and understanding.
Oklahoma University, 50¢

THE GIFT OF TS'AI LUN--PAPER 3R 33min sd b&w
Hammermill Paper Company
Who Ts'ai Lun is; how and where paper was invented; modern methods of making paper from woodland cutting to finished product. Concluding scene in Kodachrome color.
Oklahoma University, 50¢

PRINTING 1R 10min sd b&w
The film furnishes information about training for this field and about a printer's work--the many jovs in the printing industry.
Association Films, $2.00

TEXTBOOK OF DEMOCRACY 2R 22min sd color
This film shows the making of the Dallas Morning News, and emphasizes the necessity for a free press in a democracy. 1946.
The Dallas Morning News, free

THAT'S NEWS TO ME 1R 22min sd b&w
This film shows how a news event is handled in story and picture, how type is set and photo-engravings are made, the stereotyping and printing processes, as well as the distribution of the finished newspaper.
The Daily Tribune, free

TREES TO TRIBUNES 1R 11min sd b&w
Office of War Information
Importance of great forests to the printing industry; how paper is made for a daily newspaper.
Oklahoma University, 50¢

TYPE SPEAKS 2R 25min sd color
This film portrays the important part foundry type plays in business, education, and social life. It shows the artistry and craftsmanship required in the manufacture of foundry type from designer's board to the finished products.
American Type Founder's Sales Corporation, free

SAFETY

A SAFE DAY 1R 10min sd b&w
A typical safe worker is shown in his daily routine of driving, working and in the home.
Employers Mutual Liability Insurance Company, free

CHANCE TO LOSE 1R 10min sd b&w
A traffic safety picture, showing the uselessness of taking chances which might lead to ruin. A fast-moving dramatic film.
Oklahoma University, 50¢

CONTROL OF FLAMMABLE LIQUIDS, THE 1R 10min si b&w
This film was made to show the wrong and right methods of handling, storing, and conserving the most commonly used flammable solvents, such as gasoline, ether, and alcohol. It includes the adaptation of various types of safety cans, storage cans, and production cans for safe usage wherever flammable liquids are used.
The Protectoseal Company, free

DANGER IS YOUR COMPANION 2R 20min sd b&w
Accidents in our homes, at work, at play, on our farms, and on the highways, present one of today's greatest problems. This picture shows what is being done to combat carelessness and to train people to give emergency first aid.
Castle films, free

FACTORY SAFETY 1R 10min sd b&w
Jam Handy
Good factory safety records are achieved by such precautionary measures as rule booklets, safety meetings for foremen, stop switches, and guards for machines; goggles, and respirators for workers; and attention to minor injuries.
Oklahoma University, $1.50

FOUR POINT SAFETY HOME 1½R 15min sd b&w
This film is winner of the Liberty Mutual Award of the National Council as the best non-theatrical film of the year on home safety. It shows how off-the-job accidents affect the War Effort, emphasizes the four vital points in home safety; maintenance, good housekeeping, protection of children, and cultivation of safe practices.
A. & M. $1.50

LADDERS, SCAFFOLDS, AND FLOOR OPENINGS 1R 10min sd color
This film shows the proper construction of the various types of equipment mentioned in the title and gives suggestions for their use and maintenance. The hazards of faulty or poorly made equipment are forcefully brought out. The film emphasizes the need for safe working habits at all times. 1948.
Aetna Life Affiliated Companies, free

MORE DANGEROUS THAN DYNAMITE 1R 10min sd b&w with color reproductions
Made in co-operation with State Fire Marshall of California and U. S. Chamber of Commerce. Fires shown starting from use of everyday articles as the electric iron, lamp cord under the rug, cigar and cigarette stubs, turning light out while in bathtub, burning rubbish, using gasoline or naphtha for cleaning clothes, or gas burners.
Oklahoma University, $1.50

NO ACCIDENTS 1R 10min sd b&w
British Information Service
Emphasizes the importance of routine observance of safety precautions in

factories.
Oklahoma University, $1.50

PARTNERS IN PRODUCTION 1R 17min sd color
This is an industrial safety film, which tells with forceful and practical illustrations, showing actual shop operations, the message management is trying to get over to workers in every plant in the country. The film brings out the fact that no plant safety program can succeed without the full and sonstant cooperation of every employee.
Aetna Life Affiliated Companies, free

PEDAL PUSHERS 1R 15min si b&w
This film demonstrates safe bicycle practices, showing what should be done and what should not be done when riding a bicycle.
American Automobile Association, free

PREVENTING FIRES THROUGH ELECTRICAL SAFETY 2R 20min si b&w
This is a film which shows how fires can be prevented through the care and good usage of electrical equipment. It is recommended for both children and adult groups.
Employers Mutual Liability Insurance Company, free

SAFE AS YOU THINK 3R 28min sd b&w
With this film General Motors is trying to carry to everybody the same basic safety message that has played such an important part in making industry's factories so safe. It stresses the need for "safety consciousness" in the minds of all of us--what can happen when safety is ignored.
General Motors Corporation, free

SAFETY IN THE HOME 1R 10min sd b&w
EBF
Designed to awaken an interest in the need for safe homes. Frequency of home accidents; number of persons injured during the year; one family's campaign to eliminate accidents in their home. Many safety devices shown for the garage, workshop, stairs, playroom, bedroom, and kitchen.
Oklahoma University, $1.50

SAFETY BEGINS AT HOME 1R 10min sd b&w
Young America Films
Points out the correct way to use a jack-knife, how and when to use a step-ladder; why cellar stairs must be well lighted; why tools or other objects should not be left lying on the stairs; what safety hazards to look for in electric wiring and how to prevent them. The safe way to light a gas oven; how to handle hot pans and pots; and the necessity for keeping poison medicines out of reach of children in the bathroom medicine cabinet.
Oklahoma University, $1.50

SAFETY AT HOME ½R 5min si b&w
Eastman
Dramatization of how an average American family carries out a safety program at home. Every object has a place and is kept in its place. Knives handled safely; hand rails by the stairs; rubber toys for safety; non-slip materials for rugs; screen before the fire place; the medicine in a high cabinet.

Oklahoma University, $1.00

SAVING SECONDS 1R 15min si b&w
The value of safety on the highways and the effect of carelessness and speed in driving an automobile are shown.
American Society of Bakery Engineers, free

SCREW DRIVERS AND SCREW JAYS 1R 12min sd b&w
This film was made to combat bad traffic manners which cause accidents. Lew Lehr and Don Wilson alternate in ridiculing the selfish, heedless driver and the careless pedestrian. The message of the film is sober, but is approached with good humor rather than through gory shots of blood and wreckage.
American Automobile Association or
Shell Oil Co., free

TOMORROW'S TOO LATE 1R 10min sd b&w
Brandon Films
Safety health film for workers; results of idle machines, misuse of tools, rules of relaxation, proper meals, absenteeism.
Oklahoma University, $1.50

WE DRIVERS 1R 10min sd b&w
Reckless Rudolph, Sensible Sam and Old Man Momentum, head the cast of this picture, made in the interest of public safety. The film illustrates many valuable safety points, including hints on driving on ice, snow, in the fog, and at night.
American Automobile Association,
Employers Mutual Liability Insurance Company,
General Motors Corporation, free

WE WHO WALK 1R 16min si b&w
The correct and incorrect way of crossing the streets and highways is shown in this picture. The film was taken without the knowledge of the pedestrians who were photographed, and it gives an excellent picture of pedestrian practices.
Employers Mutual Liability Insurance Company, free

WHEEL SENSE 2R 20min sd color
This is a beneficial film for driver training classes in high schools, colleges, and civic groups. A champion racing driver, Torpedo Jones, conveys to a typical class of high school trainees, the salient points of good driving technique.
Association Films, free

SAFETY FILM STRIPS

SAFE PRACTICES IN WOODWORKING

467 pictures are organized to present a visual program of instruction in shop safety. These eight film strips may be purchased at $4.50 each or in the set for $30.00 from the Jam Handy Organization.

1. PLAY SAFE AND WORK SAFELY - 59 pictures

2. MAINTAINING A SAFE SHOP - 38 pictures

3. SAFETY INSPECTION - 45 pictures

4. TRAINING FOR EMERGENCIES - 65 pictures

5. TREATMENT FOR BLEEDING-SHOCK-PREVENTING INFECTION - 61 pictures

6. AID FOR INJURIES-FAINTING-BURNS - 57 pictures

7. EYE PROTECTION - 55 pictures

8. POWER SUPPLY - 87 pictures

SHEET METAL

COPPER MINING IN ARIZONA 3R 30min si b&w
Bureau of Mines
Methods employed in starting open-pit mining operations. Scenes in the operations of removing ore, drilling and blasting in stopes, scrap-broken ore into chutes; drawing ore from chutes and hauling it to ore pockets; hoisting to surface; and transporting ore to smelting.
Oklahoma University, 50¢

COPPER REFINING 1R si b&w
Phelps Dodge Corporation
Conversion into chemically pure copper of anode slabs made in smelter. Operations depict sampling of anodes; placing them in electrolytic tanks, with starting sheet cathodes of pure copper between them; removal from tanks and shipment to gold refinery of slime containing gold, silver, and other impurities; cutting cathode into sheets for fabrication.
Bureau of Mines, free

COPPER SMELTING 1R si b&w
Phelps Dodge Corporation
Conversion of copper ore and concentrates into metallic copper. Crushing and sampling ore, mixing with concentrates; roasting; melting in reverberatory furnaces; conversion into blister copper or copper matte, which forms beneath the slag; removal of sulphur, and casting resulting metallic copper into slabs, called anodes.
Bureau of Mines, free

CUTTING THREADS WITH TAP AND DIES 2R 19min sd b&w
U.S.O.E. No. 34
Shows the methods, operations and procedure for cutting small threads with hand taps and dies. Explains the correct use of the taper tap, the plug tap, and the bottoming tap in cutting internal threads in a blind hole. Shows how to use a hand die to cut threads on a stud to fit in the tapped hole.
Castle Films, sale $31.44 Film strip $1.00

FABRICATION OF COPPER 3R si b&w
Phelps Dodge Copper Products Corporation
Shows the making of wire of all types, insulating wires with various substances, testing wire and the making of copper tubing, pipe and copper-base alloys.
Bureau of Mines, free

FORMING ON A HAND OPERATED BRAKE 2R 17min sd b&w
U.S.O.E.
Laying out work for bending in a hand operated brake. How to set up the brake for bend angle and bend radius; how to operate the brake and how to check test pieces and finished work.
Castle Films, sale $29.29 Film strip $1.00

HAND SOLDERING 2R 20min sd b&w
U.S.O.E. No. 479
Explains the theory of soldering and shows how to prepare soldering irons and torches; how to clean and prepare the work; how to fasten the joints; how to fasten the wire and lug joints; and how to seal seams.
Castle Films, sale $32.16 Film strip $1.00

HEATING AND AIR CONDITIONING 1R 11min sd b&w
Vocational Guidance Films
Shows some of the places such as restaurants, hospitals, factories, etc., where air conditioning is used; scenes of equipment being constructed, installed, and service follow. Heating equipment is shown and principles explained. The job range is outlined and the education requirements are indicated.
A. & M., $1.50

HOW TO FORM ALUMINUM--DRAWING, STRETCHING, AND STAMPING 2R 22min sd b&w
Bureau of Mines
Techniques of sheet-metal working illustrated by animated drawing, opening with reference to properties of cold-working and heat-treatable aluminum alloys and purpose of heat-treating and refrigerating metals, and closing with a summary of operations and instruction on selection of metal and the use of the tools.
Oklahoma University, 50¢

HOW TO FORM ALUMINUM--GENERAL SHEET METAL PRACTICE 2R 21min sd b&w
Bureau of Mines
Techniques of sheet metal working illustrated by animated drawings. Closes with a summary of fundamentals of operations.
Oklahoma University, 50¢

HOW TO FORM ALUMINUM-BLANKING AND PIERCING 1¼R 16min sd b&w
Bureau of Mines
Techniques of blanking and piercing illustrated by animated drawings; the tools employed and the material used in blanking, followed by the operation of die and punch. Closes with a summary of instructions in design, lubrication, and maintenance of tools.
Oklahoma University, 50¢

HOW TO FORM ALUMINUM--SPINNING 1¼R 17min sd b&w
Bureau of Mines
Technique of metal spinning shown by animated drawings. Standard tools required; individual characteristics of tools developed by metal spinners. Lubrication and fundamentals of metal spinning.
Oklahoma University, 50¢

HOW TO FORM ALUMINUM--TUBE AND SHAPE BENDING 1¼R 14min sd b&w
Bureau of Mines
Techniques of bending illustrated by animated drawings. Problems in tube bending and factors involved, such as; thickness, size, shape of tubes. Concludes with a recapitulation of instruction on machine bending, and importance of smooth finish on contact surfaces of bending tools.
Oklahoma University, 50¢

HOW TO RIVET ALUMINUM 3R sd b&w
Aluminum Company of America
Making different types of rivets, preparing rivet holes, fastening joints, and heating rivets under controlled temperatures. Riveting by hand and pneumatic hammers; squeeze riveters, explosive riveters. How to test riveted joints, and removal of defective rivets.
Bureau of Mines, free

METAL CRAFT 1R 11min sd b&w
EBF
Presents the steps by a master craftsman in making a pewter bowl, a bronze bowl, of constructing a candlestick mold, and the candlestick, and of designing and chasing and soldering the sides and top of a jewel box.
Oklahoma University, $1.50

SHEET METAL WORK 1R 10min sd b&w
Vocational Guidance Films
Sheet metal work performed by hand and by machinery. A knowledge of arithmetic and of angles necessary. The government requires its sheet metal workers to have a high school education or its equivalent. Jobs in this field are; furnace manufacturing, and repairing, operation of sheet-metal brake; metal roof, gutter, shylight and ventilating installations, air conditioning and others.
Oklahoma University, $1.50

THIS IS ALUMINUM 3R 28min sd b&w
Bureau of Mines
Opening action shots of manufacturing aluminum and its industrial use. Its abundance; chemical composition, mining the ore, transportation, processing, pouring. Concludes with display of manufactured articles.
Oklahoma University, 75¢

TIN FROM BOLIVIA 2R 20min sd b&w
Bureau of Mines
Brings to the screen the intensely interesting story of the production of tin; one of the few important metals not mined in the United States. Covers every phase of mining, milling, and refining of this metal. 1946.
Bureau of Mines, free

TINPLATE 3R 27min sd color
Weirton Steel Company
Ancient and modern methods of producing tinplate. Production of iron and steel, testing melt, tapping furnace, pouring molds, and transporting blooms to mill. Rolling, annealing, electrolytic tinplating. Closes with testing, inspection, and shipping to factories.
Bureau of Mines, free

SHEET METAL FILM STRIP

The following film strip may be purchased from Brandon Films, Inc.

1. SHEET METAL WORK - $3.00

WELDING

ARC WELDING STAINLESS STEEL 2R 20min sd color
The principles and factors that govern arc welding of stainless steel are portrayed in this film, which explains how and why the arc welder works. Distribution is limited to colleges and second arc trade schools.
Allegheny Ludlum Steel Corporation, free

HOW TO BRAZE ALUMINUM 1R 7min sd b&w
Aluminum Company of America
Process of joining thin aluminum sheets by means of brazing. Furnace brazing, dip brazing, and torch brazing. Differences in brazing and welding. Preparing aluminum surfaces before brazing process, with examples of solvent cleaning, vapor degreasers, and chemical etches. Automatic temperature differentials for brazing process. Brazing applications.
Bureau of Mines, free

HOW TO WELD ALUMINUM--ARC WELDING 1R 10min sd b&w
Aluminum Company of America
Metal arc, carbon arc, and atomic hydrogen processes for welding aluminum. Proper equipment and protection of personnel in arc welding of butt joints and operation of vertical welds. Preheating and angle of rod to work, close-ups of mechanized carbon-arc welding. Principles of atomic hydrogen process.
Bureau of Mines, free

HOW TO WELD ALUMINUM--TORCH WELD 2R 17min sd b&w
Aluminum Company of America
Behavior of aluminum under welder's torch. Steps necessary to make a good torch weld; preparation of welding surfaces, correct flux mixtures, proper manipulation of welding torch, and butt and tack welds in various gages of aluminum sheet and plate. Examples of torch welding of aluminum forgings, castings, and aluminum sheet and plate, together with analysis of proper and improper welding procedures. Close-ups of actual welding operations.
Bureau of Mines, free

MANUAL CUTTING A BEVEL FREEHAND 1R 13min sd b&w
U.S.O.E. No. 187

Shows how to select a tip for bevel cutting; cleaning tip, adjusting gas pressure, cutting with minimum drag, and safe operating and handling.
Castle Films, sale $23.60 Film strip $1.00

MANUAL CUTTING A SHAPE--FREEHAND GUIDED 1½R 16min sd b&w
U.S.O.E. No. 188
Shows how to make plywood template for cutting, how to make a tip guide device, positioning template for cutting, how to use the guide and a circle cutting device.
Castle Films, sale $27.88 Film strip $1.00

MANUAL CUTTING TO A LINE 2R 21min sd b&w
U.S.O.E. No. 186
Shows how to assemble an oxy-acetylene cutting outfit, selecting proper tip, adjusting oxygen and acetylene delivery pressures; how to adjust the preheating cutting flames; how to make a 90 degree freehand cut and how to disassemble the cutting outfit.
Castle Films, sale $32.87 Film strip $1.00

MODERN METAL WORKING WITH THE OXY-ACETYLENE FLAME 2R si b&w
Linde Air Products
How acetylene is produced. Production of oxy-acetylene flame by burning oxygen and acetylene in a special blowpipe. Animated drawings explain operation of equipment. Processes in use on a steel construction job; repairing automobile fenders, laying oil pipe lines. Oxy-acetylene cutting of scrap steel.
Bureau of Mines, free

OXY-ACETYLENE WELDING 2R 20min sd b&w
Jam Handy
Importance of a welder's job; introduces the welders tools, equipment, and correct method to get a flame.
Oklahoma University, $2.50

OXY-ACETYLENE WELDING IN INDUSTRIAL PRODUCTS 2R 20min sd b&w
Linde Air Products
Actual scenes where oxy-acetylene welding is being employed in manufacturing; its speed and economy.
Oklahoma University, $1.50

OXY-ACETYLENE WELDING LIGHT METAL 2R 21min sd b&w
U.S.O.E. No. 190
Shows how to assemble a gas-welding outfit, adjust gas pressures, adjust the flame, and how to make a butt weld and T weld in light tubing.
Castle Films, sale $32.87 Film strip $1.00

PREVENTION AND CONTROL OF DISTORTION IN ARC WELDING 2R 20min sd color
This film primarily in technical animation, describes the effect of heat on metals and shows how they expand and contract. The film gives three fundamental principles to be followed in approaching any problems of distortion. The picture stars Mr. Shrink, a Walt Disney character, who symbolizes the action of the shrinkage force.
The Lincoln Electric Company, free

STORY OF ARC WELDING 3R 24min sd color
Lincoln Electric Company
Arc welding originally used mainly for repairing military equipment. Advantages of arc welding. Techniques of arc welding. Different forms of welded joints. Modern home and arc welding.
Bureau of Mines, free

THE WELDING OPERATOR 1R 10min sd b&w
The first part of the film shows Oxy-acetylene equipment being used by an operator, and illustrates flat and overhead welding and cutting. The problems involved in the use of equipment and kind of welding being done are explained.
Association Films, $2.00

THE GUIDED BEND TEST 2R 17min sd b&w
U.S.O.E. No. 189
Shows how to prepare groove weld and fillet weld test specimens for the guided bend test; how to make the test and causes of failure in bending.
Castle Films, sale $29.29 Film strip $1.00

WELDING FILM STRIPS

The following film strip may be purchased from Brandon Films, Inc.

1. WELDING AS AN OCCUPATION - $3.00

OXYACETYLENE WELDING

742 pictures are designed to help students learning to perform the manual skills required for welding operations. These film strips may be purchased at $3.75 each or in the set for $41.50 from the Jam Handy Organization.

KIT A, Preparatory

1. AN INTRODUCTION TO WELDING - 68 pictures
2. SETTING UP AND LIGHTING THE WELDING TORCH - 58 pictures

KIT B, Elementary Practice

1. WELDING FLAT RIPPLES -31 pictures
2. FLAT BUTT WELDS - 45 pictures

KIT C, Further Practice (Steel)

1. FILLET WELDS - STEEL - 75 pictures
2. VERTICAL WELDS - STEEL - 38 pictures
3. TUBE WELDS - STEEL - 71 pictures

4. CLUSTER WELDS - STEEL - 30 pictures

5. WELDING STAINLESS STEEL - 34 pictures

KIT D, Further Practice (Aluminum)

1. WELDING ALUMINUM FLAT SHEETS - 64 pictures

2. WELDING ALUMINUM TUBES WITH SHEETS - 49 pictures

3. FUEL AND OIL TANK REPAIRS - 29 pictures

KIT E, Special Practice

1. OXYACETYLENE CUTTING - 34 pictures

2. BRAZING AND SILVER SOLDERING - 49 pictures

3. QUALIFICATION TEST FOR WELDERS - 67 pictures

WOODWORKING

AMERICAN WALNUT 2R 22min sd color
This film tells the story of walnut from prehistoric times to the present. It wxplains what is meant by solid and veneer construction, how plywood is made, and how figured panelled surfaces are produced, also explains the characteristics which makes walnut the only satisfactory wood for use in gun stocks, and tells why these features are so valuable in fine furniture.
American Walnut Manufacturers Association, free

THE BUILDERS 2R 20min sd b&w
EBF
The construction of a skyscraper, showing the work of draftsmen, wreckers, excavators, steel workers, and the laying of concrete floors, brick laying, and marble work, plumbers at their jobs, terra cotta and tile setters, plasterers, roofers, painters and the men who install elevators.
Oklahoma University, $2.50

BEVELING, STOP CHAMFERING, AND TAPERING SQUARE STOCK (JOINTER) 2R 20min sd b&w
U.S.O.E. No. 303
Shows how to set fence for bevel cutting; how to adjust cut, how to cut chamfer, setting infeed and outfeed tables for stop chamfer, setting stop blocks, cutting tapers and safety precautions.
Castle Films, sale $29.29 Film strip $1.00

BEVELING, MITERING, RABBETING, AND DADOING (SAW) 2R 19min sd b&w
U.S.O.E. No. 307
Shows how to cut a bevel with a tilted fence, with a tilted blade; setting miter gage; use of stop block in mitering; setting fence and blade for cutting rabbets; installation and use of dado head.
Castle Films, sale $30.74 Film strip $1.00

BUILDING AMERICA'S HOUSES 1R 10min sd b&w
EBF
Live-action photography illustrates and analyzes the high cost of building materials and examines ways these costs can be reduced.
Oklahoma University, $1.50

BUILDING A HOME WITH WESTERN PINES 2R 25min sd b&w
This film shows the actual building of the Western Pine Home at the Golden Gate International Exposition on Treasure Island in San Francisco Bay. The successive stages in the construction of the Cape Cod colonial house are seen, from the staking out of the foundation lines to the completely furnished home. Finishing treatment of pine woodwork shown, as well as room furnishings.
Western Pine Association, free

CABINET MAKING IN 18th. CENTURY WILLIAMSBURG 1R 10min sd color
Eastman Kodak
Begins with the Master and his eldest son as they set off to the shop, where the technique of an 18th. Century handicraft--from original designs, material, tools, and methods to the finished product--is given explicit presentation. The lathe, powered by a hard-working apprentice, provides a particularly vivid sequence as it shows every significant detail, property, or utensil in use.
Oklahoma University, $3.00

CALIFORNIA REDWOOD LUMBER 2R 18min si color
Impressively portraying an industry closely linked with the romance of the Golden State.
Association of American Railroads, free

CUTTING GROOVES WITH CIRCULAR SAW BLADES 2R 22min sd b&w
U.S.O.E. No. 320
Shows how to set up the machine to cut grooves, cutting grooves in stiles, and rails, cutting grooves for splines, and cutting stop channels in mirror frames.
Castle Films, sale $33.60 Film strip $1.00

CUTTING TENONS AND SEGMENTS 1½R 15min sd b&w
U.S.O.E. No. 308
Shows how to lay out and cut a tenon, setting up equipment to make a shoulder cut, setting up to make first and second cheek cuts, preparing a jig to trim and miter segments, and how to guide the jig using sliding miter gage.
Castle Films, sale $26.43 Film strip $1.00

CUTTING COVE MOLDING AND A CORE BOX 2R 19min sd b&w
U.S.O.E. No. 311
Shows how to select stock for cove molding; marking, cutting, and ripping cove molding; how to set up equipment and make successive adjustments in oblique cutting; how to select blade for oblique cutting and how to cut a deep hollow.
Castle Films, sale $31.44 Film strip $1.00

DOORWAY TO HAPPINESS 3R 30min sd b&w
This picture contains views of the logging of the large Douglas Fir trees.

Factory scenes show the manufacture of fir doors in mass production operations and details of new door specialties. Views of homes with correct new entrances are also included.
Douglas Fir Plywood Association, free

DOUGLAS FIR PLYWOOD 3R 30min sd color
Portrays the entire logging operations and details of making plywood by both the cold and hot press method. Shows the uses of plywood.
Association of American Railroads, free

ELEMENTARY MANUAL TRAINING 1R 10min sd b&w
Handicraft Instructional Films
The instructor selects tools and shows the plans to a small boy, who proceeds to measure, saw, and plane, then assemble the pieces into a small box. 1940.
Brandon Films, Incorporated

FABRICATING LIGHT AND HEAVY TIMBER STRUCTURES 2R 25min si b&w
The picture is a composite of various sequences taken during the fabrication and erection timber structures in various parts of the country, including shop and job operations.
Timber Engineering Company, free

FABRICATING THE WESTERN PINES 3R 35min sd b&w
As the title implies, this film is a portrayal of the fabrication and assembly of sash, doors, frames and screens as made from the Western Pines, and the proper installation of such essential units for use in house construction. The narration gives a clear explanation of the subject matter as the picture progresses.
Western Pine Association, free

FACE PLANING UNEVEN SURFACES (JOINTER) 1R 13min sd b&w
U.S.O.E. No. 304
Shows how to surface wide stock on one side; how to use a pusher, making and using a feather board, and use of backing block for thin material.
Castle Films, sale $23.60 Film strip $1.00

FACES AND FIGURES 3R 28min sd color
Veneer Association, 1948
Story of hardwood veneers and plywood and its many uses in modern living. Includes sources of raw materials and shows production of the veneers, matching of figures and uses.
K. and S. Films, Inc., free

FACE TURNING A COLLAR 1½R 16min sd b&w
U.S.O.E. No. 317
Shows how to prepare a faceplate chuck; attaching work to faceplate chuck; turn a fillet; and taper turn a recess.
Castle Films, sale $27.88 Film strip $1.00

FOREST CONSERVATION 1R 11min sd color
EBF
Calls attention to the many ways man has depleted the forest by greedy and ignorant exploitation for his own gain, and forecasts the results of

this exploitation if continued. Suggests what is being done and must continue, in order to save the forests. 1949
Encyclopedia Britannica Films, sale $90.00 rent, $4.00

FORESTRY AND FOREST INDUSTRIES 1R 10min sd b&w
The film takes a log after it is cut and shows the various operations to which it becomes a finished piece of lumber. The many different jobs involved are explained, including that of Forest Ranger.
Association Films, $2.00

FROM BRISTLES TO BRUSHES 3R sd b&w
Interesting trip through an immense plant, showing how brushes and brooms of all types are made.
Castle Films, free

FROM FOREST TO FIRESIDE 3R 35min sd b&w
The origin, conversion, and use of the products of Ponderosa Pine are shown in this film, including the falling of the timber, a trip through a sawmill, dry kilns, seasoning yards, and planing mills. Conversion of the lumber into boxes, window frames, and specialty products is also seen. The work being done by the research laboratory of the Association is shown, with exterior, and interior views depicting the ways the Ponderosa Pine products are used.
Western Pine Association, free

FURNITURE CRAFTSMAN 1R 11min sd b&w
EBF
Describes the roles of the designer, and skilled craftsman in making custom-built furniture. Pattern-making, laying-out, band-sawing, power-planing, jointing, lathe-turning, grooving, gluing, carving and finishing stages in close-up detail.
Oklahoma University, $1.50

HAMMERS 1R 11min sd b&w
Shows the proper handling of various types of hammers.
Plomb Tool Company, free

HAND SAWING 2R sd b&w
In an outline of the manufacture of saws, from the first made by man to the high grade steel saws of today; the difference between rip saws and crosscut saws is pictured and explained, as well as their uses.
Southwestern Institute of Technology, 50¢

HOW TO FINISH PLYWOOD 2R 22min sd b&w
This is a picture designed to give practical answers to the questions people ask about painting plywood. Finishes for both exterior and interior work are described, including light stains, plastic, stipple, enamel, wallpaper and canvassing. A number of joint treatments are shown.
Douglas Fir Plywood Association, free

JOINTING AN EDGE FOR GLUING--INSTALLING KNIVES 2R 21min sd b&w
U.S.O.E. No. 305
Shows how to determine when knives are dull; removing knives, installing

sharp knives, and adjusting; how to straighten crooked stock; and jointing edges for gluing.
Castle Films, sale $32.18 Film strip $1.00

JOINTING EDGES AND END GRAIN 90 DEGREES TO A FACE 2R 17min sd b&w
U.S.O.E. No. 302
Shows how to set the fence and infeed table to proper height; feed with the grain; end grain jointing and all safety precautions.
Castle Films, sale $29.29 Film strip $1.00

MAHOGANY--THE WOOD OF THE AGES 4R 40min sd color
This picture tells the story of mahogany and its products historically, from the tropical jungles to the finished products. It includes the making of mahogany lumber and veneer, and also includes the work of 18th. Century cabinet makers as well as contemporary designs.
Mahogany Association, Inc., free

MASTERPIECES IN MAHOGANY 2R 30min si b&w
The story of the reproduction of a fine sixteenth century mahogany table is told in this film, beginning with the design and scaled shop drawing. The rough, solid mahogany lumber and veneers are then followed step-by-step through the kiln, past the saws, and through the various machines that shape, turn, carve, and sand each part of this piece of furniture. After the assembly of the piece, by the use of dowels, glue and screws the table is shown as it passes through the finishing steps--staining, filling, glazing, sanding, waxing, and polishing.
Mahogany Association, Inc., free

MIRACLE IN WOOD 3R 35min sd color
This picture tells the story of how giant peeler logs are dropped, how blocks are peeled into veneer, how the veneer is "glued-up" into plywood, the wood-and-glue sandwich. The principle uses for the material are illustrated.
Douglas Fir Plywood Association, free

OKLAHOMA FORESTRY 2R 20min sd color
This film shows the importance of forestry in Oklahoma, the value of trees for timber and for conservation of the soil, the methods of conservation and some ways of fire fighting.
Oklahoma University, free

PAINTING AND DECORATING 1R 10min sd b&w
The film explains the many kinds of jobs in this vocation--showing both exterior and interior painting--tells of the problems involved in painting.
Association Films, $2.00

PLANING ROUGH SURFACES TO DIMENSIONS 2R 17min sd b&w
U.S.O.E. No. 301
Shows how to adjust the table for desired thickness, setting feed rolls for proper speed, feeding with the grain, and how to surface short pieces and glued stock.
Castle Films, sale $29.29 Film strip $1.00

RABBETING AND SHAPING AN EDGE ON STRAIGHT STOCK 2R 18min sd b&w
U.S.O.E. No. 318
Shows the principle of the shaper operation; setting up for cutting rabbets; setting up to shape mouldings ahd the cutting of mouldings.
Castle Films, sale $30.01 Film strip $1.00

RIPPING AND CROSSCUTTING 2R 19min sd b&w
U.S.O.E. No. 306
Shows how each part of the variety saw functions; checking saw blades, setting fence, changing blades, using cut-off gage, and hinged block in crosscutting, also safety precautions.
Castle Films, sale $30.74 Film strip $1.00

SANDING FLAT AND IRREGUALR SURFACES 2R 19min sd b&w
U.S.O.E. No. 312
Shows how the belt sander operates; how to prepare a sanding belt, sanding flat stock, sanding curved molding, how to use and replace sandpaper on a disc sander, and how to use and replace sandpaper on a spindle sander.
Castle Films, sale $30.74 Film strip $1.00

SAWING WITH JIG AND CHANGING BAND 2R 20min sd b&w
U.S.O.E. No. 309
Shows how to select proper band saw blades for the job, changing blades, folding for storage, adjusting saw guides, marking stock and cutting to the mark, preparing a jig and cutting discs with jig.
Castle Films, sale $32.16 Film strip $1.00

SAWING A REVERSE CURVE AND A BEVEL REVERSE CURVE 2R 18min sd b&w
U.S.O.E. No. 310
Shows how to select and layout stock to avoid waste, reversing reverse curve, preparing a template for a newel post, and how to saw a newel post having a reverse curve.
Castle Films, sale $30.01 Film strip $1.00

SHAPING AFTER TEMPLATE AND SHAPING CURVED EDGES 2R 17min sd b&w
U.S.O.E. No. 319
Shows how to make template, install knives, use of template smoothing squared edges; setting up and shaping curved edge, and shaping a curved edge in more than one cut.
Castle Films, sale $29.20 Film strip $1.00

THE PLYWOOD FLEET 3R 35min sd b&w
Everyone enjoys seeing speed boats, sailboats, and yachts in action. The film also shows a skiff and a plywood racing shell in construction. The climax is an exploratory trip down the Colorado River.
Douglas Fir Plywood Association, free

TURNING WORK ON A FACE PLATE 1½R 15min sd b&w
U.S.O.E. No. 315
Shows the types of face plates, how to choose face plate; attaching stock, truing up the work, scribing for inside turning; use of roundnose and diamond point chisels; how to smooth bottom of the recess.
Castle Films, sale $27.15 Film strip $1.00

TURNING WORK IN A CHUCK 1½R 15min sd b&w
U.S.O.E. No. 316
Shows how to mount work on a faceplate, turn one face of the work, make a chuck for the opposite face, fitting finished face to the chuck and turning the second face.
Castle Films, sale $26.43 Film strip $1.00

TURNING A CYLINDER BETWEEN CENTERS 2R 17min sd b&w
U.S.O.E. No. 313
Shows how to choose and center stock for a job, how to mount stock in the wood lathe for turning; how to select proper speed; how to select and use cutting tools; how to sand turning work; and the safety factors involved.
Castle Films, sale $29.29 Film strip $1.00

TURNING TAPER WORK 1R 12min sd b&w
U.S.O.E. No. 314
Shows how to center cylindrical wood stock for spindle turning; make clearance cuts; establish the diameters of a taper; how to turn a single taper; establish diameters for turning two tapers from a single piece of material and turn the tapers.
Castle Films, sale $22.88 Film strip $1.00

PREFABRICATION WITH PLYWOOD 3R 32min sd b&w
Prefabrication of houses, schools, and farm structures is shown in this film. All of the basic systems are shown, with many actual factory scenes. All erection details are carefully explained.
Douglas Fir Plywood Association, free

REDWOOD SAGA 1R 10min sd b&w
A vivid portrayal of the majestic redwood from forest to the polished beams.
Association Films, $2.00

ROMANCE OF MAHOGANY 3R 45min si b&w
The film takes the audience deep into the jungles of Central America, South America and Africa, showing the hunt for mahogany up long, sluggish rivers. The felling of the trees by hand, transportation of logs and final stages of lumber making in the United States is shown. All methods of making veneers are shown.
Mahogany Association, free

SCIENCE SAVES THE SURFACE 2R 20min sd b&w
Bakelite Corporation
Man's war against the elements weather, wear, abrasion, and corrosion. Paints, varnishes, and enamels that have been manufactured to withstand all kinds of wear.
Oklahoma University, 50¢

SEMPERVIRENS (REDWOOD TREES) 3R 29min sd color
This film portrays the wide range of uses of California redwood lumber in industry, on farms and in homes, and commercial structures, with sections showing the production of the material, to explain lumber grading and segregation for these uses.
California Redwood Association, free

THE COMPLETE SAW SHOP IN ONE MACHINE 2R sd b&w
DeWalt Incorporated, free

THE IDEAL WAY 2R 20min sd color
Contrasts woodwork and cabinet making in colonial days and present time. Gives an over-all picture of what goes in to the cabinet making business; lumbering, milling, shaping, assembling. Cabinets of all sorts are then shown in the setting of various homes and the characteristics of each type discussed.
A. & M., free

TREES FOR TOMORROW 2R 20min sd b&w
American Forest Industries
Lumbering and the ways lumbermen help conserve lumber, and replant trees. A few scenes of materials made from trees such as paper, plastics, etc.
Oklahoma University, 50¢

WOODWORKER 1R 11min sd b&w
Vocational Guidance Films
Many phases of the building industry employing thousands of men who work with wood are demonstrated. Furniture, mill-work, and pattern-making establishments; mill-working operations; such as sash and door, stair-building, cabinet assembly; small cabinet shops; veneer and furniture factories; wood pattern making.
Oklahoma University, $1.50

WOODWORKING FILM STRIPS

OPERATION OF HAND AND POWER TOOLS IN THE WOODWORKING SHOP

782 pictures are organized to present a visual program for instruction in safe methods of using hand and power tools in the woodworking shop. These film strips may be purchased at $4.50 each or in the set at $51.60 from the Jam Handy Organization.

1. HAND TOOLS-HAMMERS-SAWS - 41 pictures

2. PLANES-BITS-KNIVES-CHISELS-SCREWDRIVERS-FILES - 52 pictures

3. TOOL GRINDER - 46 pictures

4. DRILL PRESS - 63 pictures

5. JIG SAW - 76 pictures

6. BAND SAW - 79 pictures

7. DISK SANDER - 31 pictures

8. BELT SANDER - 62 pictures

9. LATHE: PARTS-SPINDLE TURNING - 74 pictures

10. LATHE: FACEPLATE TURNING-OTHER OPERATIONS - 35 pictures

11. PLANER - 47 pictures

12. JOINTER - 62 pictures

13. CIRCULAR SAW: SETTING UP-OPERATING - 40 pictures

The following film strips may be obtained from the Charles A. Bennett Company at $3.00 each.

1. FURNITURE JOINERY - 59 frames

2. MAKING A PROJECT WITH HANDTOOLS -

3. WOODWORKING MACHINES -

4. SAFETY "KNOW-HOW" IN THE WOODSHOP -

The following film strips may be purchased from Brandon Films, Inc.

1. WOOD FROM FOREST TO FINISHED PRODUCT - $3.00

2. CABINET MAKING - $3.00

3. PAINTERS AND DECORATORS - $3.00

4. WOODWORKERS TOOLS - $2.00

CHAPTER V

SUMMARY AND CONCLUSIONS

The information contained in this report deals with the lists of motion picture films and film strips pertaining to the industrial arts subjects which are most commonly taught. Information concerning projection equipment, other types of visual aids, and the technical phases of their operation has not been discussed. Other writers have provided studies relative to those topics and some of them are reviewed in the first chapter of this report. A rather extensive, yet incomplete listing of motion picture films and film strips has been provided. A brief history of both visual aids and industrial arts provides a background for the study of some of the present day values of both in our modern system of education.

A summary of the findings:

Since the close of the war a great deal of attention has been given to the development of visual aids. One of the reasons was the success of the training programs carried on by the armed services, when thousands of motion pictures and film strips were used. Perhaps the results from these aids was so great because of the more or less controlled conditions under which they were utilized. Results in the public schools have not been so spectacular, but have been good enough to warrant the continuation and increased use of these visual aids in instruction. Our great need is for more adequate training of teachers in the proper utilization of visual aids. In the past the number of educational films which were correlated with subject matter was small, but that picture is now changing. Several textbook companies are producing both motion pictures and film strips which are correlated with specific textbooks. The matter of the selection

of films by teachers has been one of concern to those interested in seeing visual aids used in their most effective manner. The methods of presentation must be improved if teachers are to make films a standard aid to instruction. Teachers must develop the habit of previewing films, and then make an interesting presentation of the film to the pupils. The fact that a film is available is a poor criterion for its inclusion in the teaching plan. The teacher should always have his objectives in mind before presenting a film.

Conclusions indicated by the study:

If it is determined that motion picture or film strip is to be used, good planning makes it necessary for the instructor to view the film privately one or more times so that he is thoroughly familiar with its contents. He plans how he is to introduce the film and what he is to do after it has been shown. He plans for physical details such as projection equipment, seating arrangement, lighting of the room, operator of projector, and materials students should have at hand immediately after the showing. The importance of careful planning cannot be overemphasized. Many an otherwise good lesson can be ruined because some small detail such as an extension cord or darkening of the room has been overlooked.

One of the aids to the use of films is an appraisal scale. If every instructor could make use of a standard scale and keep it on record for future reference, there could be a valuable file of film information stored up to be used later in the selection of films. One scale which appears to very adequately serve the purpose is the "Fitzwater Educational Film Appraisal Scale." It is printed in two forms; Form A being designed for classroom showings and Form B for the preview showing. Form A is printed on an eight by ten inch sheet, both sides, and Form B is on a

card five by seven inches, which could easily be filed. The scale was prepared by James P. Fitzwater and copyrighted in 1947 and 1949. The Stanford University Press, Stanford, California is the publisher and the scale may be purchased from them. Special permission of the publisher was granted so that the scales could be included in this report.

The Fitzwater Scale is not the only scale available, but it is included here to provide a guide to the type of information one should develop about the films they use.

FITZWATER EDUCATIONAL FILM APPRAISAL SCALE

by
James P. Fitzwater

FORM B

For Preview Showings

Exact title of film _____ Name of appraiser _____

Film produced by _____ Position _____ School _____

Black & white _____ or Color _____ City _____ State _____

Silent _____ Sound _____ Running time _____ Date film was previewed _____

Film suitable for use in _____
e.g. area of learning experience, etc.

Appropriate grade level _____
e.g. primary, elem., jr. high, etc.

BE SURE TO FILL OUT THE OTHER SIDE OF THIS CARD

Additional Copies of This Scale May Be
Obtained from the Publishers

STANFORD UNIVERSITY PRESS, Stanford, California

FILM APPRAISAL

Please check ( ) the scale at the point that indicates the degree to which this film meets each of the following criteria:

		1	2	3	4	5
1.	Relation of film contents to the area of learning experience.	Significant		Acceptable		Pointless
2.	Facts and ideas presented in the film.	Authoritative		Acceptable		Inaccurate
3.	A. Content organization and development adapted to the age level, i.e., interest, tempo, attention span, etc.	Appropriate		Acceptable		Inappropriate
	B. Relation of the vocabulary to the age level.	Appropriate		Acceptable		Inappropriate
4.	Situations presented in lifelike manner by dramatic and pictorial film structure.	Realistic		Acceptable		Displeasing
5.	Sound track augmented the visual information.	Natural		Acceptable		Distracting
6.	Comparison of this film with other available instructional materials, such as slides, maps, film strips, photographs.	More effective		As effective		Less effective
7.	Over-all appraisal of film, i.e., how well it would enrich the current classroom and life experiences.	Excellent		Average		Poor

FITZWATER EDUCATIONAL FILM APPRAISAL SCALE

FORM A

For Classroom Showings

Exact title of film _____ Name of appraiser _____

Film produced by _____ Position _____ School _____

Black and white or Color _____ City _____ State _____

Silent or Sound _____ Running time _____ Date film was used in class _____

A. INFORMATION ABOUT SHOWING
Please place a check ( ) to indicate how you used this film.

1. Area of learning experience _____
e.g. American History, Biology, etc.

2. Immediate objective _____
e.g. Development of Colonies, Cell division.

3. Grade or teaching level where film was used:
Kdgn, I, II, III; IV, V, VI; VII, VIII, IX; X, XI, XII;
( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( )

Trade school, College, Adult
( ) ( ) ( )

4. Purpose or purposes for which film was used:
a. ( ) to introduce a lesson or topic
b. ( ) to arouse interest
c. ( ) to present essential facts
d. ( ) to illustrate performance skills
e. ( ) to provide enrichment experience
f. ( ) to provide review or test of understandings

(continued)

5. Situation in which the film was used:
   a.( ) one class in a classroom
   b.( ) one class in a projection room
   c.( ) several classes in a classroom
   d.( ) several classes in a projection room
   e.( ) assembly in an auditorium
   f.( ) with one or more other films

6. Were the screening conditions, that is, room-darkening ventilation, and projection equipment, where film was used; Check ( ) one

   Satisfactory?_____ Acceptable?_____ Unsatisfactory?_____

7. Could this film have been used more advantageously?
   If so, where and how? _____

8. A. What printed pupil lesson materials and film quiz were used with this film showing? _____

   B. Was this technique helpful? _____ How? _____

   C. Other comments _____

BE SURE TO FILL OUT THE OTHER SIDE OF THIS SHEET.

Additional Copies of This Scale May be Obtained from the Publishers

STANFORD UNIVERSITY PRESS, Stanford, California

FITZWATER EDUCATIONAL FILM APPRAISAL SCALE

B. BEHAVIOR RESPONSES

After you have used this film and you have observed the students reactions, place a check ( ) in that column which indicates whether the film has:

	YES	QUESTIONABLE	NO
1. Contributed facts and ideas which the students grasp readily	( )	( )	( )
2. Aided the students in performing a specific skill	( )	( )	( )
3. Stimulated students to seek additional information elsewhere.	( )	( )	( )
4. Motivated certain students to produce creative work in written, oral, artistic, musical, dramatic, or craft expression	( )	( )	( )
5. Guided certain students to discover new problems pertinent to the lessons.	( )	( )	( )
6. Assisted students to collect, to organize, or to analyze information. . .	( )	( )	( )
7. Helped students apply information to new problems	( )	( )	( )
8. Encouraged students to follow directions and to apply these directions to new situations.	( )	( )	( )
9. Inspired students to help others with their problems.	( )	( )	( )
10. Moved students to develop a different attitude, i.e., toward others of another race, culture, religion, politics.	( )	( )	( )

(continued)

FILM APPRAISAL

Please check ( ) the scale at the point that indicates the degree to which this film meets each of the following criteria:

		1	2	3	4	5
1.	Relation of film contents to the area of learning experience.	Significant		Acceptable		Pointless
2.	Facts and ideas presented in the film.	Authoritative		Acceptable		Inaccurate
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6.	Comparison of this film with other available instructional materials, such as slides, maps, film strips, photographs.	More effective		As effective		Less effective
7.	Over-all appraisal of film, i.e., how well it would enrich the current classroom and life experience.	Excellent		Average		Poor

Recommendations:

One of the great problems of industrial arts teachers is that of obtaining the right type of films. It would be advisable to have a central agency in the state to evaluate films as they are produced. These evaluations could be made available to all prospective users of the new films.

The answer to the problem of ordering and scheduling films from several sources lies in the organization of a single film distributing agency in the state. This agency would handle all films for school use.

The producers of films need to rely more upon the classroom teachers for aid in making films to be correlated with the textbooks in use. Some film strips are now being made for specific textbooks. Many more of them are needed for all industrial arts subjects.

A library of school owned film strips for industrial arts would be a good investment in teaching aids for any industrial arts department.

More instruction in the use of films should be given teachers-in-training in the colleges. Every prospective teacher should know the value of visual aids and the effective methods of using them. It is advisable to require a course in audio-visual aids for every teacher. The course should teach the operation of all types of visual aid equipment, the methods of presentation of lessons when using each of the aids, and when audio-visual aids should be used. A part of the course could be devoted to teaching the art of producing motion pictures and film strips in the classroom. Some excellent teaching material could be developed for local use.

Future Studies:

Problems for future study are many and the writer suggests a few which have occurred to him in making this study:

(a) There is a need for a study of the methods used and the results

obtained in the use of films in the classrooms of Oklahoma schools.

(b) A study of school or school system owned films and film strips.

(c) A survey of the industrial arts departments of Oklahoma on the films used in industrial arts classes.

The problem of using motion picture films and film strips in industrial arts classes is great. It is the hope of the writer that this report, as brief as it is, will prove to be of some value to its readers. If it answers a few questions and raises a few more questions then it will serve its purpose.

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