

THE USE OF STILL AND MOTION PICTURES

IN INDUSTRIAL ARTS CLASSES

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By

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Bachelor of Science

Northeastern Teachers College

1933

Submitted to the Department of Industrial Arts Education
And Engineering Shopwork

Oklahoma Agricultural And Mechanical College

In Partial Fulfillment of the Requirements

For the degree of

MASTER OF SCIENCE

1941

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ACKNOWLEDGEMENTS

The writer of this thesis is greatly indebted to Dr. DeWitt Talmadge Hunt, Head of the Department of Industrial Arts Education and Engineering Shopwork; Professor C. L. Hill, Summer School Faculty Member from The Daniel Webster High School in Tulsa; Dr. Haskell Pruett, Associate Professor of Education, and to Mr. Clemmer R. Woods, Associate Professor of Industrial Arts Education and Engineering Shopwork for their help during the period of the production of this thesis.

The various companies and organizations distributing films used in this thesis have my deepest appreciation for their generous response to all inquiries that were made during the writing of the thesis.

An especial debt of gratitude is acknowledged my wife, Virgie Mae, for her sympathetic understanding and encouragement during the writing of this thesis.

G. C. F.

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CHAPTER I

THE PHASES OF STUDY

There are many film catalogues giving lists of educational moving pictures, but when one attempts to find appropriate pictures for showing before industrial arts shop classes, it seems that there are few such films available. It is not the purpose of this thesis to duplicate any of the film lists already available to the industrial arts teachers. The purpose is, however, to provide the reader with usable film lists that will enable him to teach more effectively the subjects of industrial arts in the public schools. A serious need has existed for several years for a source list from which industrial arts teachers can get visual materials.

The use of visual aids, including sound films, silent films, filmstrips and talking filmstrips are recognized as beneficial. In this thesis, all films relating to specific shop work classes have been grouped together.

The motion picture has become a powerful influence in the national life of our country. It is a significant agency in controlling the thoughts and ideals of our youth. The motion picture reaches more people of all ages and intelligence perhaps than any other social influence that we have today. The educational motion picture, although rather new in both its production and use in the classroom, is becoming more common. Educators should avail themselves of the opportunity of using the motion picture in their teaching.

Description of the Problem

The need for accurate and reliable lists of motion pictures, usable in school shop classes, led to the selection of this problem as a subject for a thesis. In the solution, many steps of research were necessary. The lists of motion picture films available were not classified as to subjects in which they are usable. The selection and grouping of films that contributed to industrial arts classes, with names of sources from which they could be obtained, was one of the problems met. Quite a number of film lists have become obsolete, with companies who were distributors of those films withdrawing them from circulation. The writer, in dealing with the problem, has attempted to secure all available and up-to-date films of industrial arts that have been placed before the public by the distributors of films.

Need for the Study

Until recently the use of still and motion pictures was not so extensive in the teaching of shop classes. By the use of the motion picture, it is possible to obtain information the pupil could not otherwise get. By this means, the pupils may see skilled tradesmen at their tasks.

Many of the teachers of shop classes do not have lists of films that will aid them in teaching their classes most effectively. So far as is now known, no lists of films are to be found that combine all the films usable in shop classes. The distributors of educational films do not have their films classified according to industrial arts subjects. The head-

ing under which they come is too general for the immediate use of shop subject specialists.

Uses of the Study

The film lists included can be used by the teachers of shop classes or those interested in industrial shop classes. The films could be used in vocational guidance courses to give the pupils an insight into a number of vocations. The safety films could be used in various civic organizations in safety campaigns, etc. The lists will serve as a guide for those wishing to use slide or motion picture films in their teaching or vocational guidance courses. Those films that have been validated as a part of this study can be relied upon as being helpful in industrial arts classes.

Reviews of Theses and Other Similar Investigations

A search was made for other similar research reports. All research reports produced since 1930 were examined for visual aid materials that could be used in industrial arts classes. Films were listed that could be used in some classes, but no class distinction was made of any of the films. Very few industrial arts films were listed. A search was also made for firms distributing visual educational films usable for industrial arts classes. A number of firms, agencies, and other distributors were found, with tables in some of these, showing the films that were free, rental films and those that were for sale. Three theses and one book are

reviewed in the following pages:

Fulton's Study in 1939. W. R. Fulton completed a thesis entitled Problems in Administration of Projected Visual Aids Based on Industrial Data. (11)

The writer makes a study of the number of projectors in the public schools of Oklahoma. Another phase of the study presents the reasons why there are not more films and projectors used in the public schools of Oklahoma. Some of the reasons are: (1) lack of competent operators, (2) lack of finances, (3) lack of knowledge on the part of the school boards and superintendents as to the many uses of films in schoolwork.

Firms, agencies, and companies that distribute visual aid materials and other equipment needed for visual education are listed. The approximate cost of the necessary visual aid materials are given, with recommendations, as to sizes and uses to which they are to be placed, whether in classroom or auditorium.

Photography, which is included by Fulton as a form of visual aid, is also discussed, and colleges offering courses in photography are listed. Much instructional material was secured from different companies distributing projectors and films. County superintendents, superintendents of public schools, and presidents of institutions of higher learning in the state of Oklahoma contributed to the survey. Many graphs and tables are included in this thesis, showing relative sizes, and costs of projectors, films and other equip-

ment needed in visual education.

The Barefoot Study. Another study completed in 1939 was Barefoot's thesis entitled Audio-Visual Aids in Public Schools. (3)

Barefoot states that in the early development of the use of visual aids the eye was all-powerful in the educative process. The writer gives something of the development of visual education in the introduction, and uses of sound pictures.

A survey was quoted indicating that 8,806 schools and school systems reporting had 37,671 instruments for the projection of pictures. The same schools owned 11,501 radio receiving sets, nearly a thousand centralized sound systems, approximately three-quarters of a million phonograph records, and more than three million glass slides. Very little attention has been given to 35mm silent motion pictures among schools because of their increased cost over 16mm film. The first phonograph record used in the school for instructional purposes was in 1909 in the schools of Milwaukee, Wisconsin. The interesting phase of the situation is that broadcasting facilities, government agencies, and schools are working together, experimenting, planning and replanning, all for the benefit to receive formal instruction from the radio. Many broadcasting stations offer their facilities to schools at little or no cost for presentation of an educational program.

Something of the use of the sound slide film is discussed

by the writer in which he states that still pictures are printed on 35mm positives for projection by use of a film slide projector. The other part of the film is the recording sound which illustrates or explains the picture. It is further stated that one of the greatest factors that has retarded the widespread use of sound motion pictures among schools has been the lack of a sufficient quality and variety of good educational sound film. This situation is being rapidly corrected and it should not be long before the supply will be adequate for the requirements of the average school.

A resume of the costs, etc., of equipment used in motion picture projection is given which indicates that: (1) The projectors range in price from \$350 to \$900, including projectors, amplifiers, speakers and other necessary equipment required for successful operation. (2) The less expensive projectors are those which are designed primarily for use in classrooms, while the more expensive, selling at a higher rate, may be used in auditoriums and other large spaces where it is necessary to project a large picture much farther than the ordinary classroom. (3) All 16mm projectors are portable.

The writer advises those educators who are hesitating in buying or securing radio or motion picture equipment for school use from fear of the rapid development of television, may dismiss those fears and proceed with reasonable assurance that any up-to-date equipment installed this year or next will be extremely useful for many years to come.

The writer, in advising the purchase of a machine for projection, urges that the following factors be considered:

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.

Beckham's Study, the title of which is Use of Opaque Pictures in Visual Education, (4), was given by Beckham to his study produced last year.

The writer gives a brief description and history of visual education. Many quotations are given from many sources and authors. A survey was made to see how many teachers in Oklahoma public schools used pictures in their teaching. A group of summer school students which included superintendents and principals, as well as classroom teachers, were questioned in the survey. This group included those from the one-room schools to those who taught in the larger schools of the state. The questionnaire sought to determine the knowledge of visual education aids to which the teachers had access in their teaching in the different departments. Questionnaires were sent to the instructors in teachers

colleges listed in Educational Screen that offered visual education training courses. One hundred sixteen questionnaires were submitted; sixty-six were returned, sixty-two courses were offered in visual education in the summer of 1940. Three courses were offered that were devoted to production of visual aids in teaching. Fifty-two courses were offered that were devoted partly to production of visual aids. There were forty professors who believed that a production of visual materials should be included in the training of teachers in the colleges.

The principle conclusions that the writer made at the concluding of his study were: (1) The principle reason that opaque pictures are not more extensively used in Oklahoma schools is that teachers are not informed as to the abundance of good materials which they may obtain for their classroom use. (2) A course in the production of opaque pictures should be a part of the training of every teacher.

The Charters Study. While this study is not a thesis, the small publication Motion Pictures and Youth, (6), has had a significant influence on all later studies of the uses of motion pictures in school classes.

The writer makes a study on the effects that motion pictures have upon our youth. A number of pictures were seen and data were taken from different effects that the picture had upon children and youth of all ages. The principle effects that movies have upon youth were classified under these headings: information, attitudes, health and

conduct. The same pictures were viewed by superior adults and children ranging from 5 to 10 years. The child of 5 to 10 of superior adults sees 3 of the 5 things that their parents see. The amount of information retained is very high. The second-third grade child at the end of six weeks remembers 90 percent of what he knew the day following the show. Three months later he remembers as much as he did 6 weeks after seeing it. It is interesting to note that very young children remember correctly 50 to 60 percent of what they see. Conversely, this means that they do not get 40 to 50 percent of what they see.

Children of all ages tend to accept as authentic what they see in the movies. In attitudes, the children were influenced by pictures, causing them to try to duplicate things seen in the movies. A test or check-up was made on two groups of pupils. The test showed that pupils attending movies once a week were better in deportment, rated higher in school work, and were less truant than those pupils attending movies three or four times per week. The emotions of the students were affected quite noticeably by the movies. Those from five to ten years were influenced by fear or horror types of pictures and were not influenced by pictures of love and that type. The pupils influenced by love scenes were from 15 to 19 years of age. The older pupils and adults were less affected.

A reading of the studies made up until this time makes it evident that a list of sources from which industrial arts

teachers may secure films suitable for their different classes is in demand. It is also shown that there has been no compilation of films under classes of industrial arts that are separate in their distinction for use in industrial arts classes. No validation of films has yet been made which will give industrial arts teachers an idea as to the value motion pictures may have in the teaching of certain shop classes.

Until the present time it has been a hit or miss affair, so far as the teacher is concerned, as to what the picture will teach or bring before the class. There is still much to be accomplished in this type of work, for each year finds an ever changing group of pictures, with new pictures which need previewing and validating as to their value in the various teaching fields. Other pictures already in circulation are becoming obsolete, some being withdrawn from circulation. It is the duty then of the teachers and other educators to keep abreast of the changing conditions so that they may keep before their pupils the new materials and methods of presenting information.

CHAPTER II

EDUCATIONAL AIMS

The chief purpose of education is to instruct and prepare the individual, as he grows older, to adjust himself to the changing environment so he may gain the greatest joy in living. The aim of education should be such that, as the person acquires his knowledge and preparation, he is being helped to a better life in the process. Many people get the idea that an education is to prepare the person to live at some future date--this is far from being true. The curriculum should be arranged so that the pupil may see the progress he is making. The progress chart in various forms is an outgrowth of the foregoing idea.

PART A

FUNCTIONS OF EDUCATION IN AMERICA

Education in America began immediately after the white people came to this country. Educational movements in all lands are primarily led by religious sects, and so in America we find evidence of early religious groups' taking the lead in educational movements.

We find in the study of education all through these past years in America that education is paid for primarily by taxation and is free to all Americans. The functions of education in America are to enable the coming generations to have a knowledge of their forefathers' accomplishments

and to try to carry on our national democracy and ways of living to greater national security, in intellectual, material and spiritual gain.

The primary business of education, as effecting the promise of American Democracy, is to guard, cherish, advance and make available in the life of coming generations the funded and growing wisdom of the race. This involves the dissemination of knowledge, the liberation of minds, the development of skills, the promotion of free inquiries, the enlargement of the creative spirit, and the establishment of wholesale attitudes toward order and changes--the usefulness in the good life for each person, in the practical arts, and in the maintenance and improvement of American Society, as our society, in the World of Nations. (7)

Definition of General Education. A general education is the acquiring of as much knowledge as can be obtained over a wide field of experiences. The more varied the teachings and facts with which the person comes in contact, the more general his education will become. We begin our general education with the first experience that we retain for future reference. Our general education is accomplished by the association or tying together of old experiences we know and understand with those we are experiencing for the first time. Summed up, we may say that a general education is the result of all experiences with which an individual comes in contact during his life time.

The entire object of true education, in John Ruskin's opinion, which will find wide approval, is "to make people not merely to do the right thing, but to enjoy the right things--not merely industrious, but to love industry--not merely learned, but to love knowledge--not merely pure, but to love purity--

not merely just, but to hunger and thirst after justice.

Education has a responsibility to make us alike in acquiring mental contents, no less than to cater to our individual tastes and capacities. As economic producers, we should be specialized; but not as consumers. As utilizers of the intellectual resources of civilization (excepting industrial technique) and as participants in the institutions of society (except the economic) we should be educated for considerable similarity of behavior. (13)

Objectives of Education. Much has been written about the objectives of education. All objectives are to better equip and enable the person to live his life to the fullest extent, so as to be a benefit to himself and the society with which he comes in contact.

In the past decades the father saw to the education of his son or boys. The object was for the boy to learn the trade of his father. There were instances when the father wished his son to learn some other trade or skill. He then would apprentice the boy to the man whose trade he wished his son to learn. In this way we have the first training of skilled workers other than what the father taught the son. The mother taught the daughter all necessary activities in the home. All objectives of education takes one form or another involving the seven cardinal principles, which are brought out by outfollowing social institutions:

1. Home--Worthy home membership.
2. School--Command of the fundamental processes.
3. Church--Ethical character.
4. State--Citizenship.

5. Vocation--Vocational training.
6. Recreation--Worthy use of leisure time.
7. Health--Games and sports, or knowledge of diseases.
8. Communication--World mindedness.

The Educational Policies Commission of the Industrial Education Committees has arranged the qualities of an educated man in this following statement:

- The inquiring mind--An educated person has an appetite for learning.
- Speech--An educated person can speak the mother tongue clearly.
- Reading--An educated person reads the mother tongue effectively.
- Writing--An educated person writes the mother tongue effectively.
- Numbers--An educated person solves his problems of counting and calculating.
- Sight and Hearing--An educated person is skilled in listening and observing.
- Health Knowledge--An educated person understands the basic facts concerning health and disease.
- Health Habits--Protects his own health and those who are dependent upon him.
- Public Health--Works to improve health of the community.
- Recreation--An educated person is a participant and spectator in many sports and pastimes.
- Intellectual Interests--An educated person likes and appreciates those things that are uplifting in mind and character.
- Esthetic Interests--An educated person appreciates beauty.
- Character--An educated person gives responsible direction to his own life. (7)

Social and Economic Goals in Education.

The trend in the democratic forms of education in our country has been to socialize our classes as much as possible. In the beginning of education, if we could set any date as to its beginning, the child comes in social contact more

and more with other individuals whose ideas may not be the same as the child's. He learns to readjust some of his notions and ideas to conform to the ideals of the society in which he finds himself. All life is a constant revision as well as an accumulation of ideas. When the person has become so adjusted to his environment that he forgets his own personal gain and selfishness, he is then ready to truly be a citizen of our great democracy. This is the true goal of education.

Kilpatrick very well states the social goal of education in his statement:

Democracy is essentially life, ethical life. The modern industry raised difficult problems for democracy is only too true, but such are equally problems for civilization, for life itself. (14)

The economic trend of our educational policy is toward the teaching of specialists in the various fields of vocations. The time is here for mass production in various industries, to meet the rising needs of the people.

We have spent too much time and effort in the teaching of academic subjects to the exclusion of practical and useful courses. The world now wants to know what a young person can do.

In the writings and finding of Ballard in his book, Social Institutions, he makes the statement that:

Viewed socially, education is the process by which the individual is prepared for successful participation in social relationships, broadly

conceived. That is education facilitates the functioning of the individual in his economic, political, religious and recreational relationships. (2)

It is easily seen by the excerpts from various sources that viewed socially and economically, education has for its purposes the preparation and training of the individual so he can take and keep his place in the ever changing social order in which he finds himself. In the process of the various adjustments which must be made, the finding of happiness and contentment in their work and lives is of the utmost importance. Theoretical courses involving languages, social science and artistic experiences will not qualify the youth of today for his economic life of tomorrow. Practical courses and experiences in commercial home economics and industrial arts should be offered.

PART B

HOW INDUSTRIAL ARTS CONTRIBUTE TO PURPOSE OF EDUCATION

Industrial arts may be thought of as a part of general education in that it deals with materials, and ways of manufacturing those products for the consumer. Industrial arts gives the pupil a chance to actively participate in the work that is commonly found in many vocations. With these varied experiences the student is gradually passed through many different steps in his educational development. One of the many advantages that industrial education has over other school subjects is that it may be applied to many

levels of education. With our present day civilization and its many interdependencies of occupations, industrial education, in a large measure, is giving the pupils who pass through the general shop courses a chance to learn something of many occupations.

The general education of the pupil is not complete until he develops an understanding and an appreciation of the manufacturing industries, along with the relationship between the manufacturers, workers and consumers. All pupils at one time or another will occupy a position of one of these three. Industrial arts supplies an outlet for the pent up nervous energy developed in the pupil when confined to the schoolroom, and provides a place to test the individual interest and aptitude of the pupil.

General Objectives of Industrial Arts in Secondary Schools

The general objectives of industrial arts in the secondary schools are primarily those objectives that contribute to the broadening of the general education of the pupils in industrial pursuits that they will likely encounter in later life. It is the purpose of industrial arts in the secondary schools to offer try-out courses for the pupil to take to see if his interest keeps up. The pupil may think that he would like to be an electrician, plumber, or woodworker. If he has a chance to actually work and have experiences that confront the electrician, plumber, and woodworker he will learn before it is too late whether he

would like the work before he gets into it as a profession, as is so many times the case in later life. The real objectives of industrial arts should be then to provide useful and meaningful experiences.

The general Objectives of Industrial Arts as worked out by graduate students at Oklahoma Agricultural and Mechanical College were as follows:

- (1) Provides basic industrial knowledge, usable and every day life.
- (2) Trains in problem solving of job analysis type. (Problems met in daily activities are very similar)
- (3) Home mechanics (handy man ability) is developed so that a boy can do ordinary repairs in and around the home.
- (4) Exploration into basic trades will result in general educational values of a broadening nature.
- (5) Skill in use of tools develops attitudes of exactness and carefulness.
- (6) Consumers' knowledge and appreciation, useful in selecting, operating, and maintaining services and products of industry will be attained.
- (7) Avocational training consisting of detecting and developing interests and abilities leading to a hobby may be a product.
- (8) Guidance values should come from a knowledge of several crafts and trades.
- (9) Vocational training of varying degrees is a uniform outcome.
- (10) Socialized values wherein the boy becomes skilled in personal and social relations are direct outcomes.
- (11) Provides an outlet for boy interests. Interests may be of brief duration but should be given an opportunity of expression.
- (12) Health values are apparent in the opportunity provided for physical activities.
- (13) Mechanical drawing. Its use and importance in modern life are learned.
- (14) Safety First. Provides for basic attitudes and practices that are valuable in surviving the dangers of the modern era. (12)

All objectives in education, whether it be those courses having to do with academic work or those having to do with

mechanical pursuits, have, in general, the goals set forth by the seven cardinal principles of education. We can see by the above objectives that they are, in a large measure, those principles as well as those involving industrial pursuits.

Definition of Industrial Arts. Industrial arts may be considered as a course in the school curriculum that embodies those principles of learning having to do with the understanding and manipulation of mechanical implements that enable the student to better understand the industrial environment in which he lives. There are various definitions found, but they all seem to be answered in the following definition:

Industrial arts, as a school subject, may be defined as a study of the machines, tools and processes by which the forces of nature are utilized and the materials of nature are changed by man to make them more valuable and pleasing. It leads to an understanding of the native qualities of raw materials of nature and 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. (18)

One of the most widely used definitions of industrial arts is by Bonser and Mossman in the following words:

As a subject for educative purposes, industrial arts is a study of the changes made by man in the forms of materials to increase their values, and of the problems of life related to these changes. (5)

Whatever our favorite definition for industrial arts, the fact remains that all in all the acquaintance of ways and means of using the natural things and materials that we have is the primary purpose of industrial arts. We are always seeking to find easier, quicker and more economical ways of accomplishing our tasks.

CHAPTER III

DEVELOPMENT AND USE OF VISUAL AIDS

Visual aids in teaching had its beginning when parents began instructing their children by drawings, etc., on the walls of the caves during the prehistoric times. Since that time, visual aids as a means of instruction has made wonderful improvements. Many teachers, as well as the general public, little realize the vast amount of materials now available in the different teaching fields that employ visual aids.

The latest visual aids in education are the sound films. They have come into more pronounced use recently in the training of defense workers. Its advantage in the training of industrial workers is that the films enable large groups of students to see at one time the facts and skills that the instructors are attempting to teach.

PART A

INVENTIONS AND IMPROVEMENTS IN PICTURES

The last decade saw the greatest improvements and inventions in the photographic process of recording still and motion pictures. Some of the inventors were English, French and Americans. The writer has given an account of the important inventions which act as a basis of the ever increasing developments in this fascinating field of

endeavor.

With the invention of sound pictures and now television, there seems to be nothing that the scientists and inventors are unable to cope in the realm of photographic work.

An Historical Resume of the Study. The material for the thesis was gathered from articles in magazines, books, different companies that distributed movie projectors, films, etc. The survey of the different films as listed was actually previewed and evaluated by teachers of industrial arts at Oklahoma A. & M. College, during the year of 1940 and 1941. The films were placed under the correct class to which they contribute the most in shop classes. The classes into which they were grouped were many and varied. Some films were suitable for more than one class, and were accordingly classified under more than one heading. The actual viewing of the films by teachers in industrial arts who know what they want to teach enables the user of the film to better judge which film is best suited for his class. Letters and cards were written to companies and agencies distributing films for information about their films. The writer realized that most of the firms distributing films were doing so for advertising purposes primarily. Many of the sources from which we received materials were colleges having depositories from which they supplied visual aid materials to their own state. The form, Chapter IV, part B-2, used in the survey of the film enables the user to determine if there is too

much advertising and not enough educational information for class work.

History of Photography. It would be difficult to fix a date when what we now know as "photographic action" was first recorded. No doubt the tanning of the skin by the sun's rays was what was first noticed, and this is as truly the effect of solar radiation as is the darkening of sensitive paper which is now used in photographic printing operations. We may take it that Scheele, the Swedish chemist, was the first to enter upon a scientific investigation of the darkening action of sunlight upon silver chloride which was exposed to the action of light beneath water and was dissolved in the fluid as a substance which, on the addition of caustic (silver nitrate), caused the precipitation of new silver chloride, and that on applying liquid ammonia to the blackened chloride an insoluble residue of metallic silver is left behind. He also noticed that in the rays of the spectrum, the violet most readily blackened the silver chloride. In Scheele, then we have the first who combined chemical and spectrum analysis with the science of photography. Senber repeated Scheele's experiment and found that in fifteen seconds the violet rays blackened the silver chloride as much as the red did in twenty minutes. About twenty years later than Scheele's experiment, Count Rumford contributed a paper to the Philosophical Trnaslations of the Royal Society (1789) entitled "An Inquiry Concerning the Chemical

Properties That Have Been Attributed to Light," in which he tried to demonstrate that all effects produced in a metallic solution could be brought about by a temperature somewhat less than that of boiling water. Robert Harrup in 1802, however, conclusively showed in the Nicholson's Journal that in all events, salts of mercury were reduced by visible radiations and not by change of temperature. In 1801 we come to the next step in the study of photographic action, when Ritter proved the existence of rays lying beyond the violet limits of the spectrum, and found that they had the power of blackening silver chloride. Such a discovery naturally gave a direction to the investigation of others, and Seebeck (between 1802 and 1808) and Bernard turned their attention to this particular subject, eliciting information which at that time was of a valuable nature.

To England belongs the honor of first producing a photograph by the utilization of Scheele's observation on chloride of silver. In June, 1802, Wedgwood published in the Journal of the Royal Institution the paper, "An Account of a Method of Copying Paintings Upon Glass and Making Profiles by the Agency of Light Upon Nitrate of Silver, with observations by H. Davy." He remarks that white paper leather moistened with a solution of nitrate of silver undergoes no change when kept in a dark place, but being exposed to the daylight it speedily changes color and, after passing through various shades of gray and brown, becomes at length nearly black. The alterations of color takes place more speedily

in proportion as the light is more intense.

Dr. J. M. Eder gives the first record of photographic action lending itself to production of natural colors, a fact which, in describing the history of the photographic phenomena, has been more or less overlooked.

The first to find a process of photography which gave pictures that were subsequently unaffected by light was Nicephore de Niepce. His process, which consists of coating the surface of a metallic plate with a solution of asphaltum in oil lavender dropped upon it in a wine glass, and that it is then gently heated. A polished plate is covered with varnish, and when dried, is ready for employment in the camera. After required exposure which is long indeed, a very fine image, requiring development is seen. Development is effected by diluting oil of lavender with ten parts by volume of white petroleum. After this mixture has been allowed to stand two or three days it becomes free from turbidity and is ready for use. The plate is placed in a dish and covered with the solvent. It would appear Niepce began his research as early as 1814, but was unsuccessful in his first endeavors; it was not until 1827 that he had any success worth recounting. At that date he communicated a paper to Dr. Bauer, of Kew, the secretary of Royal Society of London, with a view of presenting his findings to that society. Its publication, however, was prevented because the process, of which examples were shown, was a secret one.

In 1826 Daguerre, a painter who had experimented with silver salts, heard of Niepce's work and approached the latter as to the formation of a partnership. This was consummated in 1829. The work which Daguerre had done with Niepce had drawn attention to the light-sensitiveness of silver iodine, and Daguerre discovered accidentally that the effect produced by exposing an iodized silver plate in a camera would result in an image if the plate was fumed with mercury vapors. In introducing this type of processing of the photographic plate it was a complete success. (8)

Invention of Motion Pictures. In 1872 Senator Leland Stanford of California, investigating the gait of race horses, employed Edward Muybridge, a photographer, to set up a row of cameras, with an actuating mechanism that operated their shutters successively as a horse ran past, thus recording the various positions of the animal in the act of running. This led to Muybridge being engaged for extensive experiments at Columbia University in the recording of "Progressive Motion."

Thomas A. Edison in that same year, invented the kinetoscope, in which tiny pictures mounted spirally on a cylinder were viewed as in motion. In 1889 photographic film, as developed by Eastman Kodak Company, was employed for lantern projection. The first demonstration of the idea was given by Edison in his laboratory, Oct. 6, 1889. It was commercially presented in New York for the first time

in 1894.

Early pictures, before sound, were exhibited by passing them through projectors at the rate of 16 pictures to the second, the pictures being filmed on continuous strips of film 35mm wide, with rows of sprocket holes at each edge to engage the actuating mechanism. With the advent of sound, however, and the necessity for the sound track moving at a greater rate of speed to obtain correct tone, 24 such pictures or "frames" as they are called in the industry are projected per second or 90 ft. of film per minute. The projector is operated by an electric motor to insure uniformity of speed, and this is true also of modern picture cameras.

Pictures are projected through a mechanism that is on the same principle as the older magic lantern. A brilliant light, usually an electric arc light, passes through the picture which is then enlarged on the screen. But instead of the simple slide holder of the magic lantern, there is a complicated apparatus involving a shutter, which passes before the lens at the same time a sprocket and gear mechanism pulls one frame down and permits the next to take its place in the aperture through which the light passes. Thus thousands of small pictures are alternately passed before the light and lens, and moving onward, so fast that the eye cannot follow what appears to be a continuous unreeling of the strip of film from one spool to the other through the machine. (9)

PART B

USES AND PLACE OF MOTION PICTURES IN EDUCATION

We find many uses of motion pictures. Motion pictures are used for entertainment in various degrees of emotion. The entertainment goes from the comedy of light acting to the most serious roles of Shakespeare. The motion picture records the action of many important happenings, from the epoch making inaugural ceremonies and signing of important treaties and documents to the lighter things, such as athletic events of all kinds.

One of the important uses to which the sound motion picture has been placed is the recording of a cross section of our national life in 1936. This recording was sealed in the large crypt in the Appalachian Mountains. This work was under the direction of Dr. Thornwell Jacobs, President of Oglethorpe University in Georgia.

Current Usages. Motion pictures may be advantageously used in many settings and situations outside of the classroom. The following will illustrate some of the possibilities.

In Vocational Guidance. Whether the guidance activities of the school are carried on formally as regular courses or more informally as a part of homeroom, club, assembly, and other activities the motion picture will be found valuable in connection with them. Nearly all of the newer industrial films are quite appropriate for this type of instruction. Some, however, such as "The Skilled Mechanic," "The Farmer," and "The Doctor" have been prepared for this purpose.

In Extra-curricular Activities. Motion pictures are used effectively in the instruction of athletics in baseball, football, basketball, hockey, swimming, track events, and other types of athletics. They also are used in connection with gymnastic exhibitions, drills, and marching, as well as in various kinds of clubs, music, dramatics, and other activities.

In Giving Publicity to School Activities. Increasingly, school administrators are planning and developing motion pictures reflecting the events, activities, procedures and interests of the local schools, and bringing these to the attention of parents and patrons through the PTA, graduation programs, and other school-sponsored meetings, as well as through similar meetings of civic, religious, and other local club organizations.

In Financing the Audio- Visual Program and Other School Activities. Nearly everyone would agree that the entire program of the school should be financed through the regular channel of the board of education, but in some schools, especially in the so-called "extra-curricular" activities and in the newer fields of instruction such as audio-visual, music, etc., this is not yet possible. In such instances entertainments during the noon and free periods, as well as at night, even though they are hardly justifiable, can be staged to help provide the funds for these activities.

In Adult Education. This rapidly developing field provides another excellent setting for the profitable utilization of motion pictures. There are now available many films that man can use in this type of educational endeavor.

Encouraging Intelligent Motion-Picture Consumption
Because the average individual will consume motion pictures nearly all of his life, it is logical that some attention should be devoted to the problem of making this consumption as profitable as possible to the consumer. The school is the proper place to provide this instruction because it enrolls all of these future consumers. Teaching discrimination in motion picture consumption can be done in the same way that any type of discrimination is taught-- by discovering what the pupils like and why they like it, and by critically examining these reasons. Naturally, this program of the improvement of pupil tastes in motion pictures should not be of a high-pressure, "now-if-you-don't-like-this-you're-a-low

brow" type (so commonly found in similar programs of music, literature, and art "appreciation"), but by a sympathetic reasoning approach. In this, a free and frank pupil discussion is basic. (11)

It is easily understood why educators are turning to the use of motion pictures for more aid in their teaching of all ages of pupils, either children or adults. Motion pictures also have an appeal that reaches people of all levels of intelligence in that it teaches by letting the pupil actually see the skills that are to be learned.

Filmstrips. You who are familiar with this type of film know the wealth of experience laid at your classroom door, by means of it. In the fields of visual-aids, the filmstrip has certain distinct and outstanding advantages. It is light in weight, thus solving the transportation problem which many visual education teachers have to contend. A library of filmstrips require very little storage space; the films are not breakable; they are low in cost. The filmstrip projector is simple to operate, and the subject matter covers a wide area in many different fields. With the advent of the double-frame picture and the 2" x 2" colored slides for which only one projector is necessary, the filmstrip has assumed unlimited use in the classroom. By means of the magic of this small and compact visual aid, experiences impossible to gain in any other way can be brought into our classrooms.

With the filmstrip, the pupil and teacher may plan lessons together, pupils may take charge of the entire lesson,

running the projector, explaining the accompanying manual, and carrying on the preparatory and follow-up discussion; they may be held accountable for the care and storage of films, projector, etc. We are thus providing that all important part of teaching, the pupil participation in the school room.

By means of the wide variety of subject matter found in the filmstrip, we are able to correlate the teaching of industrial arts with other subjects in the curriculum. This correlation is very important because it gives the pupils the chance to see the relations that exist between the different fields of teaching as well as the different vocations.

Filmstrips are either rented or can be made by the pupils and teachers who have some knowledge of photography. The filmstrips are a series of pictures taken that are developed, with the positives being made from the negatives and projected on the screen.

The Motion Picture in Education. In the motion picture there has been added to education an instructional device that has tremendous power in its influence on the accumulation of knowledge and ideas. The motion picture has influenced the attitudes, ideas, and has helped shape the pattern of conduct of millions of people who have come in contact with it. Educators have not been unmindful of the importance of motion pictures in education but have been slow in its utilization in the classroom. The use of motion pictures has had, and still has, its difficulties to overcome in many places. Those

difficulties are lack of finances, competent operators of the projectors, and acquaintance of the vast materials available in the different fields of education. One of the other difficulties to meet and overcome is the lack of concentrated effort on the part of various agencies in the solution of the major problems. To solve these major problems the organization of the Educational Motion Picture Project of the American Council on Education was organized in 1935. This organization made a report on the status of motion pictures in education in the United States, to review development of the Educational Motion Picture Project, to summarize work to date, and to outline a series of proposed activities.

The status that motion picture films have in education is seen that in spite of its novelty and many attending difficulties, some progress has been made in adopting this new commutative medium as an instructional tool. Several indexes of this way of teaching are apparent. The seven indexes mentioned here explain this condition:

One of these indexes is the quality of projection equipment in the public schools. In a survey of audio-visual equipment owned by elementary and secondary schools in the country in 1936, a minimum of approximately 6,600 35mm projectors were reported as actually owned by schools and school districts. Of these approximately 800 were sound projectors. These data do not include the equipment owned by universities and colleges, the equipment which is made accessible to the public schools through rental, loan, or gift, and equipment not reported in the survey from which the data are drawn.

A second index is the production activities of the schools of the nation. The production of educational motion pictures requires not only considerable technical skill but also enthusiasm, expense, and

hard work. Scattered throughout the country in the elementary and secondary schools of our country are over 500 motion picture cameras which are used by enthusiastic teachers for production of their own film for their own classes. In higher education fields, some universities, such as the University of Minnesota, Ohio State University, and Western Reserve University, have established facilities whereby films are produced for use in their various departments and schools.

A third index is the commercial production of films for educational use. Several universities and a number of commercial organizations have been active in this field. Yale University, for instance, has produced a series of historical and psychological films, the Harvard Film Service has collected and produced films particularly in the science field, and the University of Chicago has undertaken a production of sound films in the four general divisions of its undergraduate instruction. Among commercial organizations, Erpi Pictures Consultants, Inc., has been active exclusively in the educational field, producing sound films for use on various educational levels and in various subjects, and Eastman Teaching Films has produced more than 220 16mm silent films related to many school subjects. Within the past year a movement has been initiated to produce educational films in Hollywood coordinately with theatrical productions which have educational value and significance.

A fourth index is the quality of motion picture films owned by schools and school districts. A total of approximately 40,000 reels was reported as owned by elementary and secondary schools in the spring of 1936. This total does not include the educational films owned and distributed by state departments, university extension systems, cooperative films libraries, and some 500 commercial and industrial distributors.

A fifth index is the growth in circulating film libraries. Two state departments of education and over thirty universities have extension systems maintaining libraries of motion pictures and other concrete teaching materials for use in the schools of their area.

The sixth index is the growth of the number of districts employing full-time and part-time directors of visual education instruction. In 1936 it was reported that approximately 400 districts in the

United States had made such provision. Most of our large cities have well functioning departments of instructional material.

A seventh index is the introduction of teacher training in the use of motion pictures and other materials of instruction. A laboratory course of this nature is required for teacher certification in Pennsylvania and is being introduced next year as a requirement for graduation in New Jersey teachers colleges. Elective courses are being offered in approximately 100 other teacher training institutions throughout the country, particularly in summer schools. (1)

While these data indicate that much has been done to facilitate the use of motion pictures in the classroom, even more do they indicate the need for greater and more concentrated activity. Ten thousand projectors must serve over 16,000,000 pupils in 82,000 school buildings. Production of films by teachers for their own classroom use is negligible and sporadic. Sixteen states of the Union have no state distribution facilities. In 9,000 school districts there are only 400 teachers or administrators entrusted with special duties related to visual aids. Of 1,200 teacher training institutions, only a few more than 100 provide definite training in the selection and use of motion pictures and allied teaching aids.

This situation results, in a great extent, from lack of a single agency to which schools and universities, producers and distributors, administrators, and teachers could turn for accurate information on the use of existing educational films or on the needs for new production, and through which the activities of various individuals, organizations,

agencies, and institutions could cooperate. Schools in Germany have supplied nearly 12,000 and over 50,000 prints of 16mm silent educational motion pictures through the organizations of the Educational Film Department of the Federal Ministry for Science Education and Popular Instruction. In England the use of films in education has been greatly facilitated by the establishment of the British Films Institute which reviews existing films, advises on the production of new films for school use, and issues a series of publications devoted to film reviews current information, trends, experimentation, etc. In the United States the activities of the theatrical motion picture industry are coordinated through the organization known as the Motion Picture Producers and Distributors of America, Inc., of which Will H. Hays is president. By means of this organization, producers and distributors of theatrical films have developed a system of self-regulation and have made adjustments from time to time in production policy to conform to changing public sentiment. The need for an agency in the United States which corresponds to the British Films Institute or in part to the Motion Picture Producers and Distributors of America is apparent. (15)

When such a need is met we may see the rapid progress that the schools of our nation will make in the different fields of endeavor. It is the hope of the writer that all educators and those in authority will make some provisions in the finances of the schools so that the pupils may have access to the visual-aid materials such as filmstrips, motion

pictures, etc., that are now available in all the states. Almost all of the films are free to the schools and civic organizations, the only expense being the writing for them and payment of the shipping charges both ways. Some of the films are for rent, while others are to be purchased.

All schools should have a film library. They could buy certain films, and let other schools nearby buy other films and then exchange when used. This is one method of securing a wide variety of films for use.

CHAPTER IV

CLASSIFIED LISTS OF

FILMS FOR INDUSTRIAL ARTS CLASSES

There are literally hundreds of sources of educational films for use in industrial arts classes. In this chapter, a fairly complete list of 118 film producers and distributors is included as well as lists of industrial arts films available from each source and lists of films suitable for each of 15 industrial arts subjects. This arrangement will be beneficial to the readers in the selection of films to be used in their particular class or field of teaching.

The films are first listed according to firms and companies that distribute them; and then by classes in another part of the chapter. A list of safety films is given that will be helpful in other classes besides industrial arts classes. Some of the films may come under two classes, or they may be used in classes other than those under which they are given. Many of the films listed can be obtained for school shop classes entirely free. A number are available at a small rental charge and some can be purchased for placement in a school film library. The sources of films will be discussed in the opening part of this chapter.

PART A

SOURCES OF EDUCATIONAL FILMS

Films for use in shop classes may be obtained from many

sources. Among films most commonly available are those furnished by companies using them for advertising their products. Many of those pictures are available from colleges or state universities which have a depository in connection with their visual education department. The government department has films also for distribution which are free, the school's only having to pay the express to and from the source from which they are sent. Naturally these pictures have no advertising included but some have propoganda effects favoring some new governmental agency or enterprise. Most of the motion pictures provided by the various governmental agencies have purely educational implications.

Procedure in Securing Lists of Films. To secure a list of films from any firm that distributed films, the request for them may be written to that particular firm. They will send a complete list of their films, or will refer the inquirer to their distributors. It will be necessary for the application to give the name or type of the film desired, the size of projector available and to state a preference for the silent or sound film.

Distributors of Educational Films Whose Lists Contain Industrial Education Subjects. It has been a problem for the industrial arts shop teacher to find a complete up-to-date list of firms who distribute films for industrial arts classes. The following list of firms all have films that are suitable for industrial arts classes. Some of the distributors specialize

on certain kinds of films while other firms will have an entirely different type of subjects.

The list has been compiled from all the sources that were available at the time of the writing of this thesis. There will be other sources later, for it seems that the educational leaders are becoming more interested in visual aids in teaching, especially motion pictures and slidefilms.

The readers will find the following lists of distributors a great help when seeking educational films for use in their shop and drawing classes.

A MAILING LIST OF DISTRIBUTORS
OF INDUSTRIAL ARTS EDUCATIONAL FILMS

- American Automobile Association, Washington, D. C.
- Audio-Visual Exchange Service, 223 Walton St., N. W., Atlanta, Ga.
- Audio Film Libraries, 661 Bloomfield Ave., Bloomfield, N. J.
- Aetna Casualty and Surety Co., Hartford, Conn.
- Allis Chalmers Manufacturing Co., Milwaukee, Wisconsin.
- American Institute of Steel Construction, Inc., 200 Madison Ave., New York City, N. Y.
- American Agriculture Chemical Company, 50 Church St., New York.
- American Brass Co., Waterbury, Conn.
- American Institute of Motion Pictures, Garrison Films, Inc., 1600 Broadway, New York.
- American Museum of Natural History, 77th St. and Central Park West, New York.
- Anaconda Copper Mining Co., 25 Broadway, New York.
- Andleur Film Co., Ozark Building, Kansas City, Missouri.

Associated Cooperage Industries of America, Inc., 411 Olive St., St. Louis, Mo.

Association of American Railroads, Washington, D. C.

Atkins, E. C. & Co., 402 South Illinois St., Indianapolis, Indiana.

Atlas Educational Films Co., Oak Park, Ill.

Audio-Visual Aids for Classrooms, Board of Education, Atlanta, Ga.

Automobile Club of Southern California, Los Angeles, Cal.

Bailey Film Service, 328 Markham Bldg., Chicago, Ill.

Bausch & Lomb Optical Co., 619 Saint Paul Street, Rochester, N. Y.

Bell & Howell Co., 1801 Larchmont Ave., Chicago, Ill.

Bell Telephone Co. of Penn., Philadelphia, Pa.

Behr- Manning Corp., Division of Norton Co., Troy, N. Y.

Bray Picture Co., 729 Seventh Ave., New York.

Bureau of Mines Motion Picture Films, Petroleum Experiment Station, Bartlesville, Oklahoma.

California Redwood Distributors Ltd., 35 East Wacker Drive, Chicago, Ill.

Case, J. I. & Co., Racine, Wisconsin.

Castle Film, Field Building, 135 S. La Salle St., Chicago, Ill.

Chevrolet Motor Co., Detroit, Michigan.

Chicago Flexible Shaft Co., 5561 Roosevelt Road, Chicago, Ill.

Cine-Classic Library, 1041 Jefferson Ave., Brooklyn, N. Y.

Center for Safety Education, New York University, 20 Washington, New York.

Copper & Brass Products, Waterbury, Conn.

Deere, John, and Company, Moline, Ill.

De Frenes and Co., 1909 Buttonwood St., Philadelphia, Pa.

DeVry Corp., 1111 Armitage Ave., Chicago, Ill.

- Dodson, Bruce & Co., Kansas City, Mo.
- Dudley, W. H., Visual Education Service, Inc., 736 S. Wabash Ave., Chicago, Ill.
- Eastin 16mm Pictures System, Inc., 707 Putman Bldg., Davenport, Iowa.
- Eastman Kodak Co., Teaching Films Division, 343 State St., Chicago, Ill.
- Edited Pictures System, Inc., 330 W. 42nd St., New York.
- Educational Films Service, 77 Woolnough Ave., Battle Creek, Mich.
- Erpi Classroom Film, 35-11 Thirty-fifth Ave., Long Island, N. Y.
- Federal Radio Education Committee, U. S. Office of Education, Washington, D. C.
- Films Incorporated, 330 W. 42nd St., New York.
- Films Information Service, 535 Hurst Tower Building, Baltimore, Maryland.
- Films of Commerce Co., Inc., 35th W. 44th St., New York.
- Ford Motor Company, Dep't. of Photography, Dearborn, Michigan.
- Forest Service, U. S. Dep't. of Agriculture, Washington, D. C.
- Ganz, W. J. Co., 19th East 47th St., New York.
- Garrett, Paul, Director of Public Relations, General Motors Corp., 1775 Broadway, New York.
- General Electric Co., Visual Instruction Section, Schenectady, N. Y.
- General Motors, 1775 Broadway, New York.
- Goodyear Tire & Rubber Co., Akron, Ohio.
- Gulhahn, Walter O., Inc., 34 W. 45th St., New York.
- Hammermill Paper Co., Erie Pa.
- Hancock, John, Life Insurance Co., Boston, Massachusetts.
- Harvard Film Service, Biological Laboratories, Harvard University, Cambridge, Massachusetts.
- Haselton, Guy D. Traveletts, 7936 Santa Monica Blvd., Hollywood, Cal.
- Hill, Howard, Motion Picture Service, 280 Scenic-Piedmont,

Oakland, Cal.

Hoffberg, J. H. Co., Inc., 829 Seventh Ave., New York.

Ideal Pictures Corp., 28 E. Eighth St., Chicago, Ill.

Industrial Research Institute of Humane Engineering, George
F. Whipple, Fifty Beacon Street, Boston, Mass.

International Harvester Co., 180 N. Michigan Ave., Chicago, Ill.

Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Mich.

Keystone Steel & Wire Co., Peoria, Ill.

Kodoscope Libraries, Inc., 33 W. 42nd St., New York.

Lewis Film Service, 105 East First St., Wichita, Kansas.

Liberty Mutual Insurance Co., Boston, Mass.

Linde Air Products Co., 614 National Bank Building, Tulsa, Okla.

McLorty Motion Picture Service, Certain-Teed Bldg., Military
Road, Buffalo, N. Y.

Massachusetts Institution of Technology, Visual Education
Dep't., Cambridge, Mass.

Melleville Shoe Corp., Advertising Dep't., 555th Ave., New York.

Metropolitan Museum of Art, 5th Ave., at 82nd St., New York.

Mid-Continent Picture Corp., 4327 Duncan Ave., St. Louis, Mo.

Moore, Mrs. J. M., Chief Visual Instruction Bureau, Univer-
sity of Texas, Austin, Texas.

Motion Picture and Visual Equipment, 106 South Hudson, Okla-
homa City, Okla.

Motion Picture Bureau, E. L. DuPont Co., Wilmington, Del.

National Bureau of Casualty & Surety Underwriters, One Park
Ave., New York.

National Conservation Bureau, 60 John St., New York.

National Council of Y. M. C. A. Motion Picture Bureau, 347
Madison Ave., New York.

National Fire Protection Association, 60 Battery March Street,
Boston, Mass.

- National Paint, Varnish and Lacquer Ass'n., 2201 New York Ave.,
Northwest, Washington, D. C.
- National Safety Council Inc., 20 N. Wacker Drive, Chicago, Ill.
- National Society for Prevention of Blindness, Inc., 50 West
50th St., New York.
- Oklahoma Visual Education Co., 212 N. W. 23rd St., Oklahoma City,
Oklahoma.
- Okonite Company, 501 Fifth Ave., New York.
- Pinkney Film Service, 1028 Forbes St., Pittsburg, Pa.
- Plymouth Motor Company, Detroit, Michigan.
- Post Pictures Corp., 723 Seventh Ave., New York.
- Ray-Bell Films, Inc., 2260 Ford Road, St. Paul, Minnesota.
- Reading Iron Company, 401 N. Broadway Street, Philadelphia, Pa.
- Religious Motion Pictures Foundation, Inc., 140 Nassau St.,
Philadelphia, Pa.
- Republic Steel Corp., 7850 S. Chicago Ave., Chicago, Ill.
- Rhodes, J. H. Co., 157 W. Austin Ave., New York.
- Rothacker Film Corp., Chicago, Ill.
- Singer Sewing Machine Co., Singer Building, New York.
- Society for Visual Education, 327 S. La Salle St., Chicago, Ill.
- Stevens Defense Industries School, Castle Stevens, Hoboken, N.J.
- Travelers Insurance Co., News Bureau, Hartford, Conn.
- Underwriters Laboratories Inc., 207 E. Ohio St., Chicago, Ill.
- Union Carbide & Carbon Corp., 30 E. 42nd St., New York.
- United Projector & Films Corp., 228 Frandlin St., Buffalo, N. Y.
- U. S. Department of Commerce, Washington, D. C.
- U. S. Dep't. of Interior, Bureau of Mines, Experiment Station,
4800 Forbes St., Pittsburg, Pa.
- U. S. Steel Corp., Industrial Relations Dep't., 71 Broadway,
New York.

Veneer Association, 616 S. Michigan Ave., Chicago, Ill.

Victor Animatograph Corp., Davenport, Iowa (Discontinued--
Refer to Society of Visual Education.)

Visual Aids, Bureau of Visual Instruction, University
Extension Division, Lawrence, Kansas.

Visual Education Service, 131 Clarendon St., Boston, Mass.

Visual Instruction Bureau, Division of Extension, University
of Texas, Austin, Texas.

Welch Studios, 25th St., & Lehigh Ave., Philadelphia, Pa.

Western Electric Co., 120 W. 41st St., New York.

Western Pine Association, Yeon Building, Portland, Oregon.

Westinghouse Electric & Manufacturing Co., East Pittsburg, Pa.

Wholesome Film Service Inc., 48 Melrose St., Boston, Mass.

Williams, Brown and Earle, Inc., 918 Chestnut St., Philadelphia,
Pa.

Many of the firms with whom correspondence was carried on in securing lists of film, also sent titles of films that they had just completed or were in the process of making. There are quite a number of firms just recently formed that are making films to be used in industry and in national defense classes. Many firms sent out lists of subjects which were in the process of filming. They asked the cooperation of all industrial arts teachers in helping them decide which subjects should be filmed for use in shop classes as well as in the defense work.

It would be an enormous task for the teacher of industrial arts, to write all of the firms making inquiry about films available for their classes. The writer studied the film lists of all these firms and compiled lists of films

suitable for use in industrial arts classes. The firms supplying arts films, together with the titles available, are added as the second part of this chapter.

PART B

INDUSTRIAL ARTS FILMS LISTED

UNDER THE NAMES OF FIRMS SUPPLYING THEM

The writer made an extended search in selecting the films that are suitable for industrial arts classes listed under each firm that distributes them. The writer has listed the industrial arts films that are appropriate for shop classes under the name of the firm that furnishes the film. Whenever possible the sizes of the films are given following the name of the film. There is also given the information as to whether the film is slidefilm, silent or sound film. Many of the films may be obtained either in 16mm or 35mm silent or sound.

The following lists of firms with the films that they will furnish either free, rental or purchased, are given in an alphabetical order.

Aetna Casualty & Surety Company, Hartford, Connecticut.

LADY LUCK'S HUSBAND	35mm slide silent
SENTINELS OF SAFETY	16mm 35mm sound
THE BAD MASTER	16mm 35mm sound & silent

Allis Chalmer's Manufacturing Company, Milwaukee, Wisconsin.

ACTION IN THE WOODS

American Automobile Association, Washington, D. C.

CROSS ROAD PUZZLES 35mm silent

American Brass Company, Kenosha Branch, 1420 Sixty-Third Street, Kenosha, Wisconsin.

FROM MINE TO CONSUMER 16mm 35mm silent

MINING, SMELTING AND REFINING 16mm 35mm silent

MANUFACTURE OF COPPER, BRASS AND BRONZE 16mm 35mm silent

American Institute of Steel Construction, Inc., 101 Park Avenue, New York.

AGE OF RIVETED STEEL 35mm silent

BRIDGING MARBLE CANYON 16mm silent

BRIDGING A CENTURY 16mm silent

SPAN SUPREME 16mm silent

FABRICATION AND ERECTION OF THE BANK OF MANHATTAN BUILDING 16mm silent

THE BACKBONE OF PROGRESS 16mm silent or sound

STEEL 16mm silent

American Legion. Local or State Offices.

INERTIA AND THE OTHER FELLOW Slide film

American Museum of Natural History, 77th Street and Central Park West, New York.

LUMBERING IN BRITISH COLUMBIA 16mm silent

STORY OF THE STORAGE BATTERY 16mm silent

THE POTTER'S WHEEL 16mm silent

American Museum of Natural History (Continued)

STORY OF COPPER	16mm silent
READING 'RITIN AN 'RITHMETIC	16mm silent
COPPER REFINING	16mm silent
METALS OF MOTOR CARS	16mm sound (7 reels)
SAVING SECONDS	16mm 35mm silent or sound
CARBON MONOXIDE, THE UNSEEN DANGER	16mm 35mm silent
REMEMBER JIMMY	16mm silent
AUTOMOBILE LUBRICATION	16mm silent
MAKING AN ALL STEEL AUTO- MOBILE BODY	16mm silent
STORY OF A GASOLINE MOTOR	16mm 35mm silent
STORY OF A SPARK PLUG	16mm silent

Andlauer Film Company, Ozark Building, Kansas City, Missouri.

LUMBERING IN THE PACIFIC NORTHWEST	16mm silent
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Associated Cooperage Industries of America, 411 Olive Street,
St. Louis, Missouri.

HOOPING UP	16mm silent
IN THE WOODS	16mm silent

Atkins, E. C. & Company, 402 S. Illinois St., Indianapolis,
Indiana.

THE METEOR	16mm 35mm silent safety
THE SERPENT'S TOOTH	16mm 35mm silent
THE STORY OF THE HACKSAW	16mm silent safety

Behr-Manning Corp. (Division of Norton Company) Troy, N. Y.

MANUFACTURE OF ABRASIVES 16mm sound

Castle Films, Field Building, 135 S. La Salle St., Chicago, Ill.

LOOK TO LOCKHEED 16mm sound

Chevrolet Motor Company, Detroit, Michigan.

FACTORY SAFETY 35mm sound

SCHOOL PATROL 35mm sound

Deer, John, and Company, Moline, Illinois.

FROM ONE ANVIL 16mm 35mm silent

THE BLACKSMITH'S GIFT 16mm silent

MAKING TRACTOR HISTORY 16mm silent

MR. SHEPPARD LOOKS INSIDE 16mm silent

THE MARK OF THE GENUINE 16mm silent

DuPont, E. I., DeNemours & Company, Wilmington, Delaware.

THE WONDER WORLD OF
CHEMISTRY 16mm 35mm silent

A NEW WORLD THROUGH
CHEMISTRY 16mm 35mm sound

Eastman Kodak Company, Teaching Films Division, 343 State
Street, Chicago, Illinois.

LUMBERING IN THE PACIFIC
NORTHWEST 16mm silent

SILVER 16mm silent

LEATHER 16mm silent

FURNITURE MAKING 16mm silent

INDUCED CURRENTS 16mm silent

TABLEWARE 16mm silent

Eastman Kodak Company (Continued)

TIN	16mm silent
FOUR-STROKE CYCLE ENGINE	16mm silent
THE AUTOMOBILE	16mm silent
LEAD	16mm silent
ELEMENTARY OPERATIONS ON THE ENGINE LATHE	16mm sound

Edited Pictures, Inc., 339 W. 42nd St., New York.

ELECTRICAL MEASUREMENT	16mm silent
THE CHEMICAL EFFECTS OF ELECTRICITY	16mm silent
THE SHOE	16mm silent

Ford Motor Company, Department of Photography, Dearborne, Mich.

FORD AND A CENTURY OF PROGRESS	16mm silent
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Forest Service, U. S. Dep't. of Agriculture, Washington, D. C.

TIMBER	16mm 35mm silent
TWO GENERATIONS	16mm silent

Garrett, Paul, Director of Public Relations, General Motors Corp., 1775 Broadway, New York.

WE DRIVERS	16mm 35mm silent or sound
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General Electric Company, Nela Park, Cleveland, Ohio.

SAFE SEEING DRIVERS	slide films
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General Electric Company, Visual Instruction Section, Schenectady, N. Y.

UNSEEN VALUES IN GENERAL ELECTRIC MOTORS	35mm sound
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General Electric Company (Continued)

WIZARDRY OF WIRELESS	16mm 35mm silent
MAZDA LAMP MANUFACTURE	16mm 35mm silent
THE CONDUCTOR	16mm silent
THOMAS A. EDISON	16mm 35mm silent
MOUNTAINS OF COPPER	16mm silent 35mm sound
WELDING-ARC IN BUILDING ERECTIONS	16mm 35mm silent
AUTOMATIC ARC WELDING	16mm 35mm silent
TIES OF STEEL	16mm 35mm silent
CONQUEST OF THE FOREST	16mm 35mm silent

General Motors Corp., Dep't. of Public Relations, Broadway
and 57th Street, New York.

THE AUTOMOBILE FASHION PLACE	16mm silent
WHERE MILEAGE BEGINS	16mm 35mm sound
WE DRIVERS	16mm 35mm sound

Goodyear Tire and Rubber Company, Akron, Ohio.

THE STORY OF THE TIRE	16mm 35mm silent
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Harvard Film Service, Biological Laboratories, Harvard
University, Cambridge, Massachusetts.

SURFACE CHANGES AT HIGH TEMPERATURES	16mm 35mm silent
SILVER SMITH	16mm 35mm silent
THE MEDAL MAKER	16mm 35mm silent

Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Mich.

SMOOTH STARTS	sound film
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Jam Handy Organization (Continued)

AROUND THE CORNER	sound film
CURVE CONTROL	sound film
ON THE LEVEL	sound film
CURRENT FLASHES	sound film
SOFT PETAL	sound film
RIDING THE FILM	sound film
HORSEPOWER	sound film
SPINNING LEVERS	sound film
FIRE CONTROL	sound film
GET GOING	sound film
STOP THAT CAR	sound film
DOWN THE GASOLINE TRAIL	sound film
FREE AIR	sound film
THE HOT HEAD	sound film
POWER	sound film
BENCHWORK AND FITTING	slide film
MACHINING	slide film
BLUE PRINT READING	motion picture
WELDING, SOLDERING AND BRAZING	slide film
METALLURGY	slide film
BLACKSMITHING	slide film
BASIC ELECTRICITY	slide film
THE AUTOMOTIVE MECHANICAL TRAINING Kit-set #1	slide film
MOTION PICTURES FOR TRAINING IN AUTOMOTIVE MECHANICS	motion picture

Jam Handy Organization, (Continued)

THE AUTOMOTIVE MECHANICAL TRAINING Kit-set #2	~ slide film
THE PILOT TRAINING Kit-set	slide film
FACTORY SAFETY	motion picture
A SAFE DAY	motion picture
BENCH WORK	slide film
GENERAL SHEET METAL (Not ready for distri- bution)	slide film
FOUNDRY PRACTICE	slide film
FORGE SHOP (Not ready for distribution)	slide film
BASIC PRINCIPLES OF ELECTRICITY	~ slide film
PRINCIPLES OF THE OPERA- TION OF THE AUTOMOBILE	~ slide film
CARE AND REPAIR OF PASSENGER CARS AND TRUCKS	~ slide film
HOW VARIOUS UNITS OF AUTOMOBILES OPERATE	talking motion picture

Keystone Steel and Wire Company, Peoria, Illinois.

A TRIP THROUGH A MODERN STEEL AND WIRE MILL	16mm 35mm silent or sound
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Linde Air Products Company, 614 National Bank Building,
Tulsa, Okla.

AUTOMATIC MACHINE CUTTING WITH CM-12 SHAPE CUTTING MACHINE A-4	16mm silent
AUTOMATIC MACHINE CUTTING WITH CM-15SHAPE CUTTING MACHINE A-5	16mm silent

Linde Air Products Company (Continued)

MODERN METAL WORKING WITH OXYACETYLENE FLAME	16mm 35mm silent
OXWELDED INDUSTRIAL PIPING	16mm 35mm sound
MULTIFLAME LINDE WELDING FOR PIPELINE CONSTRUCTION	16mm silent
OXWELDING AND CUTTING, THE MODERN METHOD OF JOINING AND SEVERING METALS	16mm 35mm silent
OXWELDING FOR PROFIT	16mm 35mm silent
HARDFACING G-3	16mm silent
OXWELDING IN PRODUCTION	16mm 35mm silent
CURRENT PICTURES IN OPERATING OXYGEN THERAPY EQUIPMENT J-1 Parts 1 & 2	
FLAME-HARDENING K-1	16mm silent
UNIONMELT WELDING An electric welding process U-1	16mm silent
UNIONMELT WELDING IN INDUSTRY Part 1 U-2	16mm silent
UNIONMELT WELDING IN INDUSTRY Part 2 U-3	16mm silent

Massachusetts Institution of Technology, Visual Education
Dep't., Cambridge, Massachusetts.

TRAVELING WAVES ON TRANS- MISSION LINE	16mm 35mm silent
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Mellerville Shoe Corp., Advertising Dep't., 555 Ave., New York.

ROMANCE OF SHOE MAKING	16mm 35mm silent
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Metro-Goldwyn Mayer Corp., 630 Ninth Ave., New York.

HIT AND RUN DRIVER	35mm sound
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Metropolitan Life Insurance Co., 1st. Madison Ave., New York.

ONCE UPON A TIME	16mm 35mm silent and sound
SAFETY IN NUMBERS	slide film
WORKING FOR DEAR LIFE	16mm 35mm silent

Metropolitan Museum of Art, 5th Ave., at 82nd St., New York.

THE POTTERY MAKERS	16mm 35mm silent
THE MAKING OF WROUGHT IRON	16mm 35mm silent
THE ETCHER'S ART	16mm 35mm silent
DRYPOINT--A DEMONSTRATION	16mm 35mm silent

Midcontinent Picture Corp., 4327 Duncan Ave., St. Louis, Missouri

THE EVOLUTION OF AN INGOT	16mm sound
SERVICING THE CARBURATOR	35mm sound
BETTER BRAKES	35mm sound
THE CARBUERATOR	35mm sound
SHOES OF THE AGES	35mm sound

Moore, Mrs. C. J., Chief Visual Instruction Bureau, University of Texas, Austin, Texas.

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STEEL-MANUFACTURE OF PIPE	35mm silent
MAGIC CIRCLES	16mm silent
ENDLESS CHANNELS	16mm silent

National Paint, Varnish and Lacquer Association, 2201 New York Ave., N. W., Washington, D. C.

THE ROMANCE OF PAINT AND VARNISH	16mm silent
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National Conservation Bureau, 60 John St., New York.

DEATH TAKES NO HOLIDAY	16mm silent
STREET AND HIGHWAY SAFETY	16mm silent

National Council of Y. M. C. A. Motion Picture Bureau, 347
Madison Ave., New York.

OUT OF THE DEEP WOODS OF DIXIE	35mm silent
MANUFACTURE OF DOUGLAS FIR PLYWOOD	16mm silent
TREES AND MEN	16mm sound
BIG TIMBER	16mm sound
FOUR THOUSAND GIFTS OF THE FOREST	16mm sound
THE STORY OF CANADIAN PINE	16mm silent
LONG DRAWN OUT	35mm silent
THE LITTLE BIG FELLOW	35mm silent
CONSTRUCTION THAT ENDURES	16mm silent
PRINCIPLES OF PLANNING AND CONSTRUCTION OF LOW PRICED HOMES	16mm silent
THE HOUSE THAT ANNE BUILT	16mm sound
FOLLOW THE WHITE TRAFFIC MARKER	16mm silent
THE MARCH IS FORWARD	16mm 35mm sound

National Safety Council, Inc., 20 N. Wacker Drive, Chicago, Ill.

ARTIFICIAL RESPIRATION	35mm silent
HINDSIGHT VERSUS FORESIGHT	35mm silent
ASK DADDY	35mm silent
TESTING THE DRINKING DRIVER	slide film sound
MAKING YOUR CITY SAFE	slide film sound
GAMBLING WITH DEATH	35mm silent
STREET SAFETY FOR ADVANCED GRADES AND ADULTS	16mm silent

National Safety Council (Continued)

THE TRUCK DRIVER 16mm sound
 THE VERDICT 16mm 35mm silent

National Society for the Prevention of Blindness, Inc.,
50 West 50th Street, New York.

THE EYES HAVE IT (Length:
 twenty minutes) Sound slide film

National Tube Company, Frick Building, Pittsburg, Pennsylvania.

ARTERIES OF INDUSTRY (6
 reels) 16mm 35mm silent

Reel I Mining of ore--blast furnace operation--
 Bessemer converter process of making steel.

Reel II Open hearth process of making steel--
 blooming and rolling mill operations.

Reel III Butt-Weld process of making pipe--
 galvanizing pipe.

Reel IV Lap-Weld Process of making pipes and tubes.

Reel V & VI Seamless process of making pipe.

Pinkney Film Service, 1028 Forbes Street, Pittsburg, Pa.

GIRL POTTERY MAKERS 35mm silent

ELECTRICAL HEART 35mm silent

Okonite Company, 501 Fifth Ave., New York.

THE OILOSTATIC SYSTEM 16mm silent

RUBBER INSULATED CABLES 16mm silent

Plymouth Motor Company, Detroit, Michigan.

CHANCE TO LOSE 16mm silent or sound

Ray-Bell Films Incorporated, 2269 Ford Road, St. Paul, Minn.

THE BLACKSMITH'S GIFT 16mm 35mm sound

Ray-Bell Films Incorporated (Continued)

HER HUSBAND'S CHOICE 16mm 35mm sound

Reading Iron Company, 401 Broadway St., Philadelphia, Pa.

BESSEMER AND OPEN HEARTH
STEEL 16mm 35mm silent

METAL OF THE AGES 16mm 35mm silent

Religious Motion Pictures Foundation, Inc., 140 Nassau St., Philadelphia, Pa.

CERAMICS 16mm silent

Republic Steel Corp., 7850 S. Chicago Ave., Chicago, Illinois.

STEEL, SERVANT OF THE SOIL 16mm silent

Rhodes, J. H. Co., 157 W. Austin Ave., New York.

MANUFACTURE OF BEAVER
STEEL WOOL 16mm 35mm silent or sound

Rothacker, Douglas D. 729 Seventh Ave., New York.

HERITAGE 35mm sound

JEWELS OF INDUSTRY 16mm 35mm silent

NICKEL MINING 16mm sound

NICKEL MILLING AND SMELTING 16mm sound

NICKEL REFINING 16mm sound

COPPER REFINING 16mm sound

NICKEL HIGH-LIGHTS 16mm sound

Singer Sewing Machine Company, Singer Building, New York.

MODERN INDUSTRIAL METHODS 16mm 35mm silent

Society for Visual Education, 3257 La Salle St., Chicago, Ill.

EVERY SWIMMER A LIFE SAVER 16mm 35mm silent

PORCELAIN INDUSTRY IN
CZECHO-SLOVAKIA 16mm silent

Travelers Insurance Company, News Bureau, Hartford, Connecticut.

LADY LUCK'S HUSBAND 35mm slide sound

WHY BE CARELESS 16mm silent

Underwriters Laboratories Inc., 207 E. Ohio Street, Chicago, Illinois.

APPROVED BY UNDERWRITERS 16mm 35mm sound

U. S. Department of Interior, Bureau of Mines, Experiment Station, 4800 Forbes Street, Pittsburg, Pennsylvania.

POWER WITHIN: A STORY OF
INTERNAL COMBUSTION
ENGINES 16mm 35mm silent

TWELVE POINTS OF SAFETY 35mm silent

COPPER LEACHING AND CON-
CENTRATION 16mm 35mm silent

HEAT TREATMENT OF STEEL 16mm silent

COPPER MINING IN ARIZONA 16mm silent

MAKING IT TOUGH 16mm 35mm silent

MODERN METAL WORKING WITH
OXYACETYLENE FLAME 16mm 35mm silent

NICKEL 16mm 35mm silent

THE STORY OF LUBRICATING
OIL 16mm 35mm silent

STORY OF LEAD SMELTING 16mm 35mm silent

SAFETY GLASS 16mm 35mm silent

STORY OF LEAD, MINING AND
MILLING 16mm 35mm silent

U. S. Department of Interior, Bureau of Mines, Experiment Station (Continued)

MAKING A V-TYPE ENGINE	16mm 35mm silent
STORY OF STEEL	16mm 35mm silent
STORY OF FABRICATION OF COPPER	16mm 35mm silent
ALUMINUM, FABRICATION PROCESS	16mm 35mm silent
ALUMINUM, MINE TO METAL	16mm 35mm silent
MANUFACTURE OF ABRASIVES	16mm 35mm silent

U. S. Steel Corporation, Industrial Relations Department, 71 Broadway, New York.

MAKING WIRE ROPE	35mm silent
MANUFACTURING OF SHEET METAL AND TIN PLATE	16mm silent
WALLS WITHOUT WELDS	16mm 35mm silent
MAKING AND SHAPING OF STEEL (7 reels)	16mm 35mm silent or sound
Reel I	Raw Materials
Reel II	The making of steel
Reel III	Flat rolled products
Reel IV	Bars and structural shapes
Reel V	Rails, wheels and axles
Reel VI	Wire and wire products
Reel VII	Pipe and tube manufacture
STEEL-MAN'S SERVANT (4 reels)	16mm 35mm sound
USS COR-TEN	16mm 35mm sound
WHERE DOES STEEL GO	35mm sound slide film
STEEL STANDS THE GAFF	35mm sound slide film
WHAT IT TAKES TO MAKE STEEL	35mm sound slide film
THE STEEL DOLLAR--WHERE IT GOES	35mm sound slide film

Veneer Association, 616 South Michigan Ave., Chicago, Ill.

FOREST TREASURES 16mm silent

Welch Studios, 25th St., Lehigh Avenue, Philadelphia, Pennsylvania

HEEDLESS HURRY 16mm silent or sound

Western Electric Company, 120 W. 41st St., New York City, N. Y.

INDUSTRIOUS DIAMONDS 35mm silent

LAND OF THE WHITE CEDAR 35mm silent

THE ELECTRICAL TRANSMISSION OF SPEECH 35mm silent

OIL, THE WOOD PRESERVER 35mm silent

THE INSIDE OF YOUR TELEPHONE 35mm silent

PILLARS OF THE SKY 35mm silent

THE TELEPHONE REPEATER 35mm silent

POLE PUSHERS OF PUGET SOUND 35mm silent

CEDAR CAMP IN THE CLOUDS 35mm silent

TRAIL OF THE LONG LEAFED PINE 35mm silent

WILD WOOD WORKERS 35mm silent

Western Pine Association, Yeon Building, Portland, Oregon.

HARVESTING THE WESTERN PINES 16mm sound

BUILDING A HOME WITH WESTERN PINES 16mm sound

Westinghouse Electric & Manufacturing Company, East
Pittsburg, Pa.

NEW FRONTIERS 16mm 35mm sound

WHITE COAL 35mm silent

Wholesome Film Service Inc., 48 Melrose St., Boston, Mass.

THE STORY OF RUBBER	35mm silent
AUTOMOBILE SAFETY	16mm 35mm silent
FROM HIDE TO LEATHER	35mm silent

The names of the firms with the films that they furnish are so arranged that time will be greatly reduced in the selection of films by the teacher. The arrangement of films in film catalogues provide no such simple task. The writer found the films listed in several different places in the catalogues. The foregoing arrangement will be more easily and quickly available for use. This will enable the user to see immediately if a firm has that particular film.

PART C

VALIDATING A SELECTED NUMBER OF FILMS

There has been a need for some authentic information on the suitability of films for industrial arts. The writer, in selecting the subject for this thesis, wished to find some visual-aid materials that the industrial arts teacher could reliably use without a waste of time in the process of selecting suitable films. There are few enough films at the most for use in the shop classes, and if the teacher, in his selection, has to guess what the films contain as to their appropriateness for shop class work, it is a waste of valuable time.

The selection of the films that were previewed and validated are from a general grouping. The presence of a

large number of industrial arts teachers attending school at Oklahoma A & M College made the validation of the films a rather simple matter. The process of validation of a select number of films is further explained under the next heading.

The Process of Validation. The films validated were shown to a group of industrial arts teachers attending the 1940 summer school. A rating sheet was given to each teacher for each film shown. The questions on the rating sheets could be answered by yes or no. This enabled the scorer to check rapidly without too much attention being taken from the showing of the picture, but in most cases the films were rated after the showing.

The films found to be valuable as to suitability to shop classes are marked with an asterisk. (*) classified the film as fair, while (**) designates it as good. It was inconvenient to validate all films listed, but those films validated by the industrial arts teachers have actually been seen and rated as to suitability.

Form Used in Validation. The form used in validating the films includes blanks for an estimate of the value of films as to their appropriateness for industrial arts classes. The form given here is constructed to cover every possible detail that the picture has in its teaching value for shop classes.

RATING THE EFFECTIVENESS OF MOTION PICTURES
SHOWN TO INDUSTRIAL EDUCATION STUDENTS

Prepared by George Foreman, Graduate Student
Oklahoma A. & M. College, Spring Semester, 1940

Directions for persons rating films: Please answer the questions on this sheet by writing yes or no in blank spaces at the end of questions and by filling in blanks as suggested

Is film in good condition?-----

Is film of recent date?-----

Does film have general occupational guidance value?-----

Does film present occupational information hard to gain otherwise?-----

Does film contribute to a breadth of knowledge in one particular vocation?-----

Does the film bring out an appreciation of good workmanship?-----

Does field of employment shown in film require specialized training?-----

Does film provide a degree of consumer knowledge?---

Does film suggest avocational activities or pursuits?_____

Does the film hold the interest of the audience?_____

Is film appropriate for highschool students?-----

Is there too much advertising in the film?-----

Rated by_____ Date_____

Please check scholastic status: High School____; Undergraduate____;

Graduate____; Teacher____; Others_____.

Should film be used to supplement a specific course in shopwork instruction?-----

Should the picture be used solely as a general entertainment film for all highschool students?-----

Rating the Effectiveness of Motion Pictures (Continued)

What industrial education subjects would profit most from the showing of this film. Name two or three in the order of benefit.

1. _____ 2. _____ 3. _____

Comment briefly on the value or lack of value this film has as an industrial education teaching aid. _____

Films Rated in 1940 and 1941.

The films listed here were seen and rated by teachers in industrial arts education during the years 1940 and 1941. The purpose of the validating was to help the teachers or those interested in industrial arts subjects to see the value of the film as an aid in teaching industrial arts shop classes.

Those films having (**) by them are rated as good. Those films having only (*) by them are rated as only fair. The names of the firms distributing the films are given elsewhere in this thesis.

ELECTRIC WELDING *

HARVESTING WHITE PINES **

V 8 MOTOR **

STORAGE BATTERY **

SCIENCE SAVES THE SURFACE**

POWER WITHIN **

TREES AND MAN**

BLACKSMITH'S GIFT **

FROM ONE ANVIL *

A MODERN ZEUS *

ELECTRIC MOTORS *

SANDPAPER *

FABRICATING WHITE PINES **

RUBBER INSULATED CABLES **

TROLLEY COACH IN OPERATION *

QUALITY MOTORS IN THE MAKING **

ARC WELDING IN BUILDING ERECTION **

BUILDING HOUSES WITH WESTERN PINES **

MANUFACTURING OF DOUGLAS FIR PLYWOOD **

LOOK TO LOCKHEED FOR LEADERSHIP **

The films given here are taken from a number of different sources. They are from different subjects as can be seen and will be useful in aiding the teacher in selecting films for use in their classes. Much more needs to be done in this type of work by those who are interested in visual education for industrial arts shop classes. It is the hope of the writer that more will be done in this type of work to enable the teachers to have a larger number of films from which to select that have actually been viewed and validated as to their value in industrial arts shop classes.

Results. The information gained in the validation of the films enables the teacher or user to more wisely select the film best suited to his particular class needs. Many of the films were from firms that sought to advertise their merchandise only, with very little teaching value in the films. Some of the films were made some time ago and were of little value as much progress has been made in the different occupations and skills. Many of the films viewed were very modern and contained much information that could not have been gained elsewhere.

The teacher of industrial arts shop classes may want to see other films, and if no rating has been given he will have to guess, to a large extent, the value they will have as a teaching aid.

PART D

FILMS FOR INDUSTRIAL ARTS CLASSES ARRANGED BY SUBJECTS

The writer has arranged the titles of films according to the shop classes to which they are most closely related. It is the purpose of this division of the thesis to give the reader as much information about the film as it was possible to obtain, thus enabling the user to get some idea as to what the film brings out in its showing. The name of the film is given in capital letters first. The number of reels is given, the size of the film is given and then if film is silent or sound. It is very important that a sound film is not run on silent projectors, for the sprockets on the projector of the silent machine will ruin the sound track of sound film. The address of the distributor is given last. Many of the films are free with some of them having to be rented or bought outright. The majority of the films are free though, with the user's having to pay only the express charges both ways.

The films are listed under fifteen subjects that are generally taught in industrial arts shop classes. One of the groups of films has to do with safety, which is very important not only in industrial arts shop classes but in every other course that is offered in school. These safety

films should be shown in every class in school.

ART METAL

✓ COPPER MINING IN ARIZONA (3 reels) 16mm 35mm silent. Order from U. S. Bureau of Mines, Experiment Station, 4800 Forbes St., Pittsburg, Pa.

COPPER LEACHING AND CONCENTRATION (1 reel) 16mm 35mm silent. Order from U. S. Bureau of Mines, Experiment Station, 4800 Forbes St., Pittsburg, Pa.

✓ DRYPOINT--A DEMONSTRATION (2 reels) 16mm 35mm silent. Miss Kathrine W. Lane, brilliant young sculpturess, at work at her studio, demonstrates every step necessary from the preliminary sketch in clay to the ultimate achievement in bronze. Order from Wholesome Films Service, Inc., 48 Melrose Street, Boston, Massachusetts.

✓ FROM MINE TO CONSUMER (2 reels) 16mm 35mm silent. Mining, smelting and refining of copper and fabrication of its alloys. Order from American Brass Company, Waterbury, Connecticut.

✓ HERITAGE (1 reel) 35mm sound. Discovery and uses of nickel. Order from Douglas D. Rothacker, 729 Seventh Ave., New York.

✓ LONG DRAWN OUT (1 reel) 35mm silent. A trip through a copper mill. Order from National Council of Y. M. C. A. Motion Picture Bureau, 347 Madison Ave., New York.

✓ MANUFACTURING OF ANACONDA SHEET COPPER (1 reel) 16mm 35mm silent. Self explanatory. Order from American Brass Company, Waterbury, Conn.

MOUNTAINS OF COPPER (1 reel) 16mm 35mm sound. Operations in blasting and transporting copper ore from world's largest open pit copper mines. Order from General Electric Company, Visual Instruction Section, Schenectady, N. Y.

✓ NICKEL (2 reels) 16mm 35mm silent. Mining ore, crushing, smelting, electrolytic refining, and casting; how alloys are made and other manufacturing operations; how nickel is utilized in industry, in sports, and in the home. Order from U. S. Bureau of Mines, Experiment Station, Pittsburg, Pa.

✓ SILVER: HEIRLOOMS OF TOMORROW. (3 reels) 16mm 35mm silent. Scenes in a modern silverware plant; examples of Paul Revere's work. Order from U. S. Bureau of Mines, Experiment Station, Pittsburg, Pa.

✓ THE ETCHER'S ART (2 reels) 16mm 35mm silent. Frank W. Benson, a widely known artist, shows in detail the steps necessary in the acid process of making etchings, from the transferring of the pencil sketch to the plate, to the pulling of prints from the press. Order from Wholesome Films Service, Inc., 48 Melrose St., Boston, Massachusetts.

✓ THE MEDAL MAKER (2 reels) 16mm 35mm silent. Sponsored by the American Numismatic Society. Laura Gardine Fraser demonstrates the making of medals and coins. Order from Wholesome Films Service, Inc., 48 Melrose Street, Boston, Massachusetts.

THE STORY OF THE FABRICATION OF COPPER (2 reels) 16mm 35mm silent. Rolling and drawing copper rod and wire, rolling of sheets; testing strength of copper wire and cable. Order from U. S. Bureau of Mines, Experiment Station, Pittsburgh, Pa.

THE STORY OF COPPER (4 reels) 16mm 35mm silent. Mining, milling, smelting and refining of copper. Order from American Museum of Natural History, 77th Street, and Central Park W., New York.

✓ THE SILVER SMITH (2 reels) 16mm 35mm silent. How silverware is produced from ore to things of beauty and utility. Order from Harvard Film Service, Biological Laboratories, Harvard University, Cambridge, Massachusetts.

AUTO MECHANICS

AUTOMOBILE LUBRICATION (1 reel) 16mm silent. Why old oil should be replaced with new oil; different kinds of lubricants for various parts. Order from American Museum of Natural History, 77th St., and Central Park W., New York.

BETTER BRAKES (2 reels) 35mm sound. Construction, operation and servicing of modern automobile brakes. Order from Mid-continental Picture Corp., 4327 Duncan Ave., St. Louis, Mo.

ELEMENTS OF THE AUTOMOBILE (14 reels) 16mm 35mm silent. Service visualizing inside workings of motor car; animated drawings, mechanical models and phantom drawings used. Order from Bray Pictures Corp., Educational Dept. 729 Seventh Street, New York.

FORD AND A CENTURY OF PROGRESS (1 reel) 35mm sound. Ford exhibits. Order from Ford Motor Company, Dept. of Photography, Dearborn, Michigan.

FOUR-STROKE CYCLE GAS ENGINE (1 reel) 16mm silent. Shows it in a single cylinder "T" head type of motor; a simplified carburetor, ignition system applied to single and multiple cylinder engines, water and air cooling. Order from Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.

MAKING AN ALL STEEL AUTOMOBILE BODY (2 reel) 16mm silent. Making the machinery for pressing, stamping, welding, and finishing. Order from American Museum of Natural History, 77th St., and Central Park W., New York.

MEN AND MOTORS (2 reels) 35mm sound. Craftsmanship and precision methods of automobile manufacture. Order from General Motors Corp., Dept. of Public Relations, Broadway at 57th St., New York.

METALS OF MOTOR CAR (2 reels) 35mm silent. Use of metals and alloys in construction and operation of parts of motor car. Order from American Museum of Natural History, 77th St., and Central Park W., New York.

OIL BLAST CHAMBER (1 reel) 35mm sound. Operation of new circuit breaker; highly technical. Order from General Electric Co., Visual Instruction Section, Schenectady, N. Y.

SERVICING THE CARBURATOR (1 reel) 35mm silent. Good for motor trade schools. Order from Midcontinent Picture Corp., 4327 Duncan Ave., St. Louis, Missouri.

STORY OF A GASOLINE MOTOR (3 reels) 16mm 35mm silent. Animation shows entire function of automobile motor; motor lubrication and operation of each part. Order from American Museum of Natural History, 77th St., and Central Park W., New York.

STORY OF A SPARK PLUG (2 reels) 16mm silent. Manufacture of spark plugs, manufacture of sullivanite; important part spark plugs play. Order from American Museum of Natural History, 77th St., and Central Park W., New York.

THE AUTO FASHION PLATE (2 reels) 35mm sound. Journey through the art and color section of the Fisher Body Corp. Order from General Motors Corp., Dept. of Public Relations, Broadway at 57th St., New York.

THE AUTOMOBILE (1 reel) 16mm silent. Traces production and use of iron, rubber, glass and gasoline in the automobile. Order from Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.

THE CARBURATOR (2 reels) 35mm silent. Processes of manufacture. Order from Midcontinent Picture Corporation, 4327 Duncan Ave., St. Louis, Mo.

POWER WITHIN: A STORY OF INTERNAL COMBUSTION ENGINE (2 reels)
16mm 35mm silent. Order from U. S. Bureau of Mines Experiment Station, 4800 Forbes St., Pittsburg, Pa.

SAFETY GLASS (2 reels) 16mm 35mm silent. Order from U. S. Bureau of Mines Experiment Station, 4800 Forbes St., Pittsburg, Pa.

MAGIC CIRCLE (3 reels) 16mm silent. Manufacture, laboratories, merchandising and advertising of piston rings. Sound on disc. Order from Visual Instruction Bureau, Division of Extension, University of Texas, Austin, Texas.

ENDLESS CHANNELS (5 reels) 16mm silent. How piston rings are developed; how they work inside engine. Order from Visual Instruction Bureau Division of Extension, University of Texas, Austin, Texas.

MAKING A V-TYPE ENGINE (2 reels) 16mm 35mm silent. Portrays detailed operation in making a V-type engine. Begins with the unloading of ore and takes the audience through the steps necessary to produce cylinder blocks that are checked to three millionth of an inch. Order from Bureau of Mines, Experimental Station, 4800 Forbes St., Pittsburg, Pa.

WHERE MILEAGE BEGINS (1 reel) 16mm 35mm sound. A picturization of what the gasoline engine is and how it works by simple comparison with objects in daily use. A modern multi-cylinder automobile is completely assembled. An explanation of the function and operation of the various parts is included in the film. Order from General Motors Corp., Dept. of Public Relations, General Motors Bldg., Detroit, Michigan.

THE STORY OF THE TIRE (1 reel) 16mm 35mm silent. Order from Goodyear Tire & Rubber Co., Akron, Ohio.

WHAT STOPS 'EM (Length: 7 minutes) 35mm sound. A clear explanation of hydraulic brakes and of their use on the modern motorcar. Order from Chevrolet Motor Co., Detroit, Michigan.

FIRE CONTROL (Length: 8 minutes) 35mm sound. An explanation of the automobile engine, and especially of the cylinder heads and valves. Order from Chevrolet Motor Co., Detroit, Michigan.

NO GHOSTS (Length: 11 minutes) A dramatization of the Y-K frame, with especial attention to the rigidity of the frame and the elimination of squeaks and rattles. Order from Chevrolet Motor Co., Detroit, Michigan.

BALANCE (Length: 7 minutes) 35mm sound. This picture dramatizes the balance performance of the modern automobile,

showing how all parts work together. Order from Chevrolet Motor Co., Detroit, Michigan.

THE SAFEST PLACE (Length: 7 minutes) 35mm sound. Because of progress in engineering and materials, the safest place a person can be is in his automobile as this picture proves, with special emphasis on brakes and body construction. Order from Chevrolet Motor Co., Detroit, Michigan.

IT'S THE TOP (Length: 10 minutes) 35mm sound. The principle of the turret top explained, proving how the turret top promotes safety and comfort. Order from Chevrolet Motor Co., Detroit, Michigan.

DOWN THE GASOLINE TRAIL (Length: 8 minutes) 35mm sound. Real photography and cartoon animation tell what happens to a drop of gasoline from the time it is put into the gasoline tank of an automobile to the time it brings to life all the power of the valve-in-head engine. Order from Chevrolet Motor Co., Detroit, Michigan.

TAKE IT EASY (Length: 9 minutes) 35mm sound. Dramatization of the spring suspension in the modern automobile, explaining in detail the principle of knee action. Order from Chevrolet Motor Co., Detroit, Michigan.

GET GOING (Length: 8 minutes) 35mm sound. An explanation of what happens when the motorist steps on the accelerator. Order from Chevrolet Motor Co., Detroit, Michigan.

WATER BOY (Length: 13 minutes) 35mm sound. A dramatization of the cooling system of the automobile, showing how the water circulates around the cylinders, cooling them and in turn being cooled by the air drawn in through the radiator. Order from Chevrolet Motor Co., Detroit, Michigan.

STOP THAT CAR (Length: 9 minutes) 35mm sound. What does it take to stop an automobile going at top speed? The principles of braking, climaxing in a dramatic leap from a dock to a barge at full tilt with the full confidence of the driver in an automobile's four-wheel hydraulic brakes. Order from Chevrolet Motor Co., Detroit, Michigan.

SILENCE (Length: 10 minutes) 35mm sound. Modern science has helped to make the automobile more comfortable by making it more quiet, as this picture shows. Order from Chevrolet Motor Co., Detroit, Michigan.

FIRE AND WATER (Length: 7 minutes) 35mm sound. The age-old ordeal of fire and water is here applied to the modern motorcar. The speeding car meets all modern tests with perfect ease. A picture including the most remarkable stunts ever offered on the screen. Order from Chevrolet Motor Co., Detroit, Michigan.

SPINNING LEVERS (Length: 10 minutes) 35mm sound. The transmission in the modern motorcar--the mechanism that makes it possible to have three forward speeds and a reverse--it is a series of levers, levers that spin. Order from Chevrolet Motor Co., Detroit, Michigan.

HORSEPOWER (Length: 9 minutes) 35mm sound. How the term "horsepower" came to be applied to mechanical devices is made clear in this picture, and an explanation of how modern motorcar can hold the power of eighty-five horses under its hood. Order from Chevrolet Motor Co., Detroit, Michigan.

FREE AIR (Length: 11 minutes) 35mm sound. Everything needs air to live, and every fire needs air to burn; in the modern automobile engine, a spoonful of gasoline combines with a mammoth balloon full of air to provide power. Order from Chevrolet Motor Co., Detroit, Michigan.

ON THE LEVEL (Length: 10 minutes) 35mm sound. The modern ride is a comfortable ride because automobile engineers have taken the rough places out of the road by putting knee action in the automobile. Order from Chevrolet Motor Co., Detroit, Michigan.

RIDING THE FILM (Length: 11 minutes) 35mm sound. Motorists really ride on a film of oil, because all the moving parts of the engine are kept slipping over each other by a thin film of oil. Order from Chevrolet Motor Co., Detroit, Michigan.

SOFT PEDALS (Length: 9 minutes) 35mm sound. This picture explains the operation of the tiptoe-matic clutch, showing how it contributes to ease of operation, safety, and comfort. Order from Chevrolet Motor Co., Detroit, Michigan.

CURRENT FLASHES (Length: 11 minutes) 35mm sound. A vivid explanation of how the generator and electrical system of the modern automobile work.. Order from Chevrolet Motor Co., Detroit, Michigan.

VACUUM CONTROL (Length: 11 minutes) 35mm sound. An explanation of the principle of the new vacuum gearshift, and how it contributes to comfort, ease of driving, and safety. Order from Chevrolet Motor Co., Detroit, Michigan.

OVER THE WAVES (Length: 9.5 minutes) 35mm sound. Roads will always be rough, to a limited extent--so that the ride must be smoothed out by the automobile. The smoothing is done by knee action. Order from Chevrolet Motor Co., Detroit, Michigan.

THE HOT HEAD (Length: 12 minutes) 35mm sound. Picture shows superior economy and power of valve-in-head engine. Order from Chevrolet Motor Co., Detroit, Michigan.

QUIET, PLEASE (Length: 11 minutes) 35mm sound. Demonstration of successful campaign against noise, by ride in unupholstered car, and then in fully soundproofed automobile. Order from Chevrolet Motor Co., Detroit, Michigan.

POWER (Motion Picture) 16mm sound. This picture shows how energy is harnessed in the modern gasoline engine and automobile. Before our eyes in animated pictures and cutaways we see the four-stroke cycle internal combustion engine going through its complete stroke cycle-intake-compression-power-exhaust. The explosion of the gasoline air mixture in the cylinder is shown forcing the connecting rod down to turn the crankshaft. We see this force travel through the transmission, along the propeller shaft, through the differential and rear axle and we see it turn the wheels. In short we are shown power at work. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

CURVE CONTROL (Motion Picture) 16mm sound. This picture shows and explains how various types of vehicles are steered. Steering principles governing different numbers of wheels are investigated and various types of steering mechanisms are explained. The geometric principle of a revolving cone is shown as it applies to any wheel which is tilted at an angle to the plane on which it rolls. Practice of steering is demonstrated, and we are shown how wobbling and weaving on a bumpy road are eliminated. Order from the Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

AROUND THE CORNER (Motion Picture) 16mm sound. This film deals in interesting fashion with the difficult problem of making clear the operations of the automobile differential. We see that it is possible for wagon wheels to travel at different speeds because each one can turn freely on the axles. Early automobiles are seen operating this way, encountering difficulty since only one wheel was driven by the engine and thus was not always able to get enough grip on the road. Engineers had to find a way to connect both rear wheels to the engine without sliding and slipping on turns. The solution was the differential. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

SMOOTH STARTS (Motion Picture) 16mm sound. This is a picture which illustrates the law of inertia as it applies to the problem of starting airplanes, boats, locomotive trains, and automobiles. We see that in the motorcar friction carries the power from the engine to overcome the inertia of the car in starting. The means to apply this friction evenly is supplied by the clutch. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

SMOOTH STARTS (Motion Picture) 16mm sound. This is a picture which illustrates the law of inertia as it applies to the problem of starting airplanes, boats, locomotive trains, and automobiles. We see that in the motorcar, friction carries the power from the engine to overcome the inertia of the car in starting. The means to apply this friction evenly is supplied by the clutch. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

THE AUTOMOBILE MECHANICAL TRAINING Kit-Set No. 1 (Slidefilm) This is comprised of five kits totaling 35 educational slidefilms with 2,829 pictures. The 35 slidefilms deal with the principles of operation of the units of the automobile. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

MOTION PICTURES FOR TRAINING IN AUTOMOTIVE MECHANICS (16 Motion Pictures Sound) 16mm sound. These talking motion pictures are popularized presentations dealing with the various units of the automobile. While mainly for automotive mechanics classes they are of value also to general science, physics and chemistry classes. Each talking picture is designed for integrated use with the slidefilms of Automotive Kit No. 1 or alone for purposes of introduction or review in shop classes. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

THE AUTOMOTIVE MECHANICAL TRAINING Kit-Set No. 2 (Slidefilm) This is made up of five shop-instruction kits totaling 35 educational slidefilms, with 1,910 pictures dealing with the care and repair of passenger cars and trucks. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

CARPENTRY

PRINCIPLES OF PLANNING AND THE CONSTRUCTION OF LOW PRICED HOMES (4 reels) Story about how to select homes. Shows clearly and interestingly the principles to follow and observe in planning and constructing the small home. Order from Y. M. C. A. Motion Picture Bureau, 347 Madison Ave., New York.

THE HOUSE THAT ANNE BUILT (6 reels) 16mm sound. John Manville's feature all-star talking motion picture, packed with fascinating ideas about new homes and home remodeling. Order from Y. M. C. A. Motion Picture Bureau, 347 Madison Ave., New York.

RESIN FOR THE WORLD (1 reel) 16mm silent. Order from Bell-Howell Co., 1801 Larchmont Ave., Chicago, Ill.

TIMBER-R-R-R (1 reel) 16mm 35mm silent. Timber growing and logging practices in the California pine region. Order from U. S. Dept. of Agri., Division of Motion Pictures, Washington, D.C.

WILD WOOD WORKERS (1 reel) 35mm. Preparing yellow pine trees for use; activities of sawyers, axmen, teamsters, and boatmen. Order from Western Electric Co., 120 W. 41st Street, New York.

THE METEOR (2 reels) 16mm 35mm safety film. Tells of the origin of crosscut saws and their development with a picture trip through a factory. Order from E. C. Atkins & Co., Sheffield Saw Works, 402 South Illinois St., Indianapolis, Indiana.

THE SERPENTS TOOTH (1 reel) 16mm 35mm safety film. Hand-saws with its romantic history and present modern manufacturing methods. Order from E. C. Atkins Co., Sheffield Saw Works, 402 South Illinois St., Indianapolis, Indiana.

THE MANUFACTURE OF DOUGLAS FIR PLYWOOD (1 reel) 16mm silent. Steps in the manufacture of Douglas Fir plywood from forest through the mill in detail, with brief showing of uses. Order from Y. M. C. A. Motion Pictures Bureau, 347 Madison Ave., New York.

FABRICATING THE WESTERN PINES (1 reel) 16mm sound. Graphic portrayal of the fabrication and assembly of sash doors, frames and screens as made from western pines. Order from The Western Pine Association, Yeon Building, Portland, Oregon.

BUILDING A HOME OF WESTERN PINES. 16mm sound. Step by step portrayal of the actual building of the Western Pine Home at the Golden Gate International Exposition in San Francisco. Order from Western Pine Association, Yeon Building, Portland, Oregon.

THE STORY OF CANADIAN PINE (3 reels) 16mm sound. In this film the entire story of Canadian white pine from forest to export of the finished product is covered in detail. Order from Y. M. C. A. Motion Picture Bureau, New York.

CONQUEST OF THE FOREST (1 reel) 16mm silent. Scenes in the logging country of the Northwest, with a comprehensive picture of the lumber industry. General Electric Co., Visual Instruction Section, Schenectady, N. Y.

BIG TIMBER (1 reel) 16mm sound. Large scale lumbering operations are shown in Canada's Pacific Province and spectacular scenes of logging activities. Order from Department of Education, American Museum of Natural History, Central Park West at 79th St., New York.

✓
 THIRTY YEARS OF LOGGING (2 reel) Length: 22 minutes. 16mm sound. Shows the change from one logging method to the next over a period of the last thirty years. Although west coast methods and personalities are dealt with to a great extent, the film will provide interesting entertainment for everyone, particularly forestry students. Order from Allis Chalmers Manufacturing Company, Milwaukee, Wisconsin.

CERAMICS

CERAMICS (2 reels) 16mm silent. A study of the art of pottery in the studio of Leon Volkmer. Order from Religious Motion Picture Foundation, Inc., 140 Nassau St., Philadelphia, Pa.

GIRL POTTERY MAKERS (1 reel) 35mm silent. Study of the ceramics art. Order from Pinkney Film Service, 1028 Forbes St., Pittsburg, Pa.

PORCELAIN INDUSTRY IN CZECHO-SLOVAKIA ($\frac{1}{2}$ reel) 16mm 35mm silent. Processes from common clay to finished hand-painted lustrous china. Order from Society for Visual Education, Inc., 3275 La Salle St., Chicago, Ill.

TABLEWARE (1 reel) 16mm silent. Modern methods of manufacture in preparing clays for pottery; modeling, casting, firing and decoration of ware. Order from Eastman Kodak Company, Teaching Films Division, 343 State St., Rochester, N. Y.

THE POTTERY MAKER (1 reel) 16mm 35mm silent. How the potter works at his wheel. Order from American Museum of Natural History, 77th St., New York.

THE POTTER'S WHEEL (1 reel) 16mm 35mm silent. Manufacture of porcelain. Order from American Museum of Natural History, 77th St., New York

A B C OF POTTERY (COIL METHOD) (1 reel) 16 mm silent. A detailed demonstration of the making of a small clay bowl by the coil method-easiest of all. Tools and operations are clearly shown. The bowl is finished on the potter's wheel. Successfully used in elementary grades as well as in the high-school. Order from American Museum of Natural History, 77th St., New York.

INDIAN POTTERY MAKING (2 reels) 16mm silent. In the Pueblo Indian Village of San Ildefonso near Sante Fe, New Mexico, Maria and Julian Martinez renowned makers of pottery, show in detail the entire process of making pottery. Order from American Museum of Natural History, 77th St., New York.

OLDEST OF THE ARTS, THE (POTTERY) ($\frac{1}{2}$ reel) 16mm silent. Complete process of pottery-making demonstrated at the oldest of American Potteries; "throwing", turning, glazing, firing, etc. Order from Bray Pictures Corp., 729 Seventh Ave., New York.

CONCRETE

CONSTRUCTION THAT ENDURES (1 reel) 16mm 35 mm silent. A story of concrete and its uses. Shows various ways in which concrete is employed in fireproof and durable construction, buildings, highways, statues, etc. Order from Universal Atlas Cement Company, 135 East 42nd Street, New York.

FOLLOW THE WHITE TRAFFIC MARKER (1 reel) 16mm 35mm silent. Highway safety, accidents and preventions. Shows also concrete as used in paving highways. Order from Universal Atlas Cement Company, 135 East 42nd Street, New York.

FROM MOUNTAIN TO CEMENT SACK (1 reel) 16mm 35mm silent. The story of the manufacture of Portland Cement. Order from Universal Atlas Cement Company, 135 East 42nd Street, New York.

DRAWING

MECHANICAL DRAWING (Slidefilm on Mechanical Drawing) Contemplated film to be made on mechanical drawing. Should be ready by 1942. Order from The Jam Handy Organization, 2821 E. Grande Blvd., Detroit, Michigan.

MACHINE DRAWING (Slidefilm) Contemplated film to be made on machine drawing. Should be ready by 1942. Order from The Jam Handy Organization, 2821 E. Grande Blvd., Detroit, Mich.

LETTERING (Slidefilm) Contemplated film to be made on lettering. Should be ready for distribution by 1942. Order from The Jam Handy Organization, 2821 E. Grande Blvd., Detroit, Michigan.

MOTION PICTURES ON BLUE PRINT READING (Silent Motion picture) This silent motion picture shows, step-by-step, how to read blue prints and visualizes what blue prints symbols mean in terms of the finished product. (This film is available in slidefilms also) Order from The Jam Handy Organization, 2821 E. Grande Blvd., Detroit, Michigan.

SKETCHING (Slide Film) Contemplated film to be made on sketching and should be ready by 1942. Order from The Jam

Handy Organization, 2821 E. Grande Blvd., Detroit, Michigan.

ELECTRICITY

ELECTRICAL HEART (1 reel) 35mm silent. The story of a dynamo. Order from Pinkney Film Service, 1028 Forbes St., Pittsburg, Pa.

TRANSFORMER THEORY (1 reel) 35 mm sound. Development of Stanley's transformer for alternating current; shows practicability of his theories. Order from General Electric Co., Visual Instruction Section, Schenectady, New York.

UNSEEN VALUES IN GENERAL ELECTRIC MOTORS (3 reels) 35mm sound. Manufacture of induction motor showing considerable detail. Order from General Electric Co., Visual Instruction Section, Schenectady, New York.

ALTERNATING CURRENT MOTORS (3 reels) 16mm silent 35mm silent. Detailed operations in the manufacture of an Otis Alternating Current Motor. Order from Otis Elevator Co., Publicity Division, 260 Eleventh Ave., New York.

BIG DEEDS (2 reels) 16mm 35mm silent. Trip through Schenectady Works of General Electric; shows manufacture of different classes of electric equipment. Order from General Electric Co., Visual Instruction Section, Schenectady, New York.

ELECTRICAL MEASUREMENT (4 reels) 16mm silent. Construction and operation of electric instruments and the needs of different measuring qualities. Order from Edited Pictures System, Inc., 330 W. 42nd St., New York.

ELECTRIC SHIP (1 reel) 16mm sound, 35mm silent. Features of electrical equipment shown. Order from General Electric Co., Visual Instruction Section, Schenectady, New York.

HOW THE TELEPHONE TALKS (1 reel) 16mm silent. Principles of communication; details of transmitter and receiver; diagrams and technical drawings. Order from Kodoscope Libraries Inc., 33 W. 42nd St., New York.

INDUCED CURRENTS (1 reel) 16mm silent. How currents are induced in a generator, transformed and applied in a telephone. Order from Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.

THE ELECTRICAL TRANSMISSION OF SPEECH (1 reel) 35mm silent. Fundamentals involved in transmission and reception of voice

over wire circuits. Order from Western Electric Co., 120 W. 41 St., New York.

THE LITTLE BIG FELLOW (1 reel) 35mm silent. Functions of an electric current in making a telephone call. Order from National Council of the Y.M.C.A. Motion Pictures Bureau, 347 Madison Ave., New York.

RUBBER INSULATED CABLES (1 reel) 16mm 35mm sound. Shows an insulated wire and cable that is safe to touch ...yet bearing in their copper strands all the electrical power in America. This picture shows how the best insulated wires are made and tested--gives flashing dramatic highlights of their use--tells an absorbing story of the age of electricity. Order from William J. Ganz Co., 19 East 47th St., New York.

ELECTRODYNAMICS (1 reel) 16mm sound. In this film direct photography demonstrates cause and effect, while animation explains the fundamental principles of current electricity and electromagnetism. Among the concepts presented are: Galvani's discovery of current electricity; magnetic field about a current carrying wire; magnetic field of a coil; electro-magnets; Rowland's experiment; magnetic hypothesis; reluctance; induction by a magnet; A. C. generator; D. C. generator; induction by an electric current; transformers. Order from Erpi Classroom Films Inc., 35-11 35th Ave., Long Island City, New York.

ELECTRONS (1 reel) 16mm sound. By photography and animation, the hypothesis that electricity consists of unit elementary charges is supported by observation of phenomena associated with the conduction of electricity in liquids, gases, and vacuum. The film explains Faraday's laws, valence, oil drop experiment, Edison effect, cathode rays vacuum tubes, photo-electric cell, sound-on-film, and the mass of the electron. Order from Erpi Classroom Films Inc., 35-11 35th Ave., Long Island City, New York.

ELECTROSTATICS (1 reel) 16mm sound. This film deals with static electricity as fundamental to an understanding of the modern theories of electricity. It explains how positive and negative electrification are produced and animated drawings show the part played by insulators and conductors. Natural photography supplemented by animation gives remarkable exposition of the movement of charges in the electroscope, the Compton electrometer, the static machine and Nature's display of static electricity. Order from Erpi Classroom Films Inc., 35-11 35th Ave., Long Island City, New York.

TRANSPORTATION (2 reels) 16mm silent. The early methods of transportation; the first use of wheels on vehicles; the first steam locomotive; the discovery and harnessing of

electricity; the assembling of a modern electric locomotive; electrified railroads; types of electric locomotives. Order from United States Bureau of Mines, Experiment Station, 4800 Forbes St., Pittsburg, Pa.

HOUSE OF POWER (1 reel) Length: 11 minutes. Showing the advancement and growth of Allis-Chalmers power machine both in the industrial and agricultural line. Order from Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin.

ON THE AIR (Length: 10 minutes) 35mm sound. An automobile radio program featuring Rubinoff is sent over the air, and an explanation is made of how radio broadcasting works. Order from Chevrolet Motor Company, Detroit, Michigan.

CURRENT FLASHES (Length: 11 minutes) 35mm sound. A vivid explanation of how the generator and electrical system of the modern automobile work. Order from Chevrolet Motor Co., Detroit, Michigan.

THE INSIDE OF YOUR TELEPHONE (2 reels) 35mm silent. Gathering and utilizing of 15 raw products used in manufacturing of the telephone. Order from Western Electric Co., 120 W. 41st St., New York.

THE TELEPHONE REPEATER (1 reel) 35mm silent. Operation of a vacuum tube as a telephone repeater which amplifies the voice current at intervals. Order from Western Electric Co., 120 West 41st St., New York.

THE WIZARDRY OF WIRELESS (2 reels) 16mm 35mm silent. History of communication; explanation by animated drawing of principles involved in wireless. Order from General Electric Co., Visual Instruction Section, Schenectady, New York.

THE CHEMICAL EFFECTS OF ELECTRICITY (1 reel) 16mm silent. Action of two electrodes in electrolysis traced from crude beginnings, through modern battery manufacture, electrolysis, electroplating, to metallurgy of copper and aluminum. Order from Edited Pictures System Inc., 330 42nd St., New York.

MAZDA LAMP MANUFACTURING (2 reels) 16mm 35mm silent. Detailed steps in manufacturing of lamps. Order from General Electric Co., Visual Instruction Section, Schenectady, N.Y.

STORY OF THE STORAGE BATTERY (2 reels) 16mm. Uses and manufacture. Order from American Museum of Natural History, 77th St., and Central Park W., New York.

THE CONDUCTOR (1 reel) 16mm silent. Making a lamp cord. Order from General Electric Co., Visual Instruction Section, Schenectady, New York.

THE NEW FRONTIERS (2 reels) 16mm 35mm sound. Summarizes achievements of industrial scientists; electricity's contributions to industrial purposes. Order from Westinghouse Electric & Manufacturing Co., East Pittsburg, Pa.

THOMAS A. EDISON (1 reel) 16mm silent. Methods employed in the development of his great invention, the incandescent lamp. Order from General Electric Co., Visual Instruction Section, Schenectady, New York.

TRAVELING WAVES ON TRANSMISSION LINES (3 reels) 16mm 35mm silent. Shows in animated behavior an electrical current traveling along 250 miles of transmission line. Order from Massachusetts Institute of Technology, Visual Education Department, Cambridge, Mass.

WHITE COAL (2 reels) 35mm silent. Manufacturing of electricity by water power. Order from Westinghouse Electric and Manufacturing Co., East Pittsburg, Pa.

BASIC ELECTRICITY (12 Slidefilms) This series of 12 educational slidefilms with approximately 850 pictures deals with the basic principles of electricity and some of its applications. The subjects covered follow: (1) Magnetism. (2) Static Electricity. (3) Current Electricity. (4) The Electric Cell. (5) The Storage Battery. (6) Electromagnetism. (7) The Generator. (8) Alternating currents. (9) Electric Motors. (10) Heating and Lighting Applications. (11) Electric Meters. (12) Applications for solenoids, motor uses, radio, and electroplating. Order Jam Handy Organization, 2821 E. Blvd., Detroit, Michigan.

FORGING

BESSEMER AND OPEN HEARTH STEEL ($\frac{1}{2}$ reel) 16mm 35mm silent. Process visualized by animation and actual photography; principle of regenerative process. Order from Reading Iron Co., 401 North Broad St., Philadelphia, Pa.

IRON ORE TO PIG IRON (1 reel) 16mm silent. Mining, transportation and smelting of iron ore; steel bridge construction; uses of steel. Order from William H. Dudley, Visual Education Service Inc., 7365 Wabash Ave., Chicago, Illinois.

MAKING IT TOUGH (3 reels) 16mm 35mm silent. Complete cycle of alloy-steel, "Heat" in open hearth furnace, casting ingots, properties and uses. Order from U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.

STORY OF LEAD SMELTING (2 reels) 16mm 35mm silent. Smelter; after refining the lead it is run into molds and cooled on molding wheels. Order from U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.

SURFACE CHANGES AT HIGH TEMPERATURES (1 reel) 16mm 35mm silent. Metals heated to high temperatures in atmosphere of nitrogen in special furnace. Order from Harvard Films Service, Biological Laboratories, Harvard University, Cambridge, Massachusetts.

RAW MATERIALS (1 reel) Shows materials that go into steel. Starting with the mining of iron ore in open hearth pits and underground mines and its delivery to the huge ore docks and freighters. Order from American Museum of Natural History, 77th St., and Central Park West, New York.

THE BLACKSMITH'S GIFT (1 reel) 16mm 35mm sound. Takes us back to 1837 to the village blacksmith shop where we see John Deere building his first steel plow. Order from Ray-Bell Films, Inc., 2269 Ford Road, St. Paul, Minn.

FROM ONE ANVIL (1 reel) 16mm 35mm sound. The story of a great business, The John Deere Plow Co., and a great nation growing together. Order from Ray-Bell Films Inc., 2269 Ford Road, St. Paul, Minn.

A TRIP THROUGH A MODERN STEEL AND WIRE MILL (2 reels) 16mm 35mm silent or sound. Shows every step in the manufacture of wire products and fence. Order from Keystone Steel and Wire Co., Peoria, Illinois.

THE MOULDER (1 reel) 16mm silent. This film shows production of small, gray iron castings by the most modern pouring and conveying system known to the trade. It is produced for our own use, but is of such excellent quality and tells such an interesting story of modern foundry practice, that we believe it will be helpful to all who see it. Order from General Electric Co., 1801 N. Lamar St., Dallas, Texas.

METALLURGY (12 Slidefilms) These twelve educational slidefilms are: (1) History of metals, part 1. (2) History of metals, part 2. (3) History of metals, part 3. (4) Making iron and steel. (5) Working steel. (6) Properties of iron and steel. (7) Physical testing. (8) Heat treating. (9) Alloys and alloy steels. (10) Failures. (11) Brasses, bronze and white metals. (12) The metallurgist. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

BLACKSMITHING (7 Slidefilms) The seven educational slidefilms cover the following: (1) The blacksmith. (2) Forging

tools. (3) Forgecraft. (4) Forge operations. (5) Stock calculations. (6) Tool smithing. (7) Horseshoeing. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

LEATHER WORK

AMERICAN GLOVE CRAFT (2 reels) 16mm 35mm silent. Glove manufacture. Order from DeFrenes & Co., 1909 Buttonwood Street, Philadelphia, Pa.

FROM HIDE TO LEATHER (1 reel) 35mm silent. Manufacture of shoes. Order from Wholesome Films Service Inc., 48 Melrose St., Boston, Mass.

LEATHER (1 reel) 16mm silent. Sources of leather; tanning methods; making of shoes by hand contrasted with manufacture by modern machinery. Order from Eastman Kodak Co., Teaching Films Division 343 State St., Rochester, New York.

ROMANCE OF SHOE MAKING (2 reels) 16mm 35mm silent. Steps in the manufacture of shoes. Order from Melville Shoe Corp., Advertising Department 555 Fifth Ave. New York.

SHOES OF THE AGES (1 reel) 35mm sound. Evolution of the shoe with actual historic relics and modern products. Order from Midcontinent Picture Corp., 4327 Duncan Ave., St. Louis, Missouri.

THE MARCH IS FORWARD (2 reels) 16mm 35mm sound. Manufacture of shoes. Order from National Council of Y.M.C.A. Motion Pictures Bureau, 343 Madison Ave., New York.

THE SHOE (1 reel) 16mm silent. Production from raw materials. Order from Edited Pictures System Inc., 330 W. 42nd St., New York.

THE STORY OF LEATHER (1, 2, and 3 reels) 35mm silent. Processes through which raw hides go before they can be called leather. Order from Wholesale Film Service, Inc., 48 Melrose St., Boston, Mass.

THE STORY OF TIAGA OAK SOLE LEATHER (4 reels) 16mm sound. The making of sole leather from cow and steer hides to finished leather; the tanning industry. Order from McLarty Motion Picture Service, Certain Teed Building, Military Road, Buffalo, New York.

MACHINE SHOP

AGE OF RIVETED STEEL (2 reels) 35mm silent. Various uses of riveted steel in engineering construction. Order from American Institute of Steel Construction, Inc., 200 Madison Ave., New York.

METAL OF THE AGES (3 reels) 16mm 35mm silent. Manufacture of wrought iron pipe. Order from Reading Iron Company, 401 N. Broad Street, Philadelphia, Pa.

THE MARK OF THE GENUINE (time 20 minutes) "The mark of the Genuine" is an educational picture particularly suited to classroom showing. It takes you into the huge John Deere Plow Works, and shows all of the main operations so important in building a quality plow share. You see how soft-center, plating, welding, testing, on through the tempering process. Order from John Deere, Moline, Illinois.

MACHINE MAKER (1 reel) 35mm sound. Order from Harvard Film Service, Biological Laboratories, Harvard University, Cambridge, Massachusetts.

ELEMENTARY OPERATIONS ON THE ENGINE LATHE (1 reel) 16mm sound. This skillfully prepared sound film provides invaluable help in the detailed demonstration of modern shop practice. It is replete with carefully planned, superbly photographed full-screen close-ups which isolate and greatly enlarge the critical action involved in every significant procedure. It not only permits demonstrating to the whole class at once, but enables each student to follow the action, step by step, to even greater advantage than would be possible from a position directly at the side of the instructor. The effectiveness of the film is further heightened by full explanations, in sound of every step. Order from Eastman Kodak Company, Teaching Films Division, Rochester New York.

BENCHWORK AND FITTING (9 Slidefilms). These educational slidefilms cover the following subjects: (1) Hand Tools, what they are, use and care. (2) Hand and Power Hacksaws. (3) Drills and Drilling. (4) Reaming and Threading. (5) Finish Rough Castings. (6) Scraping. (7) Rivets and Riveting. (8) Layout Tools and Measuring Instruments. (9) Layout Work. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

MACHINING (10 Slidefilms) These educational slidefilms deal with basic phases of machining: (1) The Machinist. (2) Machine Tools. (3) Machine Technique. (4) Measurements. (5) Drill Presses. (6) Grinding Wheels. (7) Lathes.

8. Milling and Surfacing. 9. Shapers and Planers. 10. Specialized Machines. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

BLUE PRINT READING (A motion picture) Silent. This silent motion picture shows, step-by-step, how to read blue prints and visualizes what blue print symbols mean in terms of the finished product. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Michigan.

PAINTS, VARNISHES AND FINISHING MATERIALS

✓ FROM PIGS TO PAINT (2 reels) 16mm silent 35mm silent. Story of Dutch Boy White Lead. Order from National Council of Y. M. C. A. Motion Picture Bureau, 347 Madison Ave., New York.

✓ THE ROMANCE OF PAINT AND VARNISH (2 reels) 16mm silent. Shows the assembling of raw materials that go into paints, and the manufacture of protecting coatings. Order from National Paint, Varnish and Lacquer Association, New York Ave., N. W., Washington, D. C.

✓ THE MANUFACTURE OF BEAVER STEEL WOOL (1 reel) 16mm 35mm silent or sound. Growth of the industry; processing machinery; packing and shipping. Order from James H. Rhodes Company, 157 W. Austin Ave., New York.

MANUFACTURE OF ABRASIVES (3 reels) 16mm 35mm silent. Made in cooperation with the Corbor Undum Co., Order from U. S. Bureau of Mines Experiment Station, 4800 Forbes St., Pittsburg, Pa.

LEAD (1 reel) 16mm silent. Way in which ore is mined and smelted; multiple uses of metal in industry; processes of making white lead. Order from Eastman Kodak Company, Teaching Films Division, 343 State Street, Rochester, New York.

THE WONDER WORLD OF CHEMISTRY (1 reel) 16mm 35mm sound. The picture features such recent developments in nylon, synthetic rubber, fibers, etc. Order from E. I. DuPont DeNemours & Company, Wilmington, Delaware.

THE JEWELS OF INDUSTRY (2 reels) 16mm silent. Manufacture of modern abrasives and their uses in industrial plants. Order from Douglas D. Rothacker, 729 Seventh Ave., New York.

LASTY
LIX

SAFETY

WOODWORKING MACHINERY # 49. Length: 25 frames. Filmstrips, silent. Order from National Safety Council, Inc., 20 North Wacker Drive, Chicago, Illinois.

SHOPPING FOR SAFETY Sound-slide films. Length: 30 minutes (2 parts) Deals with proper supervision, maintenance, and techniques in the school shop. Also contains first-aid suggestions for the shop teacher. Part 1, "Shopping for Safety," deals with the boy's introduction to safe practices in the vocational shop. Part 2, "Skills vs. Trouble," deals more specifically with the development of skills as a means of preventing accidents. Order from Center For Safety Education, New York University, 20 Washington Square North, New York.

SAFE CURRENTS Sound slide films. Length: 30 minutes (2 parts) Shows the safe way of using electricity in the home, including approved practices for avoiding fires that result from the misuse of electrical appliances. Part 1, "Safe Currents," shows how electrical shocks can be prevented. Part 2, "Fire by Wires," illustrates the prevention of fires in the home due to electricity. Order from Center for Safety Education, New York University, 20 Washington Square North, New York.

OPEN FOR INFECTION Sound slide films. Length: 20 minutes. Story features workman, who cuts finger and then scoffs at first aid. Is ordered to first aid room by foreman. While having the cut treated, he learns from the doctor of the great dangers in neglecting even the smallest cut or injuries. The important reasons for prompt first aid are given and examples of neglected first aid are shown. The worker is firmly convinced by the argument and vows never again to let a cut go untreated. Order from National Safety Council, Inc., 20 North Wacker Drive, Chicago, Illinois.

WE DRIVERS (1 reel) 16mm 35mm. Silent or sound. An effective picture on traffic safety. Black and white and partly technicolor. Order from Paul Garrett, Director of Public Relations, General Motors Corporation, 1775 Broadway, New York.

SAVING SECONDS (2 reels) 16mm 35mm silent or sound. The theme of this picture is that "Haste makes waste." The film shows the folly of trying to save seconds at the risk of losing lives. Safety lessons in driving a car are shown and accidents due to incorrect and careless driving are illustrated when "Johnny" takes the wheel of the car. Order from American Museum of Natural History, 77th Street, and Central Park West, New York.

CARBON MONOXIDE THE UNSEEN DANGER (1 reel) 16mm 35mm silent. Splendid film on safety, showing dangers of carbon monoxide gas from an automobile running in a closed garage and proper First Aid methods to be used in resuscitation. Order from Department of Education, The American museum of Natural History, 77th Street and Central Park West, New York.

TWELVE POINTS OF SAFETY (1 reel) 35mm silent. Made in co-operation with Peabody Coal Company, Order from United States Bureau of Mines, Experiment Station, 4800 Forbes Street, Pittsburg, Pa.

REMEMBER JIMMY (1 reel) 16mm silent (Courtesy Fireman's Fund Indemnity Company) An excellent safety film showing the disastrous results of speeding, inattentive and drunken driving, cutting in, etc., Order from The American Museum of Natural History, 77th Street, and Central Park West, New York.

WHY NOT LIVE (1 reel) 16mm 35mm silent or sound. A graphic, dramatic lesson in safety and accident prevention, fitting in timely fashion with the nationwide campaign aimed to cut down the tragic and terrific toll of accidents on the highway, in the water, in the home and on the farm. Order from William J. Ganz Company, 19 East 47th Street, New York.

AUTOMOBILE SAFETY (1 reel) 16mm silent 36mm silent. Shows how accidents are caused by careless drivers and way and means of avoiding accidents. Order from Wholesome Film Service Company, Inc., 48 Melrose Street, Boston, Massachusetts.

AMERICAN RED CROSS TO THE RESCUE (1 reel) 16mm 35mm silent and sound. A national emergency flood. The American Red Cross faces the worst disaster since its founding. The Army, Navy, and Coast Guard cooperate. Order from William Ganz Company, 19 East 47th Street, New York.

FOLLOW THE WHITE TRAFFIC MARKER (1 reel) 16mm silent. A dramatic film showing automobile accidents and how to prevent them. Order from Y. M. C. A. Motion Picture Bureau, 347 Madison Avenue, New York.

HEEDLESS HURRY (1 reel) 16mm sound or silent. Vividly portrays the careless acts of drivers and pedestrians resulting in tragic consequences, with a huge annual toll of deaths and suffering. Order from Welch Studios, 25th Street and Lehigh Avenue, Philadelphia, Pa.

HELL WOULDN'T HAVE HIM (1 reel) 16mm sound. Excellent for showing to truck drivers. Order from Bruce Dodson & Company, Kansas City, Missouri.

ARTIFICIAL RESPIRATOR (1 reel) 35mm silent. Shows the prone pressure method how to revive a person from drowning and from the asphyxiation by gas and electrical shock. Order from National Safety Council, Chicago, Illinois.

FACTORY SAFETY (1 reel) 35mm sound. (See local Chevrolet Dealer for details) Instruction in safety rules, housekeeping, eye protection, and first aid are presented with varied factory backgrounds. Order from Chevrolet Motor Company, Detroit, Michigan.

THE HANDICAP (1 reel) 35mm silent. Industrial Safety-- A romantic story teaching an impressive safety lesson. Order from National Safety Council, Chicago, Illinois.

HINDSIGHT VERSUS FORESIGHT (2 reels) 35mm silent. Some methods of combating hazardous conditions are shown in foundry scenes emphasizing the need for safety goggles, safety shoes, and proper clothing. Order from National Safety Council, Chicago, Illinois.

LADY LUCK'S HUSBAND (Slide film) 35mm sound. Features industrial safety, also suitable for vocational schools. Order from Travelers Insurance Company, Hartford, Connecticut.

THE OUTLAW (2 reels) 35mm 16mm silent. "King carelessness" smuggles a troupe of mischievous imps into a factory, but the factory manager, safety engineer and the workman regain control. Order from Liberty Mutual Insurance Company, Boston, Massachusetts.

ASK DADDY (2 reels) 35mm silent. Elementary-deals with home and street safety and firearms. Order from National Safety Council, Chicago, Illinois.

CROSS ROAD PUZZLE (2 reel) 35mm silent. Shows dangers resulting from lack of uniform traffic regulations. Order from American Automobile Association, Washington, D. C.

DEATH TAKES NO HOLIDAY (slide film sound) Presents pictures of the larger phases of the motor traffic problem and high schools' opportunity to train drivers. Order from National Conservation Bureau, New York.

TESTING THE DRINKING DRIVER (Sound slide film) Presents pictures of the proper procedure to follow in securing conviction of drivers under influence of alcoholic liquor. Order from National Safety Council, Chicago, Illinois.

MAKING YOUR CITY SAFE (Slide film, sound) An invaluable aid to any city or community wishing to start or improve a traffic safety program. Order from National Safety Council, Chicago, Illinois.

GAMBLING WITH DEATH (1 reel) 35mm silent. Shows highway, railroad grade crossing situation from every angle. Order from National Safety Council, Chicago, Illinois.

GOOFS (1 reel) 35mm silent. Presents series of auto accidents which have actually occurred. Suitable for showing in secondary school. Order from Automobile Club of Southern California, Los Angeles, California.

HIGHWAY MANIA (2 reels) 35mm sound. Improper and proper driving practices are shown. Order from State Motor Vehicle Commission, Trenton, New Jersey.

HIT-AND-RUN DRIVER (1 reel) 35mm sound. Shows adventures of detection, conviction and remorse of young hit-and-run driver. Order from Metro-Goldwyn Mayer Corporation, 630 Ninth Avenue, New York.

THE HIT THAT SCORED (1 reel) 35mm silent. Shows adventures of a reckless truck driver who believes in bluffing the other fellow. Order from the Bell Telephone Company of Pennsylvania, Philadelphia, Pennsylvania.

INERTIA AND THE OTHER FELLOW Slide film Describes organization of community traffic committee. Order from American Legion. Local or State office.

ONCE UPON A TIME (1 reel) 16mm 35mm silent or sound. Animated cartoon showing fairyland setting used to emphasize need of safety on streets and highways. Order from Metropolitan Life Insurance Company, 1 Madison Avenue, New York.

READING 'RITIN AND 'RITHMETIC (1 reel) 16mm 35mm silent. Simple traffic rules for elementary school children. Order from American Museum of Natural History, 77th and Central Park, New York City, N. Y.

SAFE SEEING SAFE DRIVING (Slide film) Portrays horrors of accidents and prescribes scientific lighting as a major remedy. Order from General Electric Company, Nela Park, Cleveland, Ohio.

SAFETY IN NUMBERS (Slide film) Community safety programs for organization. Order from Metropolitan Life Insurance Company, New York.

SCHOOL PATROL (1 reel) 35mm sound (Contact local Chevrolet dealer for details) Shows school boy patrols duty and points out nine safety rules for pedestrians. Order from Chevrolet Motors Car Company, Detroit, Michigan.

SENTINELS OF SAFETY (1 reel) 16mm 35mm sound. Home safety. Glorifies housewife as person who must keep family safety minded. Order from Aetna Life Insurance Company, Hartford, Connecticut.

STREET AND HIGHWAY SAFETY (1 reel) 16mm silent. Suitable for elementary schools. Order from National Conservation Bureau, 60 John Street, New York.

STREET SAFETY FOR ADVANCED GRADES AND ADULTS 16mm silent. Safety principles governing activities of older children and adults. Order from National Safety Council, 20 North Wacker Drive, Chicago, Illinois.

THE TRUCK DRIVER (1 reel) 16mm sound. Deals with fleet safety problems on the streets and highways. Order from National Safety Council, 20 North Wacker Drive, Chicago, Ill.

THE VERDICT (2 reels) 16mm 35mm silent. A gripping story depicting the speeder, jay walker, lady driver, truckman and man who has had "only a couple of drinks." Dramatic climax. Order from National Safety Council, 20 North Wacker Avenue, Chicago, Illinois.

WE DRIVERS (1 reel) 16mm 35mm sound. Excellent picture. Shows safe, unsafe driving practices. Order from Independent Relations Department, General Motors Corporation, Detroit, Michigan.

WHY BE CARELESS (1 reel) 16mm. Features highway safety. Slapstick comedy. Order from Travelers Insurance Company, Hartford, Connecticut.

CHANCE TO LOSE (1 reel) 16mm sound and silent. Excellent traffic safety picture. For general public. Order from Plymouth Motor Company, Detroit, Michigan.

BICYCLING WITH COMPLETE SAFETY (1 reel) 16mm silent. Scenes taken with the cooperation of students in the Kansas City Public Schools. Order from The Calvin Company, 26th & Jefferson Street, Kansas City, Missouri.

EVERY SWIMMER A LIFE SAVER (1 reel) 16mm 35mm silent. Shows methods of rescue and resuscitation, including first aid methods as practiced by boy scouts. Order from Society for Visual Education, 327 South LaSalle Street, Chicago, Illinois.

WORKING FOR DEAR LIFE (1 reel) 16mm 35mm silent. Stresses importance of having thorough physical examination made annually. Order from Metropolitan Life Insurance Company, New York. Dr. D. B. Armstrong.

THE BAD MASTER (1 reel) 16mm 35mm silent and sound. Excel-

lent educational fire prevention data. Order from Aetna Casualty & Surety Company, Hartford, Connecticut.

STOP SILICOSIS (1 reel) 16mm 35mm sound. Illustrates the danger of silicosis and dust hazards in industrial plants. Gives detailed but comprehensive information on how to eliminate these hazards. Order from National Safety Council, 20 North Wacker Drive, Chicago, Illinois.

THE EYES HAVE IT (Length: 20 minutes) Sound slide film. A dramatic appeal for the use of goggles in industry. The value and importance of goggles is demonstrated by case histories of eye accidents and how they could have been prevented. Augmented by other characters and sound effects. Order from National Society For the Prevention of Blindness, Inc., 50th Street, New York.

RULES FOR TOOLS (Length: 20 minutes) Sound slide film. An interesting story of the safe use of small hand tools, built around the four rules, "select the right tool," "be sure it's in good condition," "use it properly," "put it away safely." The tools, themselves, play the leading roles and carry on a conversation with "Ol' Man Accident." Each tool explains how the safety rules should be applied to him. Order from National Safety Council, Inc., 20 North Wacker Driver, Chicago, Illinois.

FORMATIONS (9 minutes) 35mm sound. There are four cars the driver must keep in mind at all times: the car ahead, the car behind, the car around the corner, and the car he is driving. If he drives safely in relation to these cars, he will be a safe driver. Order from Chevrolet Motor Company, Detroit, Michigan.

THE OTHER FELLOW (Length: 9 minutes) 35mm sound. A reckless driver sees himself driving many other cars on the road. He learns from these experiences that to every other driver he is the "other fellow." The safety lesson is taught through comedy. Order from Chevrolet Motor Company, Detroit, Mich.

KNIGHTS ON THE HIGHWAY (Length: 9.5 minutes) 35mm sound. Night driving is getting to be more a pleasure every year, because progress is being made on the understanding of the principles which make night driving different. The picture illustrates six important safety rules of night driving. Order from Chevrolet Motor Company, Detroit, Michigan.

SHEET METAL

THE EVOLUTION OF AN INGOT (2 reels) 16mm sound. Manufacture of galvanized sheet metal from ingot to finished product.

Order from Midcontinent Picture Corp., 4327 Duncan Ave., New York.

WELDING

WELDING, ARC IN BUILDING ERECTION (2 reels) 16mm 35mm silent. Uses of electricity in arc welding in construction of large buildings. Order from General Electric Co., Visual Instruction Section, Schenectady, N. Y.

AUTOMATIC ARC WELDING IN INDUSTRY (2 reels) 16mm 35mm silent. Application in the steel, automobile and electrical industries. Order from General Electric Co., Visual Instruction Section, Schenectady, N. Y.

TIES OF STEEL (1 reel) 16mm 35mm silent. Converting scrapped steel rails into railroad ties by automatic arc welding machine. Order from General Electric Co., Visual Section, Schenectady, N. Y.

MODERN METAL WORKING WITH THE OXYACETYLENE FLAME (2 reels) 16mm 35mm silent. Order from U. S. Bureau of Mines Experiment Station, 4800 Forbes St., Pittsburg, Pa.

OXY-ACETYLENE WELDING AND CUTTING FOR REPAIR, MAINTENANCE AND PRODUCTION (1 reel) 16mm 35mm sound. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Okla.

OXWELDED INDUSTRIAL PIPING (1 reel) 16mm 35mm silent. Shows various piping systems, air conditioning and refrigeration systems. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Okla.

OXWELDING AND CUTTING THE MODERN METHOD OF JOINING AND SEVERING METALS (1 reel) 16mm 35mm silent. Internal construction and operating principle. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Okla.

OXWELDING FOR PROFIT (2 reels) 16mm 35mm silent. Versatility of processes in home, plant, farm application in many fields. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Oklahoma.

OXWELDING IN PRODUCTION (2 reels) 16mm 35mm silent. Production of automobile body units, welding of pressure vessels and transformer tops. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Oklahoma.

AUTOMATIC MACHINE CUTTING WITH CM-12 SHAPE CUTTING MACHINE A-4 (1 reel) 16mm silent. Order from Linde Air Products Co.,

614 National Bank Building, Tulsa, Oklahoma.

AUTOMATIC MACHINE CUTTING WITH CM-15 SHAPE CUTTING MACHINE A-5 (1 reel) 16mm silent. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Oklahoma.

MULTIFLAME LINDE WELDING FOR PIPELINE CONSTRUCTION (1 reel) 16mm silent. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Okla.

WALLS WITHOUT WELDS (3 reels) Story of stainless steel tubes. 16mm 35mm silent. Order from U. S. Steel Corp., Industrial Relations Department, 71 Broadway, New York.

STEEL--MANUFACTURE OF PIPE (1 reel) 35mm silent. Manufacture of pipe; rolling and cutting of blooms; rolling, trimming, beveling and bending skelp into rough tubes; lap welding; and inspection and testing products. Order from Visual Instruction Bureau, The University of Texas, Austin, Texas.

PIPE AND TUBE MANUFACTURING (Reel 7) 35mm silent. Illustrates how seamless and butt welded pipe is made. One sees a solid round billet of steel leave the furnace, enter the piercing mill and emerge on the other side as a long tube, passing on through the rolling reel, sizing, and testing operations. Order from Film Division, American Museum of Natural History, 77th St., and Central Park West, New York.

HARDFACING (1 reel) 16mm silent. Shows how metals are surface hardened by using the flame of torch. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Oklahoma.

UNIONMELT WELDING 16mm silent. An electric welding process. U-1. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Oklahoma.

UNIONMELT WELDING IN INDUSTRY Part 1 U-2 16mm silent
UNIONMELT WELDING IN INDUSTRY Part 2 Y-3 16mm silent
Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Oklahoma.

FLAME-HARDENING K-1 16mm silent. Shows how the different steel metals and tools are hardened by use of the flame. The picture shows also the high temperatures to which the metals are heated. Order from Linde Air Products Co., 614 National Bank Building, Tulsa, Oklahoma.

WELDING, SOLDERING AND BRAZING (7 slidefilms) This series of educational slidefilms covers these subjects: (1) The welder--a brief history of welding. (2) Gas welding equipment. (3) Gas welding. (4) Arc welding equipment. (5) Arc welding.

(6) Elementary soldering. (7) Brazing. Order from The Jam Handy Organization, 2821 E. Grand Blvd., Detroit, Mich.

WOODWORKING

FURNITURE MAKING (1 reel) 16mm silent. Contrasts importance of period styles of past with styles of today; master craftsmen at work; modern methods in machine production. Order from Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.

HOOPING UP (1 reel) 16mm silent. Shows manufacture of tight barrels for liquids from felling of the tree to the filling of the barrel. Order from Associated Cooperage Industries of America, Inc., 411 Oliver St., St. Louis, Mo.

IN THE WOOD (1 reel) 16mm silent. Shows the manufacture of barrels. Order from Associated Cooperage Industries of America, Inc., Oliver St., St. Louis, Mo.

MODERN INDUSTRIAL METHODS (4 reels) 16mm 35mm silent. Lumbering; cabinet making; mass production of interchangeable parts; testing sewing machines. Order from Singer Sewing Machine Co., Singer Bldg., New York.

ACTION IN THE WOODS (2 reels) 16mm 35mm silent. Producing timber in the woods for commercial purposes. Order from Allis Chalmers Mfg. Co., Milwaukee, Wisconsin.

CEDAR CAMPS IN THE CLOUDS (1 reel) 35mm silent. Scenic survey of pole-making industry. Order from Western Electric Co., 120 W. 41st St. New York.

CONQUEST OF THE FOREST (1 reel) 35mm 16mm silent. Felling trees and manufacturing lumber in the Northwest. Order from General Electric Co., Schenectady, N. Y.

FELLING FOREST GIANTS (1 reel) 16mm silent. Lumbering in Carolinas and the Northwest; various methods of handling. Order from Films of Commerce Co., 35 W. 44th St., New York.

LAND OF THE WHITE CEDAR (1 reel) 35mm silent. Making poles in nature's snowy workshop. Order from Western Electric Co., 120 W. 41st St., New York.

LUMBERING IN THE PACIFIC NORTHWEST (2 reels) 16mm silent. Story of lumber in Washington and Oregon. Order from Audleur Films Co., Ozark Building, Kansas City, Mo.

LUMBERING IN BRITISH COLUMBIA (1 reel) 16mm 35mm silent. Shows lumbering operations and shipping. Order from American Museum of Natural History, 77th St., and Central Park West, New York.

LUMBERING IN THE PACIFIC NORTHWEST (2 reels) 16mm silent. Laying railroads; dragging logs to it by steel cables; sawing logs into lumber; drying, planing and subsequent sorting and shipping. Order from Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.

OIL, THE WOOD PRESERVER (1 reel) 35mm silent. Cargo of creosote oil from time it is pumped from tanker until it is forced into pine poles. Order from Western Electric Co., 120 W. 41st St., New York.

OUT OF THE DEEP WOODS OF DIXIE (1 reel) 35mm silent. Preparing yellow pine tree cross arms. Order from National Council of Y. M. C. A. Motion Picture Bureau, 347 Madison Ave., New York.

PILLARS OF THE SKY (1 reel) 35mm silent. Gathering and milling the raw products for cross arms and conduits. Order from Western Electric Co., 120 W. 41st St., New York.

POLE PUSHERS OF PUGET SOUND (1 reel) 35mm silent. Views of northwestern cedar industry showing many amusing and thrilling incidents. Order from Western Electric Co., 120 W. 41st Street, New York.

FOREST TREASURES (1 reel) 16mm sound. Cutting and sawing logs of mahogany, walnut, oak and other kinds of trees used in veneer making. Complete operations from log to finished piece of furniture. 20 minutes to show. Order from The Veneer Association, 616 South Michigan Ave., Chicago, Illinois.

TEAK LOGGING WITH ELEPHANTS ($\frac{1}{2}$ reel) 16mm silent. In upper Siam. Order from Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.

TIMBER-R-R (1 reel) 16mm 35mm silent. Timber growing and logging practices in the California pine region. Order from U. S. Department of Agriculture, Division of Motion Pictures, Washington, D. C.

THE TRAIL OF THE LONG LEAFED PINE (1 reel) 35mm silent. Yellow pine forests of far south; how trees are utilized for telephone timber. Order from Western Electric Co., 120 W. 41st St., New York.

TWO GENERATIONS (3 reels) 16mm silent. Handling and utilization of wood lands; prepared especially for use in hardwood sections of the South. Order from U. S. Dept. of Agriculture, Division of Motion Pictures, Washington, D. C.

WILD WOOD WORKERS (1 reel) 35mm silent. Preparing yellow pine trees for use; activities of sawyers, axmen, teamsters, and boatmen. Order from Western Electric Co., 120 W. 41st St., New York.

✓ THE MANUFACTURE OF DOUGLAS FIR PLYWOOD (1 reel) 16mm silent. Steps in the manufacture of Douglas fir plywood from forest through the mill in detail, with brief showing of uses. Order from Y. M. C. A. Motion Picture Bureau, 347 Madison Ave., New York.

TREES AND MEN (4 reels) 16mm sound. Modern logging and sawmill operations in the Northwest, emphasizing timber as a crop and showing methods used to conserve this resource and promote continuous production. Order from Y. M. C. A. Motion Picture Bureau, 347 Madison Ave., New York.

HARVESTING THE WESTERN PINES (1 reel) 16mm sound. Order from the Western Pine Association, Yeon Building, Portland, Oregon.

FABRICATING THE WESTERN PINES (1 reel) 16mm sound. Graphic portrayal of the fabrication and assembly of sash doors, frames and screens as made from the Western Pines. Order from Western Pine Association, Yeon Building, Portland, Oregon.

CALIFORNIA GIANTS (1 reel) 16mm sound. Order from California Redwood Distributors Ltd., 35 Wacker Drive, Chicago, Ill.

✓ BUILDING A HOME WITH WESTERN PINES 16mm sound. Step by step portrayal of the actual building of the Western Pine Home at the Golden Gate Exposition in San Francisco. Order from The Western Pine Ass'n., Yeon Building, Portland, Oregon.

BIG TIMBER (1 reel) 16mm sound. A film depicting lumbering operations on Vancouver Island, B. C., from woods to the mill. This film contains some spectacular scenes of felling giant fir trees, etc. Order from Y. M. C. A. Motion Picture Bureau, New York.

FOUR THOUSAND GIFTS OF THE FOREST (2 reels) 16mm sound. This film is a woodland phantasy of color. It displays, in the guise of a pageant, the wide variety of forest products which contribute to the present-day standard of living. Order from Y. M. C. A. Motion Picture Bureau, New York.

THE STORY OF CANADIAN PINE (3 reels) 16mm sound. In this film the entire story of Canadian white pine from forest to the export of the finished product is covered in detail. Order from Y. M. C. A. Motion Picture Bureau, New York.

It is the purpose of the arrangement of films under their different subjects to aid the teacher of the different classes in industrial arts to find the film that is needed for his class more quickly and easily. The teacher of each class in shop or drawing should have a copy of these film lists that will contribute to his particular class. The film lists may also be used by the general shops teacher.

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CHAPTER V

SUMMATION AND RECOMMENDATIONS

A thesis most commonly eventuates in a series of recommendations first resulting from the study itself. This thesis has two definite results, (1) the lists of films and distributors of industrial arts films in Chapter IV and (2) a series of recommendations constituting a part of this chapter. Before the recommendations are formulated and stated, a brief resume of the work of this thesis will be presented.

PART A

THE THESIS REVIEWED

The writer first presents an overview of the problem. It is self evident that no complete and up-to-date list of films for use in industrial arts classes has been readily available in one publication. A need for a complete list of motion pictures usable in industrial arts classes has existed for some time. This study is made so that an adequate listing of films and film sources is available as a guide for industrial arts teachers in supplying films suitable for use in their classes. A number of previously written theses and works having to do with visual-aids in teaching are reviewed.

Education, its objectives, its social and economic goals and its definitions are discussed. Industrial arts and its contributions to education, several definitions of

industrial arts and its objectives are also given.

The history of photography and motion pictures is given with a discussion of the current situation. The advantages of the filmstrip as an instructional device are enumerated. The motion picture as an educational aid is credited with being one of the most usable modern educational devices. It has unlimited value in its use in education.

One list in this thesis gives the names of all known companies, firms and agencies that are distributors of films usable in industrial education classes. Another list indicates all visual-aids material relating to industrial arts classes that each particular agency has available for distribution.

A number of selected films have been validated and rated, which enables the user to select quickly the appropriate film for his particular needs. The writer describes the process of validation and shows the rating form that was used in the validation.

The names of all the industrial arts films that are suitable for shop classes are arranged according to the classes in which they are usable. There are 118 addresses of film exchanges from which a person can get industrial education films. There are fifteen industrial education course titles that have the films grouped under them according to the shop class in which they may be used. Two hundred seventy-three titles of films usable in industrial education classes are classified in the fifteen groups. The writer

advocates the showing of films on a three-year cycle plan.

It is proposed to establish a film library in each state so that films that are suitable for industrial arts classes are more readily available. The purchase of films by the school is also advocated, with a plan of rotating the films among schools having projectors, so that the pupils may have a greater variety of films for use.

The plan that the writer recommends is that the State Department of Education provide a number of projectors for use in schools not equipped for the showing of pictures and to furnish operators who can travel throughout the state showing films that might be of benefit to the pupils in different schools.

A course should be offered in all teachers' colleges of all states to acquaint the teachers with the values of visual aid materials. This course should include instruction in the operation of the projector.

PART B

SPECIFIC RECOMMENDATIONS

As an outcome of this study, the following specific recommendations are made.

A Three-Year Cycle in Showing Films. The grouping of the films as to the subject matter and skills they portray according to the difficulty of comprehension could be successfully worked out. It could be done very well by a group of teachers of industrial arts. The validation of

the pictures used in this thesis is proof that this could be accomplished. When the films have been grouped according to the difficulty of comprehension, there should be set up a program for the showing of the films. Those films that are of a general nature should be shown to all the school, including both boys and girls. A group of safety films should be shown to all the students. A group of films such as the following will be appropriate for the whole student body.

FROM ONE ANVIL	A TRIP THROUGH A MODERN
CERAMICS	STEEL AND WIRE MILL
TABLEWARE	CONSTRUCTION THAT ENDURES
THE POTTERY MAKER	PRINCIPLES OF PLANNING
BIG DEEDS	AND THE CONSTRUCTION
WHITE COAL	OF LOW PRICED HOMES
FROM PIGS TO PAINT	THE HOUSE THAT ANNE BUILT
MANUFACTURED ABRASIVES	PORCELAIN INDUSTRY IN
FURNITURE MAKING	CZECH-SLOVAKIA
RAW MATERIALS	THE ELECTRICAL TRANS-
THE MOULDER	MISSION OF SPEECH
TIES OF STEEL	THE INSIDE OF YOUR
WE DRIVERS	TELEPHONE
TWELVE POINTS OF SAFETY	STORY OF THE STORAGE
REMEMBER JIMMY	BATTERY
HEEDLESS HURRY	RUBBER INSULATED CABLES
SCHOOL PATROL	MODERN INDUSTRIAL METHODS
TWO GENERATIONS	ACTION IN THE WOODS
HOUSE OF POWER	BICYCLING WITH COMPLETE
MAKING IT TOUGH	SAFETY
WALLS WITHOUT WELDS	EVERY SWIMMER A LIFE SAVER
WORKING FOR DEAR LIFE	FOUR THOUSANDS GIFTS OF
STORY OF LEAD SMELTING	THE FOREST
CONQUESTS OF THE FORESTS	TEAK LOGGING WITH ELEPHANTS
PIPE AND TUBE MANUFACTURE	OIL, THE WOOD PRESERVER

These films are a few of the available films giving general knowledge over a number of items.

Junior Highschool. Since the purpose of the junior highschool is chiefly social, civic and occupational orientation, the

films shown to junior highschool pupils should be representative of manufacturing processes, occupational types and general education values. The films that are used should be taken from as many fields and subjects in industrial arts as it is possible to secure. Included in all motion pictures that are shown to any group should be some films on safety. Examples of films suitable for junior highschool boys are:

NICKEL	BICYCLING WITH COMPLETE SAFETY
THE METEOR	FORD AND A CENTURY OF PROGRESS
SAFETY GLASS	AUTOMOBILE LUBRICATION
WHITE COAL	FELLING OF FOREST GIANTS
THE CONDUCTOR	THE STORY OF THE TIRE
LEAD	MANUFACTURE OF ACONDA SHEET COPPER
HOOPING UP	FABRICATING THE WESTERN PINES
ELECTRICAL HEART	THE REFINING OF STEEL
RESIN FOR THE WORLD	WIZARDRY OF WIRELESS
THE SILVER SMITH	BESSEMER AND OPEN HEARTH STEEL
IRON ORE TO PIG IRON	WHERE MILEAGE BEGINS
THE MEDAL MAKER	PILLARS OF THE SKY
THE AUTOMOBILE	STORY OF THE CANADIAN PINE
THOMAS A. EDISON	THIRTY YEARS OF LOGGING
MEN AND MOTORS	
WHY BE CARELESS	
METAL OF THE AGES	
WILD WOOD WORKERS	
INDUSTRIOUS DIAMONDS	
ALUMINUM: MINE TO METAL	

The moving pictures given will be of a general nature that are not too hard to understand. The pictures will serve the purposes of acquainting the pupils with many vocations.

Second Year Highschool. This group of boys is ready for more advanced pictures, showing more technical skill in the performance of operations. The following pictures will be more suited to the second year highschool group of boys.

CHANCE TO LOSE
 STOP SILICOSIS
 THE VERDICT
 HIGHWAY MANIA
 TRANSPORTATION
 BETTER BRAKES
 HERITAGE
 BIG TIMBER
 WE DRIVERS
 MAGIC CIRCLE
 COPPER REFINING
 FURNITURE MAKING
 THE POTTERY MAKER
 THE POTTER'S WHEEL
 WILD WOOD WORKERS
 THE BLACKSMITH'S GIFT

READING 'RITIN AND
 'RITHMETIC
 MAKING A V-TYPE ENGINE
 AGE OF RIVETED STEEL
 RAILS, WHEELS AND AXLES
 ACTION IN THE WOODS
 CONQUEST OF THE FOREST
 SENTINELS OF SAFETY
 STREET AND HIGHWAY SAFETY
 ONCE UPON A TIME
 HIT-AND-RUN DRIVER
 ENDLESS CHANNELS
 FROM MINE TO CONSUMER
 BARS AND STRUCTURAL SHAPES
 THE STORY OF THE SERPENT'S
 TOOTH

ALLOYS USED IN AUTOMOBILE CHASSIS
 MAKING AN ALL STEEL AUTOMOBILE BODY
 THE STORY OF THE SERPENT'S TOOTH
 THE MANUFACTURE OF BEAVER STEEL WOOL

The group of motion pictures which is given here will enable the teacher of industrial arts classes to quickly select the films best suited for the second-year highschool boys. The pictures are a little more technical than those in the preceding group.

Third and Fourth Year Highschool. This most advanced group of boys is ready for the pictures of a more technical nature as well as those showing many occupational skills and trades. The group of pictures selected by the writer will enable the boys of the junior and senior year of highschool to get more advanced methods and ideas on the manufacturing of various articles and the skilled tradesmens.

ELECTRIC SHIP
 WHITE COAL
 UNIONMELT WELDING
 TABLEWARE
 HARDFACING

THE CHEMICAL EFFECTS OF
 ELECTRICITY
 SURFACE CHANGES AT HIGH
 TEMPERATURE
 THE TELEPHONE REPEATER

SANDPAPER	AUTOMATIC ARC WELDING IN INDUSTRY
SAVING SECONDS	AUTOMATIC MACHINE CUTTING WITH CM-12
HIGHWAY MANIA	AUTOMATIC MACHINE CUTTING WITH CM-15
THE EYES HAVE IT	MODERN INDUSTRIAL METHODS
LOOK TO LOCKHEED	SHAPE CUTTING MACHINE A-4
SHOP SAFETY	SHAPE CUTTING MACHINE A-5
GOOFS	LUMBERING IN BRITISH COLUMBIA
RULES FOR TOOLS	THE ROMANCE OF PAINT AND VARNISH
BIG DEEDS	INDIAN POTTERY MAKING
MAKING IT TOUGH	AMERICAN RED CROSS TO THE RESCUE
THE NEW FRONTIERS	DEATH TAKES NO HOLIDAY
INDUCED CURRENTS	FOUR-STROKE CYCLE GAS ENGINE
A B C OF POTTERY	GIRL POTTERY MAKERS
TRANSFORMER THEORY	TESTING THE DRINKING DRIVER
FLAME-HARDENING K-1	STORY OF THE SPARK PLUG
OXWELDING FOR PROFIT	STREET SAFETY FOR ADVANCED GRADES AND ADULTS
GAMBLING WITH DEATH	
THE HIT THAT SCORED	
SERVICING THE CARBUERATOR	
MANUFACTURED ABRASIVES	
THE OLDEST OF THE ARTS	
ARTIFICIAL RESPIRATION	
METALS OF MOTOR CARS	

The writer had in mind, when selecting the pictures for the third and fourth year highschool, the guidance and informational skills that would enable the pupil when finishing school to be better equipped to take up some more advanced work in some vocational occupation.

The Establishment of An Industrial Film Library. The establishment of an industrial arts and trades school film library would be a great step towards the realization of the more advanced ideas and methods of teaching industrial subjects.

With the advent of the industrial era, the establishment of such a library would be the sensible thing to do. The state educational department should do this as a means of having and supplying their own industrial teachers with suitable films and visual-aids that would better equip the

student with ideas and methods that are adaptable to modern industry.

The location of the film library should be at the leading engineering school or college in each state. The reason is that they have coming to their schools, the industrial arts teachers who are to use the films, and while attending college they can plan and discuss certain courses that may be aided in numerous ways by using industrial arts films.

The Purchase of Filmstrips and Films. School administrators and school board members should make some provision in their school budget for the purchase of visual-aid materials. This may take the form of moving picture projectors, filmstrips, moving picture films, or slides.

For those schools that already have projectors, some films should be bought each year, for there are new films coming out each year and by this method the pictures that are used will be up-to-date in the material they bring before the classes. By purchasing one or two films each year the school will soon have its own film library

One plan whereby the schools would have access to a larger number of films would be for the schools purchasing agents to get together and select films with the help and suggestions of their industrial arts teachers. Each school would know which film the other school had and in this way there would be no duplication of films. When they received their films they could show them and pass them on to the school who has other films that they would exchange for the film.

Films to be Shown to All Students. The films purchased should cover a wide field in teaching. All teachers should have the right to select and buy those films best suited to the particular subject that they teach.

The films of the lower grades would be for the smaller pupils having subject matter that could be understood by them. Other films that have a common interest for all pupils in school should also be purchased.

Films for Special Courses. In many film catalogues the films are listed under many subjects. The teachers of certain courses may find materials listed that will apply directly to their subject field. In the subject of industrial arts there were no such groupings, and the writer has grouped those films that are available under fifteen headings. The industrial arts teachers will have to select the pictures that are best suited for their individual classes and let their superiors know that it is just as important to buy equipment in visual-aids for shop classes as it is to buy science and biological equipment.

There are so many new ideas and skills that the moving picture will bring before the students, the industrial arts teacher cannot afford to pass up the opportunity to use them in his teaching.

The Central Storage and Operation of Equipment. There should be some provisions made in the location of a central storage film library, where the films could be easily reached by the

users. The checking of the films in and out of the film library is an important item. The demand for certain types of pictures is sometimes great, and there has to be some means of working out a schedule for the showing of the pictures at different schools. The request for pictures should be made at least two weeks before time for the showing. This will enable the distributors to let the user know in time if the picture is not available at that time and this will enable the user to substitute some other picture if the film requested is out, or try some other source to get the picture.

The best results will be obtained from the films if the operator of the projector knows the technique of operation. He should be able to make adjustments of equipment without delay when necessary. The best results will be obtained from good equipment, including the projector, the lens, lighting, focusing, and sound equipment. The screen used has a lot to do with the quality of the picture shown. To get the best results, then, in the use of motion pictures and slidefilms, a competent operator, a good projector and a good sound system are required.

A College Course in Moving Picture Operation. A college course in moving picture operation should be given to enable the teachers who might be operators of projectors in their class work to do a better job of teaching. The teachers are getting other training to better equip themselves for their work, so it would be fitting to offer a course in the operation of projectors. In

many of the schools the reason given why they do not have visual aids such as motion pictures, is the lack of competent operators.

The proper place in the curriculum for this course would be in industrial education. It is a vocation in every sense of the word and should be placed under vocational work. A course could be offered to train operators of movie cameras as well as projectors. In larger schools, the developing of films for use in projection could be done by the one who operates the projector. We have courses under education that enables the teacher to develop film and print pictures. There is a future in either vocation as a camera man or an operator of moving picture projectors. To the writer's knowledge there is no such course offered in our colleges in this state.

With a better acquaintance of the uses and the operation of visual aids in industrial education more interest and better results will be the reward of our efforts as industrial arts teachers.

The Place of the Industrial Arts Teacher in the Visual Education Program. The industrial arts teacher's place in a visual education program in the school can be made one of importance. The knowledge of photography including the correct use of the motion picture camera, the developing of films, the making of filmstrips, film slides, and prints, the enlarging of pictures and the knowledge of how to use the motion picture projector, should be required information for all industrial arts teachers.

With this knowledge, the industrial arts teacher can make many usable articles for use in the visual-aid program of the school. The writer has made a contact printer, an enlarger both fixed and movable, a film drier, a print drier, and various instruments to be used with a microscope to project microscopic images on a screen. All of the articles mentioned were made in a school shop. The writer took two courses in photography which led to the above projects.

Many times a teacher in any field has to use all the ingenuity he possesses to keep developing new methods and ideas in teaching. The industrial arts teacher has an unlimited opportunity to expand and try out methods of teaching. His opportunity is great in the field of visual education. The teacher can decide the kind of program he wants. The program can be one that keeps the pupils interested and anxious to learn or one in which they came to pass the class period.

Recommendations for Further Study. The writer, in completing this study, has had to stop because the problem is one that is continuous. Each new method of doing some manipulation in industry is going to be filmed and new films will be in demand with sources available that many of the industrial arts teachers will want to know about. New and better ways of validating films will be one of the recurring problems to be solved. There are many processes and skills in the building of airplanes and its related work that will be filmed. All of this information and where to obtain films related to that particular

skill will present problems that will need someone to solve, or to study.

It is the hope that some one in industrial arts education will continue the study as to the securing of more and better ways of using the visual aids that will be in demand.

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