

A STUDY OF VISUAL AIDS AND THEIR USE  
IN TEACHING INDUSTRIAL EDUCATION IN  
THE SECONDARY SCHOOL

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A STUDY OF VISUAL AIDS AND THEIR USE IN  
TEACHING INDUSTRIAL EDUCATION  
IN THE SECONDARY SCHOOL

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## P R E F A C E

Much progress is still to be made in the field of visual education. Though time and experience will bring visual education out of the experimental stage, commercial producers of projected visual materials, at present, are unable to fully meet the requirements of educators.

Projected teaching aids are of recent development and are consequently expensive and relatively difficult to use. Special methods for their use in the classroom must be developed. The average classroom teacher is unfamiliar with these methods, and is therefore prone to neglect their use. However, the use of projected visual aids has increased greatly during the last few years, and promises to continue on the increase in the years to come. In fact, it is safe to say that educators have scarcely more than introduced the use of projected visual aids. Whether or not mechanized visual aids will wholly or in part replace the use of teachers in the classroom, the fact seems inevitable that much use will be made of such aids in the teaching process in the years to come.

Unfortunately, in introducing these devices, school administrators have been concerned chiefly with matters of economy---less often with their use or value. Visual education departments such as we have in our large school systems should aid in giving instruction under real classroom situations in the effective use of projected visual aids.

There is evidence that the production of subject material for projection in the classroom has been placed too much in the hands of commercial producers. Through a more general participation of teachers in using and planning them we may expect that in time their influence may be felt toward getting the type and quality of material that the classroom needs.

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PART I  
INTRODUCTION

## CHAPTER I

## STATEMENT OF PURPOSE AND SCOPE OF PROBLEM

Purpose of the Study. The main purpose in making this study is to provide a summary of the value and limitations of visual aids in the secondary school, and to compile lists and sources of available materials.

It is true that there are few publications to which the beginner in the use of visual aids could go. The experience in this field is limited and consequently the publications are limited. The intention here is mainly an endeavor to supplement material already available by bringing together that which has a particular bearing on the subject of industrial education.

Definition of Subject. Visual education is that type of education in which visual experiences play the principle roll. Visual education is education through the seeing experience. Visual aids indicate teaching procedure, the effect on the learning process being the resultant. The term visual education broadly implies the process of education as achieved through the use of visual aids. Visual aids refer to the material and methods available for the purpose of visual education. The author shall here concern himself with visual aids.

The use of such terms as "visual aids," "visual instruction," and "visual education," while they have served to classify a group of teaching aids into a systematic scheme of instructional materials, has been unfortunate in that they have tended to set these materials apart from the more commonly used classroom teaching tools. (21 page 258)

A visual aid is any picture, model, object, or device which provides concrete visual experience to the learner for the purpose of introducing, building up, enriching, or clarifying abstract concepts; developing desirable attitudes; and stimulating further activity on the part of the learner. (7 page 259)



Of the senses, the eye is thought to be of most importance in the learning process. Dent, (7 page 2) says that for this reason the term "visual -sensory" aids becomes a more nearly true statement of the situation than "visual education" or "visual instruction." The development of sound pictures, sound filmstrips, radio, sound recording, reproduction and distribution equipment, the majority of which are being used extensively among schools, is bringing into use a comparatively new term "audio-visual." Visual aids, sound aids and almost the entire field of illustrative materials is encompassed by this term.

Visual aids, do not in themselves, serve the whole task of education. Presented to classes that have not received earlier preparations, or without explanation during their use, much of the potential value is lost. On the other hand, these same materials can be used, according to Dent, (7 page 4) to teach increased amounts in a given time; teach more thoroughly, and aid in the retention of knowledge from a small percentage to 40% or more, if properly trained teachers are making the presentation.

Visual Aids in the School Program. Visualization used in a broad sense is the easiest, most rapid and most economical way of acquiring experience. We remember that which has been seen clearly, or that which has been visualized clearly on the basis of past experience. The growing use of illustrations in books and magazines bears evidence that publishers are becoming aware of the value of illustrations.

Industry has found the motion picture, photograph and chart to be valuable in the training of employees and in the advertising of products. The motion picture is a more potentially potent force in the education of the public than either the radio or the press.

Every bill board shows how modern advertising recognizes the psychology of the "seeing" experience in the selling process. Visual aid service has come as a modern teaching device to aid the teacher and to facilitate pupil learning. Never for a moment must it be thought that the film can be a substitute for the teacher. The personality of the teacher is something that cannot be substituted. Teachers must continue to teach. But the skillful teacher utilizes every means at hand to make instruction function by impressing the facts clearly and vividly.

There is no magic about visual aids. Merely having them will not produce results. Like books and other equipment, they should be selected with care to fit the needs, and effectively utilized to bring about desired results. If they do not supplement, enlarge, vitalize, illustrate, or clarify the instruction, they have no place in the school program.

One of the principal reasons for lack of appreciation of the many advantages of visual aids, properly used, is that the majority of teachers and school executives know little or nothing about the different visual aid materials and their uses. It is true that most of our teachers have come out of training institutions without having taken courses in visual aids. It is true that many of our leading colleges and schools of education are offering one or more courses in visual instruction, but a very small percentage of the students benefit from these courses. One state, Pennsylvania, requires at least one such course for certification.

The future of visual instruction seems unlimited. The subject is being discussed among school people in every civilized nation. The excursion, the exhibit, the slide, the opaque projector and the motion picture are becoming more and more important in the field of education.

The primary purpose of visual education is to aid the child in understanding better the material presented in the course of study. Far too many teachers,

however, have used them as aids to the teacher rather than as aids to the pupil. Pictures often must serve as a substitute for an unprepared teacher. Films have often been used that had little or no connection with the unit or topic studied and served as entertainment rather than as instruction.

Schools, like other human institutions, are undergoing changes. Visual aids can serve definitely in keeping the pupil alive to such changes, and can serve immeasurably in that integrating process that is talked of so much at present.

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PART II

VISUAL EDUCATION AND THE SECONDARY SCHOOL

## CHAPTER II

## AIMS AND PURPOSES OF THE SECONDARY SCHOOL

At the turn of the century it was found that many countries became concerned about their secondary schools. In general there has been a tendency toward modernizing the curriculum. No other country has done so much in offering free higher education to all youth as the United States; no other has such a program theoretically appropriate to the needs of each individual.

Today we find the aims of secondary schools far different than those of the original Latin school. These first schools emphasized the aim of religious training; patterned as they were after the English type of secondary education they were unsuited to colonial needs. Nevertheless, they kept alive the tradition of education and laid foundations for a structure which was to extend far beyond the dreams they or their ancestors thought possible.

The early aims of education could be enumerated from the time of Greek supremacy--Plato, Aristotle, Rosseau, down through Froebel, Spencer, and Tinney--The views and philosophies of leading thinkers of the past have guided educational practices. These, if enumerated, would be aims of general education, but here we plan to deal with the specific aims of secondary education.

"Alexander Inglis has been called the father of secondary education in America. He was the first to analyze thoroughly our system of secondary education and to set up its aims and 'function'" His three fundamental aims were the (1) Social-Civic, (2) Economic-Vocation, and (3) the Individualist-Avocational Aim. His idea was that we attained our aims through six different functions: the adaptive, integrating, differentiating, propaedeutic, selective and directive.

Umstadt quotes Samuel Chester Parker as saying, (29 page 25):

The three important aims of secondary education are social efficiency, (which, of course, includes economic, domestic and civil), good will, and harmless enjoyment. These three are ultimate aims, with "proximate purposes"--health, information, habits, ideals, interest, acting as the stepping-stones to the three named ultimate objectives.

He goes on to say that:

The most important proximate aim of instruction is to determine and fix in the character of the pupil the lines of interest which will occupy him in later life.

The seven cardinal principles of secondary education as set forth by the Commission on Reorganization of Secondary Education (4 pages 5-10), are the most widely accepted. These objectives are: Health, command of fundamental processes, worthy home membership, vocation, civic education, worthy use of leisure, and ethical character. These seven principles are self-explanatory and will not be discussed at length.

From a study of Douglass, Koos and Briggs, we find parallels and repetitions, each one stressing the civic-social moral responsibility, physical efficiency and health; specialization after exploration of pupil's interests, aptitudes and capacities, attention to individual differences and stress on independent thinking; and the recognition that present needs must be satisfied as well as preparation made for the future.

So we come to the conclusion that the purpose of education in any civilized society are two-fold--personal and social. Through the personal purposes, the individual is enabled to develop all his possibilities so that he may lead as enriched and as full a life as his capacities permit. Through the social purposes he is enabled to develop those attitudes, habits and social skills which make living together with others possible. To elaborate, by personal purposes are meant, knowledge, habits, skills, attitudes, interests,

ideals and standards that primarily affect the individual and secondarily affect the group in which he moves. On the teacher rests the responsibility to guide and aid the pupil as he engages in the activities which will help him attain his personal objectives. These are the seven main personal objectives toward which the teacher and pupil must direct their efforts: physical health, mental health, fundamentals of learning, development of special interests and abilities, vocational efficiency, wholesome recreation, and a sense of values.

Assuming the theory that in a democracy the group exists for the welfare of the individual; it is to the individual's advantage to abide by certain rules and acquire certain habits which will facilitate his living with others. Secondary education should aim to develop a willingness and ability to abide by the rules of the group. Here we have the social purposes, namely: good citizenship, social efficiency, and a progressive social outlook.

Changing Social Conditions and the Progressive Method. It is of equal importance that the teacher keep himself alert to changes in the work and that he keep his pupils alert to new social needs. If he and they do not take advantage of these desirable opportunities for improvement, there will be a tendency for the school to lag far behind social progress. It is up to the educator to sense or better still to anticipate changes and to adapt methods to those social changes.

For example, the motion picture should have and does have a special influence on method. Television will soon show an even more striking illustration. Motor trips add personal experience to geography and social-study discussions. Congested schools occasioned by the machine era demand changes to fit larger classes; larger percentages of children of high-school age placed in the classroom through compulsory attendance laws and popular-

ization of education demand differentiation of method according to ability. Progress in medicine and science demands that the teacher give instructions as to prevention of disease and that he impart knowledge of better mental hygiene in the classroom. Radio is another important change which brings genius right into even the most obscure classroom.

Civilization still advances. The change should be reflected in the classroom; the teacher should have a clear vision of the change. He should avail himself of every opportunity offered him by the changing social and economic order and so alter his work to fit a changing civilization.

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AIMS AND PURPOSES OF INDUSTRIAL EDUCATION IN THE  
SECONDARY SCHOOL

An important incident in the development of the industrial education movement in this country was the Philadelphia Exposition of 1876. At that occasion was shown the laboratory method applied to the teaching of the mechanic arts, as employed in the Imperial Technical School at Moscow, Russia. Two of the pioneers of industrial education in this country, Professor John D. Runkel, at that time president of the Massachusetts Institute of Technology, and Professor Calvin M. Woodward, of the Engineering Department of the Washington University at St. Louis, saw this exhibit and made such recommendations as resulted in definite action by these two institutions. The Massachusetts Institute of Technology established on August 17, 1876, a department known as the School of Mechanic Arts. This was opened to boys of high school age, and was continued for several years, finally being abandoned when the Mechanic Arts High School was about to be established by the school board as a part of the public school system of the city of Boston.

The Manual Training School at St. Louis was established June 6, 1879, and in 1884 the Commercial Club of Chicago established and endowed the Chicago Manual Training School. Cleveland introduced industrial education in 1884 as a private enterprise and adapted it as a part of the free public school system in 1892. In that same year Toledo and Baltimore established similar schools.

Not only was manual training established in high schools, but efforts were made very early to secure its introduction into the elementary schools. One of the most far-reaching influences of the Swedish "sloyd" system is to be found in the insistence of its early advocates that hand work was an essential in the education of younger children in the lower grades.

Those who opposed the introduction of manual training took the ground that the purpose of public instruction was to develop general culture rather than to provide for vocational efficiency. The school was to develop general intelligence.

The advocates of the new education were thereby led to emphasize what they conceived to be the "cultural value" of constructive work. It was said that "the entire history of man, if examined carefully, finally reveals itself in the history of the invention of tools." It was pointed out that man was distinguished from all other creatures by his ability to use tools, and that the stages in his development had been marked by the increasing degree of excellence to which these tools had been brought. It was seen that tool work afforded relaxation from the tedium of purely intellectual work, and also afforded opportunity for another form of expression and thereby supplied serious defects in the education of that day.

Following the example of its prominent advocates, the teachers of manual training very early began to deny that the practical value of the work was paramount, and to insist that their function, like that of the teachers of Greek and Latin, was to develop the character of the pupil, not to increase his potential economic value. They would likely say, "we are not teaching a trade, we are educating children; not teaching them to earn a living but teaching them to live".

Conservatism of those in authority, the lack of accurate information, the impossibility of securing sufficient number of competent teachers, and the great expense involved in the purchase of adequate equipment and maintenance,--all contributed to keep advance of the new movement in check. Nevertheless, many schools and classes were established and few have been discontinued. The movement has grown until at the present time industrial

education is regarded a definite and necessary part of the school systems of all our larger towns and cities as well as in a great number of our village and country schools.

If asked to state the purpose of giving instruction in industrial education most teachers of today would propose one or more of the following, with greater or less elaboration:

1. To develop the power to think in terms of material things through analyzing, planning and performing mechanical tasks.
2. To develop manual skill.
3. To create an interest in the working man and his problems.
4. To promote the coordination of the mind and hand.
5. To provide an outlet for youthful enthusiasm and vigor.
6. To stimulate avocational or hobby interests.
7. To enable one to apply the test of practice.
8. To provide for worthy home membership-implying intelligent purchase, and maintenance of home equipment.
9. To provide a better balance between the concrete and the abstract in education- between theory and practice.

Experience has proven that no two school systems or groups of educators can think entirely alike on the matter of aims of education. It is only natural that educational theory and practice of today is tending more toward the recognition of the legitimacy of a variety of aims in education based upon the more common characteristics of individual and social differences in pupils. For example, schools have been established for the especial training of boys and girls who, because of economic or other reasons, do not enter the traditional or general high school. These schools are generally referred to as vocational schools and are stressing vocational training. It is well to remember however, that such vocational training meets the need of a

particular group and can no more lay claim to being possessed of the truly right aim of education than can a college or university.

One of the most widely used definitions of industrial arts is given by Bonser and Mossman (3 page 55) 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.

These authors classify the objectives of industrial arts under the following five major heads:

- (1) Health,
- (2) Economic,
- (3) Art and aesthetic,
- (4) Social,
- (5) Recreational.

Warner, (40 pages 5-45), submits the following objectives as the most important on the junior high school level:

- (1) Exploration,
- (2) General guidance,
- (3) Household mechanics,
- (4) Avocations, hobbies,
- (5) Social habits and insights,
- (6) Consumers knowledges and appreciations,
- (7) A degree of skill,
- (8) Correlation or integration,
- (9) Vocational purposes (for from 0 to 16 per cent.)

The final report of the committee of the American Vocational Association on Standards of Sttainment in Industrial Arts (1934) enumerates twelve items. These do not differ greatly from those stated by Warner. The report points out that the aim should not be to develop long lists of objectives, but rather one for which teachers feel a personal responsibility.

There is no way of definitely determining to what extent the objectives for general education apply in the teaching of vocation education. General education of course offers much in the way of training and experience that will function in a vocational career.

However, there is need for specific training for specific type of jobs. Snedden, (36 page 403), points out the following by way of comparison:

Vocational education consists only of divisions of subjects of all possible instruction and training which primarily prepare one for the effective exercise of vocation over that span of years during which it is, or normally should be, followed. In practice, we think of the vocations of the barber, poultry raiser, bookkeeper, tailor, sailor, high school teacher of physics, grocer, dentist, machinist, stenographer, house carpenter, cattle grower, priest, army officer, miner, and the like as filling up a long span of life, and for each of them specific vocational training and instruction - in a special school or elsewhere - is quite conceivable. It is true that for the successful pursuit of all or most of these vocations good health, good moral character, and literacy are also valuable or essential. But, in greater or less degree the qualities and powers included under these terms are valuable or relatively essential alike for all the vocational, as for the no less non-vocational, activities of life. Hence these become the proper aims of general or non-vocational education. It is only to the production of those specific skills and forms of knowledge wherein the dentist differs, as respects the production of economic goods, from the barber that the words vocational education, properly or in best recent usage, apply.

Snedden, (36 page 73), further states:

It is highly desirable that we should designate and appraise as vocational studies and forms of training, only those distinctive educational procedures, the results of which can be demonstrated in some one of the vocations recognized and more or less standardized in the world of practical affairs.

Briefly then, vocational education is that part of a persons training that specifically functions in the successful participation in a gainful occupation. During the whole experience of man on this earth, and in his struggle against environment, manual skill and occupational knowledge has been transmitted from man to man and from generation to generation. Today, as always, every new idea, or method, or invention of recognized value must be transmitted to others by the original discoverer or his followers. Only in this way does it become a permanent addition to our fund of knowledge.

Prosser and Allen, (34 page 9), refer to vocational education as being

of a "conscious of unconscious nature". They refer to conscious vocational education as being:

. . . the transmission of knowledge or skill under conditions where, on the one hand, the function of the instructor is recognized, and, on the other hand, the need of the group for instruction is recognized. The man who feels the need for certain training and avails himself of the use of a library in which writers of books become his teachers, is carrying on an educational process of which he is perfectly conscious. On the other hand, the man who writes such a book is equally conscious of the fact that he is endeavoring to place at the disposal of his readers something in which he is presumably a specialist. The school, after all, merely becomes a place where the work of the teacher and learner can be carried on more effectively. If the instructor know exactly what knowledge and skill it is his job to impart - to that extent the instructing process is organized.

Lee, (28 page 437), describes vocational education in this way:

Vocational education is that form of education whose controlling purpose is to fit persons for the demands of useful employment. As academic traditions cease to befog the issue, all education will be regarded as the result of experiences whereby we become more or less able to adjust ourselves to the demands of the particular form of society in which we live and work. From this viewpoint, vocational education will become that part of the experiences of an individual whereby he learns successfully to carry on any gainful occupation. In a narrower sense, it will mean the controlled and organized experiences used to train a person for any given employment.

Vocational education, according to Struck, (38 page 18), for a changing social order:

. . . must, somehow or other, broaden its scope of educational service far beyond the bounds of narrowly conceived technical training. Broad foundations for trade skill, for technical knowledge, as well as for social economic contributions must be the outcome of vocational industrial education for tomorrow.

## CHAPTER III

## DEVELOPMENTS IN VISUAL AIDS

Visual education is not new. It had its beginning in the early history of man when pictures were drawn on the walls of caves to convey messages to others. Man has always gained knowledge quicker and retained it longer when it was received visually. The thing that is new about visual education is the scientific use of visual aids in the modern curriculum.

Years ago a few crude pictures found their way into textbooks. As time went on more and more pictures were used, not to make books amusing, but to illustrate effectively the words, sentences, and paragraphs on those or adjoining pages. Today textbooks which do not contain profuse and appropriate illustrations do not meet with favor among teachers or pupils.

Similarly, the map, chart, globe, exhibit, photograph and stereograph have become important and effective aids to instruction. These have been the forerunners of more recently developed visual aids and teaching devices, including glass slides, film slides, opaque projectors and motion pictures. All the visual aids, old and new, are being applied to teaching more effectively each year. Each type seems to have its necessary function in the learning process.

For the past twenty-five years more and more attention has been given to the possibilities of the motion picture as an aid in the educative process. Considering its manifold possibilities, its ability to secure and retain attention, its versatility, and its unique attribute of being able to show motion, place the motion picture foremost among the commonly employed visual aids.

The motion picture, both silent and sound, in its turn, has cast a spell over the entire world. It is true that its major field of usefulness, at

present, is in the entertainment field, but progressive educators are managing to extract a few by-products of the industry in the form of curricular motion pictures.

The earliest efforts to bring the motion picture into the service of education were largely dominated by the commercial interests in getting double use and double pay, for films that had already been completed for recreational or other purposes. The educators were slow to make demands upon the new industry for films specifically designed to serve their ends, and to experiment on their own account with this new possibility. Non-commercial experimentation with the motion picture likely began in the laboratories of research workers needing a means of recording phenomena and of analyzing movements; in industrial and commercial organizations as a means of instructing workers, salesmen and others in methods and techniques; and in educational propaganda by the governmental and other agencies interested in promoting health, standard practice in agriculture, and other non-commercial ends.

The introduction of motion pictures into classroom use so impressed educators that many predicted the early elimination of the teacher. This was also an oft heard prediction when radio made its advent.

Educators have long realized that by its peculiar ability to portray action vividly and through the addition of sound and color, the film is a remarkably powerful medium of instruction. Classroom limitations of learning are overcome through the introduction of a pictorial experience easily understood by children and exceptionally interesting to them. Hoban, (21 page 91), makes the following statement:

The use of motion pictures stimulates the interest and activity of pupils, gives rise to self-expression and self-development, greatly aids the retarded child, and generally contributes to economy of time, enrichment of the curriculum and the development of attitudes, knowledge and skills.



The following are recognized by McClusky, (30 page 92), as advantages and limitations of the motion picture:

1. The moving picture has the unique advantage of depicting action of behavior, with its irresistible illusion of life and reality. It is, however, an expensive visual aid and for that reason should be resorted to only when necessary:
  - (i) to show activity which no other pictorial aid can portray, and
  - (ii) to provide such vicarious experiences as may be brought to us because we cannot get them in any other way.
2. The film has proved valuable to scientific workers by enabling them to reproduce processes and analyze motion and movements for detailed study.
3. The film has value in presenting popular non-technical phases of the subject to those who have relatively little interest regarding it.
4. By means of the motion picture and the animated diagram, one can visualize the invisible.
5. The motion picture is very effective in publicity, drives, campaigns for social betterment and similar forms of propaganda.
6. The film is the best visual tool when the continuity of a process involving movement is to be seen.
7. The film is advantageous for purposes of vivid summary or general survey of a broad topic.
8. The film is unique in revealing for the first time in the history of human learning, things which are too slow or too fast to be seen by the human eye.

**Limitations:**

1. Motion pictures are expensive.
2. The film with its rapid-fire method of projection must be stopped, slowed up, or shown a second or third time if any real study and analysis of the content is to be had.
3. The moving picture in its present form and use has a tendency to relegate the teacher into the background.
4. Few good films are available at reasonable cost.
5. Films are perishable and do not stand wear and tear like other visual aids.
6. The film to be effective in the classroom, should be previewed by the teacher and followed up by definite study. Often the teacher cannot get the film when it is most needed.
7. The film is used too often as a substitute for, rather than a supplement to other methods of presentation.

Dent, (7 page 44), points out some of the rules to be observed in getting the best results from motion pictures under normal conditions.

1. The motion picture should be used where it will contribute most to the understanding of the subject; i.e., to introduce the subject, as a part of the laboratory or study period, or as review.

2. The picture should be used directly in connection with the teaching of the subject to which it pertains; i.e., the motion picture, "Dixie," should be used during the week or weeks devoted to consideration of the Civil War.
3. The teacher should preview the film in order that there may be thorough familiarity with the content. Points which are not entirely clear to the teacher should be checked in advance, so questions from members of the classes may be answered intelligently.
4. The showing of the film should, in most cases, follow an oral introduction or discussion, during which certain unanswered questions will be left for the film to answer.
5. In the case of silent films, explanatory discussion during the showing has been found to be helpful in some instances, if the discussion is pertinent. If not, omit it.
6. Usually it will be advisable to show the film twice; once with out stopping and with minimum comment, followed up by open discussion, and the second showing to answer questions raised during the intervening discussion.
7. Use the film reverse and stop on film sparingly and only to emphasize points which require such emphasis. Reversing the film, unless accomplished properly, may become merely a funny stunt, thus losing its potential value in analysis of motion.
8. Whenever possible, use the pictures with but one class group at a time, and use them in the room to which the class is accustomed. Moving the class to another room or with another class or section, is apt to become little more than a picture show, except in situations where a skillful auditorium teacher is in charge.
9. Follow the use of the pictures with an adequate test or other checking device, to determine the progress made. The procedure will have a tendency to develop among class members the seriousness of purpose of the picture presentations.
10. Make certain that the film and equipment are forwarded to the next teacher or school according to schedule. Report any difficulties in projection, such as breaking the film, irregularities in projection, etc., to the person in charge of visual instruction service for the building or school system.
11. Plan the next picture well in advance, relating it as closely as possible to the topic which it is to assist.

There are two types of film in general use, one of which is used almost exclusively in the theatrical field, and the other almost exclusively in the field of education. The film used by the theaters is made of nitro-cellulose. This material is highly inflammable but cheaper and more durable. The fire hazard in theaters is minimized through the use of projection booths and fire prevention materials.

Educational film is made of acetate of cellulose and is non-inflammable. It is usually referred to as "safety film." Due to the expense and incon-

venience of providing projection booths in the classroom, the safety film has come to be adopted as standard. All 16 M. M. film printed for educational purposes is printed on safety film.

The films of many sizes have been in use during the existence of the motion picture, ranging from 8 M. M. to 70 M. M. in width, the theatrical field and the educational field centered exclusively on the 35 M. M. and the 16 M. M., respectively.

Safety, ease of handling, low cost parcel post transportation, lightness; these and others are advantages to be found in the use of the 16 M. M. film.

## CHAPTER IV

## SET-UP FOR VISUAL AIDS

A plan for effectively organizing and administering a program of visual instruction in a large school system is presented in the following pages. Reference is made only to the use of slides, films, special pictures and projection materials and equipment, and so forth, that are not kept in the classroom. Such material as is available in the classroom will be used whenever needed:

The essentials involved are the following:

1. A central office of visual education to serve the whole city or community.
2. A local school chairman or committee.
3. Adequate yearly appropriation of funds to finance such a program.
4. Curriculum committees to serve in the examination and recommendation of films and other aids.

The Central Office of Visual Education. A good city-wide visual education department is a great asset. Although it may not be able to furnish all the desired material from its own department, all material within reason should be made available through it.

Pictures, projectors, and other equipment must be viewed, tested, purchased, serviced and distributed.

Records must be kept, correspondence maintained and literature accumulated and filed. Effectiveness of pictures and technics must be determined through evaluation.

The central director of visual education must be concerned with "selling" the program to the teachers and administrators, and thus cause the work of the department to be extended. A very small percentage of teachers have

actually employed mechanically projected aids in their teaching. The reason for this is probably reluctance on the part of the teacher to try anything new, and fear of being unable to operate the machines.

Teachers must be taught efficiency in the use of apparatus and effective use of the picture aids in the classroom through special instruction, conferences, demonstration lessons and courses. Following adequate instruction in the use of apparatus, the individual teacher should be certified by the central office as being competent to operate the apparatus. Such a plan reduces to a minimum the loss to the department by damage to films and equipment through error.

The central office should periodically compile and distribute to each department a bibliography accompanied by a sufficiently detailed description of the items included in the bibliography to insure proper selection by the teacher. (In the appendix of this volume is listed a bibliography of films having particular reference to the teaching of Industrial Education.)

The central office of visual education must be of real educational service to the school system and contribute to the spirit and philosophy of visual instruction. It should avoid evolving into a department which functions solely in the purchase, maintenance and distribution of equipment.

It has been found advisable in some school systems to employ a part time visual education director and furnish him with a full time clerk or assistant who will take care of all the detailed matters incidental to such a department. In this way the department can be operated at reduced expense. However, the size and needs of the community will determine the size of staff to be maintained.

All projectors of visual aids are mechanical devices and need mechanical adjustment, and occasional minor repairs. It is well that the director

possess sufficient mechanical aptitude and knowledge to adequately function in this respect.

The Local School Chairman. A teacher with a light teaching load and possessing administrative ability should be in charge of visual aids in the individual school.

This person should possess above all, an interest in the field of visual education so that the service might be extended to all the departments in the school. He should be a practical person with sufficient knowledge of mechanics to efficiently take care of the more common mechanical repairs and adjustments.

It shall be the duty of the school chairman to organize movie clubs, photographic clubs, movie operators' clubs, etc., among the high school boys. These boys are trained to operate the machines. Upon receipt of films, the boys, acting as operators, go to various classrooms at the scheduled time and show the films. The boys under no circumstances should be allowed to attempt repairs to equipment.

Adequate Yearly Appropriation of Funds. An average annual per pupil expenditure of from fifty cents to one dollar will probably bring greater returns than any other like expenditure. Provision must be made in the budget for the purchase of motion pictures, projection machines, film slides and other necessary items incidental to carrying on this program. New machines must replace old machines; new films must supplement the film library; repairs and replacements to the various pieces of equipment must be provided for; and funds for the general expense of maintaining an office must be available.

The mistake is often made by state and local bureaus of stocking a great deal of "free" film containing considerable advertising. Though much of this is good, for the most part it does not bear sufficient merit to

warrant its use over commercially produced film specifically designed for classroom use.

There can be no "first cost" buying of equipment and then expecting this equipment to serve indefinitely. Failure to make annual provision denies the pupils of the respective educational systems the opportunity to benefit from the latest and best that industry can offer in the way of visual aids. Many school systems in the nation have been slow to adopt the use of projection machines for classroom use but it is probably only a matter of time before all schools in the country will be thus provided.

Teacher Committees. Motion pictures, like text books, must be carefully selected to justify their value. Cooperation of curriculum committees, teacher committees, and department heads in the selection of materials is very desirable. In White Plains, New Jersey, (12 page 279), the superintendent of schools acts upon the advice of each of the subject matter committees in purchasing materials. The school system is of such a size as to make the membership of each committee open to a teacher from each of the eight elementary schools, thus giving each school a voice in the purchase of films and other aids. In this way visual aids are considered an integral part of the curriculum, and are used by all the schools. Teachers who would benefit most should be allowed on these selection committees.

## CHAPTER V

## LISTING OF AVAILABLE FILMS AND THEIR SOURCES

The classified listing of films that follows includes practically all films that have been circulated to date and that have proved to have permanent value.

It is well to bear in mind that all 16 M. M. films are acetate base and that they are therefore non-inflammable. All theatrical film is 35 M. M. and printed on inflammable materials. Most non-theatrical film is safety film and 16 M. M. in size.

It will be necessary that the distributor of each film be contacted relative to price and transportation arrangements.

State Universities and Extension Divisions are very important sources of educational films. Full literature can be obtained from these institutions regarding the extent of their materials.

The subjects listed here have particular bearing on industry and engineering, and therefore should be of especial interest to teachers of Industrial Education.

These listings have been taken from film catalogs.



The following are directions for using the film listings here-in contained:

1. Title is given in large type.
2. Number of reels follows title in parenthesis.
3. Brief explanation of contents appears with each listing.
4. Size and kind of film is listed--such as 16 M. M., silent, etc.
5. Name and address of distributor is given.

## ELECTRICITY

The following films listed under the general classification of Electricity are of particular interest to students in electricity and radio classes. Many of the films listed can serve in occupations and guidance work.

## (Cable, Telephone and Telegraph)

1. BUSINESS IN GREAT WATERS (2) Laying the fastest submarine cable ever made between Newfoundland and the Azores. 16mm sound, 35mm sound. Western Electric Company, 120 W. 41st St., New York City, N. Y.
2. CONCERNING CROSSARMS (1) Something about the branches of our trees of speech. 35mm silent. Western Electric Company, 120 W. 41st St., New York City, N. Y.
3. FAR SPEAKING (1) Shows the faith of one of earliest subscribers in ultimate outcome of Prof. Bell's invention. 35mm silent. Y.M.C.A., National Council of Motion Picture Bureau. 347 Madison Ave., New York City, N. Y.
4. FEATURES OF HIGH VOLTAGE CABLE (1) A talk showing progress made in high voltage cable. Samples of various types. 35mm sound. General Electric Company, Visual Instruction Section, Schenectady, N. Y.
5. HOW THE TELEPHONE TALKS ( $\frac{1}{2}$ ) Principles of communication; details of transmitter and receiver; diagrams and technical drawings. 16mm silent. Kodascope Libraries, Inc., 33 W. 42nd St., New York City, N. Y.
6. INDUCED CURRENTS (1) How currents are induced in a generator, transformed and applied in a telephone. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.
7. LAYING THE WORLD'S FASTEST OCEAN CABLE OFF NEWFOUNDLAND (2) Incidents filmed during the work of connecting England and America. 35mm silent. Western Electric Company, 120 W. 41st St., New York City, N. Y.
8. NEW VOICE HIGHWAYS (1) How telephone cable is made and used. Contrasts old method of stringing city wires on poles with modern method of running lead covered cables underground. 16mm sound, 35mm sound. Western Electric Company, 120 W. 41st St., New York City, N. Y.
9. NOW YOU'RE TALKING (1) Animated cartoon illustration the harm that may result from improper handling of phone. 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau. 347 Madison Ave., New York City, N. Y.
10. PUTTING A TELEPHONE TOGETHER (1) Trick photography. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.

11. SHORT CUTS TO QUANTITY (1) Few examples of achievements of mass production of telephones without sacrifice of quality. 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N. Y.
12. SOMETHING ABOUT SWITCHBOARDS (1) Unusual processes in fabricating and installing equipment for telephone exchange. 35mm silent. Western Electric Company, 120 W. 41st St., New York City, N. Y.
13. SPEEDING UP OUR DEEP SEA CABLES (2) Camera record of laying of perm-alloy cable between New York and Azores. 35mm silent. Western Electric Company, 120 W. 41st St., New York City, N. Y.
14. STUDIES IN TELEPHONY (1) Self-explanatory. 16mm silent. Ideal Pictures Corporation, 30 E. Eighth St., Chicago, Illinois.
15. THE ELECTRICAL TRANSMISSION OF SPEECH (1) Fundamentals involved in transmission and reception of voice over wire circuits. 35mm silent. Western Electric Company, 120 W. 41st St., New York City, N. Y.
16. THE INSIDE STORY OF YOUR TELEPHONE (2) Gathering and utilization of 15 raw products used in manufacturing of telephone. 35mm silent. Western Electric Company, 120 W. 41st St., New York City, N. Y.
17. THE LITTLE BIG FELLOW (1) Functions of electric current in the making of a telephone call; animation. 35mm silent. Y.M.C.A., National Council of, Motion Pictures Bureau, 347 Madison Ave., New York City, N. Y.
18. THE TELEPHONE REPEATER (1) Operation of vacuum tube as a telephone repeater which amplifies the voice current at intervals. 35mm silent. Western Electric Company, 120 W. 41st St., New York City, N. Y.
19. THE WIZARDRY OF WIRELESS (2) History of communication; explanation by animated drawings of principles involved in wireless. 16mm silent. 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
20. THE WORLD'S TELEPHONE WORKSHOP (1) Photographic sidelights of unusual manufacturing process. 35mm silent. Y.M.C.A. National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N. Y.
21. THROUGH THE SWITCHBOARD (2) Successive steps in the operation of a phone call. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N. Y.
22. UNDERWATER SPEECHWAY (1) High spots in the making and use of submarine telephone cable. 16mm sound, 35mm sound. Western Electric Company, 120 W. 41st St., New York City, N. Y.
23. WIRELESS TELEPHONY ( $\frac{1}{2}$ ) How sound waves are carried by electric waves and reconverted into sound waves. 16mm silent, 35mm silent. Bray Pictures Corporation, Educational Dept., 729 Seventh Ave., New York City, N. Y.

## (Radio and Sound Movies)

1. A LIVING FOR TWO (2) How radiograms and photograms are sent across the ocean; shows a race against time. 16mm silent. Church, Frank R. Films, 829 Harrison St., Oakland, California.
2. EARTH'S FOUR CORNERS (1) Story of search for components of RCA Radio-tron; processes of manufacturing. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N. Y.
3. ENGINEERING THE SOUND FILM (1) Shows development of sound pictures to present standard. 16mm sound, 35mm sound. Western Electric Company, 120 W. 41st St., New York City, N. Y.
4. FINDING HIS VOICE (1) How sound is recorded and reproduced. 16mm sound, 35mm sound. Western Electric Company, 120 W. 41st St., New York City, N. Y.
5. LISTENING IN (1) How the familiar radio set is put together. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., New York City, N. Y.
6. MAN MADE MIRACLES (1) Story of manufacture of radio tube. 16mm silent. Wholesome Films Service, Inc., 48 Melrose St., New York City, N. Y.
7. MYSTERY BOX (1) Analysis in motion picture photography and animated drawings of basic principles of radio. 16mm silent, 35mm silent. Bray Pictures Corp., Educational Dept., 729 7th St., New York City, N. Y.
8. OUT OF THE SILENCE (1) Problem of the hard-of-hearing; how it can be improved by the new ear aid. 16mm sound, 35mm sound. Western Electric Company, 120 W. 41st St., New York City, N. Y.
9. OUT WHERE THE SOUND BEGINS (1) Studies of highlights in works where telephone and talking picture equipment are made. 16mm sound, 35mm sound. Western Electric Company, 120 W. 41st St., New York City, N. Y.
10. SKY HARBOR (1) Operation of radio telephone explained. 16mm sound, 35mm sound. Western Electric Co., 120 W. 41st St., New York City, N. Y.
11. THE FAMILY ALBUM (1) Animated cartoon picturizing by-products of telephone development. 16mm sound, 35mm sound. Western Electric Co., 120 W. 41st St., New York City, N. Y.
12. THE FLYING TELEPHONE (1) Part radio telephone plays in making air travel safe. 16mm sound, 35mm sound. Western Electric Co., 120 W. 41st St., New York City, N. Y.
13. VOICE THAT SCIENCE MADE (1) Action of human vocal organs contrasted with new artificial larynx. 16mm sound, 35mm sound. Western Electric Company, 120 W. 41st St., New York City, N. Y.
14. WALTER DAMROSCH (1) Sound track shown on screen while Damrosch strikes notes indicated in sound track. 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N. Y.

15. WIRELESS TELEGRAPHY AND THE RADIO (2) Scientific subject, yet intelligible to the layman. 16mm silent. Dudley, William H., Visual Education Service, Inc., 736 S. Wabash Ave., Chicago, Ill.

(General)

1. A MODERN ZEUS (1) Production of artificial lighting. 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
2. CATHODE RAY TUBE ( $\frac{1}{2}$ ) Dr. W. D. Coolidge explains how a cathode ray tube operates; its effect on various substances. 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
3. CHEMICAL EFFECTS OF ELECTRICITY (1) Action of two electrodes in electrolysis traced from crude beginnings, through modern battery manufacture, electrolysis, electroplating to metallurgy of copper and aluminum. 16mm silent. Edited Pictures System Inc., 330 W. 42nd St., New York City, N. Y.
4. DYNAMIC AMERICA (2) Development and uses of electricity. Contrasts living conditions before electricity with present. 16mm silent. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.
5. ELECTRIC HEAT IN INDUSTRY (3) Use of electric heat in the treatment of auto parts and various manufacture processes. 16mm silent, 35mm silent. General Electric Co., Schenectady, N. Y.
6. FROM COAL TO ELECTRICITY (2) How electricity is generated from coal—four steps: coal to heat; heat to steam; steam to mechanical motion; to electricity. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N. Y.
7. HEAT AND LIGHT FROM ELECTRICITY (1) Electricity in series and parallel circuits; Ohm's Law; manufacture and use of conductors, insulators, lamps, arc furnaces and heating equipment. 16mm silent. Eastman Kodak Company, Teaching Films Division, 343 State St., Rochester, N. Y.
8. ILLUMINATION (1) Shows the progress, measurement and quality of illumination and approved methods of interior lighting. 16mm silent.
9. LIGHT OF A RACE (1) Principal steps in development of artificial illumination from earliest beginnings to incandescent lamp. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N. Y.
10. MAGNALUX LUMINAIRE (1) Explains and illustrates three methods of interior lighting—direct, semi-indirect and indirect. 35mm sound Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.
11. MAZDA LAMP MANUFACTURING (2) Detailed steps. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
12. OUT OF THE SHADOW (2) Designed to arouse interest in modern city lighting. Causes and effects of poor street lighting. 35mm silent. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

13. STORY OF A STORAGE BATTERY (2) Uses and manufacture. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N. Y.
14. THE CONDUCTOR (1) Making of lamp cord. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
15. THE INDUCTION VOLTAGE REGULATOR (2) Features and functions. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
16. THE NEW FRONTIERS (2) Summarizes achievements of industrial scientists; electricity's contribution to industrial purposes. 16mm sound, 35mm sound. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.
17. THE VACUUM-TUBE SYNCHRONIZING EQUIPMENT (1) Operation when "tying-in" inter-connecting power systems; advances made. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
18. THOMAS A. EDISON (1) Methods employed in the development of his great invention, the incandescent lamp. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
19. TRAVELING WAVES ON TRANSMISSION LINES (3) Shows in animation behavior of anelectrical wave traveling along 250 mile transmission line. 16mm silent, 35mm silent, Massachusetts Institute of Technology, Visual Education Dept., Cambridge, Mass.
20. WHITE COAL (2) Manufacturing of electricity by water power. 35mm silent. Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

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## MACHINERY

Teachers of machine shop, auto mechanics, welding, and other metal working subjects will find these films of value. They are also useful in related information and occupational courses.

## (Miscellaneous)

1. A GLIMPSE OF A CENTURY OF PROGRESS (1) Features the Sky-Ride with its vertical and horizontal transportation equipment. 16mm silent. Otis Elevator Co., Publicity Division, 260 11th Ave., New York City, N. Y.
2. GRAPHIC REPRESENTATION OF MACHINE OPERATIONS (2) Operations of various machines--lathes, milling machines, planers and drills, 35mm silent. Massachusetts Institute of Technology, Visual Education, Cambridge, Mass.
3. HOW MOVIES MOVE (1) Explanation of Geneva Star and Canon Maltese Cross mechanism. 16mm silent. Kodascope Libraries, Inc., 33 W. 42nd St., New York City, N. Y.
4. KNOW YOUR ABC'S (2) Trip through the factory of ABC Washers and Ironer, showing manufacturing methods; gives model sales presentation. 16mm sound. Altopfer Bros. Co., Peoria, Ill.
5. OUR MECHANICAL SERVANT--THE ELEVATOR ( $\frac{1}{2}$ ) Principle of hydraulic elevator. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
6. OXY-ACETYLENE WELDING AND CUTTING FOR REPAIR MAINTENANCE AND PRODUCTION (1) Summary of fields in which process is used. 16mm sound, 35mm sound. Linde Air Products Co., 205 E. 42nd St., New York City, N. Y.
7. OXWELDED INDUSTRIAL PIPING (1) Shows various piping systems, air-conditioning and refrigeration systems. 16mm silent, 35mm silent. Linde Air Products Co., 205 E. 42nd St., New York City, N. Y.
8. OXWELDED PIPE LINES FOR OIL AND GAS (1) Current practice in laying of oxwelded lines long-distance transmission. 16mm silent, 35mm silent. Linde Air Products Co., 205 E. 42nd St., New York City, N. Y.
9. OXWELDING AND CUTTING THE MODERN METHOD OF JOINING AND SEVERING METALS (1) Internal construction and operating principles. 16mm silent, 35mm silent. Linde Air Products Co., 205 E. 42nd St., New York City, N. Y.
10. OXWELDING FOR PROFIT-I & II (leach) Versatility of process in home, plant, farm application in many industrial fields. 16mm silent, 35mm silent. Linde Air Products Co., 205 E. 42nd St., New York City, N. Y.
11. OXWELDING IN PRODUCTION- I & II (1 each) Production of automobile bodies, refrigeration units, welding of pressure vessels and transformer tops. 16mm silent, 35mm silent. Linde Air Products Co., 205 E. 42nd St., New York City, N.Y.
12. PUNCH PRESS SAFETY WITH INCREASED PRODUCTION (1) Automatic and semi-

- automatic feeds and power press guards. 16mm silent, 35mm silent. Lewis Film Service, 224 N. Market St., Wichita, Kansas.
13. REFRIGERATION (1) Ammonia compressing system of refrigerating, applied to artificial ice-making and household mechanical refrigeration. 16mm silent. Iowa State College, Visual Instruction Service, Ames, Iowa.
  14. REXOIL AND THE FLAME OF FLAMES (3) Manufacture and use of burners and air conditioning equipment. 16mm sound. McLarty Motion Picture Service, Certain-Teed Bldg., Military Road, Buffalo, N. Y.
  15. RIDING SKYWARD (2) Shows operation of automatic "Signal Control" elevators and types of old elevator equipment. 16mm silent. Otis Elevator Co., Publicity Division, 260 11th Ave., New York City, N. Y.
  16. STORY OF ROCK-DRILLING (2) Use of diamond core drill, "rotator," hammer drill, water-jet stoppers in iron mining and granite quarries. 35mm silent. Cleveland Twist Drill Co., 1242 E. 49th St., Cleveland, Ohio.
  17. SIMPLE MACHINES (1) Lever and inclined plane are developed as fundamental to other machines. Principles of mechanical advantage, work, efficiency and conservation of energy are applied. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.
  18. THE ENGINE LATHE AND ITS OPERATION (7) Complete assembly of lathe parts, construction and operation. 35mm silent. Society for Visual Education, Inc., 327 S. LaSalle St., Chicago, Ill.
  19. THE MOLDER (1) Mass production of small gray-iron castings. 16mm silent. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
  20. THE PROSPERITY PROCESS (2) Versatility of oxy-acetylene process in fabricating, severing, repairing, hard-surfacing metal parts. 16 mm silent, 35mm silent. Linde Air Products Co., 205 E. 42nd St., New York, N. Y.
  21. THE STORY OF THE HEAVY EXCAVATION MACHINERY (4) Varied uses. 35mm silent. U. S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
  22. THE UNIVERSAL MILLING MACHINE AND ITS OPERATION (8) Parts and construction; manifold operation. 16mm silent, 35mm silent. Society for Visual Education, Inc., 327 S. LaSalle St., Chicago, Ill.
  23. USE AND ABUSE OF TWIST DRILLS (2) Strictly technical; shows part of twist drills and errors to avoid in their use. 16mm silent, 35mm silent. Cleveland Twist Drill Co., 1242 E. 49th St., Cleveland, Ohio.
  24. VALVES, THEIR MANUFACTURE AND USES (3) Their importance to industry and the home; how they are made. 16mm silent, 35mm silent. U. S. Bureau of Mines Experiment Station, Pittsburgh, Pa.



## MANUFACTURED PRODUCTS AND PROCESSES

In the comprehensive list following, students in occupations, guidance and related information courses will find much material of value. Students in nearly all school shop classes will find in this list subjects which definitely apply to their work.

## (Building Materials)

1. CONSTRUCTION THAT ENDURES (1) Shows composition of concrete and uses and--Panama Canal, bridges, highways, etc. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N. Y.
2. FROM MOUNTAIN TO CEMENT SACK (1) Manufacture of Portland cement and preparation for market. 16mm silent, 35mm silent. U. S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
3. FIRE CLAY REFRACTORIES (3) Storage yards and kilns, and mines where fire clay is obtained; molding of fire clay. 16mm silent, 35mm silent. U. S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
4. FROM PIGS TO PAINT (2) Story of Dutch Boy White Lead. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N. Y.
5. FROM RAGS TO ROOF (1) Story of asphalt shingles. 35mm sound. Aund-lauer Film Co., Ozark Bldg., Kansas City, Mo.
6. HOUSE OF DREAMS (1) How rustproof metals are used to improve home construction and save money for home-owners and builders. 16mm silent. American Brass Co., Waterbury, Conn.
7. MONARCH CONTROLS THE AIR (1) Shows value of modern weatherstripping and methods of installation. 35mm silent. Midcontinent Pictures Corp., 4327 Duncan Ave., St. Louis, Mo.
8. STORY OF STONE (1) Self-explanatory. 16mm silent, 35mm silent. Y.M.C.A. National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N. Y.
9. THE MANUFACTURE OF BEAVER BRAND STEEL WOOL (1) in 16mm, (3) in 35mm. Growth of the industry; processing machinery, packing and shipping. 16mm silent, 35mm silent; 16mm sound, 35mm sound. Rhodes, James H., Company, 157 W. Austin Ave., New York City, N. Y.
10. THE ROMANCE OF PAINT AND VARNISH (2) Shows assembling of raw materials that go into paints, and the manufacture of protecting coatings. 16mm silent. Save the Surface Campaign, National Paint, Varnish & Lacquer Ass'n, 2201 New York Ave., N. W. Washington, D. C.
11. VERMONT MARBLE INDUSTRY (2) Quarries; turning, planing and cutting

marble; water saw in cutting; polishing; uses in architecture. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N. Y.

(Clothing, Textiles and Leathers)

1. AMERICAN GLOVE CRAFT (2) Glove manufacture, 16mm silent, 35mm silent. DeFrenes & Co., 1909 Buttonwood St., Philadelphia, Pa.
2. A WOOLEN YARN (1) From fleece to finished fabric. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N. Y.
3. COTTON. CIVILIZATION'S FABRIC (2) Cotton from field to mill; spinning and weaving. 16mm silent, 35mm silent. Fruit of the Loom Mills, 715 Hospital Trust Bldg., Providence, R. I.
4. COTTON GOODS (1) Carding, twisting, and drawing of yarn; production of thread; weaving and testing of fabrics; uses of cotton. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.
5. FROM COCOON TO SPOOL (1) Life history of silkworm; obtaining of raw silk; manufacturing process to finished bolt of silk. 16mm silent, 35mm silent. Belding, Hemingway Corticelli, 119 W. 40th St., New York City, N. Y.
6. FROM COCOON TO KIMONA (1) Silk industry of Japan. 16mm silent, 35mm silent. Wholesome Films Service Inc., 48 Melrose St., Boston, Mass.
7. FROM FLAX TO LINEN (1) Traces flax from plant and seed stage to line flax; spinning; weaving and bleaching linen cloth. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.
8. FROM HIDE TO LEATHER (1) Manufacture of shoes. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
9. FROM LOWLY WORMS TO LOVELY WOMEN (3) From silkworm culture in China to finished stocking. 16mm sound. DeFrenes & Co., 1909 Buttonwood St., Philadelphia, Pa.
10. HOW BATIK IS MADE IN JAVA ( $\frac{1}{4}$ ) Javenese maidens weaving the cloth and decorating it by the batik process. 16mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.
11. HOW THE KENWOOD BLANKET IS MADE (2) Sorting and selecting of wool; dyeing, weaving and finishing. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Pictures Bureau, 347 Madison Ave., N. Y.
12. HOW SILK IS MADE (1) Steps in the making of silk; from laying of eggs to the steaming, boiling, and making of thread and cloth. 16mm silent, American Museum of Natural History, 77th St. and Central Park W., New York City, N. Y.
13. IN BATIK LAND (1) Shows the making of batik cloth. 16mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.

14. LEATHER (1) Sources of leather; tanning methods; making of shoes by hand contrasted with manufacture by modern machinery. 16mm silent. Eastman Kodak Co., Teaching Films Div., 343 State St., Rochester, N. Y.
15. LUZON LINGERIE (1) Designing and making of exquisite lingerie in the Philippines. 16mm silent. Bell and Howell Co., Larchmont Ave., Chicago, Ill.
16. MY LADY'S STOCKINGS (1) From the production of silk to the manufacture of stockings. 16mm silent. Kodoscope Libraries, Inc., 33 W. 42nd St., New York City, N. Y.
17. HOW MEN'S CLOTHING IS MADE (2) Story of suit of clothes from the designing to making suit; Needle Trade School in New York City. 16mm silent. American Museum of Natural History, 77th st. and Central Park W., New York City, N. Y.
18. ROMANCE OF CLOTH (1) From field to loom; finished product. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
19. ROMANCE OF RAYON (2) From felling of trees to obtain strands of rayon to the finished piece of shining material. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York, N. Y.
20. ROMANCE OF SHOEMAKING (2) Steps in manufacture. 16mm silent, 35mm silent. Mellville Shoe Corp., Advertising Dept., 555 Fifth Ave., N. Y.
21. RUG MANUFACTURING (1) Designing, weaving and processing. 16mm silent. Mogull Brothers, 1944 Boston Road, New York City, N. Y.
22. SHOES OF THE AGES (1) Evolution of the shoe with actual historic relics and modern products. 35mm sound. Midcontinent Pictures Corp., 4327 Duncan Ave., St. Louis, Mo.
23. SILK (1) Raw silk culture in Japan; country traversed to reach United States; methods of production in modern factory. 16mm silent. Eastman Kodak Co., Teaching Films Div., 343 State St., Rochester, N. Y.
24. SILKEN CITIES OF JAPAN (1) Modern process of reeling silk and spooling in large establishments. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
25. SILK INDUSTRY (1) Steps in manufacture. 16mm silent. Bell and Howell Co., Larchmont Ave., Chicago, Ill.
26. THE ART OF SPINNING AND WEAVING (2) Development of hand spinning; principles of weaving demonstrated on old hand loom. 16mm silent, 35mm silent. Harvard Film Service, Biological Laboratories, Harvard University, Cambridge, Mass.
27. THE BOY SCOUT AND HIS UNIFORM (1) Steps in manufacture of a complete outfit for Young America. 35mm silent. Society for Visual Education, Inc., 327 S. LaSalle St., Chicago, Ill.
28. THE LINEN INDUSTRY IN THE U.S. (2) Growing of flax and making of it

- into fine linen. 16mm silent. Hill, Dr. David, First Nat'l Bank Bldg., Salem, Ore.
29. THE MARCH IS FORWARD (2) Manufacture of shoes. 16mm sound, 35mm sound. Y.M.C.A., National Council of, Motion Pictures Bureau, 343 Madison Ave., New York City, N. Y.
  30. THE SHOE (1) Production from raw materials. 16mm silent. Edited pictures System Inc., 330 W. 42nd St., New York City, N. Y.
  31. THE READING FULL-FASHIONED KNITTING MACHINE IN ACTION (1 & 2) Operation of machine making full-fashioned hosiery. 16mm silent, 35mm silent. DeFrenes & Co., 1909 Buttonwood St., Philadelphia, Pa.
  32. THE PART OF THE CAR THAT'S VELVET (2) Complete story of mohair velvet upholstery. 16mm silent. Y.M.C.A., National Council of, Motion Pictures Bureau, 347 Madison Ave., New York City, N. Y.
  33. THE STORY OF LEATHER (1, 2 & 3) Processes through which raw hides and skins go before they can be called leather. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
  34. THE STORY OF TIOGA OAK SOLE LEATHER (4) The making of sole leather from cow and steer hide to finished leather; the tanning industry. 16mm sound. McLarty Motion Picture Service, Certain-Teed Bldg., Military Road, Buffalo, N. Y.
  35. WOOL (1) Shearing sheep; packing and shipping of wool; converting into cloth. 16mm silent. Edited Pictures System Inc., 330 W. 42nd St., New York City, N. Y.
  36. WOOLEN GOODS (1) Sources of wool; contrasts methods of carding, spinning and weaving homespun and factory-made woolens. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N. Y.
  37. WOOL MARKETING AND MANUFACTURE (3) From fleece to finished fabric; whole process of manufacture. 35mm silent. U. S. Dept. of Agriculture, Division of Motion Pictures, Washington, D. C.
- (Food Products)
1. ACROSS THE SEVEN SEAS (1) Trip through Java; making of tapioca. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Pictures Bureau, 347 Madison Ave., New York City, N. Y.
  2. AFTER THE FOG (2) Commercial canning of food. 16mm silent, 35mm silent. Y.M.C.A., National Council of Motion Pictures Bureau, 347 Madison Ave., New York City, N. Y.
  3. CANNING AND GRADING LIMA BEANS (2) Modern cannery scenes; how government inspects and grades beans; differences between three grades found in grocery stores. 16mm silent, 35mm silent. U. S. Department of Agriculture, Division of Motion Pictures, Washington, D. C.
  4. FOOD SHOT FROM GUNS (1) Growth of rice in Orient and United States; unique transportation process of puffing grains. 16mm silent, 35mm silent. Quaker Oats Co., Advertising Dept., 141 W. Jackson Blvd., Chicago, Ill.

5. FROM POD TO PALATE (2) Growing and harvesting the pea crop and the process of canning in a modern factory. 16mm silent. Chicago Film Laboratory, Inc., 1322 Belmont Ave., Chicago, Ill.
6. MAKING THE FINEST CHOCOLATE IN AMERICA (1) From cocoa bean to chocolate bar. 16mm silent. Mogull Brothers, 1944 Boston Road, New York City, N. Y.
7. STORY OF SPICES (1) From early biblical days to treatment in largest spice plant in the country today. 16mm silent, 35mm silent. Stark-Films 209 W. Centre St., Baltimore, Md.
8. THE BEST PART OF THE PARTY (1) A story of the romance of modern ice cream. 16mm sound. Y.M.C.A., National Council of, Motion Pictures Bureau. 347 Madison Ave., New York City, N. Y.
9. THE GIFT OF MONTEZUMA (5) Growing and harvesting of cocoa beans in the tropics, shipping and manufacture into chocolate products. 35mm sound. Hershey Chocolate Co., Motion Picture Division, Hershey, Pa.
10. TEN POUNDS TO THE BUSHEL (1) Growing of oats and manufacture of rolled oats. 16mm silent, 35mm silent. Quaker Oats Co., Advertising Dept., 141 W. Jackson Blvd., Chicago, Ill.

(Steel and other metal manufacturing)

1. ALLOYS USED IN AUTOMOBILE CHASSIS ( $\frac{1}{2}$ ) Uses and properties. 16mm silent. Bray Pictures Co., Educational Dept., 729 Seventh Ave., New York City, N. Y.
2. ALLOYS USED IN AUTOMOBILE ENGINE ( $\frac{1}{2}$ ) Uses and properties. 16mm silent. Bray Pictures Co., Educational Dept., 729 Seventh Ave., New York, N. Y.
3. ARTERIES OF INDUSTRY (6) Story of modern steel pipe. 16mm silent, 35mm silent. U. S. Steel Corp., Industrial Relations Dept., 71 Broadway, New York City, N. Y.
4. BESSEMER AND OPEN HEARTH STEEL ( $\frac{1}{2}$ ) Process visualized by animation and actual photography; principal of regenerative process. 16mm silent, 35mm silent. Reading Iron Co., 401 N. Broad St., Philadelphia, Pa.
5. FROM MINE TO CONSUMER (2) Mining, smelting and refining of copper and fabrication of its alloys. 16mm silent, 35mm silent. American Brass Co. Waterbury, Conn.
6. HEAT TREATMENT OF STEEL (2) Method of heat treatment in modern furnaces where temperature is regulated automatically. 16mm silent, 35mm silent. U. S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
7. HERITAGE (1) Discovery and uses of nickel. 35mm sound. Rothacker, Douglas D., 729 Seventh Ave., New York City, N. Y.
8. INDUSTRIOUS DIAMONDS (1) Use in making copper wire. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N. Y.

9. IRON ORE TO PIG IRON (1) Mining, transportation and smelting of iron ore; steel bridge construction; uses of steel. 16mm silent. Dudley, William H., Visual Education Service, Inc., 736 S. Wabash Ave., Chicago, Ill.
10. LONG DRAWN OUT (1) Journey through copper wire mill. 35mm silent. Y. M.C.A., National Council of, Motion Pictures Bureau, 347 Madison Ave., New York City, N. Y.
11. MAKING AMERICAN WIRE ROPE (2) 35mm silent. U. S. Steel Corp., Industrial Relations Dept., 71 Broadway, New York City, N. Y.
12. MAKING IT TOUGH (3) Complete cycle of alloy-steel, "heat" in open hearth furnace; casting ingots; properties and uses. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
13. MANUFACTURING OF ANACONDA SHEET COPPER (1) Self-explanatory. 16mm silent, 35mm silent. American Brass Co., Waterbury, Conn.
14. MANUFACTURE OF PIG IRON ( $\frac{1}{2}$ ) Working of the blast furnace shown in animation--charging, elimination of impurities, slag, etc., 16mm silent. Bray Pictures Dept., 729 Seventh Ave., New York City, N. Y.
15. MANUFACTURE OF SHEET STEEL AND TIN PLATE (6) Mining of ore, steel-making processes; application of finished product. 35mm silent. U.S. Steel Corp., Industrial Relations Dept., 71 Broadway, New York City, N.Y.
16. METAL OF THE AGES (3) Manufacture of wrought iron pipe. 16mm silent, 35mm silent. Reading Iron Co., 401 N. Broad St., Philadelphia, Pa.
17. NICKEL (2) Mining of 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. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.,
18. PIG IRON TO STEEL (1) Divided into three units. The Open Hearth Furnace, The Blooming Mill, The Finishing Mill. Traces progress of the ore through mining process to finished product. 16mm silent. Dudley, William H., Visual Education Service, Inc., 736 S. Wabash Ave., Chicago, Ill.
19. SHEET COPPER (1) Manufacture and uses. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
20. SOMETHING NEW UNDER THE SUN (1) Camera study of action of carbology, hard-as-diamond cutting edge for high speed tools. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
21. STRONG AS STEEL (2) Story of steel from mine to finished product of automobile. 35mm sound. Metropolitan Motion Picture Co., 1745 E. Grand Blvd., Detroit, Mich.
22. STORY OF ILLINOIS ALLOY STEEL (2) Processes from mining of iron ore to finished product. 16mm silent, 35mm silent. Ray-Bell Films Inc.,

2269 Ford Road, St. Paul, Minn.

23. STORY OF LEAD SMELTING (2) Smelter; after refining the lead is run into molds and cooled on moulding wheel. 16mm silent, 35mm silent. U.S. Bureau of Mines Experiment Station, Pittsburg, Pa.
24. STORY OF LEAD MINING AND MILLING (3) Drilling, blasting and loading of lead ore; operations at mill. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
25. SURFACE CHANGES IN METALS AT HIGH TEMPERATURES (1) Metals heated to high temperature in atmosphere of nitrogen in special furnace. 16mm silent, 35mm silent. Harvard Film Service, Biological Laboratories, Harvard University, Cambridge, Mass.
26. THE EVOLUTION OF AN INGOT (2) Manufacture of galvanized sheet metal from ingot to finished product. 16mm sound. Midcontinent Pictures Corp., 4327 Dencan Ave., St. Louis, Mo.
27. THE NEW CONTINUOUS PROCESS OF MAKING IRON AND STEEL SHEETS (2 & 4) Open hearth, continuous rolling, finishing processes. 16mm silent, 35mm silent. American Rolling Mill Co., Middletown, Ohio.
28. THE JEWELS OF INDUSTRY (2) Manufacture of modern abrasives and their uses in industrial plants. 16mm silent, 35mm silent. Rothacker, Douglas D., 729 Seventh Ave., New York City, N.Y.
29. THE MAKING OF STEEL (2) Various processes through which ore passes in being made into steel. 16mm, 35mm. Chicago Film Laboratory, Inc., 1322 Belmont Ave., Chicago, Illinois.
30. THE STORY OF STEEL (Series of 5 subjects) Mining and Metallurgy (2), Shows basic processes from ore to ingot; Rails, Rods and Plates (1); Wire Products (1); Manufacture of Pipe (1); Sheets and Tin Plates (1); Shows uses of steel. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
31. THE STORY OF MONEL METAL (1 in sound, 2 in silent) Various phases in manufacture of monel metal and its many uses in industry and the home. 16mm silent, 35mm sound. Rothacker, Douglas D., 729 Seventh Ave., New York City, N.Y.
32. THE STORY OF THE FABRICATION OF COPPER (2) Rolling and drawing copper rod and wire, rolling of sheets; testing strength of copper wire and cable. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
33. WALLS WITHOUT WELDS (3) Story of seamless steel tubes. 16mm silent, 35mm silent. U.S. Steel Corp., Industrial Relations Dept., 71 Broadway, New York City, N.Y.

## (Paper Industry)

1. A DAY WITH THE SUN (3) Publishing New York Sun newspaper. 16mm sound, 35mm sound. Y.M.C.A., Motion Pictures Bureau, 347 Madison Ave., New York City, N.Y.
2. BOOKS - FROM MANUSCRIPT TO CLASSROOM (1) A complete and dramatic story of the making of a textbook. 16mm sound, 16mm silent. Winston, John C., Company, 1006 Arch St., Philadelphia, Pa.
3. DAILY PAPER (1) Depicting the extensive and complicated business of publishing a newspaper. 16mm silent. Pinkney Film Service, 1028 Forbes St., Pittsburg, Pa.
4. FROM TREE TO NEWSPAPER (1) Getting out logs for wood pulp; life in camp; boating logs to pulp mill; making wood pulp and paper. 16mm Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
5. FROM TREES TO TRIBUNES (3) Every phase of making of Chicago Tribune from timberlands to delivery of complete papers. 16mm silent, 35mm silent. Y.M.C.A., Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
6. HOW A NEWSPAPER IS MADE (2) News stories followed through newspaper plant, editorial, copy and pressrooms. 35mm silent. Church, Frank R., Films, 829 Harrison St., Oakland, California.
7. MAKING A BOOK (1) From manufacture of paper to bound volume. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
8. NEWSPRINT PAPER (1) From forest to finished product. 35mm silent. Pinkney Film Service, 1028 Forbes St., Pittsburg, Pa.
9. STYLED STATIONERY (2) Process of making paper from rags; making of stationery. 16mm silent. American Museum of Natural History, 77th St., and Central Park W., New York City, N.Y.
10. THE MAKING OF A GREAT NEWSPAPER (3) Complete process; gathering news, transferring copy from paper to metal and back, etc. 35mm silent. Midcontinent Pictures Corp., 4327 Duncan Ave., St. Louis, Mo.
11. THE VOICE OF BUSINESS ( 2 & 3) Manufacture of paper, 16mm silent, 35mm silent. Hammermill Paper Co., Advertising Dept., Erie, Pa.
12. THE WORLD OF PAPER (2) Epoch-making advances in art of writing, printing and paper making from ancient to modern times. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
13. WHEN TREES TALK (1) Paper industry and preservation of forests. 16mm silent, 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.



## (Silver and Pottery)

1. CERAMICS (2) A study of the art of pottery in the studio of Leon Volkmer. 16mm silent. Religious Motion Picture Foundation, Inc., 140 Nassau St., Philadelphia, Pa.
2. GIRL POTTERY MAKERS (1) Study of the art. 35mm silent. Pinkney Film Service, 1028 Forbes St., Pittsburg, Pa.
3. PORCELAIN INDUSTRY IN CZECHO-SLOVAKIA ( $\frac{1}{2}$ ) Process from common clay to finished hand-painted lustrous china. 16mm silent, 35mm silent. Society for Visual Education, Inc., 327 S. LaSalle St., Chicago.
4. SILVER (1) Manufacture of sterling flatware and hollow ware, production of plated ware and mirrors; uses of silver in photographic field. 16mm Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
5. SILVER: HEIRLOOMS OF TOMORROW (3) Scenes in a modern silverware plant; examples of Paul Revere's work. 16mm, 35mm. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
6. TABLEWARE (1) Modern methods of manufacture in preparing clays for pottery; modelling, casting, firing and decorating ware. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
7. THE SILVERSMITH (1) How silverware is produced from the ore to things of beauty and utility. 16mm silent, 35mm silent. Harvard Film Service, Biological Laboratories, Harvard University, Cambridge, Mass.
8. THE MEDAL MAKER (3) The title tells it. 16mm silent, 35mm silent. Harvard Film Service, Biological Laboratories, Harvard University, Cambridge, Mass.
9. THE POTTERY MAKER (1) How a potter works at his wheel. 16mm silent, 35mm silent. Metropolitan Museum of Art, 5th Ave., at 82nd St., New York City, N.Y.
10. THE POTTER'S WHEEL (1) Manufacture of porcelain. 16mm silent, 35mm silent. American Museum of Natural History, 77th St., and Central Park W., New York City, N.Y.

## (Rubber)

1. CONQUERING THE JUNGLE (1) Transforming wilds of Sumatra into modern rubber plantation. 16mm silent, 35mm silent. Goodyear Tire and Rubber Co., Advertising Dept., Akron, Ohio.
2. ROMANCE OF RUBBER (2) Work on Sumatra rubber plantation; care of trees, tapping and transportation of crude rubber to United States. 16mm silent, 35mm silent. Y.M.C.A., Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
3. RUBBER (1) From plantation in Sumatra through manufacture of tires, tennis shoes and fountain pens in United States. 16mm silent. Dudley, William H., Visual Education Service, Inc., 736 Wabash, Ave., Chicago, Ill.

4. RUBBER INDUSTRY OF BRITISH GUIANA (1) Primitive and modern methods of collecting and manufacturing rubber. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
5. RUBBERING IN SELANGORE (1) The industry in the Federated Malay States; gathering and treating the rubber latex; tamil laborers to work and play. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
6. STORY OF RUBBER (1) Manufacture and use of rubber goods. 16mm silent. Y.M.C.A., Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
7. THE INNER TUBE (1) Various stages of construction. 16mm silent, 35mm silent. Goodyear Tire and Rubber Co., Advertising Dept., Akron, Ohio.
8. THE STORY OF GOODYEAR (2) Interesting phases of a great rubber company from gathering raw product to finished commodities. 16mm silent, 35mm silent. Goodyear Tire and Rubber Co., Advertising Dept., Akron, Ohio.
9. THE STORY OF THE TIRE (2) Various processes employed in the manufacture of an auto tire. 16mm silent, 35mm silent. Goodyear Tire and Rubber Co. Advertising Dept., Akron, Ohio.

(Miscellaneous)

1. BAMBOO (2) How it grows in Japan; used to make walking sticks, fishing rods, baskets, toys, fans, etc., 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
2. DIAMOND CUTTERS IN AMSTERDAM ( $\frac{1}{2}$ ) Various stages of cutting and polishing. 16mm sound. 35mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.
3. EYES OF SCIENCE (3) Theory, manufacture and application of modern optical instruments. 16mm silent, 35mm silent. Bausch and Lomb Optical Co., 635 St. Paul St., Rochester, N. Y.
4. FROM DESERT SAND TO SPARKLING GLASS CREATIONS (1) Manufacturing glass jars. 16mm silent. High, Charles, Films, 1213 So. Boulder Ave., Tulsa, Okla.
5. FROM DESERT TO DOORSTEP (2) Manufacturing milk bottles. 16mm silent. High, Charles, Films. 1213 So. Boulder Ave., Tulsa, Okla.
6. FURNITURE MAKING (1) Contrasts important period styles of past with styles of today; master craftsmen at work; modern methods in machine production. 16mm Eastman Kodak Co., Teaching Films Div., 343 State St., Rochester, N.Y.
7. GEM CUTTING AND POLISHING ( $\frac{1}{2}$ ) Work shop of a gem cutter. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
8. GLASS BLOWING (1) Correct procedure and manipulations for elementary glass blowing with Pyrex glass; procedure for joining two tubes; method of blowing bulbs. 16mm silent. Dudley, William H., Visual Education Service, Inc., 736 Wabash Ave., Chicago, Ill.

9. GLASS CONTAINERS (3) Machinery in action in various processes involved in making glass. 16mm silent. Whitall Tatum Co., 225 Varick St., New York City, N.Y.
10. GLASS INSULATORS (2) Entire process of manufacture, from mixing of materials, through pressing, their testing and packing. 16mm silent. Whitall Tatum Co., 225 Varick St., New York City, N.Y.
11. GLASS MAGIC (3) Steps in manufacture of an ophthalmic lens. 16mm, 35mm. Bauscha and Lomb Optical Co., 635 St. Paul St., Rochester, N.Y.
12. HOOPING UP (1) Shows manufacture of tight barrels for liquids from the felling of the tree to the filling of the barrel. 16mm silent. Associated Cooperage Industries of America, Inc., 411 Olive St., St. Louis, Mo.
13. IN THE WOOD (1) Manufacture of beer barrels. Associated Cooperage Industries of America, Inc., 411 Olive St., St. Louis, Mo.
14. MAKING MANILA CIGARS ( $\frac{1}{4}$ ) How cigars and cigarettes are made and boxed in an open air factory. 16mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.
15. MANUFACTURE OF ILLUMINATING GAS (1) Trip through gas plant. 35mm silent. American Museum of Natural History, 77th St., and Central Park W., New York City, N.Y.
16. MANUFACTURE OF MILLED TOILET SOAP (1) Making of high quality toilet soap from vegetable oils. 16mm silent. White King Soap Co., 617 E. First St., Los Angeles, California.
17. MODERN INDUSTRIAL METHODS (4) Lumbering; cabinet making; mass production of interchangeable parts; testing sewing machines. 16mm silent, 35mm silent. Singer Sewing Machine Co., Singer Bldg., New York City, N.Y.
18. MAKING THE NOISELESS PORTABLE (2) Manufacturing of Remington typewriters. 16mm silent. McLarty Motion Picture Service, Certain-Teed Bldg., Military Road, Buffalo, N.Y.
19. PLAYTHINGS OF CHILDHOOD (1) Manufacturing toys. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
20. ROMANCE OF GLASS (1) Discovery of glass; manufacture of glass jars; comparing hand-blowing with modern machine methods. 16mm, 35mm. Y.M.C.A., Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
21. SOAP (1) Contrasts methods of producing home-made soap in both hard and soft water. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
22. STORY OF DYNAMITE (2) From raw materials to finished product; work of explosives in mining and construction work. 35mm silent. American Museum of Natural History, 77th St., and Central Park W., New York City, N.Y.

23. STORY OF SOAP (1) From raw materials in South Seas to completed package. 16mm. White King Soap Co., 617 E. First St., Los Angeles, California.
24. THE MAKING OF A MODERN CONTAINER (1) Manufacturing of slick barrels, used for packing dry products such as flour, fruits, etc. Associated Cooperage Industries of America, Inc., 411 Olive St., St. Louis, Mo.
25. THE MARCH OF THE WOODEN BARREL (1) Shows a series of tests of the slack barrel. 16mm silent. Associated Cooperage Industries of America, Inc., 411 Olive St., St. Louis, Mo.
26. THE MAKING OF TWINE (1) Sisal hemp fields in Yucatan; cutting leaves and removing the fiber, curing and baling; manufacture of twine. 35mm silent. International Harvester Co., Inc., 606 S. Michigan Ave., Chicago, Ill.
27. THE STORY OF BAKELITE RESINOID (2) Portrayal of chemistry underlying manufacture of bakelit materials; varied uses. 16mm silent, 35mm silent. Y.M.C.A., Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
28. THE JONKER DIAMOND (1) History of the famous stone; its discovery in South Africa; cutting, grinding and polishing for setting. 35mm sound. Metro-Goldwyn-Mayer (Primarily theatrical), 1540 Broadway, New York City, N.Y.
29. TIME (2) Story within a story; how correct time is recorded by scientists; modern watchmaker. 16mm silent, 35mm silent. Wholesome Films Service Inc., 33 W. 42nd St., Boston, Mass.
30. TRAVELS IN TOYLAND (1) Toy-making in all its branches. 16mm silent. Kodascope Libraries, Inc., 33 W. 42nd St., New York City, N.Y.
31. TWO ENDS OF A ROPE (1) Hemp industry of the Philippines; cutting the stalks and preparing hemp for market; rope making in Manila. 16mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.
32. WHY I USE MIMIMAX (1) Manufacture and testing of dental amalgam alloy. 16mm silent. Mimimax Co., Advertising Dept., 185 Wabash Ave., Chicago, Ill.

## MECHANICAL AND ELECTRICAL POWER

1. ELECTRICAL HEART (1) Story of a dynamo. 35mm silent. Pinkney Film Service, 1028 Forbes St., Pittsburg, Pa.
2. ELECTRIC POWER IN THE SOUTHERN APPALACHIANS (1) Before Water Power Was Developed. Shows progress in the South. 16mm silent. Eastman Kodak Co., Teaching Division, 343 State St., Rochester, N.Y.
3. ENERGY AND WORK (1) Workings of a steam operated electric power plant. 16mm silent. Edited Pictures System, Inc., 330 W. 42nd St., New York City, N.Y.
4. POWER TRANSFORMERS (2) Development and manufacture. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
5. POWER (2) Development of power from earliest uses of steam power to great stations of today. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
6. POWER OF FALLING WATER (1) How power is generated from great falls and distributed. 35mm silent. Wholesome Films Service, Inc., Melrose St., New York City, N.Y.
7. STEAM POWER (1) Early steam engines and explains improvements which made steamboat possible; steam boilers, locomotives. 16mm silent. Dudley, William H., Visual Education Service, Inc., 736 S. Wabash Ave., Chicago, Ill.
8. STORY OF POWER (3) Early development of steam engine and modern uses of electricity; animated photography. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N. Y.
9. STEAM TURBINE (2) Description and demonstration of operation of single-stage turbine wheel by means of steam and air jets. 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N. Y.
10. THE BUSY BODY (1) Parts comprising the smallest motor. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
11. THE MODERN TREND IN TURBINE DESIGN (2) Factors affecting the design of steam turbines. 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
12. THE TURBINE WITH THE SOLID ROTOR (2) Story of steam turbine; shows stages in manufacture and its operation. 35mm silent. Westinghouse Electric & Manufacturing Co., East Pittsburg, Pa.
13. WATER POWER (1) Primitive methods of utilizing energy of falling water; how power of Niagra is changed into energy. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.

14. WATER POWER (1) Importance of water power in generating electricity, Water Wheels; High Head Water-power Developments; Low Head Water-power Developments; Hydro-electric Generator; Transmission and Use of Electric Power. 16mm silent. Eastman Kodak Co., Teaching Division, 343 State St., Rochester, N.Y.

## MECHANICAL DEVICES

Students in electricity, auto mechanics, machine shop, welding and other allied metal working classes will find the films under the heading of Mechanical Devices of interests.

1. ALTERNATING CURRENT MOTOR (3) The detail operations in the manufacture of an Otis Alternating Current Motor. 16mm silent. Otis Elevator Co., Publicity Division, 260 Eleventh Ave., New York City, N.Y.
2. ARC WELDING IN BUILDING ERECTION (2) Uses of electric arc welding in construction of large office buildings. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
3. AUTOMATIC ARC WELDING IN INDUSTRY (2) Application in the steel automobile and electrical industries. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
4. AUTOMOBILE LUBRICATION (1) Why old oil should be replaced with new oil; different kinds of lubricants for various parts. 16mm silent. American Museum of Natural History, 77th St., and Central Park W., New York City, N.Y.
5. A DAY WITH THE TRACTOR BUILDERS (2) Shows every step in tractor construction. 35mm silent. Chicago Film Laboratory, Inc., 1322 Belmont Ave., Chicago, Ill.
6. BETTER BRAKES (2) Construction, operation and servicing of modern hydraulic automobile brakes. 35mm sound. Midcontinent Pictures Corp., 4327 Duncan Ave., St. Louis, Mo.
7. BIG DEEDS (2) Trip through Schenectady Works of General Electric; shows manufacture of different classes of electric equipment. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
8. DIESEL ELECTRIC LOCOMOTIVES AND RAIL CARS (3) Complete explanation and tests of the 6-cylinder Diesel engine. 35mm sound. Westinghouse Electric and Manufacturing Co., East Pittsburg, Pa.
9. ELECTRICAL MEASUREMENT (4) Construction and operation of electric instruments and the needs of different measuring quantities. 16mm silent. Edited Pictures System, Inc., 330 W. 42nd St., New York City, N.Y.
10. ELECTRIC SHIP (1) Features of electrical equipment shown. 16mm sound. 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
11. ELEMENTS OF THE AUTOMOBILE (14) Series visualizing inside workings of motor car; animated drawings, mechanical models and phantom drawings used. 16mm silent, 35mm silent. Bray Pictures Corporation, Educational Dept., 729 Seventh Ave., New York City, N.Y.
12. FORD AND A CENTURY OF PROGRESS (1) Ford exhibits. 35mm sound. Ford Motor Co., Dept. of Photography. Dearborn, Michigan.

13. FOUR-STROKE CYCLE GAS ENGINE (1) Shows it in a single cylinder "T"-head type of motor; a simplified carburetor, ignition system applied to single and multi cylinder engines, water and air cooling. 16mm silent. Eastman Kodak Com., Teaching Films Division, 343 State St., Rochester, N.Y.
14. KEEP THE HOME LIGHTS BURNING (1) Shows greatest advance in ten years in distribution transformer design. 35mm sound. Westinghouse Electric & Manufacturing Co., East Pittsburg, Pa.
15. MAKING AN ALL STEEL AUTOMOBILE BODY (2) Making the machinery for pressing, stamping, welding and finishing. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
16. MAKING A V-TYPE ENGINE (2) Made in cooperation with Ford. Shows furnace and machining operations on various parts of engine, and assembly, testing of completed engine. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
17. MEN AND MOTORS (2) Craftsmanship and precision methods of automobile manufacture, 35mm sound. General Motors Corp., Dept. of Public Relations, Broadway at 57th St., New York City, N.Y.
18. METALS OF A MOTOR CAR (2) Use of metals and alloys in construction and operation of parts of a motor car. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
19. OIL BLAST EXPLOSION CHAMBER (1) Operation of new circuit breaker; highly technical. 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
20. PRATT AND WHITNEY MOTORS (1) How airplane engines are made. 16mm silent. Church, Frank R., Films, 829 Harrison St., Oakland, California.
21. PREPROVED (3) Manufacture and sales presentation of Dodge trucks. 16mm sound, 35mm sound. Chrysler Corp., Dodge Division, 7900 Jos. Campau, Detroit, Mich.
22. RHAPSODY IN STEEL (2) Manufacturing at Ford motor plant; special music score. 35mm sound. Ford Motor Company, Dept. of Photography, Dearborn, Mich.
23. SERVICING THE CARBURETOR (1) Good for motor trade schools. 35mm silent. Midcontinent Pictures Corp., 4327 Duncan Ave., St. Louis, Mo.
24. STORY OF A GASOLINE MOTOR (3) Animation shows entire function of automobile motor; lubrication and operation of each part. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
25. STORY OF A SPARK PLUG (2) Manufacture of spark plugs, manufacture of sullivanite; important part spark plugs play. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
26. TIES OF STEEL (1) Converting scrapped steel rails into railroad ties by automatic arc welding machine. 16mm silent, 35mm silent, General Electric Co., Visual Instruction Section, Schenectady, N.Y.



27. THE AUTO FASHION PLATE (2) Journey through the art and color section of the Fisher Body Corp., 35mm sound. General Motors Corp., Dept. of Public Relations, Broadway at 57th St., New York City, N.Y.
28. THE AUTOMOBILE (1) Traces production and use of iron, rubber, glass and gasoline in the automobile. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
29. THE CARBURETOR (2) Processes of manufacture. 35mm silent. Midcontinent Pictures Corporation, 4327 Duncan Ave., St. Louis, Mo.
30. THE ELECTRIC NEEDLE (1) Electric arc welding; installation of pipe line to convey oil, gas, steam, and water in large municipal systems. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
31. THE FOURTH NECESSITY (1) Automobile transportation. 35mm sound. General Motors Corp., Dept. of Public Relations, Broadway at 57th St., New York City, N.Y.
32. THE HARVESTER (3) A new type combine--mechanical features and performance. 16mm sound, 35mm sound. Ray-Bell Films, Inc., 2269 Ford Road, St. Paul, Minn.
33. THE POWER WITHIN (3) Explains in detail by animated drawings location and operation of each part of motor. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburg, Pa.
34. TRANSFORMER THEORY (1) Development of Stanley's transformer for alternating current; shows practicality of his theories. 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
35. UNSEEN VALUES IN GENERAL ELECTRIC MOTORS (3) Manufacture of induction motor shown in considerable detail. 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
36. WESTINGHOUSE RAILWAY LINE MATERIAL (1) Manufacturing methods. 35mm sound. Westinghouse Electric & Manufacturing Co., East Pittsburg, Pa.

## ENGINEERING

Teachers of the metal working subjects, as well as of occupations and guidance, will find the films under the general heading of Engineering, helpful.

1. AGE OF RIVETED STEEL (2) Various uses of riveted steel in engineering construction. 35mm silent. American Institute of Steel Construction, Inc., 200 Madison Ave., New York City, N.Y.
2. A NATIONAL PROGRAM IN THE TENNESSEE VALLEY (2) General view of TVA development; explanatory accompanying voice. 35mm sound. Tennessee Valley Authority, Film Circulation Unit, Knoxville, Tennessee.
3. AMERICA'S GREAT BRIDGE TEST (1) Technical study of test made to determine strength of modern reinforced arch bridge. 16mm silent, 35mm silent. U.S. Dept. of Agriculture, Division of Motion Pictures, Washington, D. C.
4. BOULDER DAM (4) Story of the construction of the dam. 16mm silent, 35mm silent. U.S. Bureau of Reclamation, Washington, D. C.
5. BOULDER DAM FROM START TO FINISH (1) The building of this great project step by step. 16mm silent. Hollywood Film Enterprises, Inc., 6080 Sunset Blvd., Hollywood, Cal.
6. CONOWINGO (2) Great hydro-electric development. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
7. CONQUEST OF THE CASCADES (1) Interesting features of the Cascade Tunnel and its contribution to better transportation. 16mm silent, 35mm sound, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
8. CONQUERING THE DESERT (2) Transformation of trackless waste in Salt River Valley of Arizona into expansive cotton plantation. 16mm silent, 35mm silent. Goodyear Tire and Rubber Co., Advertising Dept., Akron, Ohio.
9. DREDGING NEW YORK HARBOR (1) Excellent study of this modern naval engineering process. 16mm silent. Edited Pictures System, Inc., 330 W. 42nd St., New York City, N.Y.
10. EMPIRES OF STEEL (3) Building the Empire State Building, New York City. 35mm silent. U.S. Steel Corporation, Industrial Relations Dept., 71 Broadway, New York City, N.Y.
11. ERECTION OF GOODYEAR ZEPPLIN STEEL HANGAR, AKRON, O. (1) Title tells it. 16mm silent. American Institute of Steel Construction, Inc., 200 Madison Ave., New York City, N.Y.

12. ERECTION OF LEES FERRY BRIDGE OVER MARBLE CANYON--COLORADO RIVER (3) Title tells it. 16mm silent. American Institute of Steel Construction, Inc., 200 Madison Ave., New York City, N.Y.
13. FROM SWAMPS TO WORKSHOP (1) Building of manufacturing plant. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
14. GRAND COULEE DAM (2) Explanation of the Columbia Basin project, its conservation purposes and structural features. 16mm silent, 35mm silent. U.S. Bureau of Reclamation, Washington, D. C.
15. HOW BROOKLYN BRIDGE WAS BUILT (1) Scientific animated drawing explaining one of world's greatest engineering achievements. 16mm silent. Kodascope Libraries, Inc., 33 W. 42nd St., New York City, N.Y.
16. NATIONAL PARKS AND EAST RIVER TUNNELS (1) Striking contrast between works of nature and engineering achievements of today. 35mm silent. Pinkney Film Service, 1028 Forbes St., Pittsburg, Pa.
17. NEW YORK-EAST RIVER TUNNELS (1) Diagrammatic and actual scenes of construction of this achievement. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
18. NORRIS DAM (3) Shows in detail construction of the project to develop the water and other resources of the Tennessee River watershed. 16mm silent, 35mm silent. Tennessee Valley Authority, Film Circulation Unit, Knoxville, Tenn.
19. THE BUILDING OF BOULDER DAM (1) Construction and equipment. 35mm silent, International Harvester Co., Inc., 606 S. Michigan Ave., Chicago, Ill.
20. THE EXPLOSIVE ENGINEER-FORERUNNER OF PROGRESS (1) Modern application of explosives in the industrial world. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburgh, Pa.
21. THE KILL VAN KULL BRIDGE (3) Building of bridge between Bayonne, N.J. and Staten Island, New York Harbor. 35mm silent. U.S. Steel Corp., Industrial Relations Dept., 71 Broadway, New York City, N.Y.
22. THE PLAYGROUND THAT WENT TO WORK (1) Land and water problems overcome in building a great workshop. 16mm sound, 35mm sound. Western Electric Co., 120 W. 41st St., New York City, N.Y.
23. THE SPAN SUPREME (4) Story of manufacture and erection of cables of the Hudson River Bridge. 35mm silent. American Institute of Steel Construction, Inc., 200 Madison Ave., New York City, N.Y.
24. TUNNELING TO YOSEMITE (2) Construction of Wawona Tunnel. 35mm silent. U.S. Dept. of Agriculture, Division of Motion Pictures, Washington, D. C.
25. WHEELER RESERVOIR CLEARANCE (2) Clearing the land for impounded water. 35mm silent. Tenn. Valley Authority, Film Circulation Unit, Knoxville, Tenn.

## NATURAL RESOURCES

These films were listed as possessing guidance and occupational information. The fish industries are illustrative of types of employment. Under the sub-headings of mining and petroleum, students of most all shop classes will find subjects of interest.

1. CATCHING SALMON IN OREGON (1) How fish are caught, eggs extracted and fertilized for hatcheries. 16mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.
2. CHESAPEAKE BLUE CRAB (2) Fishing for crab in Maryland. 35mm silent. Maryland State Game Dept., Munsey Bldg., Baltimore, Md.
3. CHESAPEAKE BAY OYSTERS (2) Oyster industry in Maryland. 35mm silent. Maryland State Game Dept., Munsey Bldg., Baltimore, Md.
4. FISH AND FISHING FOR EVERYBODY (1) The great fish industry of Canada, showing Thurlow Fish Hatchery, Belleville, Ont., Fish incubation. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
5. FISH AND FOWLS (1) Conservation of fish in inland waters; industry that supplies markets with deep water fish. 16mm silent, 35mm silent. Films of Commerce Co., Inc., 35 W. 45th St., New York City, N.Y.
6. FRESH FROM THE DEEP (1) Catching and packing halibut. 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
7. FROM CATCH TO CAN (1) The sardine industry. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
8. HARVESTING THE DEEP (1) Gathering harvest of cod, haddock, flounders, and other fish off Cape Sable Banks. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
9. HOW SALMON ARE CAUGHT (1) Methods used in British Columbia coastal salmon fisheries. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
10. INSHORE FISHING ON THE ATLANTIC COAST (1) Work of Canadian fishermen. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N. Y.
11. MAINTAINING THE SALMON SUPPLY (1) Salmon hatchery in British Columbia. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.

12. NEW ENGLAND FISHERIES--COD (1) Divided into following units; Equipment for Cod Fishing; Catching Cod Fish; Preparing Cod for Market; Annual Memorial Services. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
13. NEW ENGLAND FISHERIES--MACKEREL ( $\frac{1}{2}$ ) Divided into two units; Catching Mackerel; Preparing Mackerel for Market. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
14. ON THE SKEENA RIVER (1) Salmon Fisheries. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Pictures Bureau, 347 Madison Ave., New York City, N.Y.
15. PACIFIC COAST SALMON (1) Multitudes of plucky salmon swimming to spawning beds; Natural and artificial spawning; seine and trap fishing; packing and canning. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
16. SALMON ANGLING ON THE RESTIGOUCHE (1) Methods used in catching silver salmon in Canada's most renowned salmon stream. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau. 347 Madison Ave., New York City, N.Y.
17. STORY OF A CAN OF SALMON (1) Process of canning. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
18. THAR SHE BLOWS! (1) Whaling in Alaskan waters and views of seals on the coast. 16mm silent. Kodascope Libraries, Inc., 33 W. 42nd St., New York City, N.Y.
19. THE SALMON RUN (1) Views of one of Alaska's greatest industries; life history of the salmon. 16mm silent. Kodascope Libraries, Inc., 33 W. 42nd St., New York City, N.Y.
20. THE ROMANCE OF WHALING (3) Showing one of the most picturesque industries of early New England; some facts on the whale. 16mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
21. THE SPONGE INDUSTRY (1) Fishing for sponges, by hooking and diving, off Florida coast; curing, packing, sorting and clipping of the sponge. 16mm silent, 35mm silent, 16mm sound, 35mm sound. Rhodes, James H., Co., 157 W. Austin Ave., Chicago, Ill.
22. TRAPPING TUNA (1) Industry on east coast of Canada. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.
23. WHALING (1) Picture taken on board an Alaskan whaler--sighting and harpooning of whale. 16mm silent. Eastman Kodak Co., "Kodak Cinegraphs", Rochester, N.Y.

## (Lumbering and Forest Products)

1. ACTION IN THE WOODS (2) Producing timber in the woods for commercial purposes. 16mm sound, 35mm sound. Allis-Chalmers Mfg. Co., Milwaukee, Wis.
2. CEDAR CAMPS IN CLOUDLAND (1) Scenic survey of pole-making industry. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N.Y.
3. CONQUEST OF THE FOREST (1) Felling trees and manufacturing lumber in the Northwest. 16mm silent, 35mm silent. General Electric Co., Schenectady, N.Y.
4. FELLING FOREST GIANTS (1) Lumbering in Carolinas and the Northwest; various methods of handling. 16mm silent, 35mm silent. Films of Commerce Co., Inc., 35 W. 44th St., New York City, N.Y.
5. LAND OF THE WHITE CEDAR (1) Making poles in nature's snowy workshop. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N.Y.
6. LUMBERING IN THE PACIFIC NORTHWEST (2) Story of lumber in Washington and Oregon. 16mm silent, 35mm silent. Andlauer Film Co., Ozark Bldg., Kansas City, Mo.
7. LUMBERING IN BRITISH COLUMBIA (1) Lumbering operations and shipping. 16mm silent, 35mm silent. American Museum of Natural History, 77th St., and Central Park W., New York City, N.Y.
8. LUMBERING IN THE PACIFIC NORTHWEST (2) Laying railroad; dragging logs to it by steel cables; sawing logs into lumber; drying, planing and subsequent sorting and shipping. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
9. LUMBERING IN SIAM (1) The industry as carried on by the Siamese. 16mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.
10. OIL, THE WOOD PRESERVER (1) Cargo of creosote oil from time it is pumped from tanker until it is forced into pine poles. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N.Y.
11. OUT OF THE DEEP WOODS OF DIXIE (1) Preparing yellow pine trees cross-arms. 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau. 347 Madison Ave., New York City, N.Y.
12. PILLARS OF THE SKY (1) Gathering and milling the raw products for cross-arms and conduits. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N.Y.
13. POLE PUSHERS OF PUGET SOUND (1) Views of northwestern cedar industry showing many amusing and thrilling incidents. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N.Y.
14. RESIN FOR THE WORLD (1) How resin is obtained. 35mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.

15. TEAK LOGGING WITH ELEPHANTS ( $\frac{1}{4}$ ) In upper Siam. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.
16. TIMBER-R-R (1) Timber growing and logging practice in the California Pine Region. 16mm silent, 35mm silent. U.S. Dept of Agriculture, Div. of Motion Pictures, Washington, D.C.
17. THE TRAIL OF THE LONGLEAF PINE (1) Yellow pine forests of far South; how trees are utilized for telephone timber. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N.Y.
18. TWO GENERATIONS (3) Handling and utilization of woodlands; prepared especially for use in hardwood sections of the South. 16mm silent, 35mm silent. U.S. Dept. of Agriculture, Div. of Motion Pictures, Washington, D. C.
19. WILDWOOD WORKERS (1) Preparing yellow pine trees for use; activities of sawyers, axmen, teamsters and boatmen. 35mm silent. Western Electric Co., 120 W. 41st St., New York City, N.Y.

(Mining)

1. ASBESTOS (1) Mining and clobbering of asbestos fiber; factory views; testing of asbestos roofing. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
2. ANTHRACITE (1) Six units; The Miner Goes to Work; Timber Supports in the Mine; Blasting Coal; Removing Coal from the Mine; The Breaker; Cleaning and Grading Coal. Anthracite region. 16mm silent. Dudley, William H., Visual Education Service, Inc., 736 S. Wabash Ave., Chicago, Ill.
3. ANTHRACITE (1) Early mining and methods employed today in shaft, slope and drift mining. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
4. BITUMINOUS COAL (1) Principal operations in mining and preparation; primitive and modern methods contrasted. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
5. BITUMINOUS COAL (1) Methods used in mining of soft coal and the making of coke. 16mm silent. Dudley, William H., Visual Education Service, Inc., 736 S. Wabash Ave., Chicago, Ill.
6. BLACK SUNLIGHT (1) Coal formation a million years ago until today, in animation; actual photography of anthracite mining. 16mm silent, 35mm silent. Bray Pictures Corp., Educational Dept., 729 Seventh Ave., New York City, N.Y.
7. BURIED SUNSHINE (2) Origin, mining and preparation for market of anthracite. 16mm silent, 35mm silent. Y.M.C.A., National Council of, Motion Picture Bureau, 347 Madison Ave., New York City, N.Y.

8. COAL AT ITS BEST (2) The "Chemacol" process of treating coal; advantages of this processed coal. 16mm sound, 35mm sound. Ray-Bell Films Inc., 2269 Ford Road, St. Paul, Minn.
9. COMMON SALT (1) Nature and action of salt; methods used in extraction, purifying, drying and bagging surface and rock salt deposits. 16mm silent. Eastman Kodak Co., Teaching Films Division, 343 State St., Rochester, N.Y.
10. GOLD MINING IN THE KLONDIKE (1) Old and modern methods. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
11. GOLD (1) Mining, smelting and uses of gold. 16mm silent. Eastman Kodak Co., Teaching Films Div., 343 State St., Rochester, N.Y.
12. JAYHAWK COAL (2) In the mines of southern Kansas. 35mm silent. Andlauer Film Co., Ozark Bldg., Kansas City, Mo.
13. LEAD (1) Way in which ore is mined and smelted; multiple uses of metal in industry; process of making white lead. 16mm silent. Eastman Kodak Co., Teaching Films Div., 343 State St., Rochester, N.Y.
14. MAGIC GEMS (1) Study of minerals and precious stones. 35mm silent. F. C. Pictures Corp., 505 Pearl St., Buffalo, N.Y.
15. MAKING COAL AND WATER GAS ( $\frac{1}{2}$ ) Story of coke and coal gas; operation of modern gas plant. 16mm silent. Bray Pictures Corp., Educational Dept., 729 Seventh Ave., New York City, N.Y.
16. MODERN COAL MINING (2) How labor-saving electrical machinery has replaced old methods. 16mm silent, 35mm silent. Goodyear Tire and Rubber Co., Advertising Dept., Akron, Ohio.
17. MOUNTAINS OF COPPER (1) Operations in blasting and transportating copper ore from world's largest open-pit copper mine. 16mm silent, 35mm sound. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
18. ORIGIN OF COAL AND COAL MINING (1) Origin of coal mines of today shown in animated drawings; process of sub-surface mining. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston Mass.
19. PILLARS OF SALT (1) How salt is mined and refined. 16mm silent, 35mm silent. General Electric Co., Visual Instruction Section, Schenectady, N.Y.
20. SALT MINING (1) In the mines near Hutchinson, Kansas. 35mm sound. Andlauer Film Co., Ozark Bldg., Kansas City, Mo.
21. STORY OF A FAMOUS COAL (3) Complete story of underground mining operations in modern mechanized mine; world's largest coal washing plant. 16mm sound, 35mm sound. Progress Film Co., 2120 Lincoln Park W., Chicago, Ill.
22. SULPHUR (2) Method of mining; how sulphur is transported and its uses and by-products. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.



23. THE STORY OF COAL ( $\frac{1}{2}$ ) Formation, coal areas, how it is mined and grades; animation and actual photography. 16mm silent. Bray Pictures Corp., Educational Dept., 729 Seventh Ave., New York City, N.Y.
24. THE STORY OF COPPER (4 parts, may be used separately) Mining (5); Milling (1); Smelting (1); Refining (1). 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
25. THE WONDERS OF ANTHRACITE (3) Geology, history, mining and preparation. 16mm silent. DeFrenes & Co., 1909 Buttonwood St., Philadelphia, Pa.
26. TIN (1) Opencast mining, sluicing and bucket dredging shown in world's richest mines (Malay States); making tin products. 16mm silent. Eastman Kodak Co., Teaching Films Div., 343 State St., Rochester, N.Y.
27. TRIP TO CRIPPLE CREEK (1) Few moments among greatest gold and silver mines in the world. 16mm silent. Reynolds, Ernest M., 165 E. 91st St., Cleveland, Ohio.
28. WILDWOOD. A 100 PER CENT MECHANIZED MINE (3) Operation of bituminous coal mines by means of machinery. 16mm silent, 35mm silent. U. S. Bureau of Mines, Experiment Station, Pittsburgh, Pa.

(The Petroleum Industry)

1. EVOLUTION OF THE OIL INDUSTRY (3) Development of petroleum industry from early times to the drilling of modern oil wells, pipe lines and refineries; importance to modern civilization. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
2. FIT TO WIN (4) Complete story covering production and refining of petroleum products, from oil well to customer. 16mm sound, 35mm sound. Midcontinent Pictures Corp., 4327 Duncan Ave., St. Louis, Mo.
3. LIQUID GOLD IN TEXAS (1) Securing and refining of oil. 35mm silent. Wholesome Films Service, Inc., 48 Melrose St., Boston, Mass.
4. MEXICAN OIL FIELDS (1) How oil is drilled for, struck, tanked, piped and shipped. 16mm silent. Bell and Howell Co., 1801 Larchmont Ave., Chicago, Ill.
5. NEW SUPER SHELL (2) Refining process used in manufacture of modern high test gasoline. 35mm sound. Midcontinent Pictures Corp., 4327 Duncan Ave., St. Louis, Mo.
6. NORTHERN CALIFORNIA'S NATURAL GAS DISCOVERY FIELD (3) Detailed pictures of the operations of Butte's oil field. 16mm silent. Church, Frank R., Films, 829 Harrison St., New York City, N.Y.
7. OKLAHOMA CITY OIL FIELDS (1) High lights of the world's largest oil gushers, flowing wells, oil fires, etc. 35mm silent. Davis, H. O., 522 N. Broadway, Oklahoma City, Okla.

8. PETROLEUM, THE LIQUID MINERAL (4) Production and refining of oil, distribution and use of products. Acenes include drilling of well, pumping, transportation of oil, recovery of gasoline from natural gas. 16mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
9. PRODUCING CRUDE OIL (1) Work preliminary to drilling; drilling, operations, methods of transporting oil from fields to cities. 16mm silent. Eastman Kodak Co., Teaching Films Div., 343 State St., Rochester, N.Y.
10. REFINING CRUDE OIL (1) Straight photography and animation show process of cracking crude oil and the products derived from it. 16mm silent. Dudley, William H., Visual Education Serv., Inc., 736 Wabash Ave., Chicago, Ill.
11. REFINING THE CRUDE (4) Crude petroleum traced from oil well to refinery and through process of distillation. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburgh, Pa.
12. REFINING PLUS ( $1\frac{1}{2}$ ) Refining crude oil into high-grade lubricants; processes explained step by step. 16mm silent. Jordan Productions, 4 State St., Oil City, Pa.
13. SHELL CARRIES ON (2) Scientific testing apparatus used in gasoline refineries and results. 35mm sound. Midcontinent Pictures Corp., 4327 Duncan Ave., St. Louis, Mo.
14. STORY OF GASOLINE (2) Shows oil field refineries, distilling, transportation and delivery. 16mm silent, 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.
15. STORY OF LUBRICATING OIL (2) Manufacture and use of lubricants; general view of typical refinery; theory of processes employed. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburgh, Pa.
16. THE REFINING OF PETROLEUM ( $\frac{1}{2}$ ) What takes place in the refining of crude oil; animated diagrams show cracking process. 16mm silent. Bray Pictures Corp., Educational Dept., 729 Seventh Ave., New York City, N.Y.
17. THE STORY OF A MEXICAN GUSHER (2) Discovery of a bubbling seepage of petroleum in Mexican jungle; stages in drilling well. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburgh, Pa.
18. THROUGH OIL FIELDS OF MEXICO (3) General views around oil fields; "spouters", laying pipe line, tank farm and refinery. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburgh, Pa.
19. THROUGH OIL LANDS OF EUROPE AND AFRICA (Series 2, 3 & 4) Picturesque views of countries; study in oil. Group 1--Oil supply of Italy, Hungary, the Danube, Roumania; Group 2-- Poland, Greece, Egypt; Group 3--Germany, France, Spain, Morocco, Algeria. 16mm silent, 35mm silent. U.S. Bureau of Mines, Experiment Station, Pittsburgh, Pa.

20. USES OF GAS IN NEW YORK CITY INDUSTRIES (1) Such as a hat factory, modern bakery, doll factory, manufacture of storage batteries. 35mm silent. American Museum of Natural History, 77th St. and Central Park W., New York City, N.Y.

PART III

SUMMARY

## SUMMARY

Visualization is the quickest, easiest, and most economical way to acquire experience. Pictures contribute to the concrete experience of us all. They explain things which many people cannot understand if they are to rely on the printed word.

The picture as an aid in education has been used for thousands of years for conveying messages from one person to another. It is probably true that a picture language was the forerunner of our modern alphabet. Among the outcomes to be expected in a program of visual education are: (a) increased initial perception; (b) increases retention of subject matter; and (c) increased understanding. Visual aids are becoming important educationally because they stimulate interest in learning, save time in the teaching process, and broaden outlooks and understandings.

Visual aids have a very definite place in the school program. The wall chart and map, the blackboard illustration and the glass slide have long been with us. The modern developments in visual aids have strengthened the value and importance of visual aids. The retardation that the movement experiences no doubt has as its cause the cost and care of equipment and the reluctance on the part of many teachers to try anything new. Many teachers definitely state preferences as to which type of visual aid is best. Each type of visual aid has its definite service to render. One type may be best in one situation. Another type may be better in another situation. A combination of types serve best in some situations.

The tendency exists among some teachers to show movies for the amusement benefits to be derived, or to eliminate some of the burden of teaching. No worth while results can be gotten unless a few definite rules are followed:

The picture to be shown must be pre-viewed. In many instances it must be shown twice. The picture must be reviewed as soon after showing as possible. It is often advisable to discuss with the class the subject matter to be covered by the film previous to showing, so that the class may be prepared for what is to come. The showing of too many pictures at one time must be avoided. Pupils must be held responsible for content of the lesson, in the way of subsequent class discussions and examination. When the student expects this he will regard the matter more seriously and not look upon movies as a device set up by the teacher for the sake of entertainment.

In a discussion of objectives it is well to remember that the practical work that is done in industrial arts and vocational industrial classes involves many concrete, objective learning situations that are rich in sense-participation. To the extent that industrial education is true to life, pupils will learn to evaluate on a factual basis. Just as the methods and technics involved in teaching various classes such as part time, general continuation, and unit trade, varies; so also must the method and approach vary in teaching these various groups with visual aids. Objectives vary, the time element varies, the type of student varies, so also must the emphasis and content vary.

Industrial arts, vocational industrial education and general education are not separate functions in the education process, that they must be segregated one from the other. The fundamental principles of education apply in any case. The principles, methods and procedures of teaching industrial education are those employed in the teaching of vocational education.

The author has listed in one chapter reference to considerable film material of value to students in all industrial education work. The teacher must select that which is best suited to a given situation and which meets a given need. An effort has been made to group the subjects into large classifications to aid in the selection of materials for various types of situations.

PART IV

APPENDICES

## APPENDIX A

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Maps, Charts and Globes

- Denoyer-Geppert Company,  
5235 Ravenwood Avenue, Chicago, Ill.
- National Geographic Society,  
Sixteenth and M Streets, Washington, D. C.
- A. J. Nystrom and Co.,  
3333 Elston Avenue, Chicago, Ill.
- Weber Costello Co.,  
Chicago Heights, Chicago, Ill.

Photographs and Prints

- Art Extension Press, Inc.,  
Westport, Conn.
- Colonial Art Company,  
Oklahoma City, Okla.
- Division of Motion Pictures,  
U.S. Department of Interior, Washington, D. C.
- George Washington Memorial Association,  
386 Fourth Avenue, New York City, N.Y.
- International Art Prints,  
64 East Lake St., Chicago, Ill.
- National Geographic Society,  
Sixteenth and M Streets, Washington, D. C.
- Orthovis Printing Co.,  
Chicago, Ill.
- Perry Pictures Company,  
Box 4, Malden, Mass.
- Photographic History Service,  
5537 Hollywood Blvd., Hollywood, California
- Poster-Lesson-Course, Scientific Education Publishers,  
Log Angeles California
- Publishers Photo Service, Incorporated,  
105 West 40th St., New York City, N.Y.
- Yosemite Park and Curry Company,  
Yosemite National Park, Cal.

Opaque Projectors

Bausch and Lomb Optical Company,  
Rochester, N.Y.

Spencer Lens Company,  
Buffalo, N.Y.

Trans-Lux Daylight Picture Company,  
247 Park Avenue, New York City, N.Y.

Stereographs and Stereoscopes

Keystone View Company,  
Meadville, Pennsylvania

E. Leitz, Incorporated,  
60 East 10th St., New York City, N.Y.

Glass Slides

Bailey Art Slide Company,  
21 Lake Avenue, Newton Center, Mass.

Conrad Slide and Projection Company,  
Superior, Wisconsin.

Eastman Educational Slides,  
Iowa City, Iowa

International Art Prints,  
64 East Lake St., Chicago, Ill.

Keystone View Company,  
Meadville, Pennsylvania

National Studios, Incorporated,  
226 West 56th St., New York City, N.Y.

Henry G. Peabody,  
Pasadena, California.

Spencer Lens Company,  
19 Doat St., Buffalo, N.Y.

Victor Animatograph Company,  
Davenport, Iowa

Slide-Making Materials

Celluloid Corporation,  
290 Ferry St., Newark, New Jersey

Eastman Kodak Company,  
Rochester, N.Y.

Society for Visual Education,  
327 South LaSalle St., Chicago, Illinois

Glass Slide Projectors

Bausch and Lomb Optical Company,  
Rochester, N.Y.

Keystone View Company,  
Meadville, Pennsylvania

Spencer Lens Company,  
Buffalo, New York

Victor Animatograph Company,  
Davenport, Iowa

Filmslides

Division of Motion Pictures,  
Department of the Interior, Washington, D. C.

Edited Pictures System, Incorporated,  
130 West 45th St., New York City, N.Y.

Society for Visual Education, Incorporated,  
327 South LaSalle St., Chicago, Ill.

Visual Instruction Service, University Museum,  
University of Pennsylvania, Philadelphia, Pa.

Visual Text Sales Company,  
Los Angeles, Cal.

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

Filmslide Cameras

Eastman Kodak Company,  
Rochester, N.Y.

Folmer-Graflex Corporation,  
Rochester, N.Y.

International Research Corporation,  
Ann Arbor, Michigan

E. Leitz, Incorporated,  
50 East 10th St., New York City, N.Y.

Carl Zeiss, Incorporated,  
485 Fifth Avenue, New York City, N.Y.

Filmslide Projectors and Attachments

Bausch and Lomb Optical Company,  
Rochester, N.Y.

Eastman Kodak Company,  
Rochester, N.Y.

E. Leitz, Incorporated,  
60 East 10th St., New York City, N.Y.

Spencer Lens Company,  
Davenport, Iowa

Film Cement

Ampro Corporation,  
2839 North Western Ave., Chicago, Ill.

Bell and Howell Company,  
1801 Larchmont Avenue, Chicago, Ill.

Safety Projector Company,  
310 West 2nd St., Duluth, Minn.

Motion Picture Machines

Bell and Howell Company,  
1801 Larchmont Avenue, Chicago, Ill.

Eastman Kodak Company,  
Rochester, N.Y.

Edited Pictures System, Incorporated,  
330 West 42nd St., New York City, N.Y.

Erpi Picture Consultants, Incorporated,  
259 West 57th St., New York City, N.Y.

Herman A. Devry, Incorporated,  
1111 Center St., Chicago, Ill.

Holmes Projector Company,  
1813 Orchard St., Chicago, Ill.

Ideal Pictures Company,  
30 East Eighth Street, Chicago, Ill.

International Projector Corporation,  
90 Gold Street, New York City, N.Y.

RCA Victor Company,  
Camden, New Jersey

United Projector and Film Corporation,  
228 Franklin St., Buffalo, N.Y.

Victor Animatograph Corporation,  
Davenport, Iowa

Weber Machine Corporation,  
59 Rubber St., Rochester, N.Y.

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

Screens

Da-Lite Screen Company,  
2721 North Crawford Avenue, Chicago, Ill.

Alfred D. Hornstein,  
29 East Madison, St., Chicago, Ill.

Motion Picture Accessoried Company,  
43-47 West 42nd St., New York City, N.Y.

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

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Craig Movie Supply Company,  
1053 South Olive St., Los Angeles, California

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