# THE STATUS OF INDUSTRIAL ARTS IN KANSAS HIGH SCHOOLS 1950-1951

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# CHAPTER I

## SCOPE AND ORGANIZATION OF THE STUDY

The status of industrial arts in any particular state must necessarily be introduced by factors contributing to its development. For this reason the history of industrial education in its earliest forms will be traced, through Europe and America, to the present situation as it exists in Kansas. It is hoped, by the writer, that an account of past events and experiences in the industrial movement will form a background for better understanding of current problems.

Origin of the Study. The study was first suggested by Prof. C. L. Hill, Department of Industrial Arts Education and Engineering Shopwork, of this college. The writer, after completing all formal schooling and teacher preparation in Oklahoma and then spending four years teaching industrial arts courses in the Severy, Kansas High School, recognized the opportunity to attack a problem which offered considerable useful knowledge from a personal point of view. With this in mind the study was launched during the summer of 1950.

Needs for the Study. A status survey is primarily concerned with history in the making, so that trends and problems may be studied while they are developing instead of waiting until they are a part of the past. Information about present activities are necessary as a guide in formulating policies and working out plans for development in the immediate future. As far as can be determined, no study, of this scope and nature, has been made in Kansas.

Methods of Investigation. The normative survey method of investigation

formed the nucleus of the study. To ascertain conditions as they now exist, a questionnaire, seeking answers to prevailing problems, was mailed to industrial arts teachers in each of the 441 Kansas high schools offering courses in the field. Documentary information from the State Department of Public Instruction, Topeka, furnished data not specifically covered by the questionnaire. This was the source of much of the current information. The historical method involving the study of past development, as recorded by the writing of accepted authorities in books and magazines, was used to introduce and evaluate the present status. Information concerning the current status of industrial arts was arranged in usable forms to facilitate its study and is included as tables in the content.

Definition of Terms. To assist in the assimilation of the material contained in the study, a glossary of terms is included.

> Manual Training. That phase of industrial training originated to emphasize the importance of making "good workmen" as well as "educated intellects." (4, page 361)
>
> Manual Arts. A change in view following the demand that the "art" and other phases of manual training be developed through having the individual pupils choose and design their own projects. (16, page 4)
>
> Industrial Arts. A phase of general education that concerns itself with the materials, processes and products of manufacture, and with the contribution of those engaged in industry. The learnings come through the pupils' experiences with tools and materials and through his study of resultant conditions of life. (12, page 15)
>
> Industrial Education. A term including all educational activities concerned with modern industry, its raw materials, products, machines, problems and personnel. It includes manual training, manual arts, industrial arts, vocational education, and vocational industrial education. (13, page 1)
>
> Vocational Education. A phase of industrial education concerned primarily with training students, at the secondary school level, for useful employment in one trade or occupation. Teachers are usually selected from the trades and given professional teacher training. (10, pages 248, 249)
>
> Vocational Industrial Education. The training of workers for the

skilled and semiskilled occupations which are a part of the modern industrial world. It is given as the student nears the time of employment, and emphasizes the specific skills, information, and work habits which will give success on the job. (12, page 15)

Adult Education. A means for continuing growth in manipulative skill, intellectually, emotionally, morally, and spiritually, long after evident physical growth has ceased. (18, page 490)

Unit Shop. The oldest existing type of shop, where a single activity is engaged in by the students. (10, page 302)

General Shop. A shop that is planned and equipped to teach two or more distinct types of shopwork at the same time under one teacher. (12, page 15)

The foregoing definitions will be useful to the reader in following the development of industrial arts from its beginning to the present, and in evaluating the content of the existing conditions in Kansas as presented in Chapter IV.

Reviews of Other Works of this Nature. Darrell D. Simmons, in 1949, completed a similar survey on the status of industrial arts in South Dakota during the school year of 1948-49. The study included 89 high schools, representing the total number offering industrial arts classes, dividing them into two sections for study. Those schools having membership in the North Central Association in the one group and the schools accredited only by the state in the other. The groups were compared as to curriculum, enrollment, average class size, inventory of shop equipment, salaries of teachers, and teacher preparation. In addition, information concerning the duties of industrial arts teachers outside the field, the use of textbooks in classroom instruction, and the use of audio-visual aids, is included.

The status of industrial arts in Oklahoma was considered by Henry C. Tinkle in 1946. The schools offering industrial arts were divided into three groups for the purpose of study. They were junior high schools, high schools that were members of the North Central Association, and accredited

high schools not members of the North Central Association. The number of schools offering courses, size of classes, periods per day, teachers' salaries, value of shop equipment, and qualification of teachers were included and discussed. The study embraces 87 junior high schools and 222 senior high schools, representing the total number of schools offering industrial arts in Oklahoma during 1946.

The origin of the junior high school movement in the United States and its growth in Oklahoma is given in the study, as well as a description of the North Central Association of Colleges and Secondary Schools, with its aims and factors contributing to its present importance in the field of education.

Available Literature. Very little has been written concerning the industrial arts in Kansas. Some information of early development in the state, relative to the programs established at Kansas State College, Manhattan, and at Kansas State Teachers College, Pittsburg, may be found in the two volumes of Charles A. Bennett's "History of Manual and Industrial Education." As far as can be determined by the writer, no literature is available, current or otherwise, that contains a study of the development of industrial arts within the state. During the school year 1949-50, J. Kelly Mudd prepared a study at Kansas State Teachers College, Pittsburg on the relative time expended in preparation for instruction, classroom instruction, shop management and other duties by industrial arts teachers in Kansas. Lowell B. Wharton, also of Kansas State Teachers College, Pittsburg, submitted a term paper entitled "Leaders and Legislation for Vocational Education in Kansas," to the industrial arts department of that college, in 1939.

Predicted Views of Results. In seeking to answer questions concerning

facts, with regard to the existing conditions in the high schools of Kansas, teachers in the field may compare their own practices with that of other instructors throughout the state. By directing attention to the trend toward greater professional preparation among the teachers, higher levels of attainment may be forthcoming. Current procedures employed in the teaching of industrial arts classes will be presented in such manner as to enable the reader to determine what methods are dominant. The study is not intended to solve the problems of industrial arts in Kansas, but with the help of an increased insight, derived from a study of the data, thinking may be directed toward the solution of those problems.

Plan for Presenting Material. A history of the development of industrial arts will be included in Chapter II. The evolution of the movement, from the time of early teaching of crafts by the ancient Jews to about 1917, is to be followed through the changes as they occurred in Europe and America. Development since 1900, as it applies to America, will be presented to include the current situation in the industrial arts.

The early views and beliefs of industrial arts and the subsequent economic, social, and educational events that lead to their changing will be introduced in Chapter III. The objectives of industrial arts and their current application in the educational scheme will also be considered.

A brief history and the geographic features of the state are to be included in Chapter IV to serve as an introduction to material gathered from the questionnaire. A discussion of methods used in research and the presentation of data concerning the teachers and curriculum in the schools will complete the chapter.

A summary of findings, conclusions indicated by the study, and recommendations will form the content of Chapter V.

This study is confined to the 441 high schools of Kansas offering courses in industrial arts during the school year 1950-51. It is hoped by the writer that it be of value to industrial arts teachers of other states for the purpose of comparing conditions, to teachers joining Kansas school systems from outside the state, and to the teachers and schools of Kansas.

# CHAPTER II

## THE INDUSTRIAL ARTS MOVEMENT

When man learned to control and use fire, he passed from savagery to barbarism. He began to cook his food, smelt metals and shape them into tools, and engage in crafts that were unknown to him before. The crafts learned were not taught each succeeding generation by any standards of instruction as we know them today, but unconscious imitation was overcome and the learning process was underway.

### PART A

### DEVELOPMENT OF INDUSTRIAL ARTS IN EUROPE

Man's desires to improve his surrounding conditions increased as civilization progressed and led to his acquiring of skills and knowledge to fulfill these wants. Since the center of civilization had moved steadily northward from its beginning, the major developments in industrial education made most of its early progress in Europe.

Early History. Handicrafts and certain forms of passing knowledge from generation to generation have been found in the earliest records of civilization. The ancient Jews, Babylonians, and Greeks placed some value on the skillful manipulation of tools and made provisions for educating the youth in crafts then practiced. Earliest records show the duty of teaching the trades and skills to be placed upon the parent. In Jewish education the fundamental motive for teaching crafts was religious, rather than to fill any economic or avocational needs, but the process was there and represents one of the earliest examples of the teaching of trades. The custom was for the boy to attend school in the morning to be taught by the Rabbis

and spend the afternoon with his father learning a trade.

Among the Babylonians the education in crafts was taught by the apprenticeship method. The Code of Hammurabi (225 B. C.) contains the following:

> "If an artisan take a son for adoption and teach him his handicraft, one may not bring claim against him.
>
> If he do not teach him his handicraft, that adopted son may return to his father's house." (3, page 13)

This paternal relationship of father and son existed among the master and apprentice until the industrial revolution took manufacturing away from the home.

During the Homeric age in Greece, craftsmen occupied a position of respect in the social structure. The use of slaves to perform the more menial tasks, later caused handiwork to decline until it was held in contempt by all but the lower classes. The writings of Socrates (470-399 B. C.) reveal other reasons such as long hours of labor in a sitting position and working in gloomy surroundings oftimes injurious to health. (3, page 15)

Christian Monks held manual labor in the highest esteem and among many of their Orders labor was required of all. The Benedictines (529) in addition to manual labor were compelled to read and, since printing books from type was not developed until about 1450, all reading had to be done from manuscripts. The art of "bookmaking" flourished with them. Skilled scribes were released from other duties to become instructors in the "Scriptorium" to teach others. Outside the monasteries the only form of education remained the participation in some type of skilled labor.

The invention of the printing press, revival of classical learning, and the Protestant reformation during the 15th century, gave new impetus to teaching methods. During this period appeared the idea that sense impressions are the basis of thought and knowledge, and the related idea of "learning by doing." These have become fundamental ideas upon which modern

industrial arts has been built, and led to the placing of handicrafts in the schools of the 15th century.

Schools were founded by Commenius, Hartlib, Petty, Locke and Wiegel to include craftwork as a means of improving education. Others such as Francke, Rousseau and Basedow with their schools and writing, helped reform the educational system and prepare the way for further development.

Middle Ages. Johann Heinrich Pestalozzi (1746-1827), the "father of industrial arts," in 1774, gathered some 20 poor children into his home and set them to doing work around the house and in the fields. Very little time was given to actual lessons, but the children were taught while working with their hands. One of the major contributions of his Neuhof Industrial School was the successful use of objects and manual labor, both skill and unskilled, as a means of teaching the traditional subjects. (3, page 118)

Following Pestalozzi, and carrying on many of his principles, was Philip Emanuel von Fellenburg. His academy at Hofwyl became the most influential in Europe during the first half of the 19th century and gave a great impulse to the agricultural schools, the industrial reform schools, and the manual labor schools that followed.

In the period following Pestalozzi and Fellenburg and aided by the invention of the steam engine and its application in the factories, the manual arts were analyzed and organized into pedagogical forms comparable to older subjects in the school curriculum. The economic value of education was apparent in enough cases to encourage public and private expenditures for schools. Many schools were organized in the spirit of Pestalozzian methods.

Froebel's schools in Germany, mainly of the kindergarten type, included handwork as an integral part of education. Robert Owen and his school at

New Lanark in England gave the children a place to learn the weaving trade. Both schools were conducted in the Pestalozzian spirit.

Industrial schools were established in Germany during this period that have since been useful for orphans, paupers, and deserted children in need of a practical education and for children who have committed a crime and are sent to an institution for correction. The same needs for an industrial reform school made it necessary to include industrial work in the elementary schools for poorer children.

Many leaders, in both industry and education, did not approve the methods and thought apprenticeship a better means of training for industrial pursuit. When the factory system became well established, apprentice methods could not meet the needs. It had been most effective under the old guild system where the master and apprentice worked side by side, a practice that became impossible with the advent of labor-saving machinery and large factories. The decline of the apprentice system gave added impetus to industrial arts education in the schools.

The growing masses of people engaged in industry caused a movement known as the Mechanics Institute in Great Britain. The more intelligent workers developed a desire for more knowledge of a technical and scientific nature, consequently, night classes were organized. The rise of lower technical schools and the desire for more efficiency in industry led to the establishment of schools to train technologists and experts in many fields. These schools grew rapidly into the technical colleges of the same grade as universities and reached their highest early development in Germany.

Recent Developments. The Imperial Technical School of Moscow was established by imperial decree in 1868, for the purpose of training civil engineers, mechanical engineers, draftsmen, and chemists. To supplement

the theoretical instruction, large shops were built to give practical application to the theories. The plan was not successful because the students were obliged to learn by the "no teaching" or imitative method while working with hired workmen engaged in construction contracted from private individuals.

This led Victor Della Vos, the director of the School, to analyze the mechanic arts and organize a new system whereby the "construction shops" were separated from the "instruction shops." This became known as the Russian system of workshop instruction and represents the first analysis of the mechanic arts.

Underlying principles of the Russian system embraced many of the modern concepts of industrial arts, they were: unit shops, work stations with individual tools, use of models progressing from simple to the intricate, a system of grading by a scale of tolerance in each dimension of the project, and the idea that every teacher have more knowledge of his specialty than is necessary to perform the exercises in the instruction. (4, pages 17-18)

The Russian system, more than any single factor up to 1868, placed instruction in the mechanic arts on a pedagogical basis. The Imperial Technical School sent exhibitions to all the Expositions of the day and exerted a profound influence on the schools of Europe and America. Its presentation at the Centennial Exposition in Philadelphia during 1876 was a direct cause of the School of Mechanic Arts being opened at Massachusetts Institute of Technology and later the St. Louis Manual Training School in America. (4, page 42)

The modern movement for manual arts fell on fertile ground in the Scandinavian countries. For centuries the people of these countries, with long winter evenings, had engaged in a system of homecraft known as sloyd. With the advent of factories enabling the people to buy an article for the

household more easily than it could be produced at home, sloyd all but vanished from the social structure. The young men and boys no longer spent evenings at home engaged in sloyd, but in many instances were at the public houses where liquor could be obtained. This breaking down of both skill and character led the Scandinavian leaders to seek a solution by bringing back sloyd. By 1844, sloyd schools were numerous throughout Norway and Sweden.

Otto Saloman, in 1872, established a sloyd school at Naas with instruction in carpentry, carving, turning, smith's work, and many others. His school gave birth to "educational sloyd" with aims to create a desire for manual labor, to develop independence and self-reliance. (4, page 67)

Manual training grew out of German pedagogy, but the first influence was exerted by Denmark and Sweden. (4, page 169) Teachers were sent from German schools to receive instruction in sloyd and returned to teach in the German schools.

The Leipsic Boys Workshop, founded by Waldemar Goetze in 1879, was the leader of the manual training movement in Germany. One of the essential principles of the Leipsic workshop was to have instruction given by teachers trained in other school subjects and not by artisans. The idea being that the value of the subject to general education was greater than the economic value of skills acquired. (4, page 173)

Other German cities developed manual training courses of their own, patterned after the Leipsic School, and the movement continued to grow. By 1909, 40% of the eligible students took manual training at Mannheim, attesting to the popularity of the movement.

The background of industrial arts development must naturally be found in the older countries of Europe, but with the rapid growth of American

industrial might, more recent developments must be approached from the American viewpoint.

## PART B

## DEVELOPMENT OF THE INDUSTRIAL ARTS IN AMERICA

The development of industrial education in America was greatly influenced by the important changes as they took place in Europe, but because the idea of free education prevailed since early days in the colonies, more money from private individuals could be spent on secondary, professional, and industrial education. In addition, important legislation such as the Morrill Act of 1862 gave an early stimulus to higher education and the mechanic arts.

Colonial. The history of industrial training in the days before colonization was directly related to the monastic schools of Europe. As early as 1630, schools were in operation in what is now New Mexico, California, and Florida. These schools were started by Catholic missionaries, teaching such crafts as tailoring, shoemaking, carpentry, carving, blacksmithing, brickmaking, and stonecutting, and later native artisans took their place as they became skilled. Girls were taught to spin, weave and sew.

In the English Colonies, apprenticeship was much the same as that practiced in the mother country. It developed more as an educational institution in America than in Europe, due to the fact there were no guilds and was under the charge of the town and colony authorities. Most of the colonies passed legislation for the benefit of apprentices to insure them the opportunity for training. However, not all the masters were capable of "reading, writing, and ciphering," which must be taught according to law. This led to the establishment of the first elementary schools in America.

The General Court of Massachusetts, in 1647, ordered every town of fifty families to select one among their numbers as a teacher, to be paid by the

parents and masters or the inhabitants in general. No mention is made of industrial education, but because of the Puritan distaste for idleness this training was probably given in the home. The important thing about the movement was the first "free" schools in America.

A plan of public school education was proposed by Thomas Budd in 1685, for Pennsylvania and New Jersey, and contained a proposal for making education compulsory for all children. He proposed to teach "that art, mystery, or trade that he or she most delighteth in." Although there is no evidence that it was put to practice, it may have influenced education of that day. (3, page 62)

There were other schools of some importance established during the 18th century, the most notable being the De la Howe School at Abbeville, South Carolina in 1787. The boys were engaged primarily in farming and gardening, while the girls practiced the household arts.

Post Revolution. Fellenburg's Academy furnished the inspiration for the Manual Labor Movement in America, which lasted a brief period from 1825 to 1843. During this time several schools tried the manual labor experiment, the first was Andover Theological Seminary at Andover, Massachusetts. In 1826, a few individuals began making boxes and doing cabinet work, such as bedsteads, tables, and chests. Similar work was done at other seminaries, the Oneida Institute of Science and Industry at Whitesborough, New York, the Manual Labor Academy at Germantown, Pennsylvania, and the Woodbridge School at South Hadley, Massachusetts.

The schools maintained shops for working in wood and farms for manual labor, however, emphasis was always placed upon the physical-exercise value of labor and nothing was said about the value of the skills themselves. One by one, nearly all the schools dropped the manual labor experiment until it

passed from the educational scene in 1843.

The Mechanics Institute Movement that reached America from England in 1820, closely parallels the Manual Labor Movement. The first important institution was established in 1820 at New York City and amounted to a "mechanics school." Libraries were provided for in the larger cities to be used by the apprentices and in New York City a school for the children of mechanics was established. It existed until 1858 and then was discontinued.

The major contributions of the Mechanics Institute in America stemmed from the discovery that many of the workers attending the night classes could not read or write and in general were not prepared to receive instruction offered them. Liberal education was given and consisted of four important classes of studies; English, classical and modern languages, mathematics, and science. (3, page 321)

An outgrowth of the Mechanics Institute in America was the Lyceum Movement. Because of the great distance between large cities in America, it was impossible to reach all of the industrial workers. Lyceums were formed in the smaller cities and banded together to support educational programs. Like the Mechanics' Institute Movement, the Lyceum Movement placed an emphasis on acquiring useful knowledge and helped build the American ideal of popular education. (3, page 328)

The 19th Century. The early mechanics institutes left a desire to teach science and mathematics, as applied to industry and agriculture, with the schools of America. A new type emerged to meet this demand, the School of Applied Science and Engineering. These institutions required the full time of the students and prepared them for higher positions in agriculture, engineering, and the mechanic arts.

The Morrill Act of 1862, aimed primarily at aiding in the establishment

of agricultural schools, became the most important legislation for higher education ever adopted by any nation. (3, page 358) The terms of the grant provided each state with 30,000 acres of public land, for each senator and representative in Congress, to be used in establishing colleges of agriculture and the mechanic arts.

Early experiments in practical shopwork for engineers were conducted by Calvin M. Woodward of Washington University at St. Louis and John D. Runkle of the Massachusetts Institute of Technology. While teaching a class in applied mathematics, Woodward observed that students could not visualize certain problems being considered because they knew nothing of using the simplest types of tools. In 1871, he sought to abolish this condition by fitting the University with a workshop containing a lathe for turning wood and iron, a work bench, and a full set of carpenter's tools. The following year, after observing the success of the shop experiment, Woodward advocated the same practice for common schools.

John Runkle was confronted with an identical problem at Massachusetts Institute of Technology. He found that students without shop experience had difficulty entering professional work upon graduation. The Russian exhibition, at Philadelphia in 1876, solved the problem and shopwork was installed at the Institute the following year.

Woodward, the champion of industrial arts in America, had long visualized shopwork in the secondary schools on a plane with mathematics and science. The Manual Training High School of Washington University, established in 1879 at St. Louis, was a realization of that dream. It is a tribute to the organizational genius of Woodward that the very first manual training school to appear was typical of the later schools opened all over the United States.

The course of study, including mathematics, science, language, drawing, and shopwork was not intended to prepare boys for college, but three years of college preparation could be obtained by electing a foreign language. It is important to note that scholarship standards were not lowered on account of the introduction of shopwork. (4, page 349)

The decade from 1880 to 1890 was a period of great controversy and heated discussion. The new type of school filled a need long recognized as essential to the American school system, yet some of the more conservative educators feared it would lower academic standards already established. Ridicule, by some educators, was used in an effort to block the movement that seemed destined to become a part of all the public schools. One speech, by an educator of the day, contained the following: "There is no information stored up in the plow, hoe handle, steam engine, but there <u>is</u> information stored up in books." (4, page 361)

Woodward carried the fight for industrial training in secondary schools through lectures and writing in defense of the movement. He had, in the beginning, established the school to teach efficiency in the use of tools but came to realize that shopwork was a valuable stimulant to other subjects contained in the curriculum. One of his chief points of attack was the phrase, "Put the whole boy to school." (4, page 370)

Donors began contributing large sums to be used in the establishment of manual training or technical high schools in all the industrialized sections of the United States. This enrichment of manual training schools had a tendency to fuse them with the regular or academic schools and increase the emphasis on technical instruction. By 1893, manual training had been introduced into public high schools of more than fifty cities in the United States.

## PART C

## THE CURRENT SITUATION IN INDUSTRIAL ARTS

Manual training as adapted for the elementary schools was, to a large measure, responsible for industrial arts as now employed in American schools. Highly specialized courses of a technical nature were impractical and the value of acquiring skills was of secondary importance to the younger students. Leaders maintained the continuity of manipulative processes in manual training must be subordinate to the needs of the subject.

Industrial Arts since 1900. The kindergarten schools of America experienced a reactionary movement against excessive formalism during the latter years of the 19th century. Kindergartens were conducted along the principles expounded by Froebel and incorporated in sloyd; that is, they consisted of strict courses based on a sequence of difficulty in making. About the time of this reaction, teachers trained under Herbart, at the University of Jena, were returning to America. They looked upon manual instruction, not as a subject, but an effective means of teaching the traditional subjects of the school. (4, page 450)

John Dewey believed industrial occupations to be the very center of the school, but they should be regarded as a method of teaching. He would have the content so broad and rich in related matter that it would become the basis for teaching the other subjects in school. Dewey believed a child's knowledge originates and develops simultaneously with his doing; that "industrial occupations gratify his native tendencies to explore, to manipulate tools and materials, to construct." (1, page 220)

Charles R. Richards, of Teachers College, Columbia University, quickly adopted Dewey's philosophy and presented it to men in the manual arts field

at the National Education Association meeting in 1901. Included in his address was the following:

> "The problem of the elementary school today is, I conceive, to make the life of the school more real; more an epitome of the kind of thinking, feeling, and doing that obtains in real life; more a reflection of the actual life outside of the school walls..." (4, page 452)

A few years later, in 1904, Richards suggested the adoption of the term "industrial arts" to replace that of manual training. He maintained that manual training, in its strictest forms, was outmoded and "now we are beginning to see that the scope of this work is nothing short of the elements of the industries fundamental to modern civilization." (4, page 453)

Frederick G. Bonser, of Teachers College, Columbia University, considered industrial arts as both a subject and a method, an end and a means. Accepting the philosophy of Dewey, and applying it to industrial arts, the following is typical of his beliefs:

> "From this standpoint, it will at once appear that primary emphasis will not be placed upon the production of industrial commodities, but rather upon intelligence and cultivated taste in their choice and use. In no single field will all of the children function as producers, but from every field worthy of study they will all function as consumers. The largest problems are those of developing an appreciative understanding of industry as it is at the present time, realizing its social problems and cultivating intelligent judgment and appreciation in the selection and use of industrial products." (4, page 454)

Teacher training institutions naturally kept pace with the changes in industrial education. The increasing demand that all teachers hold at least a Bachelor's degree and preferably a Master's has induced universities to introduce professional courses in the field of manual and industrial education. The first of the universities to offer these courses was Columbia during the school year 1893-94. Stout Institute and Bradley Polytechnic Institute were among the first privately endowed institutions to offer professional courses.

The Smith-Hughes Act of 1917, creating federal aid for certain types of vocational education, produced a new demand for professional training. Prior to the Act preparation of teachers was undertaken primarily by the various normal schools, but after 1918 the universities expanded their curriculum to meet growing demand for industrial education teachers.

The most notable progress following the Smith-Hughes Act of 1917 has been in the development of the professional spirit among industrial arts teachers. This has been accomplished largely through professional associations organized for cooperation and advancement of the profession.

The Industrial Art Teachers' Association created at Boston in 1882, set a standard that has been well worth following. Other early organizations of note were: the Manual Training Teachers' Association of America, 1894, the American Manual Training Association, 1896, Western Drawing Teachers Association, 1894, and the Manual Arts Conference, under the leadership of Robert W. Selvidge, Charles A. Bennett, William T. Bawden, and others, in 1908.

In 1927, at the Los Angeles Convention of the American Vocational Association, a group of persons especially interested in industrial arts petitioned for a special committee. A committee on "Standards of Attainment in Industrial-Arts Teaching" was appointed by the President of the Association in 1928. The committee consisted of the following members: Emanuel E. Ericson, Chairman, Santa Barbara College, California; Clyde A. Bowman, The Stout Institute, Menomonie, Wisconsin; William T. Bawden, Kansas State Teachers College, Pittsburg; Maris M. Proffitt, United States Office of Education, Washington; William E. Roberts, Board of Education, Cleveland; and Robert W. Selvidge, University of Missouri, Columbia. (15, page 6)

The committee was instructed to proceed in its own manner to achieve the desired ends. It was decided to limit the activity of the committee to

a study of those things a student should know and be able to do, in the field of industrial arts, after finishing a course of instruction in the junior high school. The work of the committee, by setting standards of instruction in industrial arts, has been a valuable aid to teachers in improving the quality of their work.

Frederick G. Bonser, Teachers College, Columbia, was influential in changing manual training from a limited manipulative activity into industrial arts, a content subject, with methods of teaching and learning. During his tenure at Teachers College, from 1910 to 1931, Dr. Bonser's influence had a tremendous effect on the trend of industrial arts, finally culminating in his definition of the term, as follows:

> "The industrial arts are those occupations by which changes are made in the forms of materials to increase their values for human usage. 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." (2, page 413)

The definition became more widely and authoritatively quoted than any in the history of the movement. It appealed to public school administrators and caused industrial arts teachers everywhere to examine their stated objects, their courses, and their methods for the purpose of revision to conform with the new concept of industrial arts.

There has been an increasing tendency toward government subsidy in education since 1917. Naturally all of the legislation for general education has affected industrial arts in direct proportion to the other fields, but in 1944 a comprehensive study of vocational education was undertaken. President Franklin D. Roosevelt appointed a commission to study the subject of aid for vocational education and present a summary of its findings. Briefly, the conclusions were: that vocational training needed expanding; evening instruction was needed; that no one method could be found adequate; and

that standards in the teaching force required attention.

The United States Office of Education in 1944, reported an increase of 18 major occupations over 1923. These included aircraft, radio, air conditioning, photography, and petroleum processing. Such development in industry creates a demand for constant revision of industrial training methods. Some of the newer activities in the field, such as counseling and guidance, supervisory training, and the co-ordination of vocational training and industrial arts, have attempted to meet the demands of these changes.

The final achievement in the status of any group is its recognition as a profession. Such 1875, groups of instructors have organized to further the development of industrial arts. Today there are many city, state, and regional associations of industrial arts teachers that are contributing much to the professional attitudes of teachers in the field.

# CHAPTER III

## PHILOSOPHY OF INDUSTRIAL ARTS

The field of industrial arts, a relative newcomer upon the educational scene, has accepted the challenge of modern education for living. Because modes of living are constantly changing, so must the general view and beliefs of industrial arts be continually revised if it is to serve the purpose for which it was intended.

## PART A

## EARLY PHILOSOPHY OF INDUSTRIAL ARTS

When educational leaders began visualizing the mechanic arts on the same plane with other school subjects, the fundamental motives of industrial arts were established. The economic value of systematized teaching over the apprenticeship method was already evident, but the educational and social concepts were results of later development.

Early Views. The desire to produce thoroughly trained men, to take positions in industry as superintendents, foremen, and skilled workmen, was the initial aim of shop instruction as originated by the Russian system. Later, under such terms as "manual training," "manual arts," and "handwork," the primary values attributed to the activities were disciplinary. These values were expressed in terms of developing neatness, accuracy, patience, persistance, love of labor, manipulative skill, honesty and character. There were other values related as subordinate, but not objectives to be worked for consciously. The result of this type of training in the schools was that courses consisted almost wholly of manipulative activity, largely dictated to

students, with no opportunity to think, create, invent, or in any other way use initiative or originality. The manual arts appealed to the student's impulses to manipulate tools and materials and for this reason was entered into with more satisfaction than other subjects requiring the use of words and books only, but the practical values for improving the selection and use of industrial products was not considered. (5, pages 3, 4) Calvin M. Woodward and John D. Runkle were largely responsible for the innovation of this type of course in American schools. (4, pages 317, 320) Later, Woodward's visions for elevating shopwork to a plane comparable to other school subjects caused the establishment of his Manual Training School at St. Louis. This school emphasized the "development of good workmen" as well as "educated intellects," and sought to enrich the curriculum in the schools by the addition of shopwork. (4, page 361)

Development of Industrial Arts. Criticism of shopwork in the public schools, concerning the controversy of whether manual training was so much energy withdrawn from mental training, led Woodward to say less about the advantages of receiving a start toward occupation in industry, and more about the general educational value of manual training, regardless of future occupations. (4, page 361)

The result of inadequate educational outcomes in "manual training" caused the development of a content subject to take the place of that highly disciplinary subject. In October, 1904, Charles R. Richards suggested that the term "industrial arts" be adopted in the place of manual training. (4, page 453) The name, while not free from criticism, is the most satisfactory term yet proposed and has become almost universally accepted. The early trend toward industrial arts began when educators demanded that the sequential teaching of manipulative processes of manual training give way to

a system that would be comparable to, and in harmony with, other subjects in general education. (4, page 451) In schools, the industrial arts should have a place commensurate with their importance outside the school. Their study should relate to the meeting of practical problems and needs of the consumer, as well as an understanding of economics and social problems in daily life. (5, page 6)

The early efforts of leaders in the industrial education movement were directed toward obtaining a place in the educational system for teaching skillful manipulation of tools. As the changing social and economic structure became more complex, the introduction of a content subject to teach the broader aspects of the industrial arts became necessary. To develop an insight in industry and obtain a knowledge of products of value to the consumer, became the educational aims of industrial arts.

## PART B

## PRESENT PHILOSOPHY OF INDUSTRIAL ARTS

The philosophy of industrial arts is as changing as the broader general educational scheme of which it is a part. While, in the beginning, "industrial arts" was used to designate informal courses originated to replace the old Froebel plan, the term has become so popular in the United States that it is now used to describe all instruction in handicrafts for general education, whether formalized or not. (4, page 455)

Objectives of Industrial Arts. Until the advent of the present industrial arts phase of education, opportunities were not equal for the more than half of our school population who think more readily in terms of concrete experiences than in verbal or abstract terms. The abilities of children to construct, to investigate, to experiment, and to learn by engaging

in activities that are undertaken with satisfaction and success, had been almost wholly neglected. (5, pages 6, 7) The following statement of objectives, expresses the desired outcomes of industrial arts in regards to its present philosophy:

1. To explore industry and American industrial civilization in terms of its organization, raw materials, processes and operations, products, and occupations.

2. To develop recreational and avocational activities in the area of constructive work.

3. To increase an appreciation for good craftsmanship and design, both in the products of modern industry and in artifacts from the material cultures of the past.

4. To increase consumer knowledge to a point where students can select, buy, use, and maintain the products of industry intelligently.

5. To provide information about, and--in so far as possible--experiences in, the basic processes of many industries, in order that students may be more competent to choose a future vocation.

6. To encourage creative expression in terms of industrial materials.

7. To develop desirable social relationships, such as cooperation, tolerance, leadership and fellowship, and tact.

8. To develop a certain amount of skill in a number of basic industrial processes. (20, pages 42, 43)

The objectives of industrial arts, as they apply to the teacher, are not essentially different from those of teachers in other subjects, since general aims of academic subjects are the same as those in industrial arts. Industrial arts should always be conceived and practiced as a phase of general education, but the previously named objectives are those for which industrial arts teachers should assume a large measure of responsibility for themselves. (15, pages 50, 51)

Application of Current Philosophy. The present development of the general shop plan for industrial arts classes seems to more nearly approach the fulfillment of objectives in the industrial arts programs of small

schools. The unit type shop has not become obsolete, for nearly all large junior and senior high schools now use individual shops, each teaching a single subject, and those deviating from the practice do so only to a certain point. (10, page 303) Still the student must enroll in a number of different courses to gather "information about, and experiences in, the basic processes of many industries."

The following statement further substantiates this theorem:

> "If a single outstanding trend of the present were to be used to predict the future of industrial arts work, it would most certainly be the trend toward the organization of pupil experiences for instructional purposes around the central idea of the general shop.....That this (growth) will continue seems to be beyond the shadow of a doubt. The reasons for this are obvious. The general shop form of organization: (a) Provides for a variety of media and, consequently, of activities for pupil experiences in manipulative work for self-expression and exploratory values; (b) provides an excellent opportunity for acquiring, in a realistic way, information about industry and our industrial society; (c) offers a large variety of activities that make it more nearly possible to provide pupils with experiences in accordance with their interest and developmental levels.....; (d) accords well with the educational objectives and principles underlying the organization of the junior high school,.....; and, (e) makes it administratively possible.....to offer industrial arts in a larger number of communities than would otherwise be possible." (12, page 16)

Bonser and Dean James E. Russell, both of Teachers College, Columbia University, provided a plan for a series of general contacts with industrial materials in a "general" or "composite" shop. (16, page 4) However, the marked trend toward the general shop plan has been evident for a considerable period of time, but may be considered as a recent development.

(12, page 15)

No attempt has been made to list all of the values that should come from pupil participation in the industrial arts. However, careful examination of the eight objectives of industrial arts, will disclose that the attainment of these objectives alone would more than establish the need for such courses in the curriculum of our schools. Much has been said about the

formulating of objectives on paper and their subsequent neglect in the actual teaching process, still there is less likelihood that any group that has once stated a set of aims will fail to work for their consumation than if these standards were never established.

## PART C

## PERSONAL PHILOSOPHY OF INDUSTRIAL ARTS

The study of the principles that have caused and controlled the events leading to industrial arts in its present form, as stated by various leaders in the field and the later application of these principles in the field of teaching, has formed the basis for this writer's personal philosophy of industrial arts.

Accepted Definitions. A system of general beliefs may be based on the various definitions used in describing industrial arts. While philosophy may, and generally does, vary with changing concepts and conditions pertinent to the field under consideration, the following terms defining the industrial arts are believed to be applicable to the present views of the writer.

> a. Those occupations by which changes are made in the forms of materials to increase their values for human usage. 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 those changes. (5, page 5)

> b. A phase of general education that concerns itself with the materials, processes and products of manufacture, and with the contribution of those engaged in industry. The learnings come through the pupils' experiences with tools and materials and through his study of resultant conditions of life. (12, page 15)

> c. A group of school subjects taught so as to emphasize the "how" and the "why" of industrial materials and occupations; to give an appreciation of real industrial life situations thereby contributing to education and culture. (14, page 9)

d. A definite phase of general education based on values derived principally from manipulative activity and study of materials.
(10, page 248)

The foregoing definitions, gathered from several sources, have essentially the same meaning. Industrial arts, as a subject in education, is more concerned with manipulative activity and the study of materials than in preparing students for remunerative employment. Emphasis is placed upon the participation and exploration of the student rather than skill and efficiency, therefore, the program strives to offer a variety of experience with tools and materials representing many crafts and industries. One of the more important characteristics of industrial arts, from an educational standpoint, is that standards of accomplishment are based upon pupil growth rather than the degree of skill attained. (10, pages 248, 249)

Accepted Objectives. The objectives of industrial arts very closely parallel those aims of general education as set forth in "The Cardinal Principles of Secondary Education," they are:

1. Health
2. Command of fundamental processes
3. Worthy home membership
4. Vocation
5. Civic education
6. Worthy use of leisure
7. Ethical character

(10, pages 256, 258)

Certainly, industrial arts as nearly approaches these principles as any other phase of education, and, together with the other subjects, makes a valuable contribution to the intellectual growth of its students.

The objectives which give the student an insight into industry, consumer's knowledges and appreciation, a degree of skill in a number of basic industrial processes, and information about many types of industries, are responsibilities that fall almost wholly upon the industrial arts.

Accepted Controlling Conditions. The conditions that control industrial arts content are basically the same factors as those determining what is to be achieved in the remaining fields of education. A highly industrialized society has made the acquiring of a skilled occupation an important preparation for future living. The exploratory phase of industrial arts has evolved to meet this condition, not by teaching the skill itself, but by allowing the student to experiment and explore until a niche is found in industry for which he is best suited. The changing economic conditions, which today are such that every person is a purchaser of enormous amounts of manufactured products, emphasizes the importance of consumer knowledge. Improving labor conditions, leaving more time for pursuit of avocational interests, have made their impressions. Conditions surrounding a people are never static, and for this reason, revisions become necessary to keep pace with progress of civilization.

The philosophy of industrial education has changed immensely since the beginning of manual training in America. No doubt, as we progress into an even greater scientific and mechanical age, the general views and beliefs will undergo changes that cannot be comprehended today.

# CHAPTER IV

## CURRENT STATUS OF INDUSTRIAL ARTS IN KANSAS

Among the first states to adopt a school for the purpose of teaching agriculture and mechanic arts under the Morrill Act, Kansas has been quick to adopt new developments in the industrial education movement. Because she, like her sister states in the central plains region, is comparatively young, much of the improvement has been influenced by factors outside the state.

## PART A

## HISTORICAL BACKGROUND OF THE STATE

Since the degree of development in any group depends to a large extent upon the environment in which it lives, the physical, economic, and social background will be introduced as a basis for further study of Kansas.

The Early Years. So far as the white man is concerned, the history of Kansas began in 1541 when Coronado, the Spanish explorer, journeyed across its plains in search of the fabulous cities of "El Quivira." The great distance his army had traveled, and the futility of the search, caused Coronado to send most of his men back to Mexico before reaching what is now Kansas. With a band of about thirty men, the explorer turned north and eventually reached the first of the indian cities northeast of the great bend of the Arkansas. Here in a village of the Wichita Indians, as in all the villages to the southwest, Coronado found nothing but disappointment in his quest for gold. Without visualizing the golden wheat fields, which four centuries later would bring great wealth to the region, the disillusioned Coronado

turned back toward Mexico.

With the exit of Coronado, the land was left to the plains indians, of which the principal tribes were the Pawnee, Osage, and Kansa. With the exception of a few French explorers in the early 18th century, who claimed the land for France but left no further mark, no other white men were in the region.

The United States gained possession of most of the present state with the Louisiana Purchase of 1803 and immediately dispatched Lewis and Clark, Pike, and Long to explore and appraise the region. It was described as a useless waste of sand not unlike the remainder of the Great American Desert.

Trade with Mexico over the old Santa Fe Trail marked the only activity until 1827, when the first white settlement sprang up at Ft. Leavenworth with the establishment of that army post. The discovery of gold in California and Utah began in the "forties" and Kansas became a veritable sea of "prairie schooners" carrying immigrants westward to those fields. As the stream subsided, many of the people recognized a promising land and continued no further, still, in 1854 the total population was no more than 700.

Territorial Days. The region remained a part of Missouri until 1821, but from that date until 1854 it was an unorganized territory. The Kansas-Nebraska Bill of 1854, in creating a territory including most of the present state of Colorado, left the decision of slavery to the people. Immigrants began pouring in from the North and South with each side determined to win the election and establish or abolish slavery according to their beliefs.

A fierce struggle followed, with outbursts of armed conflict along the Missouri border, before the issue was finally settled by the intervention of Federal troops late in 1856. Immigrants from the North increased steadily until at last, in 1859, a constitution prohibiting slavery was adopted.

On January 29, 1861, Kansas was admitted to the Union as the thirty-fourth state.

Statehood. Civil War followed Kansas' entrance into the Union. Guerrilla warfare during the conflict, coupled with the drought of 1860, caused the young state to be called "Bleeding Kansas." Immediately after the war, immigrants again came pouring in, which led to a period of rapid development. Railroads contributed to the progress by building 2,000 miles of track during the four years between 1868 and 1872.

As the railroads grew in Kansas, the cattle raising areas to the south began driving herds over the long trails to the nearest shipping points. Abilene, Wichita, Dodge City, and Great Bend gained early prominence as cattle markets.

By 1885, the "cow towns" were welcoming a few homesteaders, but during the following year, when railroad companies began releasing land for public sale, the "boom" really began. Many settlers became prosperous only to lose their lands to the "land boomer," with his fraudulent schemes, and the lean years of drought, blizzards, and prairie fires. The ensuing movement "back home" became historic, however, those hardy pioneers that remained were the builders of a sturdy, prosperous state.

Geography. Kansas is sometimes called The Central State, for within its boundaries is the geographical center of the United States. To the north the state is bordered by Nebraska, on the east by Missouri, its western plains join Colorado, and Oklahoma lies to the south. The state is rectangular in shape, except in the northeast where the Missouri River cuts off a corner, and embodies an area of 82,276 square miles. Although a part of the great plains which form the eastern slope of the Rockies, the physical character of the land is best described as rolling prairies. There are

no mountains and no marshes, but a gradual rise from 725 feet above sea level in the southeast, to 4,135 feet on the western border. The climate is mild, with a temperature range of 80° to 100° in the summer and rarely falling below zero in the winter.

Economic Status. The chief resources of Kansas are its fertile soil and favorable climate, which permit the growing of most temperate region crops. Agriculture is the chief industry and consists of the following named crops; wheat, corn, sorghum, oats, barley, soybeans, and hay, in the order of their importance. Mineral resources of oil, gas, coal, zinc, lead, cement, and salt assist in stabilizing the economy. Manufacturing consists of meat packing, flour milling, petroleum refining, and the aircraft industries, to name the more prominent.

Population. The population has grown steadily from 1,769,257 in 1920 to 1,947,000 in 1950. The greatest number of inhabitants reside in the eastern section of the state, which also contains most of the cities. Of the white population, 91.6 per cent is native born, with the foreign born coming chiefly from Germany, Russia, Sweden, England, Canada, and Czechoslovakia. Slightly over 3 per cent of the total population is Negro.

Education. Development of education has progressed with great rapidity since the beginning of this century. Although many of the one teacher elementary schools still remain, as may be ascertained from Table I, the recent tendency has been toward consolidation for greater efficiency and better instruction.

The educational system, excluding the institutions of higher learning, numbers 5,192 schools with 336,503 students and 18,192 teachers. There are 21 public and private institutions of higher learning with 31,212 students

and 2,901 teachers. Table I presents the statistical information by types of schools, as of September, 1950, on file with the State Department of Education, Topeka.

TABLE I
STATISTICAL INFORMATION CONCERNING
SECONDARY SCHOOLS 1950-51

| | No. Schools | Enrollment | Teachers |
|---|---|---|---|
| **High Schools** | | | |
| 1st Class Cities | 16 | 17,197 | 738 |
| 2nd Class Cities | 86 | 23,491 | 1,349 |
| 3rd Class Cities | 532 | 39,341 | 3,304 |
| Private | 43 | 5,774 | 455 |
| Total | 677 | 85,803 | 5,846 |
| **Junior High Schools** | | | |
| 1st Class Cities | 26 | 16,206 | 637 |
| 2nd Class Cities | 29 | 8,451 | 394 |
| Total | 55 | 24,657 | 1,031 |
| **Elementary Schools** | | | |
| One Teacher Schools | 2,558 | 28,017 | 2,558 |
| Two or more Teacher (Independent) | 1,344 | 61,249 | 3,187 |
| Two or more Teacher (Consolidated) | 203 | 28,776 | 1,273 |
| 1st Class Cities | 166 | 58,899 | 2,195 |
| 2nd Class Cities | 189 | 49,102 | 2,102 |
| Total | 4,460 | 226,043 | 11,315 |

Kansas secondary schools are divided into four educational classes according to standards of instruction, enrollment, equipment, and teacher qualifications. The three secondary school supervisors make periodic inspections of all accredited high schools and a summary of their report is mailed to the administration of the school after each visit. During these visits, school records are examined, teachers may be interviewed briefly, classrooms may be visited, and the building and laboratory equipment inspected. The qualifications of each classification, other than condition of the school as

determined by the supervisors, are:

> Class A: Fifteen semester hours college credit in the field being taught.
>
> Class B: Twelve semester hours college credit in the field being taught.
>
> Class C: Eight semester hours college credit in the field being taught.
>
> Class M: Those schools not complying with requirements for Class C schools are on probation. If they remain in this class for three consecutive years, they are no longer accredited by the State Department and lose all state aid.
>
> Teacher requirements for all classes: Bachelors degree from an accredited college, valid certificate, forty-five semester hours of general education, six semester hours of psychology, six semester hours directed toward understanding the school as a social institution, and six semester hours directed toward obtaining competence in instruction at the secondary level. (9, page 16)

All secondary schools in the first and second class cities are classified as A, the number of schools by classification is as follows:

TABLE II
CLASSIFICATION OF SECONDARY SCHOOLS 1950-51

| Classification | Number of Schools | Percent |
|---|---|---|
| A | 223 | 33.1 |
| B | 122 | 18.0 |
| C | 317 | 46.8 |
| M | 14 | 2.1 |
| Total | 677 | 100.0 |

In addition, 180 or 80.3% of the Class A schools are fully accredited by the North Central Association of Secondary Schools and Colleges.

The Kansas educational system includes twenty-one colleges or universities and twenty junior colleges. The most important are:

> University of Kansas, Lawrence
> Kansas State College of Agriculture and Applied Science, Manhattan

Kansas State Teachers College, Pittsburg
Kansas State Teachers College, Emporia
Fort Hays State College, Hays

The remainder of the institutions of higher learning contribute to the preparation of teachers for the Kansas high schools, but their influence is mainly local. Table III includes statistical information on the schools of higher learning.

TABLE III
STATE, PUBLIC, AND PRIVATE INSTITUTIONS OF HIGHER LEARNING

| | No. Schools | Enrollment | Teachers |
|---|---|---|---|
| Universities and Colleges | 21 | 26,473 | 2,471 |
| Jr. Colleges | 20 | 4,739 | 430 |
| Total | 41 | 31,212 | 2,901 |

Industrial Arts. Kansas was the first to establish a school of agriculture and mechanic arts under the provisions of the Morrill Act of 1862. In 1863, the Kansas State Agricultural College, later changed to Kansas State College of Agriculture and Applied Science, was founded on the grounds of the old Bluemont College in Manhattan. Many of the early land grant schools were agricultural and industrial in name only, but Kansas State College offered courses in shopwork from the beginning. A student might elect one kind of shopwork for four years and graduate with the essential knowledge of a trade as well as his education in science, mathematics, and the literary subjects. The students enrolled in agricultural courses were encouraged to divide their time among the various shops and learn the basic skills that might be used on the farm. As early as 1874, there was a carpenter shop, a wagon shop, a blacksmith shop, a paint shop, a turning shop, "a scroll sawing, carving, and engraving shop," a printing department, a telegraph department, and a department of drawing. The school offered courses in sewing, household economy, and household chemistry for girls and,

in addition to these, they were allowed to enroll in drawing and do shopwork in scroll sawing, carving, and engraving. (4, page 314) The school had developed a system of "industrials" before the Centennial Exposition of 1876, at Philadelphia, at which time the Russian system became an influential factor in this country. These included practical agriculture, horticulture, and the mechanic arts, or industrial arts, as they preferred to call them. (4, page 316) There was no instruction and the courses had not been fully analyzed and pedagocially organized, but the school did give a thorough education on the trade level.

In 1903, the state legislature passed an act establishing a State Normal School of Manual Training at Pittsburg. It was, in the beginning, a branch of the State Normal School at Emporia and its expressed purpose was to train special teachers in the practical arts subjects. The first principal, R. S. Russ, had been instrumental in establishing manual training in the public schools at Pittsburg during 1899.

The course of instruction consisted of two years' work in three academic subjects and normal training. The school, open to holders of first or second grade teachers' certificates, graduates of high schools, and those who passed an entrance examination, was aimed primarily at preparing manual training teachers for the elementary schools. A ten weeks' theory and practice teaching course was included in the second year. (4, page 478)

The school progressed rapidly during its early years. In 1905, the course was expanded to include three years, and mechanical drawing, pattern-making, and molding and forging were added. Courses of high school rank made up most of the curriculum until 1910 when a fourth year was added. At the same time, a class in "methods" was announced for teachers and students in the last two years. This included practice teaching, plans for equipping

manual training departments, and a history and development of manual training.

Since 1913, the school has been conferring the degree of bachelor of science in education on those completing the four year curriculum. In January, 1929, the Board of Regents authorized the organization of one year of graduate study and work for the degree began the following year.

The name was changed to the Kansas State Teachers College of Pittsburg in 1923 and, although industrial arts is offered in the other state schools, it has continued to be the leader of teacher training for Kansas high schools in the field.

In 1935, William T. Bawden came to the school as Head of the Department of Industrial and Vocational Education. Under his direction, the college exerted an even greater influence throughout the state and succeeded in correlating the curriculum in Kansas high schools with that of neighboring states. (20, page 27)

Otto A. Hankammer, present Head, Department of Industrial Education and Art Department, succeeded Bawden in 1945 and has endeavored to increase the stature of the school in the graduate field. His interest has always been in the graduate program and the need for industrial arts teachers to increase their teaching efficiency through graduate study. Dr. Hankammer was head of the Committee on Curriculum Revision during 1939-40, that revised the industrial arts program in Kansas. The revision, mentioned previously as coming during the years Bawden was head of the department, attempted to establish new goals and standards of achievement and to revise the curriculum to meet the changing situation.

Since statehood, Kansas has been a leader in the field of industrial education. Not so much in the manner of inaugerating new developments,

although the system of "industrials" at Kansas State College in 1874 must be considered a first, but in the adoption of progressive methods as they become apparent in the ever changing field of industrial education.

## PART B

## METHODS OF RESEARCH

Although man has yet to devise a perfect method of searching for truths, the very foundation of his progress may depend upon the efforts expended by him in that direction. The accepted methods of research were used by the writer in approaching and attempting to show the status of industrial arts in Kansas high schools.

The Inquiry Form. The questionnaire or inquiry form was prepared with the idea of gathering, from teachers in the field, that information not available from other sources. The form was kept as brief as possible, to require a minimum amount of time in completing by the respondent, and still include all of the information necessary to the study. The questions included were devised for the purpose of gathering data concerning professional preparation of the teachers, teaching load, courses offered in the high schools, teaching methods, the physical plant, and the salaries of teachers.

After deleting questions considered trivial, the form was presented for criticism before proceeding further. Recommendations were considered and incorporated in the questionnaire, and accompanying letter of explanation, before being mailed to the industrial arts teachers of Kansas. A self-addressed, stamped envelope was included in each inquiry, with the return address of a person of higher authority upon it, in this case, Prof.

C. L. Hill, of the Industrial Arts Department, Oklahoma A. & M. College.

Methods of Study. To determine what had been incorporated in status reports, the primary step consisted of examining other works of this nature in the field. Because information of a current nature, as well as historical background, was needed to complete the study, both the survey and historical methods of research were necessary. These conclusions were reached after observing the following statement:

> "It is pointed out that: (1) a study of the evolution of nationalism and democracy, and of the thinking of great leaders, may contribute to an understanding of contemporary problems; (2) educational history aids in the detection of fads and frills, acts as a sovereign solvent for pedagogical prejudices, and reveals how education as a social institution has become centralized and complex, as contrasted to an earlier form of centralized and local control of schools." (11, page 240)

Information was gathered from library sources at this college and the Kansas State Teachers College, Pittsburg, educational reports and records of the State Department of Public Instruction, Topeka, questionnaire returns, and from talks with Dr. O. A. Hankammer and Dr. James V. Melton of the Industrial Education and Art Department, Kansas State Teachers College, Pittsburg.

Information was analyzed and organized to conform with an outline prepared for this study.

Validity of Results. Because industrial arts, as well as other phases of the educational program, must be constantly revised to meet the demands of a changing society, the questionnaire purports to ascertain prevailing conditions in the field. Questions concerning the professional preparation, pedagogical methods, teaching experience, and tenure, were included to obtain facts with regard to the existing conditions as related to the teachers. While the survey itself is not essentially forward looking, it reveals

practices and conditions in a majority of the high schools teaching industrial arts in Kansas.

Questionnaires were mailed to industrial arts teachers in the 441 high schools offering courses in the field. Usable returns were received from 341 or 77.3% of the total.

## PART C

## INDUSTRIAL ARTS TEACHERS

The success of any phase of the educational program is largely dependent upon the ability of the teacher. Since the growth of industrial arts education, from the "manual training" stage of development, has been accompanied by a corresponding increase in professional standards, the current status of industrial arts may be reflected to a certain extent, by the teachers in the field.

Professional Preparation. The time has long since passed, when teaching, as an occupation, was open to any person with some college education that prepared him to do nothing else. (10, page 369) The number and types of degrees held by the 341 teachers in Kansas, as given in Table IV, confirms this statement.

Of the 264 teachers holding the Bachelor's Degree, 137 were working toward a Master's, while only 3 of the 73 Master's Degree instructors were seeking higher degrees. This would seem to indicate that most of the teachers consider a Master's Degree to be sufficient preparation. To further emphasize this contention, the following comments are included:

> "No, no incentive."
> "No, the school requires six hours every three years but that is all."

Kansas State Teachers College, Pittsburg ranks first among the schools preparing industrial arts teachers, but only by a small margin. Colleges and universities of 10 states and the District of Columbia were represented

TABLE IV
QUALIFICATION OF INDUSTRIAL ARTS TEACHERS
AND SOURCE OF DEGREE

| | | | Other | | | Other States | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Degree | KSTC Pittsburg | KSTC Emporia | Kansas Schools | Okla. | Mo. | Colo. | Nebr. | Iowa. | Other* | Total |
| BS | 93 | 77 | 88 | 27 | 12 | 1 | 1 | 1 | 3 | 303 |
| AB | 0 | 1 | 29 | 2 | 0 | 2 | 4 | 0 | 0 | 38 |
| MS | 28 | 11 | 9 | 6 | 0 | 4 | 0 | 1 | 1 | 60 |
| MA | 1 | 1 | 4 | 2 | 1 | 4 | 0 | 2 | 1 | 16 |
| Other** | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| Total | 102 | 90 | 131 | 57 | 13 | 11 | 5 | 4 | 5 | 418 |

*Other Sources - New York, Texas, Minnesota, New Mexico, District of Columbia.
**Other Degrees - Doctor of Veterinary Medicine.

among the institutions of higher learning conferring the degrees. Oklahoma is the principal out-of-state source with 57, of which 11 were from Oklahoma A. & M. College.

The number of semester hours in the field ranged from zero to ninety, with one teacher represented in each extreme. The average for the 341

TABLE V
PROFESSIONAL PREPARATION OF THE 341 INSTRUCTORS
AS TO NUMBER OF COLLEGE HOURS IN FIELD

| No. of Hours | Frequency |
|---|---|
| 0- 4 | 2 |
| 5- 9 | 4 |
| 10-19 | 46 |
| 20-29 | 78 |
| 30-39 | 80 |
| 40-49 | 58 |
| 50-59 | 28 |
| 60-69 | 22 |
| 70 and over | 22 |
| Unknown | 1 |
| Total | 341 |

teachers was found to be 37.4 hours. The information in Table V may be compared with the regulations of the State Department of Public Instruction pertaining to issuance of teaching certificates in industrial arts.

> Class A: Fifteen semester hours in the Industrial Arts field with five or more semester hours in the subject taught.
>
> Class B: Twelve semester hours in the Industrial Arts field with five or more semester hours in the subject taught.
>
> Class C: Eight semester hours in the Industrial Arts field with three semester hours in the subject taught. Two semester hours may be deducted from the field for one or more units in high school work. (8, page 25)

The teaching experience and tenure of the teachers may be found in Table VI. Of the 341 teachers, 72, or 21.1% were teaching the first year in their present position. Fifty of the teachers surveyed had just taught

TABLE VI
TEACHING EXPERIENCE AND TENURE

| Years of Experience | Freq. Total | Freq. Present Position |
|---|---|---|
| 1 | 50 | 72 |
| 2 | 46 | 66 |
| 3 | 29 | 49 |
| 4 | 24 | 36 |
| 5- 9 | 50 | 74 |
| 10-14 | 38 | 13 |
| 15-19 | 31 | 6 |
| 20-24 | 25 | 6 |
| 25-29 | 28 | 7 |
| 30 and over | 17 | 3 |
| Unknown | 3 | 9 |
| Total | 341 | 341 |

their first year. The average number of years experience for the 341 teachers was 10.5 years, with 5.1 years representing the average for present position.

Teaching Load. There has been much discussion concerning the relative instructional load that industrial arts teachers should carry in comparison to teachers of the so-called "regular" subjects. Administrators and teachers of other subjects may be inclined to feel that class organization and

methods in industrial arts are such that the teachers are favored. Industrial arts teachers are prone to feel that good teaching in this field requires all that other subjects demand, plus a great many extra details and responsibilities. (10, page 229)

Of the 341 teachers surveyed, 99, or 29% taught classes in the industrail arts field only. The average number of class periods taught daily by

TABLE VII
NUMBER OF CLASS PERIODS TAUGHT DAILY

| Hrs. per Day | Frequency |
|---|---|
| 1 | 0 |
| 2 | 6 |
| 3 | 28 |
| 4 | 74 |
| 5 | 125 |
| 6 | 91 |
| 7 | 11 |
| Unknown | 6 |
| Total | 341 |

the industrial arts teachers is shown in Table VII. The figures may be misleading, however, since many extra curricular activities, such as coaching athletics and school administration, could not be considered as class periods, yet were being conducted by 167 of the 341 industrial arts teachers. See Table X. The average number of hours per day, for the 341 teachers was 4.9.

The number of students enrolled in each industrial arts class varied

TABLE VIII
AVERAGE NUMBER OF STUDENTS
ENROLLED IN INDUSTRIAL ARTS CLASSES

| No. of Students | Frequency |
|---|---|
| 1- 4 | 6 |
| 5- 9 | 110 |
| 10-14 | 119 |
| 15-19 | 63 |
| 20-24 | 16 |
| 25 and over | 18 |
| Unknown | 9 |
| Total | 341 |

from three, the smallest reported, to 35 reported by one school. Ten was reported as the average class size by 44 of the instructors for the greatest

single frequency. The average number enrolled in each class was 12.1 students for the 341 schools, indicating that personal attention may be given to individual students by the teacher in most instances.

Other fields of teaching represented by the 341 teachers are given in Table IX. Physical Education classes for boys and girls are most frequently taught by the industrial arts teachers in Kansas. Mathematics and the

TABLE IX
FREQUENCY OF OTHER CLASSES TAUGHT BY THE 341 INDUSTRIAL ARTS TEACHERS

| Class | Frequency |
|---|---|
| Physical Education | 53 |
| General Science | 45 |
| Biology | 25 |
| History | 23 |
| Geometry | 22 |
| Algebra | 20 |
| General Mathematics | 18 |
| Driver Training | 18 |
| Physics | 14 |
| Agriculture | 13 |
| Citizenship | 10 |
| English | 10 |
| Hygiene | 8 |
| Typing | 8 |

sciences rate high as an additional field, indicating that industrial arts teachers, in general, receive more credit in these fields than is required to graduate from college. Twenty-two other classes were listed, with social science, commerce, foreign language, chemistry, and psychology among the fields mentioned.

The extra-curricular activities of Kansas industrial arts teachers are indicative of the degree in which they are a part of the school, according to Ericson:

> "A teacher who considers that all of his duties are to be performed in the shop or classroom is falling short of giving maximum service to the school or community in which he works. He who expects to render maximum service will seek opportunities to do more than to teach so many periods each day.....and while it may be true that the majority of instructors carry a heavy load in connection

> with their regular teaching, it is also true that anyone who expects to be thought of as a valuable member of a teaching staff must of necessity give thought to making contributions aside from the regular assignments. To be a member of the working force in an educational institution involves a greater challenge than to be simply a shop teacher." (10, page 326)

Sponsoring the various classes and coaching athletics are the largest activities outside the classroom. While coaching, administration, and other specific duties may not be considered as being purely extra-curricular, they

TABLE X
OTHER ACTIVITIES ENGAGED IN BY INDUSTRIAL ARTS TEACHERS OF KANSAS

| Activity | Frequency |
|---|---|
| Class Sponsor | 158 |
| Athletic Coach | 157 |
| Assistant Athletic Coach | 29 |
| Hi-Y | 28 |
| Student Council | 11 |
| Coach Plays | 11 |
| Principal of School | 6 |
| Superintendent of Schools | 4 |
| Year Book | 4 |
| Boy Scouts | 4 |
| Ind. Arts Club | 4 |
| Visual Education Director | 4 |
| Transportation to Athletic Contests | 3 |
| Stage Settings for Dramatics | 3 |
| Pep Club | 3 |

represent additional duties and assist in making the industrial arts teacher a working part of the school system. Twenty-two other activities were mentioned by the teachers. Only 66, or 19.1% of the 341 instructors sponsored no outside activities.

Concerning the duties of hallway supervision or noon hour duty, and general repair work for the school, the following situation exists:

| | Yes | No | Unknown |
|---|---|---|---|
| Assist in hallway or noon hour duty. | 244 | 66 | 29 |
| Engage in general repair for school. | 201 | 97 | 43 |

The average time spent in the classroom and in preparation was 36.7 hours for the total number of teachers. This would seem to indicate that

teaching requires less time than a comparable job in industry. However, extra-curricular activities of some teachers would tend to increase the average to well above a forty hour week. Eighteen of the 341 teachers were

TABLE XI
ESTIMATED TIME SPENT IN CLASSROOM, PREPARATION, AND MAINTENANCE

| No. of Hours | Frequency |
|---|---|
| 0- 1 | 1 |
| 15-19 | 19 |
| 20-24 | 37 |
| 25-29 | 40 |
| 30-34 | 32 |
| 35-39 | 31 |
| 40-44 | 78 |
| 45-49 | 55 |
| 50-54 | 15 |
| 55-59 | 10 |
| 60-64 | 1 |
| 65-69 | 1 |
| Unknown | 21 |
| Total | 341 |

expected to be at the school on Saturdays to perform the maintenance duties and prepare for the following week.

## PART D

## CURRICULUM IN THE SCHOOLS

The courses being offered, teaching methods in use, and teaching equipment available are important factors regarding the educational program of any state. These components are included in the following pages as they apply to industrial arts.

Schools Offering Industrial Arts. Industrial Arts courses are taught in 441 of the state's 677 accredited high schools. These schools and their location are listed in Table XXI. Courses have been offered for a number of years, in most instances, but 33 schools have added the department since 1945. The number of additions, by year, are given in Table XII.

The relative size of teaching staffs in the 341 high schools, is given in Table XIII. The average for the entire group is 1.42 teachers per sys-

TABLE XII
RECENTLY INSTALLED INDUSTRIAL ARTS DEPARTMENTS

| Year | Frequency |
|---|---|
| 1945 | 3 |
| 1946 | 5 |
| 1947 | 6 |
| 1948 | 5 |
| 1949 | 11 |
| 1950 | 3 |

tem, but 274, or 80.4%, of the 341 high schools employ only one industrial arts teacher. The largest staff reported was 26 teachers.

TABLE XIII
RELATIVE SIZE OF INDUSTRIAL ARTS TEACHING STAFFS

| No. Teachers | Frequency |
|---|---|
| 1 | 274 |
| 2 | 26 |
| 3 | 12 |
| 4 | 9 |
| 5 | 6 |
| 6 and over | 8 |
| Unknown | 6 |
| Total | 341 |

Industrial arts is being called "manual training," or some similar term, in 210 of the 341 schools. This represents 61.5% of the total schools reporting and indicates a need for a revision of terminology in the high schools. The following tabulation is compiled from the question,

> Are Industrial Arts courses referred to as "Manual Training," or some similar term in your high school?

| Yes | No | Unknown |
|---|---|---|
| 210 | 120 | 11 |

Courses in Industrial Arts. The Unit Shop is employed in the largest number of school systems, but the General Shop, used in 170 of the schools, suggests the trend of industrial arts may be in that direction. Since 274 of the 341 schools employ only one industrial arts teacher, the General

Shop plan may be best suited to the smaller schools. (12, page 15)

TABLE XIV
TYPES OF SHOPS BEING EMPLOYED
IN INDUSTRIAL ARTS DEPARTMENTS

| Type of Shop | Frequency |
|---|---|
| Unit Shop | 157 |
| General | 131 |
| Unit and General | 39 |
| Vocational Agriculture | 4 |
| Unknown | 10 |
| Total | 341 |

Woodworking is the most widely taught course in the industrial arts field. Woodworking I, or beginners woodwork, is included in the schedule of 332 of the 341 schools reporting. This represents 97.4% of the total.

TABLE XV
COURSES TAUGHT IN THE FIELD
OF INDUSTRIAL ARTS

| Class | Frequency |
|---|---|
| Woodworking I | 332 |
| Woodworking II | 240 |
| Mechanical Drawing I | 127 |
| Woodworking III | 90 |
| General Shop | 64 |
| Mechanical Drawing (Advanced) | 34 |
| Cabinet Making | 21 |
| Welding | 15 |
| General Metals | 13 |
| Sheet Metal | 9 |
| Auto Mechanics | 8 |
| Crafts | 8 |
| Home Mechanics | 7 |
| Carpentry | 6 |
| Machine Shop | 6 |
| Farm Shop | 5 |
| Wood Turning | 5 |
| Architectural Drawing | 5 |
| Upholstery | 4 |
| Leather Craft | 4 |
| General Plastics | 2 |
| Wood Finishing | 2 |

Table XV lists the courses taught during the school year 1950-51. Other subjects mentioned once in the returns were: electricity, model airplane building, forging, art metal, furniture design, elementary mechanics, advanced mechanics, millwork, general maintenance, shop maintenance, woodworking for girls, and home mechanics for girls.

Concerning the question,

> Are girls permitted to enroll in "shop" classes at your school?

| Yes | No | Unknown |
|---|---|---|
| 124 | 216 | 1 |

Only 36.4% of the 341 schools permitted girls to enroll in purely shop courses. Several schools indicated drawing courses were open to girls. The following comments further explain existing policies concerning the question:

> "In home mechanics."
> "Crafts only."
> "In alternate years."
> "Not encouraged, but permitted."

Night classes in adult education were being taught by instructors at 38 schools. Table XVI gives the number of class periods per week. Average

TABLE XVI
NIGHT CLASSES IN ADULT EDUCATION

| Classes per Week | Frequency |
|---|---|
| 1 | 19 |
| 2 | 16 |
| 3 | 3 |
| 4 | 0 |
| 5 | 0 |
| 6 | 0 |
| Total | 38 |

length of each class period was 3 hours, with blue print reading, recreational crafts, furniture repair, farm shop, and veteran's shop being among the descriptive titles used to designate the courses. Recreational programs during the summer months were being offered by 19 schools, or 5.5% of the 341 total.

Teaching Methods. No modern teacher will presume to begin a teaching year without first preparing or being given a course of study. The following response was received from the question,

| | Yes | No | Unknown |
|---|---|---|---|
| Do you prepare your own course of study? | 312 | 17 | 12 |

The teachers answering no to the above question were from the larger school systems employing a supervisor, whose duty was to present a broad outline, with the smaller details in the course of study completed by the instructors as a group.

Field trips were used as an aid in teaching by 136 of the 341 teachers.

TABLE XVII
FREQUENCY OF FIELD TRIPS IN INSTRUCTION

| No. of Trips | Frequency |
|---|---|
| 0 | 13 |
| 1 | 45 |
| 2 | 39 |
| 3 | 16 |
| 4 | 9 |
| 5 | 3 |
| 6 | 5 |
| 7 | 1 |
| 8 | 0 |
| 9 | 3 |
| 10 | 1 |
| 11 | 0 |
| 12 | 1 |
| Total | 136 |

Thirteen of the 136 had field trips scheduled for later in the school year, hence the 13 appearing after zero number of trips taken. An average of 2.5 trips per year were used by the 136 teachers, with 12 being the greatest number reported by a single teacher. The following comments are included:

"Against policies of school."
"No, but plan to in future years."
"Do not have time."
"Their value is debatable."
"No industries close."

Display of student projects was used as an incentive for better workmanship by 303, or 88.9%, of the 341 teachers. In most cases, the projects were shown at the annual activity program of the school and P. T. A. meetings.

Textbooks were used by 243 teachers as an aid to instruction, but 98, or 28.7% of the 341 teachers do not use textbooks in industrial arts classes. No reason for their not being used was asked of the teachers, but

Ericson contends that any argument against using books in industrial arts courses could equally well be presented against books for mathematics, English, history, and other subjects. (10, page 151)

Motion and still pictures have a definite place in industrial arts teaching. If the instructor will show the films in a manner that contributes to the learning process, there are at least three classes of films available; (1) those that illustrate operations and procedures applicable to work being done in the shop, (2) those that give related information regarding materials, manufacturing, etc., and (3) those that refer to occupational opportunities and conditions in specific areas of occupational life. (10, page 155) Films were used as a teaching aid by 238, or 69.8% of the 341 instructors. Some of the comments of the teachers included,

"No, because of cost."
"No suitable room for showing."
"No projector."
"Yes, when we can afford film."

The initial cost of equipment may represent an expense of major proportions, but many excellent films can be obtained through rental at a very nominal cost.

School marks, partially arrived at through testing, serve a number of useful purposes. Among these are:

(1) To reveal interests.
(2) To discover aptitudes and capacities.
(3) To measure achievement.
(4) To disclose appreciations.
(5) To determine attitudes and ideals.
(6) To reveal personality traits and character.
(7) To stimulate learning.
(8) To reveal strengths and weaknesses of teaching. (18, page 434)

Of the 341 teachers included in the survey, only 3, or 0.9% administered no tests in industrial arts classes, but "graded the projects only."

Written tests were preferred by 56.6% of the instructors to rank as the most popular type of test in the field.

TABLE XVIII
TYPES OF TESTS PREFERRED BY 341 INDUSTRIAL ARTS TEACHERS

| Type of Test | Frequency |
|---|---|
| Written | 193 |
| Manipulative | 100 |
| Oral | 41 |
| No tests given | 3 |
| Unknown | 4 |

The Physical Plant. The evolution of industrial arts from the "dark corner of the basements," with the janitor or a carpenter elevated to become the instructor, to the present, has been a period of progressive development. (10, page 302) The types of tools found most frequently in the 341 shops are included in Table XIX. Tools used in woodworking classes dominate the list, with the circular saw, lathe, band saw, and drill press, the most commonly used power equipment. No attempt was made to establish the size of power equipment in operation, but from the experiences of the writer, in visiting various shops throughout the state, much of the power equipment used in the smaller schools is of the "hobby shop" variety.

Shop libraries containing reference material and related information were being maintained in 252, or 73.9%, of the 341 schools in addition to the main library. These books, which contain procedures for operation of power machinery, related information, fundamental manipulative processes, and other information, are valuable equipment in the school shop and help conserve the teacher's time by eliminating wasteful duplication of instruction.

Salaries of Teachers. In recording the salaries of the 314 teachers that took part in this section of the study, it was noted that the lowest

was $1800 and the highest was $5000, causing a range of $3200. This may be explained by the fact that the instructor receiving $5000 was also the

TABLE XIX
FREQUENCY OF POWER TOOLS FOUND IN INDUSTRIAL ARTS SHOPS

| Name of Tool | Frequency |
|---|---|
| Circular Saw | 321 |
| Lathe (wood) | 282 |
| Band Saw (wood) | 217 |
| Drill Press | 204 |
| Bench Grinder | 183 |
| Jointer | 151 |
| Shaper (wood) | 86 |
| Portable Sander | 83 |
| Belt Sander | 79 |
| Jig Saw | 72 |
| Planer | 42 |
| Portable Drill | 41 |
| Router | 34 |
| Mortiser | 32 |
| Air Compressor | 29 |
| Radial Overarm Saw | 27 |
| Arc Welder | 25 |
| Paint Sprayers | 24 |
| Lathe (metal) | 16 |
| Forge | 12 |
| Acetylene Welder | 12 |
| Tenoner | 8 |
| Valve Grinder | 8 |
| Bandsaw (metal) | 7 |
| Skilsaw | 7 |
| Saw Filer | 7 |
| Shaper (metal) | 7 |
| Milling Machine | 6 |
| Hacksaw | 6 |
| Sewing Machine | 4 |
| Foundry | 4 |
| Shop Smith | 3 |

superintendent of schools and was being paid primarily as such. The highest paid individual instructor, teaching only industrial arts, received $4600. The average annual salary for the 314 teachers was $3386.

Of the 677 accredited high schools in Kansas, 441 or 65.1%, offer courses in industrial arts. It was noted by the writer, in examining records on file at the State Department of Public Instruction, Topeka, that many of the schools not offering courses in industrial arts were offering

vocational agriculture instead. Two schools returned questionnaires stating that industrial arts classes were discontinued for the school year of 1950-51, because no teachers were available, but plans were for resumption

TABLE XX
ANNUAL SALARY OF 314
INDUSTRIAL ARTS TEACHERS

| Salary | Frequency |
|---|---|
| $1500-$1950 | 2 |
| 2000- 2450 | 4 |
| 2500- 2950 | 37 |
| 3000- 3450 | 146 |
| 3500- 3950 | 84 |
| 4000- 4400 | 36 |
| 4500-and above | 5 |
| Total | 314 |

of classes the following year. It is significant to note that thirty-three schools have established new industrial arts departments since the ending of World War II. During the peak year of 1949, eleven schools introduced the courses. See Table XII.

The situation existing in the high schools of Kansas, regarding industrial arts, is no doubt improving along with other phases of education, but the ultimate goal of achievement has not yet been reached. The information included in this chapter may form the basis for evaluating the program as it now exists. Final conclusions and recommendations concerning industrial arts in the high schools of Kansas are included in Chapter V of this study.

# CHAPTER V

## SUMMARY AND RECOMMENDATIONS

To present the information contained in the preceeding pages in a concise manner, to establish conclusions drawn from these data, and to provide recommendations for the further development of industrial arts in Kansas, are the aims of this chapter.

Summary of Findings. The study includes the development of industrial education from the earliest history, when man first began using tools, and relates the methods used to transmit knowledges and skills from teacher to student, during the subsequent stages of development in Europe and America.

Kansas has a total of 677 public and private high schools, of which 441, or 67.1%, were offering courses in industrial arts during 1950-51. The current status of industrial arts in these schools was preceeded by the introduction of data concerning the evolution of industrial education from its very beginning to the present. The changing concepts of philosophy, expressed through writings of prominent leaders in the field, are given consideration, as are the social, economic, and geographic aspects that act as controlling factors.

Methods of study consisted of historical data gathered from a study of past conditions as related in books on the subject, current information from documentary sources made available to the writer by the State Department of Public Instruction, Topeka, and the normative survey or questionnaire. The inquiry form was mailed to industrial arts teachers in the 441 high schools and of that number, 341 or 77.3%, were returned in usable form and incorporated in the study.

Since the status of any field in education is dependent upon the

teachers it embraces, information concerning the instructors was given primary consideration in the questionnaire. Professional preparation, experience and tenure, and teaching load reflect the conditions surrounding the industrial arts and are, therefore, included in the study.

Kansas State Teachers College, Pittsburg, ranks first among the colleges granting degrees to the industrial arts teachers of Kansas, with a total of 93 Bachelor's and 29 Master's Degrees. Colleges and universities of ten states and the District of Columbia were represented among the teacher training institutions granting the degrees. Oklahoma represents the principal out-of-state source, contributing 57 degrees, with Oklahoma A. and M. College conferring eleven of the total.

Of the 338 teachers answering the query pertaining to type of degree, 264 were holders of Bachelor's Degrees, 73 were holders of Master's Degrees, and the Doctory of Veterinary Medicine Degree had been conferred upon one instructor.

Professional preparation as to college hours credit in the field of industrial arts, ranged from zero to ninety hours, with one teacher represented in each extreme. The greatest single frequency was represented by 80 teachers in the 30-39 hour range, with only six of the 341 instructors completing less than ten hours in the field. The average number of college hours in industrial arts was found to be 37.4 hours, which is well above the minimum requirements set by the State Department of Public Instruction.

The teaching experience of the teachers included 50 teachers completing their first year during 1950-51, and 17 of whom were finishing 30 years or over. The average number of years experience for the 341 teachers was 10.5 years.

Seventy-two of the 341 teachers were completing their first year in

present positions, with only three having spent 30 or more years in their current positions. The average for the 341 teachers was 5.1 years, or approximately one-half the average for experience.

Only 29% of the teachers contributing to the study were teaching classes in the field of industrial arts exclusively. Other teaching fields included physical education, general science, biology, history, geometry, and algebra, to name the more prominent. The average number of class periods taught daily ranged from two classes to seven, with the largest number, 125, signifying five. The average for the 341 teachers was 4.9 class periods per day. The average number of students in each class varied from three students to 35 with an average class size of 12.1 students for the 341 schools.

Extra-curricular activities of the 341 teachers included class sponsor, coaching athletics, assistant to the athletic coach, Hi-Y sponsor, and coaching dramatics to name the most frequently mentioned activities. Only 66, or 19.1%, of the total number of teachers reporting, engaged in no outside activities. A majority of the 341 instructors assisted in hallway supervision and engaged in general repair work for the school.

The time spent in classroom preparation and maintenance varied from zero hours to 65 hours per week, with one representative in each extreme. The average time expended each week by the 341 teachers was 36.7 hours.

One teacher departments were in use in 274 high schools throughout the state, with eight schools employing six or more industrial arts teachers. The largest single staff reported contained 26 teachers.

The unit shop was being used in 157 schools, general shop in 131 schools, with both types employed in 39 of the 341 schools. Courses included in the curriculum were woodworking I, woodworking II, mechanical drawing I, woodworking III, general shop, advanced mechanical drawing, cabinet making,

welding, and general metals, to name those courses mentioned ten or more times by the instructors contributing to the survey. Girls were permitted to enroll in shop courses in only 123, or 36.4%, of the 341 schools, indicating that expansion of courses to include some handiwork for girls may be needed.

Concerning the questions of preparing a course of study and teaching methods, only 17 teachers did not prepare their own course of study. Teaching aids being used to some extent in a large number of the cases includes; field trips, display of student projects, textbooks in classroom instruction, and film strips. Examinations to assist in establishing school marks were being used by all but three of the 341 teachers. Written tests were preferred by 193, with manipulative and oral tests receiving frequencies of 100 and 41 respectively.

A variety of power equipment was being used in the school shops with the woodworking tools in dominance. Tools listed by the 341 teachers, in the descending order of their frequency, included; circular saw, lathe (wood), band saw (wood), drill press, bench grinder, jointer, shaper, portable drill, router, mortiser, air compressor, radial saw, arc welder, paint sprayers, lathe (metal), forge, and acetylene welder.

Shop libraries were being maintained in 252, or 73.9%, of the 341 schools reporting. These books, containing related information and machine and tool processes, are valuable supplements to instruction.

In recording the salaries of the 314 teachers taking part in this section of the study, the lowest salary was found to be $1800 and the highest was $5000, causing a range of $3200. The average annual salary for the 314 teachers was $3386.

Conclusions Indicated by the Study. The fact that only 65.1% of the

high schools in Kansas are offering industrial arts courses would seem to indicate a need for enlarging the program in the state to make those courses available to an even greater number of students. While the number of schools including industrial arts courses represents only 65.1% of the total, a considerably larger percentage of students have an opportunity to engage in shop activity, since all of the larger schools include industrial arts in the curriculum. The 65.1%, or 441 schools, may include as much as 85% of the total enrollment for the state. Of the 34.9% not offering industrial arts, many of the schools include vocational agriculture and give some instruction in tool manipulation.

One teacher departments were in use in 274 high schools, with the general shop plan found in only 170. This would indicate that 104 of the one teacher systems employ the unit shop plan and necessarily restrict the exploratory phase of industrial arts.

Woodworking courses predominate the curriculum in all but the larger schools, with woodworking I included in the returns of 332 of the 341 instructors. Elementary mechanical drawing courses did not keep pace, since they were mentioned by only 127 of the teachers. While it may be safely assumed, from comments included in the questionnaire, that some drawing is being taught in woodworking I classes at the start of the year, instruction is probably inadequate in many cases.

Industrial arts courses are still being added to a few schools each year, only three were added during 1950-51 but this may be partly due to increased cost of equipment and shortages arising from our participation in the Korean War. With the cessation of hostilities and the subsequent increase in equipment and materials, new shops may be installed in a degree comparable to the period following World War II, when 33 new departments were added to high schools during the six years between 1945 and 1950.

Recommendations. A similar study, after a period of some five years, would be of value in determining the progress of industrial arts in Kansas. A comparison of surveys conducted within several states during the same period of time would be a contribution to the field in establishing the basis for greater correlation of industrial arts programs in a wide area. While economic and social conditions vary somewhat from state to state, a comparison of those states in the central plains region, or the southwest, would present nearly identical problems to be considered.

The inclusion of mechanical drawing in the curriculum of a greater number of schools would be desirable. A fundamental knowledge of construction and interpretation of working drawings is necessary in practically every course in industrial arts. A course in mechanical drawing should be a prerequisite to entrance into a unit shop course.

Greater use of the general shop plan, at least in the smaller schools, would increase the scope of industrial arts courses in the high schools. To introduce the students to a variety of basic processes involved in different materials of industry, the general shop would seem to be the logical solution in the schools employing only one industrial arts teacher. Such a move would necessarily tend to increase the minimum requirements of the State Department of Public Instruction regarding the certification of industrial arts teachers and this is recommended. The minimum requirement of eight semester hours, with two semester hours deducted for a unit of high school work, for the smaller "Class C" high schools, would not be sufficient training for a teacher to give adequate instruction in a number of different areas of the general shop. The same conditions hold true for the other classes. The following recommendations for certification of industrial arts teachers is recommended:

> Class A: Eighteen semester hours in the Industrial Arts field with five or more semester hours in the subject taught.
>
> Class B: Fifteen semester hours in the Industrial Arts field with five or more hours in subject being taught and at least three hours in general shop.
>
> Class C: Twelve semester hours in the Industrial Arts field with three semester hours in the subject taught and at least three hours in general shop. Two semester hours may be deducted from the field for one or more units in high school work.

The strengthening of the Industrial Arts Teachers Association to promote higher professional standards among the teachers in Kansas, with the publication of bulletins or newsletters to teachers in the field as one of the organization's primary functions. An annual directory of industrial arts teachers should be published and included in one of the early bulletins during the school year.

A state supervisor of industrial arts should be added to the staff of the State Department of Public Instruction. The present situation of two secondary school inspectors for the entire high school program is inadequate to meet the demands. Many school boards will increase expenditures for a phase of their educational program only if there is a recommendation for such in the report of the supervisor.

Although no attempt has been made by the writer to compare the industrial arts program, as it exists in Kansas high schools, with the programs of the surrounding states, it is believed to be equal, if not superior, to the programs of its sister states. As has been stated previously, a comparison of several status studies conducted during the same year would be interesting as well as valuable in establishing definite points for comparison.

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OKLAHOMA AGRICULTURAL AND MECHANICAL COLLEGE

School of Industrial Arts Education
And Engineering Shopwork

STILLWATER

April 12, 1951

Dear Industrial Arts Teacher:

The information obtained from the enclosed questionnaire is needed to assist in a survey of Industrial Arts in Kansas high schools, being prepared at Oklahoma A. & M. College, Stillwater, Oklahoma, as partial fulfilment of requirements for a Master's Degree.

All information will be kept confidential, your name will not be used in the survey unless permission is granted by you. A stamped envelope is enclosed.

Thank you very much for your cooperation.

Yours truly,

John L. Trease
Graduate Student
Oklahoma A. & M. College
Stillwater, Oklahoma

Approved by: _____
C. L. Hill
Prof., Ind. Arts Educ.

1. How many college hours credit in Industrial Arts have you completed?

_____

2. What degrees do you now hold and from what college or university were they obtained?

_____

_____

3. Are you now working toward another degree?_____

4. How many Industrial Arts teachers in your school?_____

5. How many years teaching experience do you have?_____

6. How many years in your present position?_____

7. What is the enrollment of your high school?_____

8. Average number of students enrolled in each Industrial Arts class.

_____

9. List classes in Industrial Arts taught daily by you._____

_____ _____ _____ _____

10. List other classes taught by you._____

11. Do you coach or sponsor other activities?_____If so, list._____

_____

12. Do you assist in hallway supervision and noon hour duty?_____

13. Do you do general repair work for the school?_____

14. If Industrial Arts classes have been recently installed in your school, give approximate year._____

15. List power tools found in your shop._____ _____

_____ _____ _____ _____

16. How many total hours weekly do you spend in classes, preparation, maintenance, etc.?_____

17. Do you teach night classes in Adult Education?_____If answer is yes, how many classes weekly?_____

18. Are you employed during the summer months in a recreation program?_____

19. Do you prepare your own course of study?_____

20. Are Industrial Arts courses referred to as "Manual Training," or some similar term, in your high school?_____

21. Are you expected to spend Saturdays working at school?_____

22. Do you arrange field trips as a means of instruction?_____How many trips have been taken this year?_____

23. In testing, which type test do you prefer for Industrial Arts classes: Written, oral, manipulative, other?_____

24. Are girls permitted to enroll in "shop" classes at your school?_____

25. Do you use a textbook in all Industrial Arts classes?_____

26. Do you use films as an aid to instruction?_____

27. Do you maintain a shop library separate from the school library?_____

28. What is your annual salary?_____

29. Does your school maintain a General Shop, Unit Shop, or both?_____

30. Do you display student projects that are worthy of recognition?_____

31. Would you permit your name being listed among the contributions to the survey?_____

32. Would you like a summary of the findings of this survey, after it is completed?_____

Name_____

Address_____

_____

TABLE XXI
A LIST OF THE ACCREDITED HIGH SCHOOLS
OFFERING INDUSTRIAL ARTS IN KANSAS
DURING THE SCHOOL YEAR 1950-51
(*Schools Contributing to Report)

| Name of School | City | County |
|---|---|---|
| *Abbyville High School | Abbyville | Reno |
| *Abilene High School | Abilene | Dickinson |
| *Ada Rural H. S. | Ada | Ottawa |
| Adams Rural H. S. | Adams | Kingman |
| *Admire Rural H. S. | Admire | Lyon |
| *Agenda High School | Agenda | Republic |
| *Agra Cons. H. S. | Agra | Phillips |
| *Alden High School | Alden | Rice |
| Alexander Cons. H. S. | Alexander | Rush |
| Allen Rural H. S. | Allen | Lyon |
| *Almena Rural H. S. | Almena | Norton |
| *Altoona Rural H. S. | Altoona | Wilson |
| *Americus High School | Americus | Lyon |
| *Andale Rural H. S. | Andale | Sedgwick |
| *Anthony High School | Anthony | Harper |
| Appanoose Rural H. S. #3 | Pamona | Franklin |
| *Argentine High School | Kansas City | Wyandotte |
| *Arkansas City Senior H. S. | Arkansas City | Cowley |
| Arlington Rural H. S. | Arlington | Reno |
| *Ashland High School | Ashland | Clark |
| *Assaria High School | Assaria | Saline |
| *Atchison C. Comm. H. S. | Effingham | Atchison |
| *Atlanta High School | Atlanta | Cowley |
| *Augusta Senior H. S. | Augusta | Butler |
| Axtell High School | Axtell | Marshall |
| Baldwin High School | Baldwin | Douglas |
| *Barnard Rural H. S. | Barnard | Lincoln |
| *Basehor Rural H. S. | Basehor | Leavenworth |
| *Bavaria Rural H. S. #2 | Bavaria | Saline |
| *Baxter Springs High School | Baxter Springs | Cherokee |
| Beattie High School | Beattie | Marshall |
| Beeler High School | Beeler | Ness |
| *Belle Plaine Rural H. S. | Belle Plaine | Sumner |
| *Belleville High School | Belleville | Republic |
| *Beloit High School | Beloit | Mitchell |
| *Belpre High School | Belpre | Edwards |
| Bendena Rural H. S. | Bendena | Doniphan |
| Bennington High School | Bennington | Ottawa |
| *Bentley High School | Bentley | Sedgwick |
| *Benton High School | Benton | Butler |
| *Bern Rural H. S. | Bern | Nemaha |
| *Bird City Rural H. S. | Bird City | Cheyenne |
| *Bison Rural H. S. | Bison | Rush |
| Bloom High School | Bloom | Ford |
| *Blue Mound Rural H. S. | Blue Mound | Linn |
| *Blue Rapids High School | Blue Rapids | Marshall |
| *Bluff City Rural H. S. | Bluff City | Harper |
| *Bogue Rural H. S. | Bogue | Graham |
| *Bonner Springs High School | Bonner Springs | Wyandotte |

TABLE XXI (Continued)

| Name of School | City | County |
|---|---|---|
| *Brewster High School | Brewster | Thomas |
| *Bronson High School | Bronson | Bourbon |
| *Brownell High School | Brownell | Ness |
| *Bucyrus Rural H. S. | Bucyrus | Miami |
| *Buffalo High School | Buffalo | Wilson |
| *Buhler Rural H. S. | Buhler | Reno |
| Burden High School | Burden | Cowley |
| *Burdett Rural H. S. | Burdett | Pawnee |
| Burr Oak Rural H. S. | Burr Oak | Jewell |
| *Burrton High School | Burrton | Harvey |
| *Burlingame High School | Burlingame | Osage |
| *Burlington High School | Burlington | Coffey |
| *Bushong Rural H. S. | Bushong | Lyon |
| *Bushton Rural H. S. | Bushton | Rice |
| *Caldwell High School | Caldwell | Sumner |
| Cambridge Rural H. S. | Cambridge | Cowley |
| Canton High School | Canton | McPherson |
| *Caney High School | Caney | Montgomery |
| *Carbondale Rural H. S. | Carbondale | Osage |
| *Cassoday Rural H. S. | Cassoday | Butler |
| *Cawker City High School | Cawker City | Mitchell |
| *Cedar Point Rural H. S. #5 | Cedar Point | Chase |
| Cedar Vale Memorial H. S. | Cedar Vale | Chautauqua |
| Central College High School | McPherson | McPherson |
| *Chanute High School | Chanute | Neosho |
| *Chase Rural H. S. | Chase | Rice |
| *Cheney High School | Cheney | Sedgwick |
| *Chetopa High School | Chetopa | Labette |
| *Cherokee Co. Comm. H. S. | Columbus | Cherokee |
| *Cherryvale Senior H. S. | Cherryvale | Montgomery |
| Cheyenne Comm. H. S. | St. Francis | Cheyenne |
| *Cimarron Comm. H. S. | Cimarron | Gray |
| *Claflin High School | Claflin | Barton |
| *Clay Co. Comm. H. S. | Clay Center | Clay |
| Clayton High School | Clayton | Norton |
| *Clearwater High School | Clearwater | Sedgwick |
| *Cleburne Rural H. S. | Cleburne | Riley |
| *Clements Rural H. S. | Clements | Chase |
| *Clyde High School Dist. #2 | Clyde | Cloud |
| *Coats High School | Coats | Pratt |
| Codell Rural H. S. | Codell | Rooks |
| *Coldwater High School | Coldwater | Commanche |
| Collyer High School | Collyer | Trego |
| *Colony Rural H. S. | Colony | Anderson |
| *Concordia High School | Concordia | Cloud |
| *Conway Springs High School | Conway Springs | Sumner |
| *Coolidge H. S. Dist. C-1 | Coolidge | Hamilton |
| *Copeland Rural H. S. | Copeland | Gray |
| *Corning Rural H. S. | Corning | Nemaha |
| *Courtland High School | Courtland | Republic |
| *Covert High School | Covert | Osborne |
| *Crawford Co. Comm. H. S. | Arcadia | Crawford |

TABLE XXI (Continued)

| Name of School | City | County |
|---|---|---|
| *Crawford Co. Comm. H. S. | Arma | Crawford |
| *Crawford Comm. H. S. | Cherokee | Crawford |
| Cuba Rural H. S. | Cuba | Republic |
| *Cullison Rural H. S. | Cullison | Wilson |
| *Culver Rural H. S. | Culver | Ottawa |
| *Cunningham Rural H. S. | Cunningham | Kingman |
| Decatur Comm. H. S. | Oberlin | Decatur |
| *Deerfield Rural H. S. #3 | Deerfield | Kearny |
| *Delia Rural H. S. | Delia | Jackson |
| *Delphos High School | Delphos | Ottawa |
| *Denison High School | Denison | Jackson |
| *Denton Rural H. S. #5 | Denton | Doniphan |
| *Derby High School | Derby | Sedgwick |
| *De Soto High School | De Soto | Johnson |
| *Dexter High School | Dexter | Cowley |
| *Dickinson Co. Comm. H. S. | Chapman | Dickinson |
| *Dodge City Senior H. S. | Dodge City | Ford |
| Dorrance Rural H. S. | Dorrance | Russell |
| *Douglass High School | Douglass | Butler |
| *Dover High School | Dover | Shawnee |
| *Downs High School | Downs | Osborne |
| Dunlap Rural H. S. | Dunlap | Morris |
| Durham High School | Durham | Marion |
| Dwight Rural H. S. | Dwight | Morris |
| East High School | Wichita | Sedgwick |
| *Edgerton Rural H. S. | Edgerton | Johnson |
| *ElDorado Senior H. S. | ElDorado | Butler |
| *Elk City High School | Elk City | Montgomery |
| *Elk Falls Rural H. S. | Elk Falls | Elk |
| *Elkhart High School | Elkhart | Morton |
| *Ellinwood High School | Ellinwood | Barton |
| *Ellis High School | Ellis | Ellis |
| *Ellsworth High School | Ellsworth | Ellsworth |
| *Elmdale Rural H. S. | Elmdale | Chase |
| *Elsmore Rural H. S. | Elsmore | Allen |
| *Elwood High School | Elwood | Doniphan |
| *Emporia Senior H. S. | Emporia | Lyon |
| Englewood High School | Englewood | Clark |
| *Enterprise High School | Enterprise | Dickinson |
| *Erie High School | Erie | Neosho |
| *Esbon Rural H. S. | Esbon | Jewell |
| *Eskridge Rural H. S. | Eskridge | Wabaunsee |
| *Eudora Rural H. S. | Eudora | Douglas |
| *Eureka High School | Eureka | Greenwood |
| *Everest Rural H. S. | Everest | Brown |
| *Fall River High School | Fall River | Greenwood |
| *Field Kindley Memorial H. S. | Coffeyville | Montgomery |
| *Fort Scott High School | Fort Scott | Bourbon |
| *Fostoria High School | Fostoria | Pottawatomie |
| Fowler High School | Fowler | Meade |
| *Frontenac High School | Frontenac | Crawford |
| Fulton High School | Fulton | Bourbon |

TABLE XXI (Continued)

| Name of School | City | County |
|---|---|---|
| *Galva High School | Galva | McPherson |
| *Garden City Senior H. S. | Garden City | Finney |
| *Gardner High School | Gardner | Johnson |
| Garfield High School | Garfield | Pawnee |
| *Garnett High School | Garnett | Anderson |
| *Gaylord Rural H. S. | Gaylord | Smith |
| *Geneseo High School | Geneseo | Rice |
| *Geuda Springs High School | Geuda | Sumner |
| *Ginnell High School | Ginnell | Gove |
| *Girard Senior H. S. | Girard | Crawford |
| *Glen Elder Rural H. S. #2 | Glen Elder | Mitchell |
| *Goessel Rural H. S. | Goessel | Marion |
| Gorham Rural H. S. | Gorham | Russell |
| *Gove Rural H. S. | Gove | Gove |
| *Grainfield Rural H. S. #4 | Grainfield | Gove |
| *Grant Co. Rural H. S. | Ulysses | Grant |
| *Grant High School | Stark | Neosho |
| *Great Bend Senior H. S. | Great Bend | Barton |
| *Greeley Co. Comm. H. S. | Tribune | Greeley |
| Greeley High School | Greeley | Anderson |
| Green Rural H. S. | Green | Clay |
| *Greensburg Rural H. S. | Greensburg | Kiowa |
| Grenola High School | Grenola | Elk |
| Gridley High School | Gridley | Coffey |
| *Gypsum Rural H. S. | Gypsum | Saline |
| *Halstead High School | Halstead | Harvey |
| Hamilton Rural H. S. | Hamilton | Greenwood |
| *Hamlin High School | Hamlin | Brown |
| *Hanston Rural H. S. | Hanston | Hodgeman |
| *Hardtner Cons. H. S. #62 | Hardtner | Barber |
| *Harper High School | Harper | Harper |
| *Hartford High School | Hartford | Lyon |
| Haskell Institute | Lawrence | Douglas |
| *Havana High School | Havana | Montgomery |
| *Haven Rural H. S. | Haven | Reno |
| Havensville Rural H. S. | Havensville | Pottawatomie |
| *Haviland Rural H. S. | Haviland | Kiowa |
| *Hays Senior H. S. | Hays | Ellis |
| *Hazelton High School | Hazelton | Barber |
| *Healy Rural H. S. | Healy | Lane |
| *Hepler Rural H. S. | Hepler | Crawford |
| *Herington High School | Herington | Dickinson |
| *Herndon Rural H. S. | Herndon | Rawlins |
| Hesston Academy | Hesston | Harvey |
| *Hiawatha Senior H. S. | Hiawatha | Brown |
| *Highland Park High School | Topeka | Shawnee |
| *Highland Rural H. S. | Highland | Doniphan |
| *Hill City Rural H. S. #3 | Hill City | Graham |
| *Hillsboro High School | Hillsboro | Marion |
| Hodgeman Comm. H. S. | Jetmore | Hodgeman |
| *Hoisington Senior H. S. | Hoisington | Barton |
| *Holton High School | Holton | Jackson |

TABLE XXI (Continued)

| Name of School | City | County |
|---|---|---|
| *Holyrood Rural H. S. | Holyrood | Ellsworth |
| *Hope Rural H. S. | Hope | Dickinson |
| *Hudson High School | Hudson | Stafford |
| *Hugoton Rural H. S. | Hugoton | Stevens |
| *Humboldt High School | Humboldt | Allen |
| Hunter High School | Hunter | Mitchell |
| *Hutchinson High School | Hutchinson | Reno |
| *Independence High School | Independence | Montgomery |
| *Ingalls High School | Atchison | Atchison |
| *Ingalls Rural H. S. | Ingalls | Gray |
| *Inman Rural H. S. | Inman | McPherson |
| *Iola Senior H. S. | Iola | Allen |
| *Ionia Rural H. S. | Ionia | Jewell |
| *Isabel Cons. H. S. #43 | Isabel | Barber |
| Jamestown High School | Jamestown | Cloud |
| *Jennings High School | Jennings | Decatur |
| *Junction City High School | Junction City | Geary |
| Kanopolis High School | Kanopolis | Ellsworth |
| *Keats Rural H. S. | Keats | Riley |
| *Kensington High School | Kensington | Smith |
| *Kingman High School | Kingman | Kingman |
| Kingsdown Cons. H. S. | Kingsdown | Ford |
| *Kipp Rural H. S. #8 | Kipp | Saline |
| Kirwin High School | Kirwin | Phillips |
| *Kismet Rural H. S. | Kismet | Seward |
| *Labette Co. Comm. H. S. | Altamont | Labette |
| *LaCrosse Rural H. S. | LaCrosse | Rush |
| *LaFontaine High School | LaFontaine | Wilson |
| *LaHarpe High School | LaHarpe | Allen |
| *Lane Co. Comm. H. S. | Dighton | Lane |
| *Langdon Rural H. S. #5 | Langdon | Reno |
| *Lansing Rural H. S. | Lansing | Leavenworth |
| *Larned High School | Larned | Pawnee |
| *Latham High School | Latham | Butler |
| *Lawrence Senior H. S. | Lawrence | Douglas |
| *Leavenworth Senior H. S. | Leavenworth | Leavenworth |
| Lebo High School | Lebo | Coffey |
| *Lecompton Rural H. S. #4 | Lecompton | Douglas |
| Lehigh High School | Lehigh | Marion |
| *Lenora Rural H. S. | Lenora | Norton |
| *Leona High School | Leona | Doniphan |
| Leonardville High School | Leonardville | Riley |
| LeRoy High School | LeRoy | Coffey |
| *Lewis Rural H. S. | Lewis | Edwards |
| *Liberal High School | Liberal | Seward |
| *Liberty Memorial H. S. | Lawrence | Douglas |
| *Lincoln High School | Lincoln | Lincoln |
| *Lincolnville Cons. H. S. | Lincolnville | Marion |
| *Lindsborg High School | Lindsborg | McPherson |
| *Linwood High School | Linwood | Leavenworth |
| *Logan Cons. H. S. | Logan | Phillips |
| *Long Island Cons. H. S. | Long Island | Phillips |

TABLE XXI (Continued)

| Name of School | City | County |
|---|---|---|
| *Longton High School | Longton | Elk |
| *Lorraine Rural H. S. | Lorraine | Ellsworth |
| *Lost Springs High School | Lost Springs | Marion |
| *Lucas High School | Lucas | Russell |
| *Luray High School | Luray | Russell |
| *Lyons High School | Lyons | Rice |
| *Macksville High School | Macksville | Stafford |
| Madison High School | Madison | Greenwood |
| *Maize High School | Maize | Sedgwick |
| *Manhattan Senior H. S. | Manhattan | Riley |
| *Manter Rural H. S. | Manter | Stanton |
| *Marion High School | Marion | Marion |
| *Marquette High School | Marquette | McPherson |
| *Marysville High School | Marysville | Marshall |
| Matfield Green Rural H. S. | Matfield Green | Chase |
| *Maple Hill Rural H. S. | Maple Hill | Wabaunsee |
| Maur Hill High School | Atchison | Atchison |
| *Mayetta High School | Mayetta | Jackson |
| *McCracken High School | McCracken | Rush |
| *McPherson Senior H. S. | McPherson | McPherson |
| *Melvern High School | Melvern | Osage |
| *Memorial High School | Florence | Marion |
| *Menlo Cons. H. S. | Menlo | Thomas |
| *Milan Rural H. S. | Milan | Sumner |
| *Milford High School | Milford | Geary |
| *Miller Rural H. S. #2 | Miller | Lyon |
| *Milton Cons. H. S. | Milton | Sumner |
| *Minneapolis High School | Minneapolis | Ottawa |
| *Moline High School | Moline | Elk |
| *Montezuma Rural H. S. | Montezuma | Gray |
| Monument High School | Monument | Logan |
| Moran Rural H. S. | Moran | Allen |
| *Morganville Rural H. S. | Morganville | Clay |
| Morland Rural H. S. | Morland | Graham |
| Morrill Rural H. S. | Morrill | Brown |
| *Moscow Rural H. S. | Moscow | Steven |
| *Mound City High School | Mound City | Linn |
| *Moundridge High School | Moundridge | McPherson |
| *Mt. Hope High School | Mt. Hope | Sedgwick |
| *Mullinville Rural H. S. | Mullinville | Kiowa |
| *Nashville Rural H. S. | Nashville | Kingman |
| Natoma High School | Natoma | Osborne |
| Neodesha High School | Neodesha | Wilson |
| *Neal Cons. H. S. | Neal | Greenwood |
| *Ness City High School | Ness City | Ness |
| Newton Senior H. S. | Newton | Harvey |
| *Nortonville High School | Nortonville | Jefferson |
| *Oakley Cons. H. S. | Oakley | Logan |
| Odin High School | Claflin | Barton |
| *Offerle Rural H. S. | Offerle | Edwards |
| Osage Senior H. S. | Osage City | Osage |
| *Osawatomie High School | Osawatomie | Miami |

TABLE XXI (Continued)

| Name of School | City | County |
|---|---|---|
| Osborne High School | Osborne | Osborne |
| *Oskaloosa Rural H. S. | Oskaloosa | Jefferson |
| *Oswego High School | Oswego | Labette |
| *Ottawa High School | Ottawa | Franklin |
| *Otis Rural H. S. | Otis | Rush |
| *Oxford Rural H. S. | Oxford | Sumner |
| *Ozawkie High School | Ozawkie | Jefferson |
| *Palco Cons. H. S. #61 | Palco | Rooks |
| *Paola Senior H. S. | Paola | Miami |
| *Paradise Rural H. S. | Paradise | Russell |
| Parker Rural H. S. | Parker | Linn |
| *Parsons Senior H. S. | Parsons | Labette |
| *Partridge Rural H. S. | Partridge | Reno |
| *Pawnee Rock High School | Pawnee Rock | Barton |
| Peabody High School | Peabody | Marion |
| Perry Rural H. S. | Perry | Jefferson |
| Peru High School | Peru | Chautauqua |
| *Phillipsburg High School | Phillipsburg | Phillips |
| *Piedmont Rural H. S. | Piedmont | Greenwood |
| *Pierceville Rural H. S. | Pierceville | Finney |
| *Pittsburg Senior H. S. | Pittsburg | Crawford |
| *Plains Cons. H. S. | Plains | Meade |
| *Plainville Rural H. S. #4 | Plainville | Rooks |
| *Planeview High School | Wichita | Sedgwick |
| *Pleasanton High School | Pleasanton | Linn |
| *Plevna High School | Plevna | Reno |
| *Pomona Rural H. S. | Pomona | Franklin |
| *Portis High School | Portis | Osborne |
| *Potwin High School | Potwin | Butler |
| *Pratt High School | Pratt | Pratt |
| *Preston Cons. H. S. | Preston | Pratt |
| *Protection Cons. H. S. | Protection | Comanche |
| *Quenemo Rural H. S. | Quenemo | Osage |
| *Quincy Cons. H. S. | Quincy | Greenwood |
| *Quinter High School | Quinter | Gove |
| *Radium Cons. H. S. #1 | Radium | Stafford |
| *Ramona Rural H. S. | Ramona | Marion |
| *Ransom Rural H. S. | Ransom | Ness |
| Rawlins Co. Comm. H. S. | Atwood | Rawlins |
| Raymond Rural H. S. | Raymond | Rice |
| Reading High School | Reading | Lyon |
| *Reece Rural H. S. | Reece | Greenwood |
| Reno Co. Comm. H. S. | Nickerson | Reno |
| *Republic Rural H. S. | Republic | Republic |
| Rexford Cons. H. S. | Rexford | Thomas |
| *Riley Rural H. S. | Riley | Riley |
| Riverton High School | Riverton | Cherokee |
| *Robinson Rural H. S. | Robinson | Brown |
| *Rosalia High School | Rosalia | Butler |
| *Rosedale High School | Kansas City | Wyandotte |
| *Rose Hill High School | Rose Hill | Butler |
| *Rossville Rural H. S. | Rossville | Shawnee |

TABLE XXI (Continued)

| Name of School | City | County |
|---|---|---|
| *Roosevelt High School | Emporia | Lyon |
| Roxbury Cons. H. S. | Roxbury | McPherson |
| *Russell High School | Russell | Russell |
| *Russell Springs Cons. H. S. | Russell Springs | Logan |
| St. Francis High School | St. Paul | Neosho |
| *St. John High School | St. John | Stafford |
| *St. Joseph's Military Acad. | Hays | Ellis |
| *St. Mary's High School | Pittsburg | Crawford |
| *Salina High School | Salina | Saline |
| Satanta Rural H. S. | Satanta | Haskell |
| Sawyer Rural H. S. | Sawyer | Pratt |
| *Scandia High School | Scandia | Republic |
| *Scranton High School | Scranton | Osage |
| *Schoenchen Rural H. S. | Schoenchen | Ellis |
| *Scott Co. Comm. H. S. | Scott City | Scott |
| *Seaman Rural H. S. | Topeka | Shawnee |
| Sedan High School | Sedan | Chautauqua |
| *Sedgwick High School | Sedgwick | Harvey |
| *Seneca High School | Seneca | Nemaha |
| *Severy Rural H. S. | Severy | Greenwood |
| *Shallow Water Cons. H. S. | Shallow Water | Scott |
| *Shawnee Mission High School | Merriam | Johnson |
| *Sherman Comm. H. S. | Goodland | Sherman |
| *Smith Center High School | Smith Center | Smith |
| *Smolan Rural H. S. | Smolan | Saline |
| *Soldier Rural H. S. | Soldier | Jackson |
| *South Haven Rural H. S. #3 | South Haven | Sumner |
| *Spring Hill High School | Spring Hill | Johnson |
| *Stafford Senior H. S. | Stafford | Stafford |
| *Stanley Rural H. S. | Stanley | Johnson |
| *Stanton Co. Comm. H. S. | Johnson | Stanton |
| *Sterling High School | Sterling | Rice |
| *Stockton High School | Stockton | Rooks |
| *Strong City Rural H. S. | Strong City | Chase |
| *Sublette Rural H. S. | Sublette | Haskell |
| *Sumner High School | Kansas City | Wyandotte |
| Summerfield High School | Summerfield | Marshall |
| *Sun City Rural H. S. #2 | Sun City | Barber |
| *Sylvia Rural H. S. | Sylvia | Reno |
| Tescott High School | Tescott | Ottawa |
| Thayer High School | Thayer | Neosho |
| *Thomas County Comm. H. S. | Colby | Thomas |
| *Toledo Township High School | Staffordville | Chase |
| *Topeka High School | Topeka | Shawnee |
| *Toronto High School | Toronto | Woodson |
| Towanda High School | Towanda | Butler |
| Troy Rural H. S. | Troy | Doniphan |
| Turner High School | Turner | Wyandotte |
| *Turon Rural H. S. | Turon | Reno |
| *Udall Rural H. S. | Udall | Cowley |
| Uniontown High School | Uniontown | Bourbon |
| *Vermillion Rural H. S. | Vermillion | Marshall |

TABLE XXI (Continued)

| Name of School | City | County |
|---|---|---|
| *Vesper High School | Vesper | Lincoln |
| Victoria Rural H. S. | Victoria | Ellis |
| Vilas Rural H. S. | Vilas | Wilson |
| *Vinland Rural H. S. | Vinland | Douglas |
| Viola High School | Viola | Sedgwick |
| Virgil Rural H. S. | Virgil | Greenwood |
| *Wallace Co. Comm. H. S. | Sharon Springs | Wallace |
| *Walton High School | Walton | Harvey |
| *Wamego Rural H. S. | Wamego | Pottawatomie |
| Washington Rural H. S. | Bethel | Wyandotte |
| *Wathena High School | Wathena | Doniphan |
| *Waverly Rural H. S. | Waverly | Coffey |
| *Webster Rural H. S. | Webster | Rooks |
| Wea Rural H. S. | Bucyrus | Miami |
| *Weir High School | Weir | Cherokee |
| *Welda High School | Welda | Anderson |
| Wellington High School | Wellington | Sumner |
| *Weskan Cons. H. S. | Weskan | Wallace |
| *West Mineral Rural H. S. | West Mineral | Cherokee |
| *Westphalia Rural H. S. | Westphalia | Anderson |
| *Wetmore Rural H. S. | Wetmore | Nemaha |
| *White City High School | White City | Morris |
| Whitewater High School | Whitewater | Butler |
| Whiting Rural H. S. | Whiting | Jackson |
| *Wichita Co. Comm. H. S. | Leoti | Wichita |
| *Wichita H. S. North | Wichita | Sedgwick |
| Wilmore High School | Wilmore | Commanche |
| Wilsey Rural H. S. | Wilsey | Morris |
| Wilson High School | Council Grove | Ellsworth |
| Wilson High School | Wilson | Ellsworth |
| *Winchester Rural H. S. | Winchester | Jefferson |
| *Windom Rural H. S. | Windom | McPherson |
| *Windthorst High School | Bellefont | Ford |
| *Winfield High School | Winfield | Cowley |
| *Winona Cons. H. S. | Winona | Logan |
| Woodbine Rural H. S. | Woodbine | Dickenson |
| Woodston Rural H. S. | Woodston | Rooks |
| *Wyandotte High School | Kansas City | Wyandotte |
| *Yates Center High School | Yates Center | Woodson |
| Zenda High School | Zenda | Kingman |
| *Zook Rural H. S. | Larned | Pawnee |

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