A Historical Study of Vocational Education in the Chicago Public and Technical and Vocational High Schools, 1917-1963

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A HISTORICAL STUDY OF VOCATIONAL EDUCATION IN THE
CHICAGO PUBLIC TECHNICAL AND VOCATIONAL
HIGH SCHOOLS, 1917-1963

by
Edward John Kosell

A Dissertation Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree of
Doctor of Education

June
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LIFE

Edward John Kosell was born in Chicago, Illinois on October 16, 1915.

He graduated from the Lane Technical High School, Chicago, Illinois, in February, 1933; from the Chicago Normal College, June, 1937; and from Loyola University in February, 1940, with the degree of Bachelor of Science in Education, and in June, 1941, with the degree of Bachelor of Science. He received the degree of Master of Arts from DePaul University in 1952.

His teaching experience has covered the gamut from the elementary school through college. As an administrator, he has served as assistant principal and principal of several Chicago schools.

Prior to embarking on a career in education, he served in industry as a precision and metallurgical inspector and as a development and research chemist; in the latter capacity he served a term in 1943-1944 on the Manhattan District Atomic Bomb project at the University of Chicago laboratories.
PREFACE

The subject of a vocation and vocational education has always been of deep interest to the writer. At a rather young age he became interested in printing and pursued that study for several years in high school. Upon graduation from college and prior to his assignment as a teacher he entered industry. He was fortunate in being employed in capacities that brought him in personal contact with many shop people and shop problems. This abiding interest is reflected in the writing of this dissertation.

Many invaluable insights and understandings of the vocational education program in the Chicago high schools were gained by the author as a result of personal membership on the Vocational Education Study Committee, appointed by Dr. Benjamin Willis, General Superintendent of Schools, in January, 1964.

Grateful acknowledgement is made to the many individuals who were so very helpful in the writing of this dissertation. Especial thanks are due Dr. Gerald Gutek for his most excellent guidance and advice, to Dr. Arthur P. O'Mara for some invaluable counsel and suggestions, and to the writer's wife for her stenographic assistance, understanding, and forbearance.
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CHAPTER I

DEFINITION OF THE PROBLEM AND USE OF RELATED STUDIES

Vocational education as such was not a proper nor even a necessary concern of the schools until the latter half of the nineteenth century. From earliest times formal school education was quite completely academic in nature. Learning the rudiments of the three "R's" in just a few years in school was considered ample education for the great majority. The relatively few who continued their formal education did so mainly as professional preparation.

Throughout most of the history of education vocational training was a highly informal process carried on by non-specialized educational agencies. The son learned a trade by working with his father; daughters were taught domestic skills by their mothers. In the medieval era training for some specialized occupations was given by the guilds through an apprenticeship system; in essence this was an extension of the type of training formerly provided by the parent or parents.

Forms of the apprenticeship system sufficed to provide vocational training for many centuries and until about a hundred years ago. However near the end of the American Civil War, mass production and the factory system, with its specialization and division of labor, made apprenticeship uneconomical and obsolete. Vocational education, therefore, became increasingly a concern of the schools.

A recent report tells us that of every ten children now in grade schools
only seven will earn a high school diploma and only two of the ten will finish four years of college. Eight out of ten will not complete college—how will they fare in the changing world of work?\textsuperscript{1}

The need for vocational education below the college level is manifestly evident, yet the great majority of our schools are still definitely college preparatory in nature. It would seem that the philosophy of at least our secondary school education should be re-examined to provide for the vocational needs of students whose high school experience will be terminal.

The primary purpose of this dissertation is to provide a historical account of vocational education in the Chicago technical and vocational high schools as a contribution to educational literature and possibly to suggest improvements to the programs to make them more attractive to many more students.

This study will attempt to investigate and isolate major trends in the vocational education program and analyze them as to causes and effects for the betterment of the curricula.

The 1917 to 1963 period was chosen as terminal dates for this study. The prior date marks the passage of the historic Smith-Hughes Act with its profound effect on vocational education. The latter date marks the passage of the Vocational Act of 1963 with its promise for greatly improved vocational education programs for the near future.

At this point it is necessary to define the essential terms to be used in this dissertation. Of primary importance is the term "vocation". Webster's \textit{Encyclopedic Dictionary} states that a vocation is a calling, an occupation.\textsuperscript{2}

Mays regards a vocation as one's "chief calling," "chief gainful pursuit,"
or "regular occupation." For Good a vocation is a calling, as to a particular occupation, profession, or business.

In this study any reference to vocations will be restricted to those below the professional level for which no training above the high school level is required.

The term "vocational education" is of major concern in this dissertation and it is even more important that it be properly defined. Knight says vocational education is practical education. The following definition is contained in a report on technical and vocational education: "... 'vocational education' is arbitrarily defined as formal occupation instruction at the high school level."

In a recent report the term "vocational education" is used to refer to all formal instruction at the high school, post high school, and out of school levels which prepares individuals for initial entrance into and advancement within an occupation or group of related occupations.

The Encyclopedia of Educational Research states that vocational education is education for work—any kind of work for which society has a need and which the individual finds congenial. It is specialized education as distinguished from general education.

For the purposes of this study vocational education will be taken to mean the formal instruction given in the vocational sequences at the Chicago public technical and vocational high schools whose purpose is to prepare individuals for entrance and promotion in an occupation or group of occupations below the professional level.

It is necessary also to define the terms "general high school," technical
high school," "vocational high school," "trade school" and "comprehensive high school" as they apply to the Chicago Public Schools.

The general high school is sometimes referred to as the regular or academic high school. Primarily a college preparatory school, it offers the academic subjects required for college entrance. In addition a course sequence in Industrial Arts is offered; however, these courses are considered to be a part of general education, in which the student has the opportunity to learn and experience something about the industrial world, how it functions, materials consumed, products manufactured, and the importance of industry to our way of life. Exploratory experiences are provided which may lead to development of vocational or avocational interests. Shops of the type found in general high schools are not primarily vocational in nature as their main purpose is not the development of vocational skills. The great majority of the Chicago public high schools are general high schools.

Another distinct type of school is the technical high school of which Chicago has only two—Lane Technical High School which serves the north side of the city and Lindblom which serves a similar function for the south side.

It should be noted that Tilden had been the technical high school for the south side until September, 1963. At that time Lindblom began phasing in as a technical high school and Tilden began the phase out process. The transition should be complete by September, 1966.

As now constituted the technical high schools offer only college preparatory courses with a strong emphasis on mathematics and the science. They have shops in such areas as printing, wood, aviation, electricity, auto machine, etc. These courses are designed to give the student a good general
background of experience which will be helpful to him in college engineering studies. While the shop courses are not primarily vocational the skills and interests developed may be an incentive to further study or employment in the area. Until just a few years ago the technical schools also offered strong vocational sequences mostly centering around state and federally subsidized shop programs.

A third type of high school in the Chicago system and one which seems destined for considerable expansion in the near future is the vocational high school. This type of school differs from the general and technical high schools in that its main objective is the teaching of vocational skills leading to employment and progress in a vocational field, directly on graduation from the high school.

Vocational high schools are fully accredited by the State Department of Education. Their students must meet the same requirements for graduation as do the students at the general and technical high schools. Vocational high school graduates are therefore qualified to enter college on graduation and many do so.

During his first two years in a vocational school the student takes four different basic exploratory shops for two periods a day. At the junior level the student selects one particular vocational field of interest to him and pursues it until graduation. He spends four periods or approximately one-half of the school day in the specific shop, during which time he is expected to learn the necessary vocational skills and related information that will enable him to qualify for employment in the field upon graduation.

People sometimes refer to a vocational school as a trade school. This
reference in the Chicago situation is entirely erroneous as can be ascertained from the definition of the function of the Washburne Trade School which is the city's only trade school: a trade school is an adult school for indentured apprentices who attend the school a certain minimum hours per year, usually one day a week, as required by their rules of indenture. In the usual situation the apprentice works on the job four days a week and attends the trade school the fifth day, with the apprentice being paid by the employer for the day spent in school. At the trade school the apprentice learns those skills and related information which can best be taught in the school shop and classrooms. In most cases students attending the Washburne Trade School are high school graduates in the 18 to 25 year age range. The trade school is definitely not a part of the Chicago secondary school program.

The following statement by Dr. Benjamin C. Willis, General Superintendent of the Chicago Public Schools, is helpful in clarifying the distinction between the principal types of Chicago secondary schools:

The vocational high school prepares students for many areas of industry and business. Vocational education includes a choice of three practical arts areas: vocational industrial education, business and home economics. During the first two years students in a vocational high school have an opportunity to explore four different shops. The typical first year program includes: English, mathematics, general science, and shop. During the second year, history is substituted for general science. In the third and fourth years, students specialize in a given shop; one-half of their school time is in the vocational shop of their choice, one-third is in related work, and the remainder in general subjects.

The general high school emphasizes a liberal arts type of program that prepares for college; some exploratory experiences in vocational fields; and a program of general education that as terminal education prepares for citizenship, intelligent adjustment to change, and worthy living. The technical high school emphasizes hand crafts, mathematics, and science; it offers preparation for college in technical fields. The vocational high schools prepare for employment in the various trades and vocations. It is possible to get preparation to meet the entrance requirements of some colleges if electives are carefully selected, but the
vocational high school does not set out to prepare for college; it is designed to prepare a student for a specific place in the business or industrial economy.9

Chicago has at least one other type of high school which near its inception was termed a "cosmopolitan high school;" also in this dissertation the term "sub-technical" is used in referring to this type of school. Neither term has found popular acceptance and these schools are officially grouped with the general or academic high schools. The terms at one time or another were applied to the Lindblom and Harrison Technical High Schools which in spite of their names were never really technical schools; they had, and still have rather heavy technical programs but these have been overshadowed by their academic programs. In present-day terminology they could be called comprehensive high schools as they offer programs for all of their students, that is, both academic and technical programs.

At this point a review of related theses and dissertations is necessary to provide a background and framework in which to locate the Chicago experience and to isolate various means of approach to the present study.

Rohan's dissertation is most nearly pertinent to the Chicago situation as it deals with the city's vocational schools.10 Some interesting information is presented on the history of adult vocational education and much statistical information is presented. However, Rohan's study is concerned with adults and the evening school vocational program.

Cooney's dissertation deals with the apprentice training program in the Chicago public schools. This is a treatise concerning the part time vocational training of adult apprentices and is not to be confused with the full time vocational education of regular high school students.11
A dissertation written by Frank Culhane in 1938 concerned itself with trade and industrial education in Illinois for the 1937-38 period. Entire chapters were devoted to such topics as Congressional Acts for Vocational Education, Federal Administration of Vocational Education, State Administration of Vocational Education, and the Status of Trade and Industrial Education. Although a good discourse on the topics mentioned, the study is concerned with the Illinois situation and little is said specifically about Chicago.

Alexander Sullivan's master's thesis written in 1940 is of value in the present study because it provided some of the philosophical background for the formation of Chicago's vocational high schools in the latter 1930's as outgrowths of elementary school level vocational centers. Reference will be made to some of Sullivan's findings in a later section of this study.

Buffalo, New York has historically been a leader in the promotion of vocational education in the public schools. A master's thesis written in 1952 by John Joseph McMahon presents a somewhat short but interesting treatment of the historical background of vocational education, especially a section on early opposition to the introduction of manual training in the public schools. Not many years later Blake presented a rather detailed account of the history of the first fifty years of vocational education in Buffalo. Of special note was his statement on the increasingly high entrance requirements for students in the program. As was true of so many other situations, in the early days it was thought that vocational schools should be repositories for students who could not succeed in the regular academic high schools. He makes mention of the fact that now many hundreds of young people are turned away because they lack certain qualifications and that it is no longer a penalty but
a privilege to attend a vocational school.

Iris Linn Fike made a very thorough study of the development of the vocational industrial education program in the secondary schools of Pennsylvania. Especially interesting was the rather detailed treatment of the historical background of vocational education beginning with vocational training in ancient times.16

In summation it can be stated that while a number of studies have been made of the historical development of vocational education in various school situations in the United States, no comparable treatment has been made of the Chicago public technical and vocational high schools, as is the intent of this proposed study.
FOOTNOTES IN CHAPTER ONE


5 Edgar W. Knight, Twenty Centuries of Education (Boston, 1940), p. 112.


11 William Joseph Cooney, "History and Organization of Apprentice Education in the Chicago Public Schools," Unpublished Master's Thesis (DePaul University, Chicago, 1936.)


CHAPTER II

SURVEY OF THE HISTORICAL BACKGROUND

The past is the parent to the present, the present has its roots in the past. Much of what we presently consider novel and unique had its beginnings in antiquity. This is true of many facets of our civilization and is very true of the field of vocational education. To properly understand the development of vocational education it is necessary to consider its origins; that is the intent of this chapter.

Self-preservation is the prime instinct of life. To sustain life, early man practiced a vocation when he hunted in the forests, fished in lakes and rivers, picked berries and fruits, and dug in the ground for roots. He was performing tasks essential to living. Most simply, a vocation is what a person does to gain a living. The need for survival made it necessary that he teach his sons and daughters to perform the tasks necessary to provide food, clothing, and shelter; this teaching was the earliest vocational education. By necessity, vocational education is as old as man himself.¹

Education always involves a large element of cultural transmission. Undoubtedly the young of primitive humanity acquired their skills and knowledge for life sustenance through unconscious imitation of their elders. As organized society developed, these skills and knowledges were deliberately taught to the young by the tribal elders. "Initiation" ceremonies were one means of instruction; another means was conscious imitation by youth while
attempting to perform adult activities. This last kind of learning is so closely related to apprenticeship that it may be properly called a primitive form of it. Since the dawn of civilization simple forms of apprenticeship have probably been the principal means of vocational education. It is probable that schools existed for those destined for the priesthood among the ancient Egyptians, Hebrews, and other early peoples. Through various kinds of apprenticeship education, man has transmitted historically the knowledge and skill necessary to sustain life.

An early form of organized vocational education was carried on in Sparta. This education was regulated by the State and was designed to train citizens to serve their country. It may be called vocational, since its chief object was to prepare boys for military service. Other than the military training carried on in Sparta no trade training of any kind was carried on in Greece.

Early Roman education provided for specific vocational training of the apprenticeship type. It was intended to produce skilled men and emphasized utilitarian objectives. This was done by means of an apprenticeship system within the family and its connections. Roman education was education largely by doing. Either by apprenticeship to the soldier, farmer, or statesman, or by participation in the activities of a citizen was the training needed imparted. During the later Roman period, much of the informal apprenticeship forms of education eroded by the increasing complexity of the Empire. More specialized types of education became necessary.

Neither in Greece nor in Rome was technical training regarded as a part of education. Education was concerned with moral and intellectual ideals only and there is no evidence that the Greeks, who were great mathematicians, used
their mathematical knowledge for practical purposes, at least not before the
time of Archimedes.⁵

Some schools were established in the Middle Ages but these were dedicated
to the training of letter writer clerks, notaries, and shorthand writers. In
addition to training for the priesthood early Christian schools educated
ignored anything practical as a part of its overall curriculum. Its objective
was, "The training of character in this world and the gaining of heaven in the
next."⁶

Although medieval education emphasized religion, education did find some
expression in the guild schools. In the Middle Ages guilds were organizations
of men in some particular trade whose purpose was to keep standards high and to
look out for the interests of their trade.

With the institution of the guilds there came a demand for a new type of
handcraft training, intended to advance craft interests. This type of
education was designed also for rather defenseless classes and grew out of
changed conditions that affected them. At first this type of education was
informal but later became more formal through the guild schools. Under this
system three degrees of industrial education developed: that of the
apprentice [or learner], the journeyman [the trained worker who works for
others], and the master [the skilled workman who follows his trade
independently and teaches apprentices]. This system was important education-
ally but in time gave way and finally broke down under the modern machine and
factory and the theory and practice of capitalism and mercantilism.⁷
Vocational or practical, non-professional education was provided through the guild by the apprenticeship system. The chief aim of education was the preparation of the apprentices for immediate participation in commercial and industrial activities. There were guilds of bakers, barbers, butchers, carpenters, clothiers, goldsmiths, saddlers, shoemakers, weavers, wool-combers, tanners, among many others. 8

The guilds were not organized, as modern labor unions are, to regulate the relations of employers and employees. They were voluntary associations, brotherhoods, organized for the protection and aid of their members. Some founded and supported schools for the benefit of the children of the members. Little is known of the type of education provided in these schools, but it probably bore a close resemblance to the teaching that prevailed in our grammar schools until about 1870, except that the teacher was always a priest and the education was more theological in character. 9

Renaissance education aimed at the production of the perfect gentleman. Educational aims gave predominance to the cultural objective. 10 No prominence was given vocational education until the latter half of the seventeenth century. At that time the great German educator and philanthropist, August H. Francke (1663-1727) showed in his Latin School that he was a social realist. In his school the "... majority of orphans and poor children learned a useful trade as a part of their regular schoolwork." 11 At his school in addition to the teaching of the classics, French, history, geography, mathematics, drawing and science, pure and applied, were taught. In other words, training in real subjects for practical life under religious influences was given. 12

A most important development in the history of vocational education
occurred in the year 1601. In that year the English Parliament, faced with poverty, unemployment, and the necessity of controlling the lower class, enacted the famous "Poor Law." One of its provisions was the poor children could be placed in workhouses and could be bound out as apprentices. A most harmful result of this measure was that it stamped public education as a charity extended by the state or community and not a natural right of the child as a preparation for his future participation in the social structure. 

Although most of the education in the workhouse schools consisted of vocational training some reading, writing, and counting was included. The small amount of formal education offered constituted the entire educational equipment for these children. 

The early American colonial schools understandably were patterned after those of England. In the United States the history of vocational education down to the close of the first quarter of the nineteenth century was similar to that of Europe through the Middle Ages. In the earlier days of the colonies some form of apprenticeship constituted the chief means of training for all occupations below the professional level exclusive of common labor. 

The Massachusetts School Ordinance of 1642 directed the selectmen to take account of children's ability to read and understand the laws of the country and the principles of religion, to fine parents and masters who failed to teach their children or to put them to work, and to apprentice the children of such parents as they found not able and fit to employ and bring them up. This ordinance reflected the Calvinistic doctrine that the moral and religious welfare of the theocratic state takes precedence over the individual and the family. The ordinance was a reflection of the English "Poor Act of 1601."
In the year 1800, at the request of Thomas Jefferson, the French statesman and economist Du Pont proposed an educational plan for the people of the United States. This system, after the manner of Rousseau, recognized the importance of manual activity in education. It was stated that a child never learns anything except by struggling, running, touching, and constructing. Actual handwork with tools was recommended, however, only as one of various forms of occupation for hours of leisure.

In the second and third decades of the nineteenth century Fellenberg's contribution to the European movement for the industrial education of the poor began to exert a significant influence upon educational theory and practice in this country. His famous institution at Hofwyl was visited by numerous people from America who kept their countrymen well informed as to the work of the Swiss reformer. Fellenberg's plan of combining hand labor with learning was adopted in this country in both public and private charitable institutions for the young, and in the American Manual Labor Schools, as they were sometimes called. However, in only a few instances did the aims of the manual labor schools seem to have been to any noteworthy extent vocational.

Fellenberg's plan of combining the school with the workshop was an extension of the work begun by Pestalozzi in Switzerland in his orphan schools between 1774 and 1825. At Newhof, Pestalozzi combined industrial work for boys and girls with instruction in reading, writing, and arithmetic. The pupils supported themselves by their own labor. The experiment demonstrated the good effect of a good environment and of a systematic and active life on the health, morals, and mental growth of the children.

About the middle of the nineteenth century a popular movement developed
in the United States for the use of public funds to provide a formal education that would promote both skill and intelligence in the occupations of the majority of the people, the mechanical industries and agriculture, and would at the same time utilize these as a means of liberal education. This agitation resulted in the passage of the Morrill or Land Grant Act of 1862 which provided for the establishment in the different states respectively, of one or more colleges of agriculture and the mechanic arts. 20

The act granted to the several states an amount of public land equal to thirty thousand acres for each senator and representative in Congress. The money derived from the sale of these lands was to be appropriated: 

"... to the endowment, support and maintenance of at least one college where the leading object shall be, without excluding other scientific and classical studies, and including military tactics to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the legislatures of the states may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." 21

The importance of the Morrill Act stems from its introduction of two new policies of federal participation in education in that it stimulated special types of education by introducing a small measure of control in specifying broad types of curricula and, secondly, because it introduced a manner of distribution which, to some extent, considered the needs of the various states. This was indeed a great milestone in the establishment of vocational education.

The next important development was the introduction of industrial drawing as a form of industrial education in the public schools of Massachusetts in
1870. A very great obstacle to the introduction of actual work with tools was the lack of an effective and economical instructional method.

At about the same time colleges of engineering were under pressure to provide practical training in the use of tools and machinery for their students and were in eager search of such a method. They discovered what they believed to be the longsought method in the Russian exhibit at the Centennial exposition in Philadelphia in 1876. It was at once introduced into colleges of mechanical engineering and was also promptly adopted by those who were seeking to employ handwork in the schools as a means of liberal culture.

The Russian system was in brief, that of analyzing workshop operations into their elementary processes, of arranging these in a graduated series and making them the object of systematic drill by the student. An essential feature of the plan was the sharp distinction between instruction and construction. The exercises were devised solely with the former end in view, no attempt being made at the "construction" of articles of use or beauty.

President John D. Runkle of the Massachusetts Institute of Technology who first noticed this exhibit was greatly impressed by the system. Runkle pointed out that the system did not train for the mastery of any particular trade but rather cultivated skill in "the elements which underlie all industrial pursuits."

Runkle's proclamation of his discovery of the Russian system and his plan for utilizing it not only in engineering but also in general education, marks the beginning of the manual training movement, the first stage in a period of discussion and experimentation in educational handwork which is still running its course.22
Calvin M. Woodward, Dean of the Polytechnic School at Washington University, St. Louis, derived special inspiration from the Russian system. His address to the St. Louis Science Association led to the founding in 1880 of the St. Louis Manual Training School, the prototype of the class of schools still known by that name. The demonstrations which this school presented of orderly progressive instruction in the use of tools and the continued agitation of the question of educational handwork in the press and on the platform by Runkle, Woodward, and others contributed to the establishment of manual training schools during the first half of the 1880's in Chicago, Philadelphia, Cleveland, Toledo, and Baltimore. With the exception of those in Baltimore the schools were privately supported and furnished, principally, by wealthy business men desirous of promoting a more practical and efficient system of education.

The interest given to the manual training movement also had implications for the schools of Chicago. In order to focus this study on the history of vocational schools in Chicago, it is now necessary to describe some of the conditions and personalities involved in vocational education in Chicago as a means of providing an introduction to the period of history reviewed by this dissertation.
FOOTNOTES IN CHAPTER TWO

1Education for a Changing World of Work, p. 18.
5Dobson, p. 50.
7Edgar W. Knight, Twenty Centuries of Education (Boston, 1940), p. 111.
8Ibid., p. 112.
11Ibid., p. 393.
15Mays, p. 21.
16Fby, p. 237.
18Ibid., p. 140.
20 Anderson, p. 135.
21 Ibid., p. 152.
22 Ibid., pp. 158-161.
23 Ibid., p. 162.
CHAPTER III

VOCATIONAL EDUCATION IN CHICAGO:

1880 TO 1916

The 1880's were marked by the assassination of President Garfield by a crazed office-seeker (1881). Chester A. Arthur was his successor. During his administration the Civil Service Act was enacted into law (1883). In 1884 Cleveland became President. His first administration was marked by the extension of the Civil Service Act. In 1888 Benjamin Harrison was elected President. He was instrumental in increasing government pensions and the building of a new navy. In 1892 Cleveland regained the Presidency. Soon a period of hard times hit the country and many commercial enterprises failed. William McKinley ascended to the Presidency in 1896 defeating William Jennings Bryan as the Democratic party split on the silver question. With the cry of "Remember the Maine!" the United States went to war with Spain and emerged as a world power (1898). Shortly thereafter Theodore Roosevelt became President. He gained world prominence by negotiating a peace treaty between Japan and Russia in 1905. In 1907 he sent a fleet of U. S. battleships on a two-year cruise around the world heightening American naval prestige.

William H. Taft succeeded Roosevelt. The parcel post and postal savings systems were established during his term of office. In 1912 Woodrow Wilson was elected president. World War I broke out in Europe in 1914 but the United States observed a policy of strict neutrality and remained above the conflict.
Chicago in the meantime was rapidly recovering from the effects of the disastrous fire of 1871. It had entered a period of rapid growth and was showing definite signs of greatness. It is a credit to the city that in the midst of all this growth education was in the mind of many of its citizens.

There was much discussion regarding the subject of manual training in the Chicago schools in the early eighties. Many thought it was inadvisable to take time away from the academic subjects and devote it to manual training. They felt, and probably rightly so, that the first and most important function of the schools was to produce good, literate, well-informed citizens. Needless to say that properly is the principal objective of the schools today.

There were those including Superintendent George Howland, who believed that especially beyond the elementary school level, manual training was of great value to students, especially those of the poorer classes who were unlikely to attend college to prepare for the professions. They felt that a re-evaluation of the high school curriculum would reveal that questionable time was being spent on "dead" languages and on other facets of what was still then a classical education.

Vocational education made a gradual entry on the Chicago scene. A very valuable precursor of manual training in the Chicago school was drawing. In his report for 1882 George Howland, the Superintendent, wrote of the gratifying increase of interest in drawing, especially in the desirable direction of industrial and mechanical drawing. He stated that "... the value of this training of the eye and hand, to say nothing of the mental training and development involved, whatever be the future employment of the pupil, is not likely to be over-estimated."
In the year 1883 Howland made an eloquent plea for manual training. He pointed out how the division of labor in industry did away with the old apprentice system so that it was no longer possible for a boy to learn a trade because there were no trades to learn. Work having become specialized, to be anything more than a mere tool, the workman had to have a higher mental training, a more systematic knowledge of principles, and a nicer and more skillful touch than the old methods gave. He felt that three years in the "scientific" i.e., the manual training school would make Chicago high school graduates the superior of the veteran of the machine shop. With our present concern over effects of automation it is interesting to note that Howland wrote in that period of "...the machine \(_{that}\) has crowded out the man."\(^2\)

Howland postulated the worthiness and suitability to school conditions of instruction in drawing and design for all students regardless of sex or social surroundings. He stated in effect that what other industrial education that should form a constituent part of school life was open to question. He referred to a high school soon to be opened in the city which would supply the need for mechanical instruction sufficient to meet the demands at that time.\(^3\)

For the school year ending June 30, 1884 Howland stated: "The action of the Board in placing Drawing upon the list of regular studies has given a new impulse to that most important branch of school work. There is a manifest increase on the part of both teachers and pupils and the character of the work seems to me greatly improved. There has been, too, a pleasing development in the direction of manual work by the pupils, in making of little articles and in preparing designs at home as well as at school, giving a new interest to their studies and adding to their skill and artistic taste."\(^4\)
In his report for 1886, Howland said that the subject of Manual Training was the subject which then demanded the most careful consideration, and the wisest thought of those to whom the direction of the schools had been delegated. As a result of much attention and discussion given to the question, it was decided to make an experimental beginning in that year.

At its regular meeting of June 30, 1886 the Board adopted the following recommendations in reference to Manual Training in the high school:

That a course of Manual Training be adopted for the High Schools; that such Course of Manual Training shall be optional, and that such pupils who desire to take this course shall have their classes in the Literary Department so arranged that they can recite in such studies from 9 to 12 o'clock.

That pupils taking the course in Manual Training shall report for instructions in this branch at half-past one o'clock at one of the rooms in the repair shop belonging to the Board on Monroe Street between Desplaines and Halsted Streets, and that the hours of instruction in Manual Training shall be from one to four o'clock.

That instruction shall be given during the first year in Mechanical Drawing and Wood Working.

That there shall be put in charge of the Manual Training Department a man who is a practical mechanic, competent to teach Mechanical Drawing and Wood Working and also competent to take charge of the other branches of Manual Training, if the same shall be subsequently introduced by the Board.

Early in the school year beginning September, 1886 a school for manual training was opened on Monroe Street near Halsted. About seventy-five first year high school pupils were enrolled. They had their regular studies in the high schools during the morning session and attended the manual training school in the afternoon, from 1:30 to 3:45, five days a week.

The school was under the direction of Herman Hanstein who had one assistant. Instruction was given in mechanical or construction drawing and the various forms of bench work such as lay-out work, filing, drilling, tapping, etc. The venture was deemed successful and the pupils were much interested...
from the very beginning. The boys were judged to be as proficient in the use of tools, and in work skills, as they would have been in two or three years of the old time apprenticeship.

Howland recommended that the work be "extended gradually to the second, the third year, and through the course; otherwise this first year's work is largely thrown away." He further said, "One of the most desirable results of this Manual Training, in my judgment, is the ennobling of labor, with the attendant habit of useful industry. Let our workmen be made able and willing to lay a more skillful hand to the execution of a more intelligent purpose, and the prejudice against productive labor, so often observed, will pass away."  

The following year, Howland disclosed that the course of the Manual Training School in connection with the high schools had been extended to two years. First and second year high school pupils were in attendance on the part-time basis established the previous year. There were now fifty-two in the first year class and thirty-three in the second.

Included in the curriculum for the first year were carpenter work, and free-hand and mechanical drawing; the second year students were taught wood turning, pattern making, modeling, moulding, casting of soft metals and mechanical drawing. Howland recommended that the school become a separate institution to best meet the needs of the students.

In his report for 1890, Howland told of the establishment of an independent Manual Training and English High School. With the expansion of the population and size of the city by annexation, it became impossible for students from outlying areas to attend morning sessions in their own high schools and the afternoon session at the Manual Training School.
The new school had a three year course. Howland felt that the institution could not accommodate more than the 130 students then enrolled and stated that an additional building would be needed for shop work for the coming year.  

The shops were completed in November 1891. The structure for these shops was built at a cost of $23,158.50. It was four floors in height and occupied a ground area of 99.1 by 56 feet, and it was built as an addition to the existing facilities on Monroe Street between Halsted and Desplaines Streets.  

The school year 1891-1892 may well be called the first real school year of the English High and Manual Training School. James F. Claflin, formerly a teacher at the West Division High School, was appointed as the first principal. He began the organizational work for the school in September, 1890.  

A reproduction of a portion of the Crane Tech Handshake is to be found as Appendix I. It has been included because of its historical value pertinent to the establishment of the English High and Manual Training School and its successor, the Richard T. Crane Technical High School—both of which are pioneer institutions in the technical and vocational movements in the Chicago Public Schools.  

In a communication presented at the September 2, 1891 meeting of the Board of Education George Howland resigned from his position as superintendent. He gave no reason for his action although it was probably for health reasons as he died shortly afterward.  

Howland, an Amherst graduate, had been with the system since 1858. He had come to Chicago from Massachusetts as assistant at Central High; two years later he became principal of the school, remaining in that capacity until assuming the duties of the superintendency in 1880. He was noted for the
beauty and clarity of his reports and had a national reputation for his writings in education.

A feeling of deep regret at losing the services of such a capable and faithful officer, mingled with fear of the difficulty of filling the vacant place took hold of the members of the Board and the appointing of a new superintendent appeared a difficult task. After some time spent in looking over the ground, the board agreed upon Albert G. Lane, then County Superintendent of Schools as the man fitted best to fill the vacancy.  

In his report of 1892 Superintendent Lane referred to the "Chicago Manual Training School" which was organized in 1883 under the patronage of the Commercial Club of Chicago for the purpose of developing manual training as an element of common school education. Lane stated that as soon as it was demonstrated that such a school was demanded by the people, and that the work constituted an important element in the education of a boy, the Chicago Board of Education established, in September, 1890, in connection with the public school, the English High and Manual Training School.

Lane reported that the course of study for the English High and Manual Training School embraced:

... in the first year, algebra, Zoology and botany, English and rhetoric, freehand and mechanical drawing, the use of the microscope, carpentry, joinery, cabinet work, wood turning and pattern making. The second year, geometry, physics, general history, English, Business forms or elements of bookkeeping, mechanical and freehand drawing and iron work at the forge and foundry. In the third year is presented trigonometry, higher algebra, chemistry, civil government, political economy, American and English classics, mechanical and architectural drawing with freehand sketches, machine shop work, management and care of machinery. Some demand has been made for instruction in shorthand and typewriting, and these are permitted in the third year as a substitute for mathematics. Those desiring to enter technical schools are permitted to take French or German. There were 259 pupils enrolled during the year. The first class to complete the course of study, which numbered eleven, graduated June 21,
1892. There is every indication that the number of boys who will apply for admission to the Manual Training School will continue to increase, and that similar schools will be required in the South and North Division of the city.15

A committee report for the school year 1892-3 showed an increase in enrolment over the previous year, 298 as against the previous 259. It was also noted that the school was placed on the list of schools whose graduates were admitted to the following institutions of higher education without examination: University of Illinois, University of Michigan, Rose Polytechnic Institute, and Purdue University.16

The Committee on the English High and Manual Training School for 1893-1894 reported a membership for the school of 268. Of the fifty-one students who graduated in June, 1894, more than thirty said they would not have attended any school after leaving grammar school had it not been for the manual training connected with the academic studies.17 Quite clearly a good number of boys saw the utilitarian aspect of manual training and as a result were encouraged to enter high school and complete their high school education.

A. F. Nightingale, the Assistant Superintendent in Charge of the High Schools recommended in 1895 that the course of study of the school be extended one year, making it a four year's course as in the other high schools of the city. He said the existing three years' course was so crowded that insufficient time was devoted to English language and literature and graduates wanting to attend the better technical schools had to take an extra course in English outside of school in order to complete their preparation. The enrolment at the school was now 389.18

The instructional progress at the English High and Manual Training school suffered a setback when on November 12, 1896 a fire caused by an over-hot
cupola furnace destroyed the school shops. The school was then relocated to rented quarters at 123 S. Jefferson Street.

E. Benjamin Andrews, newly appointed superintendent of schools, made a plea in June, 1899 for the establishment of more manual training high schools. In his words:

Chicago is a commercial and manufacturing city yet very small provision is made for the proper secondary training of our youth, ninety-five percent of whom must follow these occupations. Of fourteen high schools, one is technical—the English High and Manual Training—thirteen are professional. Justice and wisdom would dictate an order something like the reverse of this. There are in the city 60,000 boys between the ages of fourteen and eighteen. Of these about 2500 are in the high schools acquiring a professional education. The others are untrained as far as the city goes for their work in life.

How interesting to note that in this day and age some sixty-five years after Superintendent Andrews' report much the same situation exists in Chicago! In a report to Dr. Andrews, A. F. Nightingale, Assistant Superintendent in Charge of the High Schools termed urgent the need for a new building for the English High and Manual Training School. He said that the neighborhood (123 S. Jefferson Street) was undesirable for a school; the structure, a five story factory building, was ill suited for a high school and too small for the membership. Nightingale urged that a modern building be erected on a large site and that it be provided with the best equipment. He said, "No money for school purposes can be used more wisely than for such a house for our boys."

He also recommended that similar schools be established on the North and South sides of the city. Several years were to elapse before his recommendations became a reality.

Commercial studies were introduced in the high schools in the year ending June, 1901. Subjects introduced were commercial geography, commercial law,
accounting, stenography, and typewriting. 22

The school year ending June, 1902 saw the lengthening of the course of study at the English High and Manual Training School to four years. The intention was to furnish additional opportunity for technical instruction, as well as to increase the amount of cultural work offered a student in this institution. A new building was under construction and the future of the school looked very bright. 23

The Proceedings of the Board for 1901 contain a listing of the courses recommended for the new four year program at the English High and Manual Training Schools. Two programs of study were offered, the manual training course, and the course of the school of commerce.

Included in the manual training course were such shop and related subjects as mechanical and free-hand drawing, wood burning, joinery, cabinet work, pattern work, foundry practice, blacksmithing, machine and architectural drawing, machine shop practice, machine design, architectural design, and industrial art design. The commerce course of study included bookkeeping and business forms, commercial geography, stenography, typewriting, Industrial and Commercial Chicago, History of Commerce, business law, banking and finance, business methods, and ethics of business. 24

Early in 1903 the Board voted to change the name of the manual training building under construction for the English High and Manual Training School at Van Buren and Oakley Streets to the "Richard T. Crane Manual Training High School." 25

Clayton Mark, President of the Board of Education, in his report for 1903 made mention of the Crane Manual Training High School, stating that it was a
new building for housing the English High and Manual Training School to be opened in the fall. He also stated that the Board was planning the erection of a second manual training high school on the North Side of the city at the corner of Sedgwick and Division Streets. The enrollment at the English High and Manual Training School for this year was 676.

Edwin G. Cooley was now superintendent of the Chicago Schools. Cooley made a plea to have domestic science instituted and mechanical training extended to the high schools. He stated that there was general acceptance of this proposition. He felt every boy should have an opportunity for manual training during his high school course, and every girl should have a similar opportunity in the subject of domestic science.

Cooley mentioned the fact that the manual training high school for boys had moved into the new Richard T. Crane High School building at Oakley Avenue and Van Buren Street. He announced a proposal for the introduction of two years of work in manual training and household arts into all the high schools in the city.

At the beginning of the school year 1905-1906 two new manual training high schools were established, one each on the North and South Sides of the city for the purpose of providing additional facilities of the type found so popular at the R. T. Crane Manual Training High School. These schools were opened in temporary quarters, but equipment equal to that of Crane was installed, and the same course of study was used.

The total enrollment at Crane that year was 1097. The Manual Training High School (in the Hoyne School Building at Illinois and Cass Streets) had ninety-eight students and the one in the South Division High School Building at
Wabash and 26th Street had 132. All were boys. William J. Bogan was elected principal of the two schools. His services as principal were to begin on September 5, 1905.

In September, 1905, the Thomas Hoyne Manual Training High School began operation in a former grammar school building at Illinois and Cass Streets. Its purpose was to relieve the congested conditions of the R. T. Crane Manual Training High School and to form a nucleus for the organization of a new north side technical high school, long contemplated by the Board. The enrolment at opening was eighty-five but it soon increased to 440. It was planned to transfer the students in September, 1908 to the new Albert G. Lane Manual Training High School.

Sewing and cooking were introduced into the high schools with the opening of the domestic science department in the Lake High School in February, 1907, and proved very popular. During the same year the principals of the high schools recommended that advanced work in accounting, stenography, and typewriting be given in the high schools. The Board of Education accordingly authorized the Superintendent to arrange a second year's course in accounting, including penmanship and business arithmetic, and a second year's course in stenography and typewriting, in addition to the one-year courses already provided in these subjects.

Robert M. Smith, Supervisor of Manual Training and Household Arts, stated that considerable progress had been made in the development of manual training in the high schools. The new manual training high schools, the Lake and Thomas Hoyne, opened in September, 1905. He mentioned that the Albert G. Lane Manual Training High School was under construction and would be ready in
Smith said that the impression in some quarters that an expert mechanic is the best teacher should be squelched. He said that for any success in manual training, the trained teacher must be engaged—he must be a teacher first and a teacher always. In his words:

Of course it is essential that he should possess a certain amount of mechanical skill—the more the better—but the success of a manual teacher does not depend upon the amount of mechanical skill he possesses, but upon his teaching ability either natural or acquired. The trained teacher and the expert mechanic look at things from a different point of view, and the difference between them is totally irreconcilable. The mechanic by his training and environment, is forced to have in mind the quantity of work turned out and the quality need only be sufficiently good to sell. The exigencies of industrial life and the keenness of competition have forced him to place the best work in sight, and to think less of the hidden parts. The true teacher will bestow equal care upon all parts of an object whether seen or unseen. It is the producer and not the product that the teacher must consider, while in the workshop the product is of first importance, the producer comes second.

At its meeting of July 5, 1906, the Board approved transfer of some portions of the equipment from the South Division Manual Training High School to the Lake High School and the Hoyne Manual Training High School.

In his 1907-1908 report, Superintendent Cooley stated that the Board had authorized the opening of first year manual training classes in a number of general high schools and of domestic science classes in the Curtis, Englewood, Lake View and McKinley high schools.

Otto Schneider, President of the Board of Education, made a strong plea for vocational education in 1909. He felt that children should be given the most practical education. He said that where formerly the entire emphasis had been on the culture of the mind only, the tendency of modern times was on the education of the hand as well.

"Children who are physically grown and mentally somewhat slow should be
paid special attention. Such children," he said, "should receive manual
training, as their inclination usually demands at an early age."^ Schneider
cited the experience of the technical high schools where the attendance had
increased about forty percent because of the program.40

The opening of the new Albert G. Lane Technical High School in the year
1908 with an enrolment of 1411 boys was in keeping with Schneider's philosophy.
Only the Wendell Phillips and Englewood High Schools had higher enrolments at
that time.41

On assuming the duties of superintendent in 1909, Ella Flagg Young, the
only woman superintendent of schools in all of Chicago's history, promptly
recommended that a two year vocational course be instituted at the Crane and
Lane Technical high schools. It was her feeling that the vocational aim should
be recognized and that students who could spend only one or two years in high
school would leave the program better prepared for industrial employment.42

In 1911 Ella Flagg Young recommended the establishment of a technical
high school for girls to be known as the Lucy L. Flower Technical High School.
"Many girls must work," she said, "and they need a technical education which
will fit them for industry; girls should not be limited to 'the needle and the
stove'; it is impossible to limit all girls in the industries to dressmaking,
millinery, and cooking." While favoring co-education she felt that industrial
training could be better studied in separate technical schools for boys and
girls, so that no individual principal would have the whole problem of
vocational training of both.43

In accordance with Dr. Young's recommendation the Board in 1911 voted that
the vacant school building formerly occupied by the South Division High School
at the corner of Wabash Avenue and 26th Street be suitably reconditioned for
the industrial training of girls.

A rather startling development took place in September, 1912. In that
year the Chicago public schools, braving the danger of penalization, inaugurated
a system of prevocational courses in the technical high schools. Pupils were
admitted to the high schools for this program without examination and regard-
less of grade, provided they were of sufficient ability and maturity to benefit
from high school courses. In the courses for boys one period a day was devoted
to a combination of civics, history and geography, one to shop mathematics, one
to English, one to freehand and mechanical drawing and two to shop work—
pattern making, cabinet making, foundry, forge electricity and printing. The
technical school principals felt that the success of these courses was very
great, notwithstanding serious handicaps in the beginning. Further trial under
improved conditions was deemed necessary for proper evaluation of the program.

After two years of existence the Lucy L. Flower Technical High School had
shown considerable progress. The building had been furnished and special
rooms had been established: Chemistry and biology laboratories, a household
science kitchen and dining room, a sewing room with ten sewing machines, a
Power Machine room fitted with twenty-three sewing machines and a button hole
machine, laundry, students' lunch room and a lunchroom kitchen, two art rooms,
a library, and a gymnasium. A small cinder-filled area of land at the rear of
the building had been transformed into a flourishing kitchen garden where
botany class students learned how to raise vegetables for home use. The lunch
room operated at a profit. This provided the school with a fund for the many
small purchases every school must make.
No girl was permitted to use the machines in the Power Room without at least five months training in hand sewing. Many practical items were sewn and distributed to various school and community organizations.

The aim at Flower was first to have a technical school for girls which would provide for general training in the art of homemaking, and second for a marketable product of skill in occupations suitable for women whereby its graduates could find gainful employment. As did the boys' technical high schools, Flower also enrolled pre-vocational students.

Flower was the first public school in Chicago to carry on a systematic vocational guidance program. Anne Davis, a graduate of the University of Chicago and the Chicago School of Civics and Philanthropy, acted as vocational counselor and guide to girls who expected to earn their own living in the immediate future or after graduation.

The year 1913-14 marked the completion of the Carter H. Harrison Technical High School at 2850 W. 24th Street Boulevard. It was the first building in Chicago designed as a technical school for both girls and boys. Its ninety-six rooms (which included laboratories, shops, etc.) were designed for a student body of 3000. The seating capacity of the assembly hall was 2000. The approximate cost of the building and equipment was $950,000.

It is interesting to note that for several years preceding 1913 the Harrison Technical High School had been housed in the Farragut elementary school building at Christiana Avenue and 24th Street and was known as the Farragut High School. The name was changed on October 2, 1912.

The Lake High School acquired a new name at the June 23, 1915 meeting of the Board of Education; it became the Edward Tilden High School, honoring a
former member of the Board of Education.49

So ended the early era of technical and vocational education in the Chicago schools. Chicago realized the importance of vocational training for its youth as indicated by the ever increasing provisions for such training in its school system. Events of the next few years were to make profound changes in the course of the nation; one of these changes deeply affected the course of vocational education throughout the entire country.
FOOTNOTES IN CHAPTER THREE


3. Ibid., p. 60.


(N.B. Lane made no mention of the Manual Training School established in 1886 and previously referred to in this dissertation. The writer feels that this institution made a very significant contribution and impact on educational thinking in Chicago and should properly have been alluded to).


24 Proceedings of the Board of Education of the City of Chicago July 10, 1901 to June 25, 1902 (Chicago, 1902), pp. 18-49.


29 Ibid., p. 115.


31 Ibid., p. 128.

32 Proceedings of the Board of Education of the City of Chicago, July 6, 1904 to June 21, 1905 (Chicago, 1905), 777.


36 Ibid., p. 174.


40 Ibid., p. 19.


46 Ibid., pp. 266-270.


CHAPTER IV

1917-1929: THE EFFECT OF THE SMITH-HUGHES ACT ON
VOCATIONAL EDUCATION IN THE CHICAGO PUBLIC
TECHNICAL HIGH SCHOOLS

The 1917 to 1929 era was most eventful. 1917 was a year never to be forgotten. The United States declared war on Germany because of its unrestricted submarine warfare and "to make the world safe for democracy." This was the first global conflict. The entry of the United States on the side of the Allied Powers was most decisive in the defeat of Germany and the Central Powers. America's hastily trained civilian army turned the tide and quite quickly brought the Kaiser to his knees. America was now a world power as never before.

Also in this period great social changes came into being. The ill-advised Prohibition amendment was ratified in 1919 and ushered in a disrespect of law that is still with us. Women got the vote (1920) thus making our system of government more truly representative. Technological advance proceeded at a rapid rate, spectacularly so in the aviation field, as the first non-stop airplane flight was made across the United States in 1923; U. S. Navy fliers encircled the globe in 1924; a U.S. Navy plane reached the North Pole in 1926; and the world was swept with wild joy when Charles A. Lindbergh flew acone from New York to Paris. This was an era of false prosperity that collapsed when the bottom fell out of the stock market on "Black Friday" in 1929. A decade of the most severe economic depression our country has ever experienced ensued.
The Chicago schools did much to support the war effort. Great amounts of money were contributed; great quantities of material were donated; countless hours of work were freely given. Teachers and school officials toiled for many, many hours both day and night, seven days a week, to promote the war effort.¹

War Savings Stamps were sold throughout the school system. Large amounts of money were collected for Red Cross work. Money and materials collected were for the use of the soldiers at the front and in the trenches; for hospital supplies and for the clothing and feeding of women and children in Belgium, France, and Italy. "Every teacher and almost every high school girl was transformed into a knitting machine..." Classrooms and offices were made over into workshops and articles that might be useful at the front or in camps or hospitals were turned out in huge quantities. Many carloads of material were shipped abroad.²

In addition many men from the schools took up arms to "maintain the honor and dignity of the greatest republic on earth..." Superintendent Mortenson observed that for the first time in our history we had come to realize what a power for good and how important the organized public school system had become.³

At the Board meeting on Wednesday, February 20, 1918 Superintendent John D. Shoop recommended that the resources of the technical schools be placed at the disposal of the national government for the purpose of training men for the developing needs of the war effort. At the same meeting he recommended the organization of all boys and girls over sixteen into a working reserve army which would be employed after school hours in occupations directly or indirectly helpful to the waging of the war. Both recommendations were adopted by the
Board of Education. 4

Uncle Sam forthwith took advantage of the offer. A news item in the first edition of The Chicago Schools Journal of September 1918 stated that four high school buildings were used that summer for the instruction of 840 [sic] drafted men from army. The Board of Education furnished instruction to the men for six hours per day, and they were responsible to three military instructors for three hours a day more. Harrison High School accommodated 272 of the soldiers; Phillips, 120; the old South Division, 250 and the old Brennan Elementary School, 150. At the Harrison the instruction was for carpenters, sheet-metal workers, blacksmiths, machinists and automobile mechanics. At the other schools the men learned to be "drivers of automobiles and auto trucks." Classes in electricity were held at Lane and Schurz high schools. 5

The next issue of The Chicago Schools Journal (October, 1918) contained an article which stated that early in 1918 the War Department conceived what was then a revolutionary plan whereby inducted men "suited for artificers in the army" were trained for a military vocation under strict military discipline in institutions devoted to vocational education. Harrison Technical High School was honored by being classed with twenty-two colleges and universities for this experiment. 6

Three groups, totalling 669 men, were trained. The objective was to produce soldiers who in addition to their duties as fighters would also be able to do the mechanical work necessary at the front for the maintenance of their lodging, weapons, and transportation. Training was in the areas of carpentry, auto repair and gunsmithing. 7

The course was evidently successful. The cooperation between school and
military authorities and the excellent behavior of these adult students in the community of which they became a part spoke well for the spirit in which all concerned met this unique situation. 8

An excerpt from the history of the Crane Technical High School states that with the involvement of the United States in World War I the government launched a system of preparation, one of whose first acts being the taking over of Crane High as a technical training school. This act stimulated the growth of the school and soon "portables" made their appearance. A Cadet Corps was summarily organized and the government sent an army officer to supervise the military training. Eight boys, who had undergone a course of instruction at Culver, returned to take in hand the four companies at Crane, which in consequence became the best military school in Chicago. 9

Evidently the use of the schools proved advantageous both to the military forces and the school system. Apparently the army augmented the technical and vocational equipment of the schools it had occupied and left it there for the use of the schools after the cessation of hostilities.

However, war conditions also had a deleterious effect on the schools. It became extremely difficult to locate and place commercially trained, practical shop men as instructors in manual training. The proposal was to give them a period of intensive instruction in the educational aspects of the work. Thirty such young men took advantage of this offer in 1918 by attending the summer session of the Chicago Normal College. 10

The wartime situation was not a unique educational experience in at least one aspect. To this very day it is most difficult to obtain properly trained and properly qualified personnel for shop teaching positions in the schools.
The year 1917 most properly will forever be inscribed in the history of the United States. That same year, however, has extreme significance to the field of vocational education because on February 23rd of that year Public Law No. 347, 64th Congress, popularly known as the Smith-Hughes Act, was signed into law by President Woodrow Wilson only a month and a half before the United States entered World War I. This Act provides a permanent appropriation of a little more than $7,000,000 annually for vocational education in agriculture, trades and industry, home economics, and for teacher training. This Act has never been amended, except to extend its provisions to territories of the United States.11

The Smith-Hughes Act was introduced by Senator Hoke Smith and Representative Dudley M. Hughes both of Georgia. Both men had served on a Congressional commission established to study the need for federal aid to promote vocational education with Senator Smith as chairman. The Smith-Hughes Act was an outgrowth of the "Report of the Commission on National Aid to Vocational Education."12

Dr. John Lapp, past president of the Chicago City Club and the Citizens School Committee, was a member of the National Commission which in 1914 drew up the Smith-Hughes Act. In his article, "The Case for Federal Aid to Education", Dr. Lapp stated he was the principal draftsman of the bill which became the Smith-Hughes Act, the first Federal Act which spelled out a complete cooperative arrangement between the Federal government and the states.13

Although the beginning of vocational education had been established long before 1917, all Federal educational aid to states previously had been given either for general education at the elementary and high school levels through
land grants, or for special types of higher education, largely through the land grant colleges. The Smith-Hughes Act was the first instance of federal support of vocational education below the college level. Great strides in vocational education were made after the passage of the bill.

Dr. Lapp stated that when the report of the Commission was submitted in June, 1914, there was no hint of war, but as soon as it became apparent that this country might be involved in war, the passage of the Smith-Hughes Act became imperative. With President Wilson's full approval and support, the Act was adopted by Congress with few dissenting votes.¹¹

"The Smith-Hughes Act was not a war measure," said Lapp.

Statements that the Smith-Hughes Act was intended only for the national emergency of an expected war are entirely false. The Commission that framed the Act never suspected the coming of a war in which this country would be involved. There is not a single word in the 300 pages report even hinting of war. The law was framed to strengthen our hand in world economic competition and to buttress our lagging agriculture. Some persons, wholly uninformed of the history of the law, have stated that it was passed as a temporary measure. How they got that idea is a mystery. There is not a single word or even a hint implying a temporary purpose. This writer can testify that not once was it suggested by any member of the Commission, nor by any witness before the Commission.¹⁵

Because of its import to vocational education it is felt that a presentation of the salient features of the Smith-Hughes Act is in order. The full text of the Act is presented in the Appendix.

The purpose of the Act is to provide for the promotion of vocational education in the areas of agriculture, trades, and industry; to cooperate with the States in the training of teachers for vocational subjects; and to provide money and regulate its expenditure to achieve the purposes of the Act.

Section One of the Act states that there is to be an annual monetary appropriation to the States to assist them in paying the salaries of teachers,
supervisors and directors of trade, home economics, agricultural and industrial subjects and for the preparation of teachers for these subject areas. Provision is also made for the use of funds by the Federal Board of Vocational Education for administering the Act and for the making of studies, investigations, and reports to aid in the organization and conduct of the program.

Section Two is concerned with the annual appropriations under the Act.

TABLE I

SMITH-HUGHES ACT:
ANNUAL APPROPRIATIONS

<table>
<thead>
<tr>
<th>Year</th>
<th>Appropriations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918</td>
<td>$500,000</td>
</tr>
<tr>
<td>1919</td>
<td>$750,000</td>
</tr>
<tr>
<td>1920</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>1921</td>
<td>$1,250,000</td>
</tr>
<tr>
<td>1922</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>1923</td>
<td>$1,750,000</td>
</tr>
<tr>
<td>1924</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>1925</td>
<td>$2,500,000</td>
</tr>
<tr>
<td>1926 and thereafter</td>
<td>$3,000,000</td>
</tr>
</tbody>
</table>

The above sums are to be allotted to the states in the proportion which their rural population bears to the rural population of the continental United States.

Section Three is concerned with cooperation with the States in paying salaries of teachers of trade, home economics, and industrial subjects. The annual appropriations for this purpose are identical to those shown in Table 1. The sums allotted to the States are based on the proportion which their urban population bears to the total urban population of the continental United States. This section contains a provision that states that not more than 20 per cent of the money appropriated under the Act is to be used for the payment of salaries of teachers of home economics subjects.
The sums appropriated for cooperation with the States in the training of vocational teachers are dealt with in Section Four and are enumerated in the following table:

<table>
<thead>
<tr>
<th>Year</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1918</td>
<td>$500,000</td>
</tr>
<tr>
<td>1919</td>
<td>700,000</td>
</tr>
<tr>
<td>1920</td>
<td>900,000</td>
</tr>
<tr>
<td>1921 and thereafter</td>
<td>1,000,000</td>
</tr>
</tbody>
</table>

These sums are to be disbursed to the States in the proportion which their total population bears to the total population of the United States.

Section Five stipulates that in order to secure the benefits of the Act, the State through its legislature is to accept its provisions and create a State Board empowered to cooperate with the Federal Board for Vocational Education in the administration of the provisions of the Act. In states where the legislature did not meet in 1917 the governor was given the power to accept the provisions of the Act subject to action by the State legislature at its next session.

Section Six provides for the creation of the Federal Board for Vocational Education, enumerates its powers and duties, and stipulates the composition of its membership.

Section Seven is concerned with the annual appropriation of $200,000 for cooperative Federal-State studies, investigations, and reports, and for the payment of salaries, office, and other expenses of personnel necessary to the
execution and administration of the Act.

Section Eight states that State Boards shall present plans for their proposed vocational training programs; the kinds of schools and equipment; courses of study; methods of instruction; qualifications of teachers; in the case of agricultural subjects, the plans for the supervision of these subjects. A provision is made that the State Board is to make an annual report to the Federal Board of the work done in the State and an accounting of funds appropriated to the State.

Section Nine stipulates that only fully qualified educational personnel are eligible for payment of salaries under the Act. Any supplementary instructional costs necessary for a well-rounded course of training are to be borne by State and local communities alone. The State, or local community, or both shall match Federal funds for the payment of salaries of vocational subject teachers and for the training of teachers of such subjects.

Section Ten states that agricultural education programs under the Act must be for persons over fourteen years of age planning to work on a farm or in a farm home. These programs of less than college grade, must be under public supervision or control, must fit people for useful employment. The State, or local community, or both are to provide approved plant or equipment. The full annual appropriation must be used for this type of education. At least six months of the training per year must be on a farm which may or may not be provided by the school. All educational and administrative personnel must possess at least minimum qualifications.

Section Eleven bears great similarity to Section Ten but pertains to the areas of trade, industrial subjects, and home economics education. This
education is to be given under public supervision or control; it is to be of less than college grade, for persons over fourteen years of age; it must be education for useful employment for students preparing for a trade or industrial pursuit or who have already entered upon such a trade or pursuit; the state or local community or both are to provide an approved plant or equipment; all appropriated funds are to be expended each year; at least half the time for the vocational instruction must be devoted to practical work on a useful or productive basis, for not less than nine months per year and not less than thirty hours per week. At least one third of the fund for teachers salaries in this instructional area is to be used for part-time schools or classes for workers fourteen to eighteen years of age, where these workers can enlarge their civic and vocational competence. This classroom instruction should be at least one hundred forty-four hours annually. The age of sixteen years shall be fixed as a minimum entrance requirement to evening industrial schools and the instruction should be supplemental to the daily employment of the students. All trade and industrial subject teachers must meet at least minimum qualifications for the program.

Section Twelve. In order for a State to receive funds for the training of teachers, supervisors, and directors of agricultural, trade, industrial or home economics subjects, it must provide that such training is supervised by the State Board, in schools or classes under public supervision or control, that such training is given to persons acquiring experience or who are preparing themselves as teachers, supervisors, or directors. Not less than 20 per cent nor more than 60 per cent of an annual appropriation shall be expended for any one of the following purposes: For the preparation of teachers, supervisors,
or directors of agricultural subjects, or the preparation of teachers of trade
and industrial subjects, or the preparation of teachers of home economics
subjects.

Section 13. States are enjoined to appoint as custodian for such
appropriations under the Act its State treasurer who is to receive and provide
for the proper custody and disbursements of all money paid to the State from
said appropriations.

Section 14. The Federal Board for Vocational Education shall annually
ascertain whether the States are using, or are prepared to use the money
appropriated to them.

Section 15. Whenever any portion of the fund annually allotted to any
State has not been expended for the purpose provided for in the Act, a sum
equal to such portion shall be deducted by the Federal board from the next
succeeding annual allotment from such fund to such State.

Section 16. The Federal Board for Vocational Education may withhold the
allotment of money to any State whenever it is determined that such funds are
not being expended for the purposes and under the conditions of the Act. The
State board may appeal such withholding to the Congress of the United States.

Section 17. If any portion of the funds received by the custodian for
vocational education are lost or diminished, the funds shall be replaced by the
State, and until so replaced no subsequent appropriation for such education
shall be paid to such State. No portion of any funds appropriated to a State
shall be applied, directly or indirectly, to the purchase, erection,
preservation, or repair of any building or buildings or equipment, or for the
purchase or rental of lands, or for the support of any religious or privately
Section 18. The Federal Board for Vocational Education shall make an annual report to Congress on the administration of this Act and shall include in such report the reports made by the State boards on the administration of the Act and the expenditures of the money allotted to each State.

As can be seen from the foregoing the Smith-Hughes Act had been carefully drawn up. In referring to the Act in 1956 Dr. Mobley said: "Never has the Smith-Hughes Act been amended, except to extend its provisions to territories of the United States. That his measure stands the test of almost 40 years is evidence it was drafted by men of vision and ability." 16

In his article "The Case for Federal Aid to Education" which appeared in the November 1959 issue of The Chicago Schools Journal Dr. Lapp stated: "the Smith-Hughes Act has been in force for forty-two years. Three and a half million persons are this year taking work under it. Fully sixty million persons have been enrolled in one or more courses since it has been in force." 17

A careful reading of the Act impresses one with its thoroughness and organization. The allocation, distribution, and use of the funds is carefully and definitely prescribed. Its insistence on certain minimum standards for teacher qualification and preparation, organization of courses including their content and length, building and equipment standards, comprehensive reporting, evaluation and periodic review is conducive to dynamic programs in vocational education.

The success of the Smith-Hughes Act is a disproof of the slogan "Federal aid means Federal control of local schools." In the words of Dr. John Lapp: "The history of the Smith-Hughes Act is a complete refutation of the charge of
Federal interference. This law has been in effect since 1917, and, so far as is known, schools are still under state and local control.\footnote{18}

An account of the efforts to pass a bill to the end that Illinois would qualify for Smith-Hughes funds is contained in an article written by Francis G. Blair who was then the State Superintendent of Public Instruction.\footnote{19} Blair recounted the failure of passage of a bill representing a very earnest and thorough study of the Illinois situation in the 50th General Assembly. Near the close of the session certain people who were very anxious that Illinois should be in a position to receive the benefits of the Smith-Hughes Act came to Springfield to undertake the passage of such a bill during the last days of the session. The substitute bill was simple and brief; it had been prepared by the Superintendent of Public Instruction. It passed the Senate, but failed mainly for want of time in the House. All who understood the situation felt that nothing further could be done until the next meeting of the General Assembly.

However, an amendment to the Smith-Hughes Act was passed shortly and Illinois was informed as to steps to be taken to meet the new Smith-Hughes requirements. Governor Frank O. Lowden accepted on behalf of the state the conditions laid down by the Smith-Hughes Act and appointed a State Board for Vocational Education. The Board at its first meeting elected Francis G. Blair as its chief executive officer. He was given power, subject to the approval of the Board, to appoint experts and supervisors and with their aid to prepare plans for submission to the Federal Board.

This plan was submitted to the Federal Board for Vocational Education and on Saturday morning, December 29th $[1917]$, a telegram from Charles A.
Prosser announced the approval of the Illinois plan.

This plan called for the appointment of a supervisor of trade and industrial education, a supervisor of agricultural education, and a supervisor of household economics education. The three supervisors then went to work on detailed plans which were soon to be sent to the schools of the State.

Mr. Blair pointed out the difficulties of undertaking this work during the last half of the school year and under the hurried conditions; he felt; however, that a beginning could be made in the right direction and the foundations laid for a thorough-going, efficient system of vocational education in Illinois. According to Blair:

"Though the sums are very small at this time, they will in a few years give much aid and support to this new field of education. If the legislature at its next session shall appropriate an annual amount equal to the federal appropriations and the districts shall set aside an amount equal to the sum of the State and Federal appropriations, it is easy to see a very large expansion in vocational education in Illinois within the next few years."^{20}

The Illinois legislature in effect upheld Governor Lowden's decision to gain the Smith-Hughes benefits for Illinois; at its regular biennial (1919) session it passed a law accepting the provisions of the Federal Vocational Education, defining its powers, and duties and naming the State Superintendent as its executive officer.^{21}

The same Legislature passed an appropriation from the State treasury for vocational education of $400,439.97 which added to the Federal allotment placed under the control of the State Board a total of $800,879.94 for the biennium.^{22}

By the provisions of these laws the State Board for Vocational Education
was able to give financial aid to local school authorities for approved vocational courses in agriculture, home economics, and trades and industries in full-time, part-time, and evening classes. Provision was made for providing financial aid for approved training courses for the preparation of teachers of agricultural subjects, home economics subjects, and trade and industrial subjects.23

The first reference in an official Chicago Board of Education publication to aid for vocational education from Federal and State funds appeared in the report of Board proceedings for the April 3, 1918 board meeting. At this meeting Superintendent John D. Shoop requested and received permission to apply to the State Board for Vocational Education for financial assistance "for such courses as may be found on inspection to be in conformity with the regulations of the State Board for Vocational Education in the subjects of Agriculture, Trade and Industries, Household Economics, and courses offered for training teachers of the above named subjects."24

During the Summer of 1918 Superintendent Shoop reported that in order to get the fullest benefit from Federal funds for vocational education it would be necessary to reorganize many of the vocational courses offered in the schools to comply with the terms of the Federal law. He stated the revised courses would be put into effect at the opening of the school term in September of that year.25

Quite clearly this is an example of one of the purposes of the Smith-Hughes Act in action, the self-assessment of vocational programs as a condition for participation in Federal aid for vocational education. It is difficult to see how anything but good could result from such a self-assessment.
For the 1917-1929 era now under consideration, it seems that the Chicago school system spent most of its Smith-Hughes funds for vocational education for apprentice training in the high schools and for programs at continuation schools and the Washburne Trade School, although mention is made of Smith-Hughes classes in woodshop and machine shop at the Tilden Technical High School. 26

During this same period Lane Technical High School offered a four-year Architectural course which complied with the requirement of the Smith-Hughes Act and as such was reimbursable from Federal and State funds. 27

The period of 1917-1929 was generally a period of growth and expansion in student population and physical facilities in the general and technical high schools. Some of this growth was due to the improvement in the economic status of the average family sufficient to release its adolescent members from labor to engage in study; another major factor was the extension to age 16 of compulsory school attendance (1921); a third factor was the large increase in children of high school age in the city; a fourth factor was the technological unemployment of child labor; the fifth factor was the attraction presented by the enriched modern curriculum now made available in the high schools. This was the lure which held the young people in school until graduation—they could study subjects that were interesting and profitable to them and useful in their lives. 28

It is interesting to note the comparison of enrolment figures for technical high schools and for all the city's high schools for the years 1920 and 1922, the years immediately preceding and succeeding the passage of the compulsory attendance law of 1921:
TABLE III
HIGH SCHOOL MEMBERSHIP COMPARISONS: 1920-1922*

<table>
<thead>
<tr>
<th></th>
<th>1920</th>
<th>1922</th>
<th>Percent Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane</td>
<td>3313</td>
<td>4483</td>
<td>35.3</td>
</tr>
<tr>
<td>Crane</td>
<td>2274</td>
<td>2847</td>
<td>25.2</td>
</tr>
<tr>
<td>Flower</td>
<td>398</td>
<td>660</td>
<td>65.8</td>
</tr>
</tbody>
</table>

| Total of Above | 5985 | 7990 | 33.5 |

| Total of all the high schools | 38605 | 54573 | 41.3 |

*Based on the statistics of the Bureau of Research and Statistics, Chicago Board of Education.

Inspection of high school enrolment figures (see Appendix III) reveals that there had been a steady but relatively gradual student growth in the high schools for many years. However, the growth indicated for the 1920 to 1922 period is unquestionably outstanding. It must be assumed that at least a great deal of this increase was caused by enforcement of the newly-enacted extension to age sixteen of the compulsory education law.

While the 33.5% growth of the technical high schools is well below that of 41.3% for all the city high schools it must be kept in mind that perhaps space considerations were the limiting factor. Lane was forced to place more and more of its students into extended day classes to establish branches in and take over more and more nearby elementary schools, and to resort to the increasing use of portables for its burgeoning population.
Crane Technical High School also resorted to an extended day program. The use of "portables" and the Marquette school as a branch brought only temporary relief. Crane continued to grow.\(^29\)

Having anticipated just this eventuality its principal, William J. Barthold had for a number of years attempted to convince a skeptical Board of Education that Crane would expand considerably in student population. He proposed that in the near future the remainder of the square block in which the existing Crane was situated be purchased for the building of a great addition to the school. However, this was valuable property whose owners were unwilling to sell for the sums offered by the Board of Education. The situation called for tact and skillful maneuvering and Barthold proved himself equal to the demands. Erecting the building was an even more formidable task that resulted in a long struggle with city officials. Through much hard work and "unanswerable logic" Barthold was able to win over this officials for his ideas and, at last, in 1924 the structure was completed. Many innovations were incorporated in "this educational monument, a triumph for the cause of technical education."\(^30\)

Crane's enrolment, which had been slightly over 3,000 in 1923, increased to 3,459 with the opening of the large new addition in 1924, to 4,342 in 1925, and then by leaps and bounds to an all time high of 7,827 in 1929.

Tilden Technical High School, as noted, began as a small suburban school in Lake Township in 1881. In 1905, after the township was annexed to Chicago, an addition with shops was added and the technical course introduced. At this time the school was co-educational. As previously stated the school's name was changed to Tilden High School from Lake High School in 1915. Girls were
not permitted to enroll after 1917 and none were graduated after 1921.\textsuperscript{31}

A news article in the April, 1919 issue of \textit{The Chicago Schools Journal} stated that "only last November" was Tilden officially designated as a technical school although high grade technical work had been taught there for the previous ten years. The article continued on to say that this was probably so because for some time the academic work had overshadowed the technical. At the time of the article some 60 percent of a membership of about a thousand were taking technical work, with Smith-Hughes classes in wood and machine shops.\textsuperscript{32}

The November issue of the same publication told of the opening that September of Tilden as a boys' technical high school for the entire south side of Chicago. The enrolment was drawn from at least ninety public elementary schools and thirty parochial schools. This fact was cited as an indication of a strong desire on the part of the public for a technical school on the south side. Also mentioned in the article was the installation of machinery for a new pattern shop, an auto shop, and an electrical laboratory.\textsuperscript{33}

In 1922 the original building was razed and replaced with a large new building which was joined to the 1905 structure. A later period of record high school enrolment made even these facilities inadequate and twenty portables were erected on the school grounds; also, branches were opened at nearby elementary schools.\textsuperscript{34}

\textit{Flower Technical High School} which had originally been established in the old South Division building moved in 1915 because of continued growth to the old Carter School building at 61st Street and Wabash Avenue. For several years at this location the growth continued but then for some unaccountable reason
the enrolment began to decline. In an effort to attract more girls to the school a commercial department was added in 1917. This department soon required the services of four teachers and remained active until June, 1927, shortly before the school moved to the new building it presently occupies at Fulton Boulevard and Central Park Avenue on Chicago's West Side.35

At least part of the credit for the construction of the new building for Flower Technical High School should be given to former Superintendent Peter A. Mortenson who in 1922 urged the Board of Education to erect a modern technical high school building for girls. He said the existing building was entirely inadequate to meet the demands of technical training and also was inaccessible to a large portion of the community. Citing the "magnificent provisions" for boys in the enlarged Tilden and Crane Technical High Schools and the proposed new building for the Lane Technical High School, Mortenson stated that "it was time that his sister was equally cared for."36

Lindblom Technical High School, at 6130 South Wolcott Avenue, was built as the realization of the hopes of a group of public citizens of West Englewood to serve their rapidly growing community of small homes. On September 2, 1919 Lindblom opened its doors to nine hundred and sixty-five eager and enthusiastic freshmen and sophomores.37

Built to accommodate twenty-five hundred pupils, the school grew very rapidly and before the end of the second year it was necessary to establish early and late shifts; some branches were established in neighboring elementary schools.38

Even before the school opened, Superintendent Mortenson made it clear that notwithstanding the word "Technical" which was and still is, a part of
Lindblom's official name and is carved in the stone above its entrance doors, Lindblom would be a "Cosmopolitan" high school as it had been equipped to handle all the high school departments. He said there were some solid reasons for a cosmopolitan high school such as a shorter travel distance for pupils, ease of shifting from one course to another, keeping all the high school age pupils of a family together, and the centering of interest of a community in a given institution.39

He said the disadvantages were the installation of costly equipment which in a school of 2,500 would not be in constant use, resulting in teachers teaching part-time in subject areas for which they were not fully prepared or interested and the difficulty of securing principals with the necessary training and experience to establish and maintain proper liaison with commercial and industrial outlets for their pupils.40

Mortenson said the natural alternative to the cosmopolitan high school would be the specialized high school of which Chicago had three at the time: Lane, Crane, and Flower. Advantages of these were a somewhat smaller building, a lessened per capita cost, intensive use of plant and equipment, better use of the teaching staff, a more unified school interest, and an intensified study of the school's relation to the post-school life of the pupils.41

Mortenson stated that it should not be forgotten that ninth graders entering high school are quite immature and a certain percentage of them would find it advantageous to deviate from courses originally chosen; that their breadth of view is increased by contact with lines of work other than their own; that the fundamental purpose of the school was to assist pupils to acquire a well-balanced development.42
In line with Superintendent Mortenson's founding principles, Lindblom never did develop into a real technical high school on the order of Crane, Lane, and Flower. As stated by its present longtime (twenty-two years) principal, Harry F. Yates, Lindblom has historically been a "sub-technical" high school, that is, a school with a heavy technical program which, however, is overshadowed by the academic program.43

It is interesting to note how Superintendent Mortenson's concepts of the "cosmopolitan high school" some forty-two years ago correspond to Conant's suggested "comprehensive high school" of today. Without a doubt, Mortenson must be credited with being quite a visionary.

Harrison Technical High School, a co-educational school like Lindblom, has had an educational history very similar to it. It too could very well be called a "sub-technical" or in Mortenson's phraseology a "cosmopolitan" school; as such, Harrison will receive no further treatment in this dissertation, which is concerned with the technical and vocational high schools.

Like Mortenson, Conant favors a high school whose programs correspond to the educational needs of all the youth of the community.44 As noted previously, Mortenson organized Lindblom Technical High School as a school "equipped to handle all the high school departments."

At this juncture it might be helpful for the reader to realize and understand that the technical courses were not and still are not the exclusive prerogative of the technical schools. Superintendent McAndrew's report for 1925 contains a statement to the effect that the three boys' technical high schools and eight of the co-educational high schools offered a four year technical course.45
Evidently, the two year vocational courses, so popular at the time were also being taught at both the technical and academic high schools. Superintendent Shoop's report for 1918 states in effect that of a total high school enrollment of approximately 32,600, 9,018 students or approximately 27% of the students were enrolled in two year courses.\textsuperscript{46}

Superintendent McAdnrew's report made very clear that the two year vocational course was not for the college-bound student but rather for the pupil who preferred mechanical work to book work. This type of student does not expect to graduate but wants the chance to try a number of vocational courses to determine the one that is best fitted for him. It was stated that the two year vocational courses were meeting that need.\textsuperscript{47}

Students successfully completing the two year courses were officially graduated together with four year course graduates at appropriate commencement exercises. They were given diplomas certifying their accomplishment. Many of today's leaders in commerce and industry in Chicago are graduates of the now non-existent two year program. It has to be realized that it was much easier for a young person to find employment in this era despite his tender age and the possession of only a two year high school education. Today a person leaving school at the end of the second year is considered a drop-out and is stigmatized. The difference of course, lies in the fact that educational and employment standards have risen greatly in the interim.

In his recent report on the survey of the Chicago Public Schools Dr. Havighurst most interestingly advocates a three year vocational program in the high schools for the non-academically inclined youngster. The similarity of the old two-year and Havighurst's proposed new three-year program is very
The Proceedings of the Board of Education for the year 1917-1918 list the two year courses then in existence. A statement was made to effect that courses successfully completed would carry credit toward graduation from a four year course.

1. Accounting. For students desiring to do office work in the line of accounting, as for example, keeping a set of books or doing general office work not including shorthand.

2. Phonography (Shorthand). This was training for the position of stenographer.

3. Mechanical Drawing. A foundation in the principles of instrumental drawing for positions as draftsmen in machine shops or architect's offices.

4. Machine Shopwork. The aim was to give the students a knowledge of the elementary principles of machine shop practice.

5. Electricity. To acquaint the students with the elementary principles and their application, such as electric wiring and testing, the manufacture of electric appliances, and also determining the cost and efficiency of the same.

6. Household Arts. The aim was to fit girls directly to become housekeepers or to earn a living as seamstresses, dressmakers, milliners or in some other occupation suitable for women. The course required one year of cooking and one year of sewing.

7. Printing. The purpose of this course was to give elementary training in practical printing.

8. Agriculture. The purpose was to give students elementary knowledge of the care and culture of plants as applied to gardening and farming.
The same volume of the Proceedings discusses the objectives of the four year courses in the technical and commercial fields for that period. The aim of the Four Year Technical course was to prepare students for the technical industries, for normal schools, technical schools and colleges. Quite evidently the course had definite vocational objectives.

The Four Year Architectural course was planned for those who wanted to become architects, or to work in drafting rooms or those who desired a general course in mechanical drawing. (It is to be noted that there is no mention made of preparation for college; as a matter of fact students pursuing this course had to take certain additional courses to qualify for college entrance.)

The Commercial Course aimed to give students an education which would prepare them to satisfactorily fill positions as clerks, bookkeepers or stenographers, or to give a good education on general business lines.

The Office Preparatory course was organized as a continuation of the two year vocational course in accounting and stenography and enabled students to much more thoroughly prepare for office work than was possible in two year courses.

The aim of the Household Arts course was to prepare students to become efficient home makers; or workers in the textile trades or in industries related to household economics.

All of the courses just mentioned with the exception of the Architectural courses were taught at the Flower Technical High School for girls. Of the five, only the Technical Course was taught at the three boys' technical high schools. Lane additionally offered the Four Year Architectural Course, and that, incidentally, as a Smith-Hughes course.
On considering the course offerings and their objectives in the technical high school for this period one cannot escape the conclusion that vocational considerations were of greater importance than was preparation for college. Dr. Hobart Sommers, former Assistant Superintendent in Charge of Vocational Education for the Chicago schools is in agreement with this observation. In a personal interview Dr. Sommers stated that the technical high schools of this period were actually vocational schools with only about ten percent of their graduates going on to college. Most definitely vocational were the large number of two year courses then being offered in the technical schools and various general high schools in the city. 51

Dr. Sommers pointed out that the beginning of hostilities in Europe in 1914 had cut off our supply of skilled artisans from Germany and northern Europe and made it most imperative that our educational institutions and, in Chicago, more notably our technical high schools take on greatly added responsibilities for the training of skilled workers for industry and the military forces.

In recapitulation, it can safely be said that the 1917-1929 period was quite memorable in the history of vocational education in the Chicago schools. The combination of World War I, the Smith-Hughes Act, the technological unemployment of youth, and the passage of the compulsory education law requiring school attendance to age sixteen, all tended to increase high school populations and to stimulate vocational and technical programs at the city's technical schools. The Smith-Hughes Act in particular was responsible for a critical re-examination and upgrading of teacher qualifications, building and equipment standards and course content. To this day the Smith-Hughes Act is a vital and
continuing force in vocational education programs throughout the country.
FOOTNOTES IN CHAPTER FOUR

2. Ibid., p. 28.
3. Ibid., p. 29.
7. Ibid.
8. Ibid.
12. Ibid.
14. Ibid.
15. Ibid., p. 52.
17. Lapp, p. 52.
18. Ibid., p. 53.

20 Ibid., p. 10.


22 Ibid.

23 Ibid.


30 Ibid.


35 Dora Wells, "Flower's Early History is Complete as Old School Moves to New Building," Flower Echo, (June, 1932), p. 3.


38 Ibid.
39 Peter A. Mortenson, "Report of the Superintendent of Schools," Sixty- 
fifth Annual Report of the Board of Education of the City of Chicago for the 
40 Ibid.
41 Ibid., p. 25.
42 Ibid.
43 Information from a personal interview of the author with Mr. Harry F.
45 William McAndrew. Annual Report of the Superintendent of Schools,
Board of Education, City of Chicago For the Year Ending June 30, 1925 (Chicago, 
1925), p. 118.
of the Board of Education for the year ending June 30, 1918. (Chicago, 1918). 
pp. 192, 193.
47 McAndrew, p. 118.
48 Robert J. Havighurst. The Public Schools of Chicago. (Chicago, 1964), 
p. 263.
49 Proceeding of the Board of Education of the City of Chicago, 1917-1918 
(Chicago, 1918), pp. 299, 300.
50 Ibid., p. 299.
51 Information from a personal interview of the author with Dr. Hobart 
Sommers on December 30, 1964.
CHAPTER V

VOCATIONAL EDUCATION DURING THE DEPRESSION ERA: 1930-1940

The period from 1930 to 1940 was one of profound trial for all areas of American life. The Wall Street Crash of 1929 unleashed a period of economic depression which extended through the "thirties." The economic decline had educational repercussions as school expenditures were retrenched and supposed educational "frills and fads" were eliminated from school budgets. In the midst of the economic depression Franklin D. Roosevelt was inaugurated as President and with him came the political experiment of the New Deal. Alphabet agencies such as the National Recovery Act, the Agricultural Adjustment Act, the Tennessee Valley Authority, and of educational significance, the Civilian Conservation Corps were established. Roosevelt's two successful campaigns, 1936 and 1940, during this period marked a general public affirmation of the New Deal policies. In the Fall of 1939, the German invasion of Poland and the outbreak of the European war tended to destroy the complacency of American isolation which had existed throughout the 1930's.

1930 to 1940: Who having lived through this decade can ever forget it? Many things occurred, yet the central inescapable thought in the minds of the Nation was the Depression, the longest and most disastrous in all our history. Millions upon millions of our people were unemployed. Many, many lost their homes, their property and their life savings as they lost their jobs and as the banks closed down. Hardly a single person in the country was unaffected as the
Great Depression closed its icy grip on the throat of the economy of our country. Frustration and despair were in the hearts of all our people.

On assuming the Presidency on March 4, 1933 Franklin Delano Roosevelt gave the people cause for hope and a new faith in our country. But the road back was most slow and most difficult. Yet the New Deal did work and conditions did gradually improve. Hitler's attack on Poland in 1939 signalled the beginning of World War II and spurred us on to a vast military preparedness program which effectively terminated the Great Depression and whose impact is felt to this day.

The 1930-1940 decade can very aptly be called the "Decade of the Dictators." Feeding on hardtimes, mass unemployment, mass misery and dissatisfaction engendered by the Versailles Treaty, Hitler, Mussolini, Tojo, and others were able to establish themselves in power and put themselves in a position where they were able to threaten world peace.

It was inevitable, too, that the Depression would affect Chicago. The income of the Board of Education was drastically reduced as many individuals and corporations were unable to meet their tax obligations. "Payless paydays" for teachers and school employees became very common. Because of the shortage of funds contractors were unable to continue construction of a number of school-buildings and the partly finished work was abandoned. Growing financial difficulties and criticism over Board management and procedures brought demands for a complete survey of the school system. These pressures resulted in the Board entering into a contract with the Division of Field Studies of the Institute of Educational Research, Teachers College, Columbia University, to conduct a survey covering such matters as the administration and supervision of the
schools, the business administration, adequacy of the school buildings, building costs, the classification and progress of school children, courses of study offered, special services provided, and a study of the personnel. The resulting school survey, the famous "Strayer Report," was made public in June, 1932.

Based in a large part on the recommendations of this report the Board at the meeting of July 12, 1933 decided that many "extra curricular activities," embellishments," and "fads and frills" would be eliminated and that administration and operation costs would be reduced to a minimum. The Board said this action was necessary to keep the schools in operation in the face of an enormous deficit. The Board felt that the measures taken would increase rather than decrease the effectiveness of the educational program.¹ A list of the major economies effected at this meeting follows:

The school term was shortened by a month.

The number of kindergarten classes was halved.

The Parental School was discontinued.

The operation of all swimming pools was discontinued in the senior and junior high schools and in the elementary schools.

The number of high school physical education teachers was cut in half.

The vocational guidance bureau was abolished.

The number of assistant superintendents was reduced from five to three; the number of district superintendents was reduced from ten to five.

The position of Dean in the senior and junior high schools was abolished.

All high school teachers were now to teach a minimum of seven periods.

The position of Special Physical Education teacher in the elementary
schools was abolished.

The purchase of textbooks was suspended pending an inventory of such books in the schools and in the Supply Department.

Every elementary school principal was now to have no less than two schools under his jurisdiction.

The number of bathrooms was drastically reduced.

All continuation schools were abolished with the exception of the Washburne Apprentice School.

The pupil-teacher ratio in special rooms for subnormal pupils was increased.

The teaching of printing, manual training, and household arts was discontinued in all elementary schools.

The Bureau of Curriculum was discontinued.

Crane Junior College was eliminated.

The Junior High Schools were discontinued.

In addition, many other economies were made in all other branches of the Board of Education such as Operation of Plant, Bureau of Architecture, Bureau of Finance, Bureau of Purchases, Building Fund, etc. 2

Of particular significance in the area of vocational education was the action of the Board of Education to abolish the vocational guidance bureau and to discontinue the teaching of printing, manual training, and household arts in all elementary schools.

Although practically all school personnel and students suffered much by this action of the Board, it must be conceded that there was no other alternative. In justice to the Board it must be stated that virtually all the cut-
backs were restored and new features were added as Board finances improved.

With the aid of federal funds in 1934 the Board was able to complete the construction of a number of school buildings, notably the building for the new Lane Technical High School. This building had become a necessity as the original building at Sedgwick and Division Streets had become badly over-crowded with an enrolment of over 7,000 pupils and had filled sixty portable rooms and five elementary schools in the immediate neighborhood.

It was stated that instruction would be offered in the following subjects at the new Lane:11
Auto mechanics  General Science
Aviation  Biology
Wood Pattern-making  Physics
Joinery  Chemistry
Cabinet Making  History
Wood Turning  Civics
Carpentry  Economics
Forge  Citizenship
Foundry  Algebra
Machine Shop  Geometry
Metal Pattern-making  Trigonometry
Metallurgy  Advanced Algebra
Heat Treating  English Grammar
Welding  English Composition
Electrical Theory  English Literature
Electrical Practice  Library Training and Use
Radio  Dramatics
Electric Communication  Public Speaking
Architectural Drawing  German
Machine Design  Spanish
Heating and Ventilating  French
Air Conditioning  Polish
Band Music  Latin
Orchestral Music  Health Training
Vocal Music  Health Examination
Music Theory  Gymnasium Work
Printing Press Work  Swimming
Linotype  Athletics
Composition  R.O.T.C.

Commercial Art
Freehand Drawing

Course offerings in 1934 consisted of several four-year technical courses, a four-year Smith Hughes architectural course, a four-year music course, and a four-year commercial art course; in addition two-year courses were offered in the areas of auto mechanics, electrical shop, machine shop, printing, mechanical drafting and aviation.5

Shortly, thereafter, the two-year courses in the Chicago schools—which
courses incidentally were vocational in character—were abolished as it was found that the students continued on for a four-year diploma as employment opportunities in this Depression period were virtually non-existent. To date, there has been no return to this one-time very worthwhile and very successful two-year program.

Since with the erection of this building, Lane definitely assumed a position of leadership as an outstanding technical school in the United States and even in the world it might be well to dwell on some of its many facilities intended for the mental and physical health, recreation and comfort of its students:

A modern lunchroom with a seating capacity of 1200.

An assembly hall seating 2,200 suitable for lectures, plays, concerts and school and community meeting.

A large, modern library with adjacent study halls.

A small lecture hall suitable for smaller group of students for discussion and planning of such school activities as student government, school projects, and club meeting.

Large roomy lockers and the best equipment and arrangement known in sanitation in toilets, natatoriumsm and showers.

Gymnasium and a large athletic field.

Beauty both within and without the building was recognized as a necessary part of the environment in which to educate modern youth. 6

William J. Bogan, who for many years had been principal of Lane and was a staunch advocate of technical and vocational education was now Superintendent of Schools (1928–1936). It is interesting to consider some of the views he
expressed in a pertinent article of the period.

In his article Bogan stated that the schools should become more involved in vocational education—that it was too much for out of school agencies to handle. He said that problems of unemployment, poverty, and juvenile crime showed the need for utilization of all agencies that may aid society.

Americans profess a belief in free public education, but quite generally this belief applies only to a select type of education—the education that has been popular with the intellectuals for several centuries. This education was wonderful and highly practical for clergymen, teachers, and professionals but it was unattainable for the crowd because of financial, mental or physical lack. In consequence all education for the crowd had been neglected through the centuries.

Bogan cited the need for education to meet requirements of everyday life, that is, education for a livelihood. Though this might seem a low ideal for those with "heads in the clouds" it is not necessarily low. He said the acquisition of the highest type of culture by those of ability was not precluded. "In Chicago vocational education is dear to the hearts of pupils and parents, for it provides through its happy combination of shop work, drawing, science, and citizenship gateways to the trades, the professions, and supervisory positions in commerce and industry."

Bogan emphasized that vocational education had to remain dynamic and changeable to meet changing needs and that adaption was necessary for new developments. In his words, "Vocational education in Chicago looks upon itself as a clearing house receiving and passing on to its students all the education forces of the community that may aid them in adjusting to a society and
economic system in constant flux. As a matter of economy and efficiency it restricts its energies to such activities as the educative forces of life outside of the school system can not be induced to provide. 10

Bogan felt industry should be most keenly interested in every program for the development of vocational education because workers of high caliber would always be needed in great numbers—even though machines supplanted workers, those workers with a basic knowledge of industry would prove most adaptable to new conditions. 11

Continuing, Bogan emphasized that because of modern machinery the working day and working week were being shortened and the period of school life was being lengthened to eliminate the competition of minors with adults. Because of this schools would be forced to provide an education for modern needs with machinery, science, and technology to be emphasized in the new system. He said, "Man in the near future will perhaps be offered a choice of three courses (1) a narrow education for leisure based upon the traditional teachings of the classics; or (2) a narrow training for work; or (3) a judicious mixture of sciences, technology, machinery, and culture—an education for adaptability. Let us hope that in this democracy the choice will be made not on the basis of social rating, but on the needs and abilities of the choosers." 12

Bogan's utterances of some thirty years ago ring as true today as they did in that past generation. Sadly, however, his was a voice "crying out in the wilderness" and sorry to say he was largely ignored. Yet the need for a realistic education for "the crowd" is still most evident.

Dr. William H. Johnson assumed the office of superintendent on the death of Bogan in 1936. Johnson was a product of the Chicago Public Schools, the son
of a tradesman, and was quite keenly interested in vocational education.

An article in the November 22, 1937 issue of Time magazine relates how Johnson, after being in office a little over a year, declared that the curriculum of Chicago's thirty-seven high schools would be reorganized over a five year period so that 80 per cent of the courses would be vocational instead of 80 percent academic; this meant that only a small percentage of Chicago's 130,000 high school pupils would be studying exclusively college preparatory subjects. Johnson said schools should give the pupils "what they want" and estimated that 80 to 90 per cent would want vocational training; these would continue to get a few basic academic subjects such as English.13

To make possible this revolutionary shift in the curriculum Johnson announced these contemplated steps: (1) next to all high schools would be built factories and workshops for industrial training; (2) new technical and trade schools would be built; (3) the technical course would be three rather than four years in length; (4) trade schools would have a twelve month school year; (5) as they retired, resigned or died, half of Chicago's 1,338 academic high school teachers would be replaced by vocational teachers; (6) only temporary (non-competitive) appointments would be made where academic teachers were needed. Johnson said the reasons for this program, unprecedented in the United States, were the fact that only 6 percent of Chicago high school students were going on to college—the rest "being turned out with nothing that fits them to earn a living"—and the fact that the Federal government under the Smith-Hughes Act would pay half the cost of vocational instruction, a boon not enjoyed by academic education. Johnson felt the latter argument was most convincing in a period of financial doldrums with payless paydays, and closed
schoolhouses.\textsuperscript{14}

Had it not been handed down as a ukase by an educator with two strikes against him, Superintendent Johnson's plan might have won kudos, for educators are well aware that vocational education is the neglected child of U.S. schooling. But Dr. Johnson's critics leaped upon the plan with both feet. The Chicago Teachers Union charged: "The proposal smacks more of communism or fascism than of Americanism... It is the old Russian system which spurted the children of common people into vocational schools from which no further advance was possible." University of Chicago's noted Professor Charles Hubbard Judd snapped: "This has an odor of striking familiarity... the whole scheme smacks of spoils politics." And Dr. John C. Lapp, who wrote the Smith-Hughes Act, declared it was not true that the U.S. would pay half the cost of an expanded vocational program, pointed out the Federal allotment to Chicago was currently limited to $120,000, to which the state adds $120,000. "Only the wizardy of an Einstein," said he, "can explain how $240,000 can grow into a revolution of the entire Chicago school system. In fact, the whole announcement looks like the day dream of a paid publicity man..."\textsuperscript{15}

However, Superintendent Johnson retorted he would go ahead with his plan "regardless of misinterpretation by non-citizens of Chicago and small local pressure groups."\textsuperscript{16}

In passing it might be proper to explain that the "two strikes" against Johnson was the fact that he was Board President McCahey's man, and between McCahey and Chicago's Mayor Edward J. Kelly there was too close a partnership to suit the watchdogs of the Chicago schools.

Helen Reynolds, associate professor of secretarial studies, Ohio University felt that Johnson possibly was too precipitous. She questioned the accuracy of much of his data and the worth of the type of vocational education program he had proposed. She pointed out that the program would commit the Chicago schools to Federal financing and the fact that there was no assurance that Federal aid to education would always be continued—Chicago could not finance the program on its own. Professor Reynolds stated it would be better to test the plan in certain schools under scientific observation and then to base the
final plan in accordance with information obtained. 17

Her concluding statement was: "I should be happier about the whole plan if I were surer that it were better considered, and not the usual effort of a new administrator to show that he is 'progressive'; that he has something to propose which is entirely different and therefore better than what has been developed by the administrator who immediately preceded him." 18

While Johnson's intentions undoubtedly were of the best and much of the criticism levied against him was decidedly unfair, Professor Reynolds' suggestion that the plan be tested scientifically in pilot schools was most proper.

Undoubtedly because of a shortage of funds in this Depression era and the onset of World War II Johnson was never able to put his plan into full effect. To his credit, however, and the benefit of vocational education in Chicago Johnson did not permit his detractors to sway him from promoting vocational education in the Chicago schools within the means afforded him.

Already in October, 1936 he had elevated four so-called "pre-vocational" elementary schools to "vocational elementary centers" serving high school age youngsters who had not as yet earned elementary school diplomas. These students were offered an extensive program of vocational shop training under Smith-Hughes teachers in an extended six-hour day program. 19 Johnson's influence was also to be seen in the opening of the doors of the Washburne Trade School to a large number of high school beginners in 1937 for a program of vocational—not trade—education.

A new importance and status never before enjoyed was given vocational education with the establishment in the Chicago school system of the Department of Vocational Education in November, 1937. Its purpose was to "... provide
direction and assistance to the vocational teachers in the Chicago schools.\textsuperscript{20} This meant that there would now be a coordinated and concerted effort to improve and promote the quality and extent of the vocational program in the schools.

With the opening of the February, 1938 semester, trade, i.e., Smith-Hughes, departments were established in the Lane, Crane, and Flower Technical High Schools. In essence, trade or vocational training was now offered students in a high school environment. Students who had undertaken a series of exploratory shop courses during their first two years of high school were now able to specialize in their final two years in intensive training in a shop of their selection for four periods, or half their time, each day. Instruction was given by trained and experienced tradesmen teachers. A part of the remaining four periods each day was devoted to the study of related technical material, with the balance of the time being devoted to rounding out the general education of the students with emphasis on English and the Social Studies. Instruction was given in preparation for the following trades: drafting, foundry, machinist, auto mechanics, welding, electricity, commercial photography, printing, commercial art, dressmaking, millinery, and beauty culture.\textsuperscript{21}

In writing of this program Johnson said:

The student studying the trade of his or her choice works in democratic association with a student body that is both trade—and academic—minded. He sits in the English or history classroom with the future engineer or salesman. Like any other student, he participates in the extra-curricular program to the extent of his desires. He builds up the feeling among his own group and among non-vocational students that to work with one's hands in a skilled trade is as challenging, as admirable, and as worthy as any clerical or professional work may be.\textsuperscript{22}

Johnson stated students in the trade division could graduate with their class and earn a regular high school diploma by attending summer sessions to
complete the academic requirements; or they could earn such a diploma after entering employment by attending one of the six accredited evening high schools of the city.23

Clearly, like Bogan or any other fair-minded educator, Johnson was trying to put vocational education in a just and proper perspective. Education for the professions is desirable and necessary for those who can qualify and benefit from instruction for this relatively limited field; however, it is foolish, frustrating, and wasteful for "the crowd" to undergo this type of instruction only because of "prestige" reasons; those of us who have had occasion to pay bills tendered by tradesman who have done significant work for us are most willing to attest to the "dignity of labor" and the worth of the "blue-collar" class. Certainly the young person leaving high school prepared for entry into a trade or other useful employment is in an incalculably better position than someone who has gone through the motions of taking the four year academic course, who doesn't qualify for a profession and is prepared for a life of leisure without the means of attaining this type of life.

In discussing the school system for 1936-1937 Johnson made reference to the program for the training of teachers for the Smith-Hughes classes just then established in the technical high schools and the vocational schools. Arthur F. Dodge of the University of Illinois took charge of this training and conducted classes for the fore-mentioned teachers.24

The conclusion is inescapable that Johnson was not merely paying lip-service to the promotion of vocational education. It is evident that he was exploring every avenue to promote this type of education.

The establishment in January, 1938 of the Jones Commercial High School as
an all-commercial vocational high school is another accomplishment that must be credited to Dr. Johnson. This most effective school located just south of the loop at 607 South Plymouth Court, is housed in one of Chicago's oldest school buildings. Used first in 1875 as an elementary school building, it later became a continuation school and in 1938 the Jones Commercial High School for business education.25

In referring to the school Johnson said that its purpose was to provide students a better opportunity for a career in business through intensive training in business subjects. Enrolment was limited to young people who had satisfactorily completed the ninth and tenth grade work of the general high school. Subjects for the eleventh and twelfth grades of the school included one and one-half years of English, one year of U.S. history and civics, and physical and health education; specialized business education constituted the bulk of the student's program.26

Johnson said the school had been equipped with modern furniture, office appliances and other essential equipment necessary for the instruction of young people seeking employment in commercial fields. A special feature of the school was a clerical practice room designed to give the appearance of a typical, modern office.27

The teaching staff was carefully selected, its primary goal being the training of students with "marketable" skills in the commercial fields of stenography, bookkeeping, selling, merchandising, clerical practice and office machine operation. No attempt was made to prepare students for college, as the specific objective of the school was to give intensive training in business education.28
Clarence B. Carey, director of the school since its inception, said the school was organized on the basis of a survey of business men to train public school graduates to meet office job standards immediately upon graduation from high school without the need of any post-high school training. The school's location is not wholly ideal but its proximity to the loop with its business area is definitely advantageous. In addition to intensive business training, Jones stresses good grooming and personality development as vital requisites for its graduates. Its continuing contact with business and its placement and follow-up service result in an effective business training program. 29

Another great accomplishment of the Johnson administration in the Depression era was the planning and construction of a large vocational high school in the heart of the steel industry area on the far south-east side of Chicago.

Johnson said this "South Side Industrial High School" (later named the Chicago Vocational School) was planned not only to relieve over-crowding at the Tilden Technical High School and surrounding academic high schools but also to provide a type of school training "desired by a large number of young people particularly in the industrial area in the southeast part of the city." The site selected consisted of twenty-two acres located between 85th Street, Anthony Avenue, 87th Street and Chappel Avenue. 30

Plans for the new building were being formulated while the site was in the process of acquisition. Delegations of school and citizen personnel visited and inspected vocational schools at Los Angeles, Oakland, San Francisco, Baltimore, Philadelphia, Camden, Newark, Brooklyn and New York City, and their findings were reported to the Superintendent and the Board to be used in the
planning of the new South Side School. 31

A tentative plan for the school stated that it was to be opened as a vocational school for boys. It was to have a three-year course beginning with the sophomore year. The work of the first year, at the tenth grade level, was to have sufficient vocational emphasis to permit selection of specialized vocational courses for the remaining two years. The initial unit was planned to accommodate approximately four thousand boys and was to consist of an academic section primarily for first year classes, and a shop section for second and third year groups. 32

Students applying for admission to the school were to show evidence of having completed the first year of regular high school including a year's credit in each of the following courses: English, industrial arts laboratory, general science, mechanical drawing, and physical education. The requirements of the first year at the school were to be a year each of English, social studies, mechanical drawing, physical education and practical mathematics—the nature of the practical mathematics was to be dependent on the interests and abilities of the particular group— a year of shop was another requirement for the year's work—this was to consist of one-half year each in each of two shops, based on the exploratory activities of the pupil in his activities in the industrial arts laboratory in his regular freshman year. 33

It was planned to have the work of the second and third years of the school include the typical Smith-Hughes and George-Deen shop courses, together with such academic courses as would provide a broad outlook for good citizenship. Elective work in health and physical education was to be included in these two years. 34
In Johnson's words: "The work above the first year will not necessarily
be limited to two years of trade training. In some instances the course
pursued may be less than two years; in other instances, the course may require
more than two years for completion. It must be borne in mind that the prime
objective is that of employability, which in turn must be based upon adequate
instruction and not upon a prescribed amount of time to be spent in school."[35]

This statement by Johnson is evidence of his keen awareness of the under-
lying philosophy and all that is best in vocational education. Unquestionably
it is wasteful to continue certain types of vocational instruction beyond the
point of mastery even though this point is attained rather early in the
student's high school career; on the other hand, for some trades and some stu-
dents, instruction beyond the twelfth grade may be in order.

The cornerstone for the building was laid in 1938; construction on the
$3,500,000 structure continued through 1940 and into the following year.

In focusing attention on the technical-vocational curriculum in the decade
of the thirty's it is found that much attention was given to the up-grading of
existing courses and the institution of new areas of study as demanded by new
developments in science and technology.

In speaking of the Crane, Tilden and Lane Technical High School for boys,
Irwin N. Walker, a member of the Board of Education, stated the courses in
these schools kept abreast of changing industrial conditions; Lane Technical
High School, in particular, was the first high school in this country to es-
tablish classes in air-conditioning, Diesel engines, and driver education.[36]

In 1933 Flower Technical High School boasted of a special music course
[abandoned in 1936], a cafeteria management course, and a home management
course for its four-year students; and a dressmaking, millinery, and personal hygiene course for the two-year students.\textsuperscript{37}

A 1938 publication stated that Flower offered four years in college preparation, millinery, dressmaking, dress design, cafeteria service, beauty culture, nursing, and homemaking. As part of the general education of the first two years, every student was required to take courses in homemaking.\textsuperscript{38}

No mention was made of the two-year courses; these apparently were dissolved in the interim in all the high schools.

In the 30's Crane offered two types of four-year technical courses—the Language and the Non-Language. In the language course the student took two years of mathematics and two years of a language; in the non-language course, three to four years of mathematics were required. The succeeding page is a reproduction of a page of the Teachers Handbook for that period; it gives the specific course requirements for the two programs.\textsuperscript{39}

With the addition of trade, i.e. Smith-Hughes, classes in 1938 Crane now had three courses of study. The Smith-Hughes differed from the language and non-language technical courses in that the student took four periods of shop per day during his third and fourth years; he also took related mathematics, one year of science, and the regular English courses. There was no language requirement.\textsuperscript{40}

A section of the 1939 teachers' handbook is reproduced in the appendix for the purpose of providing a clearer picture of the technical and vocational shop courses at the Crane of that period; no doubt many of these course descriptions are indicative of shop courses in the other two boys' technical high schools.

No further mention of the Jones Commercial High School will be made at
### 4 YEAR TECH—NO LANGUAGE

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<td>3 1/2 yrs</td>
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<td>M. Dr. 1</td>
<td>3 1/2 yrs</td>
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<td>English 2</td>
<td>3 1/2 yrs</td>
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<tr>
<td>Shop—Auto 1</td>
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<tr>
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<td>3 1/2 yrs</td>
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<tr>
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<td>3 1/2 yrs</td>
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### 4 YEAR TECH—LANGUAGE

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<td>M. Dr. 4 or Arch. Dr. 4</td>
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<tr>
<td>Geom. 2</td>
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### Electives
- Trigonometry
- M. Dr.
- Shop
- Economics
- Adv. Biology

**FIGURE 1**

**COURSE REQUIREMENTS—LANGUAGE AND NON-LANGUAGE PROGRAMS**

**GRANNE TECHNICAL HIGH SCHOOL, 1931**
this point as it is felt that the matter of its curriculum was adequately handled on preceding pages of this chapter.

These then constitute the more important aspects of the history of vocational education in the Chicago of the Depression Years. Chicago was most fortunate in having for its school superintendents during this momentous decade two men who were truly dedicated to the cause of vocational education: William J. Bogan and William H. Johnson.

The nationally renowned new Lane Technical High School is a fitting tribute and monument to William J. Bogan for his foresight, dedication and hard work in the technical-vocational field. William H. Johnson was certainly a most dynamic educator and probably equally as dedicated and capable as Bogan. Under the administration of these two men vocational education took giant strides forward during one of the most tragic periods of our nation's history.

Although various criticisms have been voiced of Johnson's administration as being closely connected with Chicago politics, these criticisms are beyond the scope of this investigation which is concerned with the history of vocational education in Chicago.
FOOTNOTES IN CHAPTER FIVE


2. Ibid.


4. Ibid.

5. Ibid.

6. Ibid.


8. Ibid.

9. Ibid.

10. Ibid.

11. Ibid.

12. Ibid.


14. Ibid.

15. Ibid.

16. Ibid.


18. Ibid.


22. Ibid.

23. Ibid.


25. Ibid., p. 485, 486.

26. Ibid., p. 186.

27. Ibid., p. 188.

28. Ibid., p. 188.

29. Ibid., p. 488.

30. Ibid., p. 488.

31. Ibid., p. 488.

32. Ibid., p. 488.

33. Ibid., p. 488.

34. Ibid., p. 488.

35. Ibid., p. 488.

36. Ibid., p. 488.

37. The Flower Echo (Chicago, 1936), p. 5.


Ibid., p. 7.
CHAPTER VI

WORLD WAR II AND ITS EFFECT
ON VOCATIONAL EDUCATION

The peace of an early Sunday morning was violently shattered by the surprise attack of a large Japanese fleet of planes on Pearl Harbor, our great naval base in the Pacific. This attack cost us the lives of a great many people, both military and civilian, and greatly weakened our naval forces. The very next day America declared an all-out war on Japan, Germany, and Italy (1941). Initially, the Japanese scored some great victories but America fought back valiantly and the Japanese were soon on the defensive. In 1942, the United States participated in the successful invasion of North Africa. The next year we scored successes in Sicily and Italy. 1943 saw the "D-Day" invasion of Normandy, the re-election of Franklin D. Roosevelt, and the last great German offensive—the "Battle of the Bulge." Early in 1945 Roosevelt died and was succeeded by Harry S. Truman. Somewhat later that year Germany was defeated. In the latter part of the summer, President Truman authorized the use of the atomic bomb on Hiroshima and Nagasaki and the war was over.

To say that America's entry into World War II was a complete surprise would be an untruth. For well over a year before Pearl Harbor the United States had watched with considerable uneasiness Japan's mobilization and Hitler's spectacular blitzkrieg, with one country after another quickly crumbling in his path. A great many Americans believed in a policy of isolation stating that
our involvement in foreign wars would accomplish no permanent good. Yet always in our subconscious lay the disturbing thought that with our traditional allies prostrated we would eventually be forced to face the Hitler—Mussoline—Tojo colossus unaided and alone.

Japan's sneak attack on Pearl Harbor put an end to all our internal bickering. It united us as never before into a terribly magnificent and most articulate machine bent on the destruction of the Berlin—Rome—Tokyo axis. The loss of so many of our naval units at Pearl Harbor and the paralyzing effect of the Depression had put us into a most vulnerable spot, but the inborn strength and determination of the American people, its industry and its educational system were not to be denied.

If conditions in Chicago can be considered as representative of the American scene vocational education in the high schools had been on the increase; however, due to the Depression and the shrinking job market little effort had been made to replace the many thousands of skilled artisans who had left industry because of death or retirement. So it was that the onset of war found us seriously short of properly trained personnel to fill the demands of a suddenly expanding defense industry.

In Chicago, in particular, an effort had been initiated to remedy this situation in the summer of 1940. At that time, at the request of the federal government, classes for national defense training were begun in cooperation with the State Board for Vocational Education. In the latter part of 1940 ten high schools participated in national defense training—of the ten, three were in operation twenty-four hours a day.\(^1\)

The national defense training program was planned so as not to conflict
with regular day school or evening school programs of the participating schools. Classes in some schools began in the afternoon on the completion of the regular school program. In the evening schools classes began at ten p.m.; at three schools classes continued through the night. In many cases new school equipment was secured for the program.²

During 1941 approximately 60 percent of the trainees came from W.P.A. and 40 percent from the United States Employment Service.³ As can be seen the program at this time involved almost exclusively the unemployed and was not concerned with high school students. In later stages of the program classes were organized in a number of industrial plants and women were admitted to the classes.

Another way in which the Board cooperated with the war effort was by loaning its facilities and instructors to the Army and Navy for the training of its personnel. This was done at a number of locations throughout the city.

The preceding pages of this chapter have described activities essential to the war effort which had been carried on by adults in both civilian and military capacities. However, students at the elementary, high school, and junior college levels were engaged in equally valuable war work. Notable and of immediate value was the pre-induction training program which affected every high school class and activity. Two pre-induction courses required of boys for graduation were: Fundamentals of Shop Work and Fundamentals of Electricity.⁴

Aviation Shop, Radio Shop, and Pre-flight were organized as new courses. These were elective but students were strongly encouraged to enrol in them and the classes proved very popular. Also, a technical course in aeronautics was
drafted immediately following Pearl Harbor and instituted in two technical high schools.⁵

Additionally the academic work in all areas in the schools was adjusted to make it more useful and meaningful to the young boys who would be embarking on military careers. The physical education program was geared to meet the needs of young men who were soon to enter the armed forces. Cadets and student officers in the Reserve Officers' Training Corps (R.O.T.C.) received pre-induction military training of the finest kind.

The schools were helpful to the war effort in such other activities as cultivating patriotism, war stamp and bond drives, salvage campaigns, fund drives for the Red Cross, U.S.O. and Navy Relief, assistance in registration for selective service and war ration books and civilian defense programs; a system of nursery schools for pre-school children was established by the Board to provide care for the youngsters of employed mothers. Much is expected of the public schools in wartime. Unquestionably the Chicago schools did and did well everything expected of them and then went "the extra mile" to provide a most important and worthwhile patriotic service for our country.

One of the oddities of the time was the fact that Chicago's very newest school was able to make what was no doubt the greatest single direct contribution to the war effort of any one Chicago school. This distinction belongs to the Chicago Vocational School.

C.V.S., as it is commonly called, was sufficiently completed to permit its opening in September 1941 to six hundred second year high school students and a large number of one-day per week apprentices. The original plan for the school called for the enrolment of six hundred high school sophomore boys each
semester for six consecutive semesters, so that at the end of three years the capacity of the school would have been reached. 6

However, the plans for the school were altered by our entry in the war, since the Board of Education made the building available to the United States Navy for its "Naval Air Technical Training Center." After one full school year in its home building, C.V.S. was transferred to the former Westcott School building at 8023 Normal Avenue. 7

The Westcott location for C.V.S. was expanded by the addition of four new shop buildings, and the installation of machinery and equipment. At the new location elementary school graduates were permitted to enrol in addition to students transferring in from general and technical high schools. The work of the first two years at the school embraced science, mathematics, English, and physical education and students were able to transfer to other high schools without loss of credit. A variety of shop work and drafting were additionally required subjects. 8

The program of the tenth year at C.V.S. was organized on an accredited level and met college entrance requirements. During this year there was a strong emphasis on trade training. All students were required to take two periods of non-Smith-Hughes shop each day in addition to the regular academic subjects. The shop experiences were planned to provide an opportunity for students to gain some necessary skills in, and information about, other trade work allied to the particular trade they had selected. It also was felt that these shop experiences were exploratory in nature and were helpful in assisting the boys in making wise and definite choices of Smith-Hughes shops for their eleventh and twelfth years at school. 9
Besides the standard tenth year course of study included geometry (1 and 2), English (3 and 4), drafting (3 and 4), United States History (industrial), physical education and music. Students who had not previously had algebra or mechanical drawing were assigned to beginning classes in those subjects. 10

Because of the strong emphasis on trade information and skills in the eleventh and twelfth grades the courses of study for those years did not meet all college entrance requirements, although it was anticipated that graduates would be accepted by engineering colleges. Smith-Hughes regulations require that three consecutive clock hours of the six hour school day be given to shop instruction, and that the remaining time be divided between theory instruction directly related to the trade, and such non-vocational subjects as are deemed advisable for general educational purposes. The C.V.S. student was required to select one of the following trades at the beginning of the eleventh year: aviation; aircraft engines; aircraft structure; auto mechanics; drafting; welding, oxyacetylene, and electric arc; electrical; machinist; sheet metal; printing; wood cabinet making. 11

Other subjects in the course of study for the eleventh and twelfth years included related mathematics, related science (industrial physics and industrial chemistry), related English, related drafting, civics, music and physical education. While the specific aim of C.V.S. was to provide the students with one of the most essential elements of good citizenship—the ability to earn a satisfactory livelihood—still a wide extra-curricular and sports program was in operation. 12

About six months prior to the opening of C.V.S. a new status was given
vocational education by the appointment in February of that year of Philip L.
McNamee to the newly-created position of Assistant Superintendent in charge of
Vocational Education. This action filled a gap which had existed since
September, 1940 when the position of Director of Vocational Education had been
abolished; this because of the erosion of the duties of the post and the desire
of the superintendent to have direct supervision of the vocational schools.
This organizational arrangement, wherein the vocational schools are under the
supervision and direction of an assistant superintendent is presently in
existence.

Another development of the war period was the establishment in 1942 of the
Dunbar Vocational School, in response to the petitions of the residents of the
near South Side for a school of this type. This institution took over the
building and facilities of the Dunbar Vocational Elementary School at 4401 S.
St. Lawrence Avenue. The facilities were augmented by the addition of five
shops which were built adjacent to the school; these were complete units for
Foundry, Auto Mechanics, Aero Practice, Electricity and Machine Shops. Smith-
Hughes classes operated at the schools.

In writing of the Jones Commercial School in 1943 McNamee stated that it
catered entirely to the Commercial demands of the area. Classes were held in
Bookkeeping, Stenography, Business English and Spanish, Traffic Management,
etc. to provide the larger firms with a constant influx of trained office help.
At the request of the Office of Price Administration a special class was held
in letterwriting, as well as a training class for ticket agents, and baggage
men for local bus transportation systems.

Joseph A. King, who recently retired from the position of Supervisor of
Trade and Industrial Education, State of Illinois, and who for many years was a prominent figure in the field of vocational education in the Chicago schools, stated that the war conditions motivated many students to enrol in vocational courses.17

In summary then it can be safely said that the war with its rationing, materials shortages, etc. did not really impede the development of vocational education in the Chicago schools. This period saw the substantial completion of the Chicago Vocational School and the establishment of the Dunbar Vocational School. A successful and continuing organizational plan for the Department of Vocational Education was established with a great gain in prestige. The vocational schools made most substantial contributions to the war effort. Curricular changes and additions showed that the schools possessed the necessary flexibility and far-sightedness that must always be inherent in the vocational education field.

In addition to material and equipment shortages for the vocational training of high school students, World Wars I and II were comparable in their effect on the teaching staff. Many instructors left their teaching posts for better paying positions in industry. At the cessation of hostilities many decided not to return to the teaching field. In most cases it was not possible to adequately replace this personnel. The net result was that their posts had to be filled by instructors not as well qualified. After each war the road back to the establishment of an adequate staff was a long one.
FOOTNOTES IN CHAPTER SIX


2 Ibid., p. 136.

3 Ibid.


5 Ibid.


7 Ibid.


9 Ibid.

10 Ibid.

11 Ibid.

12 Ibid., p. 30.


14 Ibid., p. 6.


16 Ibid., p. 10.

CHAPTER VII

THE POST-WAR PERIOD: 1945-1963

The 1946 to 1963 period was truly one of storm and strife. Sickened by the horrors of the war just ended the peoples of the world banded together to form that great organization for peace, the United Nations at San Francisco in 1945. However, the inherent mutual distrust between the East and the West flared into the open with the Russian blockade of Berlin in 1948. U.S. employment of an airlift served as an effective counter-measure and averted armed conflict. However, the United States was soon to tangle with the Communists in Korea (1950). Eisenhower was elected to successive terms as President (1953 and 1957) and was able to effect a satisfactory but still uneasy truce in Korea. Great technological advancements ensued. Russia inaugurated the Space Age with her Sputnik and was closely followed by the American development of space satellites. Shortly, manned space flight became a reality. John F. Kennedy assumed the Presidency in 1961 and was soon confronted with the missile crisis in Castro’s Cuba. As the period ended Kennedy most tragically met death by an assassin’s bullet on a street in Dallas (1963). Lyndon B. Johnson was sworn in as his successor an hour or two later.

1946 through 1963—troubled years marked by ideological and military conflict between the Free World and the countries behind the Iron Curtain.

In Chicago William H. Johnson resigned as superintendent (1946). Herold C. Hunt was chosen as his successor (1947). George Cassell served as Acting
Superintendent of Schools in the interim. In 1953 Hunt resigned as Superintendent to accept a professorship at Harvard. He was followed by Dr. Benjamin C. Willis, the present General Superintendent of Schools.

Philip L. McNamee, the first assistant superintendent in charge of vocational education, was compulsorily retired at age 65 in 1949, to be followed by Dr. Hobart Sommers who retired in 1962, and Neal Duncan, the incumbent.

A major development of the period was the opening in September, 1946 of the giant Chicago Vocational School as a coeducational institution in its original planned building at 87th and Anthony Avenues.

At the June 26, 1946 meeting Acting Superintendent Cassell notified the Board that the United States Navy had vacated the entire Chicago Vocational School building at 2100 East 87th Street thus making it available for use as a Chicago public school. At the same meeting Cassell recommended that effective September 2nd of that year the Chicago Vocational School be transferred to this facility from the Westcott building that it had occupied during the war.\(^1\)

At that time it was decided to enroll girls in the school and facilities for their use were established on the second floor of the Anthony Avenue wing. The enrolment at C.V.S. now consisted of 2721 students of whom 204 were girls.\(^2\)

An article by McNamee told of plans for the installation of "the largest and most complete aircraft school in the country" and for courses in electronic heat treating, metallurgy and specialized fields in chemistry, all aimed at the changing needs in industry.\(^3\)

C.V.S. has the distinction of having pioneered in the introduction of vocational courses in plastics and horticulture. It is readily evident that C.V.S. and the Chicago schools realize the importance of training their
students for the world in which they will live and work. A reproduction of an insert from the C.V.S. Student Handbook is to be found on the following two pages. This insert presents in detail the programs of studies for boys and girls and lists the vocational courses available at the school.

Another expansion of the vocational education program occurred in September, 1946, when the Ellen H. Richards Vocational High School for girls was established. The initial enrolment of two hundred thirty girls was housed in a building which had in turn served as an elementary school, a barracks in World War I, a branch of the Englewood High School and a pre-vocational elementary school.

The curriculum at inception consisted of Home Arts, Dressmaking, Basic Business Training, Bookkeeping, Beauty Culture, Art, Commercial Art, English, History, Commercial Geography, Science, and Physical Education. This curriculum remained unchanged until 1962 when a course in office practice was added. In less than two decades the membership of the school had more than doubled.

Because of the construction of an expressway the Richards school was forced to move from its original location at 2535 South Green Street to the old Healy Elementary School building (built in 1885). This site at 3037 S. Wallace Street is its present location. Undoubtedly, a new and much larger building specifically designed for a vocational high school for girls would provide much more suitable quarters and would be a spur to greater enrolment and a more effective program.

Still another vocational school which had its birth in the first post-war year of 1946 was the Manley Vocational High School. For some time Manley had
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**The Following Vocational Opportunities Are Offered At CVS:**

- AVIATION
  - Airframe Mechanics
  - Powerplant Mechanics
- AUTOMOTIVE MECHANICS
- AUTO BODY & FENDER
- COMMERCIAL ART
- DRAFTING—Architectural
- DRAFTING—Machine
- ELECTRICITY
- ELECTRONICS
- HORTICULTURE
- FOUNDRY
- MACHINE SHOP
- MUSIC, Instrumental
- PLASTICS
- PRINTING
- SHEET METAL
- WELDING
- Arc & Oxy-Acetylene
- WOOD CABINETMAKING

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*Students are rotated through four different basic shops in the first two years.

**Some courses require related subjects instead of Study. Students with excellent records may be permitted to take one of the following electives, instead of Study: Chemistry, Biology, Solid Geometry, Advanced Algebra, Trigonometry, College Algebra, or Elementary Mathematical Analysis.

CVS-B17
### PROGRAM OF STUDIES FOR GIRLS

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The Following Vocational Opportunities Are Offered At CVS:

**COMMERCIAL ART**
- Advertising Artist
- Interior Decorator
- Typographer

**COSTUME DESIGN**
- Clothing Designer
- Accessory Designer

**HORTICULTURE**
- Greenhouse Grower
- Landscape Designer
- Floral Designer

**MUSIC, Instrumental**

**OFFICE TRAINING**
- Accountant
- Calculating Machine Operator
- General Clerk
- Secretary
- Stenographer
- Typist

*Students with excellent records may be permitted to take one of the following electives instead of Study: Mathematics, Chemistry, Physics.

**Except Steno, students who take Office Practice; and Horticulture, in which Chemistry 1 and 2 are required in 4B and 4A. Commercial Art students take Typo Design in 4B.

*FIGURE 3*
been a senior high school. During the war the building had been occupied by the United States Navy as a training center. However, early in 1946 the building was returned to the Board of Education.

At a board meeting in April 1946 Superintendent Johnson recommended that the building be used for a "trade and vocational high school." His reasons for the action were: "There has been a great demand on the present facilities for trade and vocational education. The facilities are inadequate for such a demand and the Manley Trade and Vocational School will offer the necessary rooms for the ever increasing need for such training."  

Manley thereupon became a vocational school and a center for training veterans of World War II. By 1956 there were about 1750 students in the building, including veterans.

During the summer of 1957, however, the General Superintendent of Schools, Dr. Benjamin C. Willis, reported that effective on September second of that year the Manley Vocational High School would be moved to the Cregier building some distance away and would thereafter be known as the Cregier Vocational High School. Willis said the reason for this move was the need for additional elementary school classroom space in the Manley School building and "...as approved previously by the board."  

Willis had originally recommended this transfer at the February 9, 1955 meeting of the Board. At this meeting he had stated that the transfer was desirable because Manley was needed for use as an elementary school, that it was not suitable for expansion as a vocational high school, and that space for the then Cregier high school students was available in the Crane High School building.
This recommendation was adopted at the March 23, 1955 meeting. However, the wisdom of the move was questioned by various members of the Board. At issue were the morale and school spirit of Cregier and Manley students going to other schools. Willis expressed his conviction that Cregier would be a better vocational school than Manley after an addition with shops was added to the Cregier facilities.

This was done but because of much smaller facilities the peak student enrolment of about 1350 in the present crowded Cregier cannot even match the 1750 enrolment at Manley at the time of the transfer of the school.

Another major development of the forties was the establishment of the Westcott Vocational High School at 8023 S. Normal Boulevard. The school was housed in an old building which for many years had been used by the Calumet High School. Later it was used as a junior high school and then as a branch of the Calumet High School. As previously noted the building housed the Chicago Vocational School during World War II. In September 1947 Westcott became a continuation school for girls; in September 1949 it became a co-educational vocational high school.

In addition to academic courses Westcott offers classes in auto servicing, electricity, radio-television repair, machine work, carpentry and sales. Girls may take beauty culture, stenography, typing, business machine operation, home economics, and sales courses.

The Chicago vocational high school program took a great step forward with the opening of a $5,000,000 building at 3000 South Parkway to house the Dunbar Vocational High School. The school had greatly outgrown its original building at 4401 St. Lawrence Avenue and the new quarters were designed to provide
facilities for an up-to-date vocational program for many more students.

The school was designed to accommodate both boys and girls. Built on a twelve acre site, the building has spacious shops, classrooms, library, guidance facilities, music rooms, gymnasiums, and swimming pool and contains the latest in modern equipment intended to provide the finest vocational high school program.\textsuperscript{13}

All students are required to complete a sequence of academic courses that include four years of English, three years of social studies, and a three year mathematics-science sequence. Students may major in one of the following vocational courses:

- Aircraft Mechanics
- Auto Mechanics
- Auto-Body and Fender
- Brick Masonary
- Cabinet Making
- Carpentry
- Commercial Art
- Cosmetology
- Architectural Drafting
- Mechanical Drafting
- Dressmaking
- Electric Shop
- Radio and Television Electronics
- Foundry
- Instrumental Music
- Machine Shop
- Millinery
- Business Education
- Bookkeeping
- Calculating
- Office Practice
- Secretarial Practice
- Typing
- Printing
- Composition
- Press Work
- Painting and Decorating
- Plumbing
- Sales and Distributive Education
- Sheet Metal
- Shoe Rebuilding
- Tailoring
- Welding

Another vocational school which originated in the 1946-1963 period was the Washburne Trade and Vocational High School. Washburne had originally been founded as a continuation school in 1919. Later apprentice work was transferred to Washburne and the name was changed to Washburne Continuation and Apprentice School. At this time it had three groups of students—continuation
school students, apprentices and disabled soldiers.\textsuperscript{15}

In 1934 Washburne moved from its original location in an abandoned elementary school building at Fourteenth and Union Streets to the old quarters of the Lane Technical High School at Division and Sedgwick Streets. At about this time the school served apprentices and trade industrial students and in consequence was renamed the Washburne Trade School in 1937.\textsuperscript{16}

A large influx of students was permitted in 1937 when the doors were opened to high school beginners. However, these students were enrolled in the unit trade department—the full time Smith-Hughes group which spends half of each school day (three hours) in the shop and half for related subjects. At this time the school was not considered to be a vocational high school and no attempt was made to accredit the program.

In 1949 Washburne properly became a trade and vocational high school by the addition of English and social studies to the curriculum.\textsuperscript{17}

On October 11, 1957 the Washburne Trade and Vocational High School was divided into two sections—John Duggan became the director of the Trade School and Joseph J. Portle was appointed principal of the Vocational High School.\textsuperscript{18}

In September 1958 the Trade School moved to the present location at 3233 West 31st Street and retained the name of Washburne. The Washburne Vocational High School which remained at Sedgwick and Division Streets officially became known as the Edwin G. Cooley Vocational High School on November 11, 1958.\textsuperscript{19}

Cooley, a co-educational high school, offers the following shops: architectural drawing, auto shop, electric shop, business education, machine shops, beauty culture, machine drafting, printing and woodshop.
The curricula for the four year vocational shop program and the four year business education program are reproduced on the two pages that follow.

The latest, and at this writing, the last vocational high school established by the Board of Education is the Charles A. Prosser Vocational High School. This school which opened in September 1959 is located at 2148 N. Long Avenue. It occupies a small portion of a very large area of land belonging to the Board of Education. This area is bounded by Fullerton Ave (2100 N) on the north, Central Ave (5600 W) on the west, Grand Ave (2100 N) on the south, and Long Ave (5400 W) on the east. Prosser is the northern-and western most vocational high school in the city. It serves only boys.

The table that follows is indicative of the growth in enrolment and faculty of the school since its opening:

**TABLE IV**

POPULATION GROWTH AT PROSSER VOCATIONAL HIGH SCHOOL

<table>
<thead>
<tr>
<th>Year</th>
<th>Students</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>September 1959</td>
<td>239</td>
<td>13</td>
</tr>
<tr>
<td>September 1960</td>
<td>137</td>
<td>14</td>
</tr>
<tr>
<td>September 1961</td>
<td>658</td>
<td>34</td>
</tr>
<tr>
<td>September 1962</td>
<td>838</td>
<td>42</td>
</tr>
<tr>
<td>September 1963</td>
<td>920</td>
<td>43</td>
</tr>
</tbody>
</table>

*Information supplied by the Department of Vocational and Practical Arts.*

The following are the vocational areas offered at the school:

- Metal Fabrication
- Machine Shop
- Sheet Metal
- Drafting
- Architectural Machine
## 9-B Semester Periods

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Shop</td>
<td>2</td>
</tr>
<tr>
<td>English I</td>
<td>1</td>
</tr>
<tr>
<td>General Science I</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics I</td>
<td>1</td>
</tr>
<tr>
<td>Drafting I</td>
<td>1</td>
</tr>
<tr>
<td>Music (Optional for Boys)</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education I</td>
<td>1</td>
</tr>
</tbody>
</table>

## 9-A Semester Periods

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Shop</td>
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</tr>
<tr>
<td>English II</td>
<td>1</td>
</tr>
<tr>
<td>General Science II</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics II</td>
<td>1</td>
</tr>
<tr>
<td>Drafting II</td>
<td>1</td>
</tr>
<tr>
<td>Music (Optional for Boys)</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education II</td>
<td>1</td>
</tr>
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</table>

## 10-B Semester Periods

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Shop</td>
<td>2</td>
</tr>
<tr>
<td>English III</td>
<td>1</td>
</tr>
<tr>
<td>Industrial History</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics III</td>
<td>1</td>
</tr>
<tr>
<td>Drafting III</td>
<td>1</td>
</tr>
<tr>
<td>Music (Optional for Boys)</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education III</td>
<td>1</td>
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</tbody>
</table>

## 10-A Semester Periods

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Shop</td>
<td>2</td>
</tr>
<tr>
<td>English IV</td>
<td>1</td>
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<tr>
<td>World History</td>
<td>1</td>
</tr>
<tr>
<td>Mathematics IV</td>
<td>1</td>
</tr>
<tr>
<td>Drafting IV</td>
<td>1</td>
</tr>
<tr>
<td>Music (Optional for Boys)</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education IV</td>
<td>1</td>
</tr>
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## 11-B Semester Periods

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational Shop</td>
<td>4</td>
</tr>
<tr>
<td>English V</td>
<td>1</td>
</tr>
<tr>
<td>U. S. History I</td>
<td>1</td>
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<tr>
<td>Physics I</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education V</td>
<td>1</td>
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</table>

## 11-A Semester Periods

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational Shop</td>
<td>4</td>
</tr>
<tr>
<td>English VI</td>
<td>1</td>
</tr>
<tr>
<td>U. S. History II</td>
<td>1</td>
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<tr>
<td>Physics II</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education VI</td>
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## 12-B Semester Periods

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational Shop</td>
<td>4</td>
</tr>
<tr>
<td>English VII</td>
<td>1</td>
</tr>
<tr>
<td>Civics I</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education VII</td>
<td>1</td>
</tr>
</tbody>
</table>

## 12-A Semester Periods

<table>
<thead>
<tr>
<th>Subject</th>
<th>Periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vocational Shop</td>
<td>4</td>
</tr>
<tr>
<td>English VIII</td>
<td>1</td>
</tr>
<tr>
<td>Civics II</td>
<td>1</td>
</tr>
<tr>
<td>Physical Education VIII</td>
<td>1</td>
</tr>
</tbody>
</table>

**NOTE:**

- First and second year students take four different basic shop subjects. Third and fourth year students select and follow one vocational shop sequence.
- Math I and II may be algebra or essential mathematics. Math III and IV may be geometry or essential mathematics.
- Physics I and II in the third year is given 7 periods a week.
<table>
<thead>
<tr>
<th>9-B Semester</th>
<th>Periods</th>
<th>9-A Semester</th>
<th>Periods</th>
<th>1st YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>English I</td>
<td>1</td>
<td>English II</td>
<td>1</td>
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<tr>
<td>General Science I</td>
<td>1</td>
<td>General Science II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Mathematics I</td>
<td>1</td>
<td>Mathematics II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Voc. Homemaking I</td>
<td>2</td>
<td>Voc. Homemaking II</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Typing I</td>
<td>1</td>
<td>Typing II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Physical Education I</td>
<td>1</td>
<td>Physical Education II</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10-B Semester</th>
<th>Periods</th>
<th>10-A Semester</th>
<th>Periods</th>
<th>2nd YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>English III</td>
<td>1</td>
<td>English IV</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Mathematics III</td>
<td>1</td>
<td>Mathematics IV</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Industrial History</td>
<td>1</td>
<td>World History</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Basic Business Training I</td>
<td>1</td>
<td>Basic Business Training II</td>
<td>1</td>
<td></td>
</tr>
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<td>Typing III</td>
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<td></td>
</tr>
<tr>
<td>Music I</td>
<td>1</td>
<td>Music II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Physical Education III</td>
<td>1</td>
<td>Physical Education IV</td>
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<td></td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>11-B Semester</th>
<th>Periods</th>
<th>11-A Semester</th>
<th>Periods</th>
<th>3rd YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>English V</td>
<td>1</td>
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<td>1</td>
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</tr>
<tr>
<td>U. S. History I</td>
<td>1</td>
<td>U. S. History II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Bookkeeping I</td>
<td>1</td>
<td>Bookkeeping II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Office Practice I</td>
<td>2</td>
<td>Office Practice II</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Calculating I</td>
<td>1</td>
<td>Calculating II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Physical Education V</td>
<td>1</td>
<td>Physical Education VI</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12-B Semester</th>
<th>Periods</th>
<th>12-A Semester</th>
<th>Periods</th>
<th>4th YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>English VII</td>
<td>1</td>
<td>English VIII</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Civics I</td>
<td>1</td>
<td>Civics II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Machine Transcription I</td>
<td>2</td>
<td>Machine Transcription II</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Secretarial Practice I</td>
<td>1</td>
<td>Commercial Law</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Physical Education VII</td>
<td>1</td>
<td>Physical Education VIII</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
Math I and II may be algebra or essential mathematics. Math III and IV may be geometry, essential mathematics, or business mathematics.

**FIGURE 5**
Graphic Arts  
Composition  
Hand  
Machine—Linotype

Automotive  
Mechanics  
Body and Fender  
Electricity

Presswork  
Letter press  
Offset  

Electronics  
Communications  
Instrumentation and Controls

A copy of Prosser's "Curriculum Guide" is presented on the page that follows.

Chicago's technical schools, which in reality had been technical-vocational schools, gradually became pure technical schools. With the entry of both boys and girls from the Cregler and McKinley high schools in 1954, Crane dropped its technical-vocational program and became a general academic high school. The Flower Technical High School became a vocational high school in 1956.

Tilden and Lane gradually phased out their vocational departments with the advent and expansion of the vocational high schools. Indeed, the last Smith-Hughes work was closed out at Lane only two years ago.

In closing this chapter mention must be made of a type of work training that has much to recommend it and seems destined to become increasingly more important in the years to come. Mention will be made of the two programs of this nature in which the vocational high schools participate. It is to be understood that a number of general high schools also participate in these programs.

The descriptions that follow are as reported in the publication: "New Programs in Vocational Education."
PROSSER VOCATIONAL HIGH SCHOOL

CURRICULUM GUIDE

<table>
<thead>
<tr>
<th>SEMESTER I</th>
<th>SEMESTER III</th>
<th>SEMESTER V</th>
<th>SEMESTER VII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Shop I (2 periods)</td>
<td>Basic Shop III (2 periods)</td>
<td>Vocational Shop V (4 periods)</td>
<td>Vocational Shop VII (4 periods)</td>
</tr>
<tr>
<td>English I</td>
<td>English III</td>
<td>English V</td>
<td>English VII</td>
</tr>
<tr>
<td>General Science I</td>
<td>World History I</td>
<td>Physics I (7 periods per week)</td>
<td>Contemporary</td>
</tr>
<tr>
<td>Algebra I</td>
<td>Geometry I</td>
<td>U.S. History I</td>
<td>Am. History I</td>
</tr>
<tr>
<td>Phy. Ed. I</td>
<td>Phy. Ed. III</td>
<td>Band or Choral (optional)</td>
<td>Band or Choral (optional)</td>
</tr>
<tr>
<td>Band or Choral (optional)</td>
<td>Band or Choral (optional)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SEMESTER II</th>
<th>SEMESTER IV</th>
<th>SEMESTER VI</th>
<th>SEMESTER VIII</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Shop II (2 periods)</td>
<td>Basic Shop IV (2 periods)</td>
<td>Vocational Shop VI (4 periods)</td>
<td>Vocational Shop VIII (4 periods)</td>
</tr>
<tr>
<td>English II</td>
<td>English IV</td>
<td>English VI</td>
<td>English VIII</td>
</tr>
<tr>
<td>General Science II</td>
<td>World History II</td>
<td>Physics II (7 periods per week)</td>
<td>Contemporary</td>
</tr>
<tr>
<td>Algebra II</td>
<td>Geometry II</td>
<td>U.S. History II</td>
<td>Am. History II</td>
</tr>
<tr>
<td>Drafting II</td>
<td>Drafting IV</td>
<td>Phy. Ed. VI</td>
<td>Phy. Ed. VIII</td>
</tr>
<tr>
<td>Phy. Ed. II</td>
<td>Phy. Ed. IV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Band or Choral (optional)</td>
<td>Band or Choral (optional)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FIGURE 6
The first program to be considered is known as the Distributive Education program. Its aims are (1) to develop a career interest in merchandising, marketing, and those service occupations which are an integral part of distribution; (2) to enable students to see the relationship of what is studied in school to the needs of business; (3) to develop the skills and knowledge necessary for success in the merchandising field; and (4) to encourage students to remain in school through earning while learning.

The program is designed for senior students (in exceptional cases, juniors) who are at least 16 years of age and who plan to enter the fields of merchandising and consumer services, as buyers or as operators of a personally owned business, store and department managers. This program has grown from one involving approximately 200 students in eight high schools in 1958 to approximately 1000 students in forty-two of the high schools in the Chicago School system.

The program is organized in a manner that imposes specific requirements on the merchant trainer and the school. The supervised training on the job is correlated with classroom training and salesmanship, retailing, store organization, advertising display, basic arithmetic and English, merchandising information, and personality development.

The student's job must be a learning experience. It is planned to give the student practice in as many phases of business as possible through the rotation and progression of duties in merchandising activities.

It is required that the teacher-coordinator in the program has practical experience in retailing, merchandising and other phases of distribution. Every student must be employed at a training station approved by the teacher-
coordinator. The student is visited periodically on the job and his progress is evaluated by the coordinator and the employer.

A strong program of leadership is fostered through group activities focused on ethics, business, and personality development.

Students are employed a minimum of fifteen hours per week. They usually attend classes in the morning and work in the afternoon, and receive basic credit for both the time spent in class and that spent in work.

An evaluation of the program reveals that (1) students tend to remain in school, dropouts are practically unknown; (2) business men are enthusiastic about the program; (3) only about 6 per cent of the graduates are unemployed, a rate much below that of graduates in general; (4) many of the graduates (17 percent) continue their education at the post-high school level.

The other program of this type is the Diversified Occupations program. It is designed for junior and senior high school students who are at least sixteen years of age and who otherwise would have little opportunity for any vocational training.

The program provides vocational training in an occupation or trade on a part-time basis; the student alternates on a half-time basis between study in school and training on the job.

At school the students devote their time to prescribed high school courses and to a study of the related and technical information of the occupation for which they are being trained on the job.

An occupationally qualified teacher-coordinator makes sure that the related instruction at school and his job experience are maintained at an educational level and that the job experience is made most worth-while by a
rotation of experiences rather than a single skill production basis.

The stated goals of the program are: (1) to encourage the student to remain in school by relating learning in school to the requirements of the job; (2) to provide an organized plan of training on the job under actual institutional or industrial conditions; (3) to permit the student to start training while in school for an occupation at which he may continue after leaving school; (4) to provide needy students with a financial base on which to continue their schooling; and (5) to provide related and technical information for the occupation for which the student is being trained.

An evaluation of the program reveals that (1) there are almost no dropouts among the participants; (2) students evince more interest in school; (3) money earned by the students is an important factor in their remaining at school; and (4) no expensive equipment is required by the schools in carrying out the program.

By the way of summary, then, it can be said that in this post-war period vocational education in the Chicago Public Schools undoubtedly made its greatest advance.

Curricular offerings were revised and greatly expanded to meet the changing needs of modern industry. Richards, Westcott, Manley-Cregier, Washburn-Cooley, Flower and Prosser became vocational high schools in response to demands for this type of education. Chicago Vocational and Dunbar occupied multi-million dollar buildings ideally suited for this type of training.

The technical high schools in effect phased out their vocational programs but the slack was more than taken up by the establishment and expansion of the considerable number of vocational high schools.
A new development of the period with promising implications for the future was the institution of co-operative work-study programs in the areas of distributive education and diversified occupations. Vocational education was well on its way to becoming of age in the Chicago schools.
FOOTNOTES IN CHAPTER SEVEN


2Information supplied by the Department of Vocational and Practical Arts.


5Based on information supplied by the Department of Vocational and Practical Arts.

6Ibid.


10Ibid., p. 1175.

11Based on information supplied by the Department of Vocational and Practical Arts.


13Dunbar Vocational High School Board of Education pamphlet.

14Ibid.

15Based on information supplied by the Department of Vocational and Practical Arts.

16Ibid.

17Personal interview with Richard Hill, Assistant Director, Washburne Trade School, Dec. 21, 1964.
18 Based on information supplied by the Department of Vocational and Practical Arts.

19 Ibid.

20 Prosser Vocational High School (A Board of Education pamphlet).

CHAPTER VIII

CONCLUSION

The early pages of this dissertation traced the origin and development of vocational education from the earliest days of Man on earth, through the time of the ancients, the Middle Ages, the Colonial period in America, and to the United States of the early 1880's.

Attention was then shifted and sharply focused on the birth and early beginnings of vocational education in Chicago. It was seen how the early civic, industrial and educational leaders realized the increasing importance of this type of education for the young people of the city. The program got off to a good, substantial start with the introduction of mechanical drawing as a regular study in the high schools. Within a few years a part-time one-year Manual Training program was organized in a building in what was then a central location. This soon became a three-year vocational training institution.

Shortly after the dawn of the twentieth century it was decided to extend the program to four years and to devote more time to English language and literature to enable graduates to qualify for enrolment in technical colleges. In effect, then the emphasis shifted from the vocational program to that of preparation for higher education.

Within a decade three other manual training schools—now renamed technical schools—made their appearance. They were primarily college-oriented although each soon boasted of two-year courses which were definitely terminal...
vocational courses. These courses persisted in the technical schools until the mid-thirties when economic conditions made them obsolete.

Shortly after the passage of the historic Smith-Hughes Act of 1917 a definite vocational training program was established in the technical schools and was concurrent with the two-year vocational and technical programs. After an initial period of growth and popularity this program was phased out in the technical high schools in the late fifties mainly due to the establishment in the interim of regular vocational high schools; Smith-Hughes courses were instituted in the vocational schools and are a most important and integral part of their programs.

Regular all-vocational high schools made their appearance on the Chicago public high school scene with the opening of the Jones Commercial School in 1938, to be followed by Chicago Vocational School (1941), Dunbar (1942), Richards (1946), Manley-Cregier (1946), Westcott (1949), Washburne (1949), Flower (1956), Cooley (1958), and lastly, Prosser (1959). This is not to say that the vocational schools now in existence are sufficient to supply the needs for this type of education for at this writing there is a continuing demand for the expansion of this type of training.

By its very nature vocational education is substantially more costly than academic education. Yet historically the Chicago schools have attempted to keep pace with the changing demands for trained workers in industry in spite of the cost. Beginning with the relatively inexpensive equipment needed for a training program which encompassed only mechanical drawing and woodwork, the schools progressed through courses in bench-work, carpenter work, wood turning, pattern making, moulding, cabinet making, forge, machine shop work,
blacksmithing, architectural drawing, machine and architectural design, electric shop, auto shop, welding, printing, aviation, radio, beauty culture, etc. Lane Technical High School was the first high school in the United States to establish classes in Diesel engines and air conditioning. Chicago's modern Dunbar Vocational School offers twenty-seven vocational courses covering such diverse fields as aircraft mechanics, business education, brick masonry, tailoring, welding, radio and television electronics, cosmetology, millinery, plumbing, painting and decorating and many other areas. The investment and facilities needed for programs of this nature are evident.

In studying the history of vocational education in Chicago's high schools one cannot fail to feel the forward surge of the program. It is true that conditions such as the two World Wars and the Depression temporarily checked the progress of the program but always afterward there was a renewed advancement. Vocational courses have always been popular with the students and the programs inevitably have had high enrollments. Any expansion in enrollment at this time however, is contingent on the securing of additional school facilities.

Probably the greatest immediate need of vocational education is the improvement of its "image," in the eyes of students, parents, teachers, and counselors. For too many years the vocational schools have been forced to accept the inept academic students; the schools have really and truly been "dumping grounds" for educational and social misfits from academic programs. It is unfortunate but true that many school people still believe that anyone not good at "books" must necessarily be "good with his hands." Nothing could be further from the truth. The good tradesman and mechanic must not only
possess good mechanical ability but also good mental ability. It is entirely inconceivable that vocational training equipment costing many thousands of dollars be entrusted to the incompetent.

A good physical plant is an essential component in attracting good students as is shown by the popularity of the programs offered at modern school plants such as the Dunbar and the Chicago Vocational Schools. It is imperative that priority be given to the construction of modern well-planned vocational schools both as replacements for existing woefully substandard facilities and for providing additional facilities for students who should properly be enrolled at such schools. Studies on a national level have shown that approximately 80 per cent of high school graduates do not go on to college. Most of these people enter the employment field without a salable job skill.

It is inconceivable and truly tragic that 90 per cent of Chicago's high school students undertake college preparatory programs when only so few will actually attend college with the balance entering the employment field untrained and unskilled. A good measure of the fault in this situation lies with well-meaning but uninformed teachers and parents who feel it is a waste of the talents of a youngster of normal ability to associate with "tradesmen" and "blue-collar trainees." Possibly, the greatest fear of the parents is that their youngsters will associate with undesirable students.

The solution of course is to build up the image of vocational education by providing excellent programs, under good teachers, in pleasant functional modern buildings from which the undesirable students are excluded or otherwise provided for.

For some time now leaders in the vocational education field have been
advocating a two-track plan for the vocational high schools. Track One would be for vocational students of average or above average ability who are not badly retarded in reading and mathematics and who could be expected to successfully complete the vocational training program.

Track Two would be for students who enter vocational school at an older age and who are so retarded in reading and mathematics that they could not undertake a regular vocational program. The vocational skills taught these students would be at a level commensurate with their abilities.

There is need for continuing, positive supervision and evaluation of vocational courses. Effective liaison must be maintained with the new developments and changing needs of industry both for the present and the future.

By such means as required periodical employment or workshops in industry, vocational teachers, supervisors and administrators must keep abreast of industrial developments. Instructional materials, teaching devices and teaching techniques must be tried out and evaluated. An alert, effective vocational guidance program must be available to serve the needs of the students. Every classroom must be staffed by an experienced vocational teacher; sufficient inducement must be made to make teaching attractive to industrial experts.

Finally, a coordinated local, state and national research program should be undertaken using local, federal, and foundation funds to set up objectives, evaluate and develop teaching materials, methods, equipment and facilities utilization.

Research is needed in the evaluation of instructional programs, follow-up of graduates, prognosis of future employment needs and evaluation of technological developments and their possible effect on vocational education.


II. ARTICLES IN PERIODICALS


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III. BOOKS


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**IV. BOOKLETS AND PAMPHLETS**


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V. DICTIONARIES AND ENCYCLOPEDIAS


VI. HANDBOOKS

The Crane Tech Handshake. Chicago, 1940.

VII. NEWSPAPERS


VIII. PERSONAL INTERVIEWS


1All persons interviewed are present or former members of the instructional or administrative staffs of the Chicago Board of Education.


Duncan, Neal. Assistant Superintendent in Charge of Vocational Education. June 12, 1964.

Evans, Helen J. Director, Vocational Education Education (Girls); Member, Vocational Education Study Committee. May 11, 1964.


Just, William G. Director, Bureau of Pupil Personnel Services; Member, Vocational Education Study Committee. March 19, 1964.

King, Joseph A. Former director, Cregier Vocational School, April 27, 1964.


Newkirk, Louis V. Director, Practical Arts and Technical Subjects; Member, Vocational Education Study Committee. May 26, 1964.

Portle, Joseph. Principal, Cooley Vocational School; Member, Vocational Educational Study Committee. October 7, 1964.

Reinsch, Robert L. Superintendent, District 18; Chairman, Vocational Education Study Committee. February 27, 1964.

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Sullivan, Alexander M. Former Director; Department of Vocational Education. March 9, 1964.

Wantuch, John, Assistant Principal, Chicago Vocational School; Member, Vocational Education Study Committee. May 14, 1964.

IX. PROCEEDINGS OF THE BOARD OF EDUCATION
OF THE CITY OF CHICAGO

September 1885 to September 1886. Chicago, 1886.

July 8, 1892. Chicago, 1892.

July 10, 1901 to June 25, 1902. Chicago, 1902.

July 9, 1902 to June 24, 1903. Chicago, 1903.

July 6, 1904 to June 21, 1905. Chicago, 1905.

July 5, 1906 to June 26, 1908. Chicago, 1908.

July 13, 1910 to June 28, 1911. Chicago, 1911.


1917-1918. Chicago, 1918.

June 19, 1917 to June 27, 1918. Chicago, 1918.

July 2, 1918 to October 25, 1918. Chicago, 1918.

July 12, 1933 to July 2, 1934. Chicago, 1934.

July 10, 1940 to July 2, 1941. Chicago, 1941.


X. UNPUBLISHED MATERIALS


DePaul University, Chicago, 1938.


APPENDIX I

A Bit of History

By Mr. J. C. Miller, Retired

The school year from September 1891 until June 1892 may well be called the first real school year of the English High and Manual Training School, now the R. T. Crane Technical High School.

The new shops were completed on November 1, 1891 and the students then began their shop work in earnest. The contract for the shop building was let in June 1891, the contract price being $23,485. Construction began at once but because of delays November came before the shops were ready for use. This building was of brick, of mill construction, four stories high, having a ground area of 56 feet by 100 feet. The first floor was occupied by the foundry and forge shop. Here Andy Brown, the Texas blacksmith, held sway. And Andy was a real blacksmith. As foundry man, he ran a hot cupola furnace as was evidenced by the fire that came as a result, November 12, 1896, when the shops were wrecked by a fire, starting from the cupola. The machine shop was in charge of C. F. Friese from the Baltimore Manual Training School, who later went to Lane and is now teaching in the Vocational School. The wood turning shop was in the north part of the second floor, a wash room separating the machine shop from the turning room. This turning room was used in succession by the wood working teachers of which there were three under the leadership of J. C. Miller, who came from Pennsylvania where he was drawing supervisor. Richard Pilkington and S. E. Ritchey were also wood workers this first year.

The third floor of the shop was devoted to wood working classes and was in one large room, the full ground area of the building. On the fourth floor were three drawing rooms. Fred G. Pink, Arthur W. Chase and later John F. Stacy taught drawing. A lumber store room was at the north end of this floor. At this time there was no lunch room in the school.

There was an alley along the north side of the shops which separated this building from the large store of John E. Smyth on Madison St. as it now stands. This store is on school board land and occupies the site of the old Scammon School the first school building built west of the river in 1855.

Adjoining the shop on the south was the old school building used for an office and for academic studies. This

building still stands as does the snop; in its original style, excepting the roof which was restored after the fire and these buildings are now used as store rooms and shops by the Board of Education. They are located on Monroe Street, east of the alley which runs north and south in the rear of the Halsted Street lots. In this old building James F. Claflin, the principal and organizer of the school, had his office. Fred R. Nichols, from Adelphi Academy, Brooklyn, New York, now principal of the Bright School, taught science, chemistry and physics. Ward M. Savery taught mathematics and Robert M. Claflin was very ill, but he worked with the tremendous energy for a month, getting the school into operation and died October 1, 1891. Albert R. Robinson, then Principal of the Dra School, came over and took up the office of principal.

The enrollment this first year was one hundred and eleven, and the average attendance was one hundred and six. Students attended for six and one half hours each day and it was a matter of comment by the superintendent of schools that four teachers in this school were doing the work of six in other high schools. It was a three year course. The first class was graduated in June, 1892, and the graduating exercises were held in the old Centenary Methodist Church on Monroe Street near Morgan. The graduates in the first class, June 24, 1892, were:

John J. Foley Joseph J. Olsen
Albert F. Hamlin Lewis R. Prentiss
Joseph Jones Max Salamson
William R. Monroe Charles S. Warner
Walter Noa Edward J. West

Mr. Claflin, the principal was a teacher in the West Division High School and was appointed Principal to organize the English High and Manual Training School in September of 1890. Little work was done this year, however, but preparations for the future were made. The earlier history of manual training in Chicago before September 1891, will be written of later.

Mr. Claflin was a Civil war soldier, being a Lincoln volunteer in 1862, a member of the Fifth Massachusetts Volunteer Militia and of the Illinois Legislature in 1874 and 1875. He was in consequence of this training: a very strict disciplinarian and students moved about the school with military precision. Richard Pilkington, the Crane Company pattern maker, was appointed to have charge of the military movements about the school, and was called Captain Pilkington by Mr. Claflin, and just "Cap" by the teachers and students. The cost of supplies this first year was $124.20.
The teachers were elected by Mr. Clafin personally and he was instructed to assemble a corps of teachers who were qualified from any city where they could be found. No examinations were given but personal selections were made. But one of the teaching staff came from Chicago, Richard Pilkington being this one, who had just finished his apprenticeship in Crane's pipe works.

The Teaching Staff in June, 1892, Consisted of:

Andrew A. Browne, Forge and Foundry.
Arthur W. Chase, Mechanical Drawing.
Christopher F. Friese, Machine Shop.
John C. Miller, Carpentry.
Fred R. Nichols, Chemistry and Physics.
John M. Pierce, English.
Richard Pilkington, Pattern Making.
Samuel E. Ritchey, Cabinet Making.
Ward M. Savery, Mathematics.
Robert M. Smith, Bookkeeping.

Albert R. Robinson, Principal.

Power for the shops was transmitted by belts from an engine room located at the northeast corner of the shop building, this being before the day of motor driven machinery.

Since the time of the fire, Mr. Robinson realized that, eventually, a modern building would have to be erected to accommodate the growing English High and Manual Training School. His endeavors together with the petitions of the students, alumni, and the faculty, culminated in the drawing up of the plans, in 1902, for the construction of a building suited for the needs of the schools. By 1904, the present structure on Van Buren Street and Oakley Boulevard had been completed.

In 1910, Mr. Robinson died. Mr. William J. Bartholf, who had been principal of the Von Humboldt school for several years, was appointed head of the Crane Technical High School. He at once took the wheel and through the storms and squalls of trying days, Mr. Bartholf firmly guided the ship, Crane.

The years passed. Soon clouds gathered and the sound of thunder was heard far to the east, across the sea. The clouds burst and the entire world became enveloped in the haze of war. The United States government inaugurated a system of preparation, one of its first acts being to take over Crane High as a technical training school. This act
stimulated growth and soon "portables" made their appearance. A Cadet Corps was organized at once and the government sent an army officer to supervise the military training. Eight boys were given a course of instruction at Culver, returning to take in hand the four companies at Crane, which became the best military school in Chicago. In another way also Craneites helped. More than 100 students discontinued their education to work on farms.

With the close of the war, attendance had become so large that the building was no longer adequate for the needs of the school. Marquette was established, more portables were built. The relief however was only temporary. Crane continued its expansion. Foreseeing future conditions, Mr. Bartholf set out to secure the entire square block between Van Buren and Jackson. It was no easy matter to convince the skeptical Board of Education of the need for such large section of valuable property to be used for a school. Facing Jackson Boulevard were buildings whose owners refused to part with them for the sums offered by the Board of Education. The situation required tact and skillful maneuvering. Mr. Bartholf succeeded in accomplishing the almost impossible. The next task was far more difficult. A building must be erected on the grounds. For nine long years, the struggle continued. Mr. Bartholf on the one hand and the city officials on the other. By dint of hard work and unanswerable logic, the officials were won over to the idea. At last, in 1924, the structure was completed. With tireless energy and faith he fought for his ideal—and won. Conveniences which had hitherto been unknown were incorporated in this educational monument, a triumph for the cause of technical education.

The growth of technical education has been evinced in the growth of Crane; the growth of Crane is the history of technical education. The humble beginning of our school may rightly be called the building of a new and novel system of learning. The success of Crane is essentially the success of technical training. The four technical high schools in Chicago at present would never have been erected had not Crane shown that manual education was not only highly practical, but beneficial as well.

In February, 1930, Mr. H. H. Hagen was appointed by the Board of Education as principal of Crane to succeed Mr. Bartholf, who retired. Mr. Bartholf died in 1935.

Marquette and Clarke branches of Crane were discontinued in 1933 when Crane Jr. College was dropped by the Board of Education and the entire building was given over to the high school.
In May, 1940, Crane celebrated its Golden anniversary, by publishing a brochure picturing the growth of the school and a banquet in the school lunchroom. Many alumni who had "made good" attended the banquet and in one accord attributed much of their success to their technical education.

This spring of 1940 not only marked the fiftieth anniversary of the school but brought the promotion of Mr. Henry Hagen, the principal, to the position of district superintendent. Mr. Allan Q. Grant served as acting principal until the vacancy was filled.

On September 9, 1940, Mr. Roy F. Webster, formerly principal of the Moose elementary school was appointed principal of Crane. He served in that capacity until December, 1943, at which time he left the teaching profession and entered industry.

Pearl Harbor was bombed December 7, 1941 and the United States was in the midst of a second World War which lasted much longer than the first one. Many Craneites and faculty members entered the service. A memorial plaque in the foyer and a memorial organ in the assembly hall commemorate the Cougars who died in that war.

In the midst of the war years, January 1944, Mr. Leo R. Klinge took over the principalship of the school. He had formerly been assistant principal in charge of the Clark branch during Mr. Bartholf's administration and principal of the Thirty-Seventh and Wells Streets elementary school prior to his promotion to head of Crane.
APPENDIX II

Smith-Hughes Act

Public Laws

[Public No. 347, 64th Congress]

[S. 703]

An Act To provide for the promotion of vocational education; to provide for cooperation with the States in the promotion of such education in agriculture and the trades and industries; to provide for cooperation with the States in the preparation of teachers of vocational subjects; and to appropriate money and regulate its expenditure.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there is hereby annually appropriated, out of any money in the Treasury not otherwise appropriated, the sums provided in sections two, three, and four of this Act, to be paid to the respective States for the purpose of cooperating with the States in paying the salaries of teachers, supervisors, and directors of agricultural subjects, and teachers of trade, home economics, and industrial subjects, and in the preparation of teachers of agricultural, trade, industrial, and home economics subjects; and the sum provided for in section seven for the use of the Federal Board for Vocational Education for the administration of this Act and for the purpose of making studies, investigations, and reports to aid in the organization and conduct of vocational education, which sums shall be expended as hereinafter provided.

SEC. 2. That for the purpose of cooperating with the States in paying the salaries of teachers, supervisors, or directors of agricultural subjects there is hereby appropriated for the use of the States, subject to the provisions of this Act, for the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $500,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $750,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $1,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of $1,250,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-two, the sum of $1,500,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-three, the sum of $1,750,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-four, the sum of $2,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-five, the sum of $2,500,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-six, and annually thereafter, the sum of $3,000,000. Said sums shall be allotted to the States in the proportion which their rural population bears to the total rural population in the United States, not including outlying possessions, according to the last preceding United States census: Provided, That the allotment of funds to any State shall be not less than a minimum of $5,000 for any fiscal year prior to and including the fiscal year ending June thirtieth, nineteen hundred and twenty-three, nor less than $10,000 for any fiscal year thereafter, and there is hereby appropriated the following sums, or so much thereof as may be necessary, which shall be used for the purpose of providing the minimum allotment to the States provided for in this section: For the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $48,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen,
the sum of $34,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $24,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of $18,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-two, the sum of $14,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-three, the sum of $11,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-four, the sum of $9,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-five, the sum of $34,000; and annually thereafter the sum of $27,000.

Sec. 3. That for the purpose of cooperating with the States in paying the salaries of teachers of trade, home economics, and industrial subjects there is hereby appropriated for the use of the States, for the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $500,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $750,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $1,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of $1,250,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-two, the sum of $1,500,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-three, the sum of $1,750,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-four, the sum of $2,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-five, the sum of $2,500,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-six, the sum of $3,000,000; and annually thereafter the sum of $3,000,000. Said sums shall be allotted to the States in the proportion which their urban population bears to the total urban population in the United States, not including outlying possessions, according to the last preceding United States census: Provided, That the allotment of funds to any State shall be not less than a minimum of $5,000 for any fiscal year prior to and including the fiscal year ending June thirtieth, nineteen hundred and twenty-three, nor less than $10,000 for any fiscal year thereafter, and there is hereby appropriated the following sums, or so much thereof as may be needed, which shall be used for the purpose of providing the minimum allotment to the States provided for in this section: For the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $66,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $46,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $34,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of $28,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-two, the sum of $25,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-three, the sum of $22,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-four, the sum of $19,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-five, the sum of $16,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-six, and annually thereafter, the sum of $50,000.

That not more than twenty per centum of the money appropriated under this Act for the payment of salaries of teachers of trade, home economics, and industrial subjects, for any year, shall be expended for the salaries of teachers of home economics subjects.

Sec. 4. That for the purpose of cooperating with the States in preparing teachers, supervisors, and directors of agricultural subjects and teachers of trade and industrial and home economics subjects there is hereby appropriated for the use of the States for the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $500,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $700,000; for the fiscal year ending June
thirtieth, nineteen hundred and twenty, the sum of $900,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, and annually thereafter, the sum of $1,000,000. Said sums shall be allotted to the States in the proportion which their population bears to the total population of the United States, not including outlying possessions, according to the last preceding United States census: Provided, That the allotment of funds to any State shall be not less than a minimum of $5,000 for any fiscal year prior to and including the fiscal year ending June thirtieth, nineteen hundred and nineteen, nor less than $10,000 for any fiscal year thereafter. And there is hereby appropriated the following sums, or so much thereof as may be needed, which shall be used for the purpose of providing the minimum allotment provided for in this section: For the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of $46,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of $32,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of $24,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, and annually thereafter, the sum of $90,000.

Sec. 5. That in order to secure the benefits of the appropriations provided for in sections two, three, and four of this Act, any State shall, through the legislative authority thereof, accept the provisions of this Act and designate or create a State board, consisting of not less than three members, and having all necessary power to cooperate, as herein provided, with the Federal Board for Vocational Education in the administration of the provisions of this Act. The State board of education, or other board having charge of the administration of public education in the State, or any State board having charge of the administration of any kind of vocational education in the State may, if the State so elect, be designated as the State board, for the purposes of this Act.

In any State the legislature of which does not meet in nineteen hundred and seventeen, if the governor of that State, so far as he is authorized to do so, shall accept the provisions of this Act and designate or create a State board of not less than three members to act in cooperation with the Federal Board for Vocational Education, the Federal board shall recognize such local board for the purposes of this Act until the legislature of such State meets in due course and has been in session sixty days.

Any State may accept the benefits of any one or more of the respective funds herein appropriated, and it may defer the acceptance of the benefits of any one or more of such funds, and shall be required to meet only the conditions relative to the fund or funds the benefits of which it has accepted: Provided, That after June thirtieth, nineteen hundred and twenty, no State shall receive any appropriation for salaries of teachers, supervisors, or directors of agricultural subjects, until it shall have taken advantage of at least the minimum amount appropriated for the training of teachers, supervisors, or directors of agricultural subjects, as provided for in this Act, and that after said date no State shall receive any appropriation for the salaries of teachers of trade, home economics, and industrial subjects until it shall have taken advantage of at least the minimum amount appropriated for the training of teachers of trade, home economics, and industrial subjects, as provided for in this Act.

Sec. 6. That a Federal Board for Vocational Education is hereby created, to consist of the Secretary of Agriculture, the Secretary of Commerce, the Secretary of Labor, the United States Commissioner of Education, and three citizens of the United States to be appointed by the President, by and with the advice and consent of the Senate. One of said three citizens shall be a representative of the manufacturing and commercial interests, one a representative of the agricultural
interests, and one a representative of labor. The board shall elect annually one of its members as chairman. In the first instance, one of the citizen members shall be appointed for one year, one for two years, and one for three years, and thereafter for three years each. The members of the Board other than the members of the Cabinet and the United States Commissioner of Education shall receive a salary of $5,000 per annum.

The board shall have power to cooperate with State boards in carrying out the provisions of this Act. It shall be the duty of the Federal Board for Vocational Education to make, or cause to have made, studies, investigations, and reports, with particular reference to their use in aiding the States in the establishment of vocational schools and classes and in giving instruction in agriculture, trades and industries, commerce and commercial pursuits, and home economics. Such studies, investigations, and reports shall include agriculture and agricultural processes and requirements upon agricultural workers; trades, industries, and apprenticeships, trade and industrial requirements upon industrial workers, and classification of industrial processes and pursuits; commerce and commercial pursuits and requirements upon commercial workers; home management, domestic science, and the study of related facts and principles; and problems of administration of vocational schools and of courses of study and instruction in vocational subjects.

When the board deems it advisable such studies, investigations, and reports concerning agriculture, for the purposes of agricultural education, may be made in cooperation with or through the Department of Agriculture; such studies, investigations, and reports concerning trades and industries, for the purposes of trade and industrial education, may be made in cooperation with or through the Department of Labor; such studies, investigations, and reports concerning commerce and commercial pursuits, for the purposes of commercial education, may be made in cooperation with or through the Department of Commerce; such studies, investigations, and reports concerning the administration of vocational schools, courses of study, and instruction in vocational subjects may be made in cooperation with or through the Bureau of Education.

The Commissioner of Education may make such recommendations to the board relative to the administration of this Act as he may from time to time deem advisable. It shall be the duty of the chairman of the board to carry out the rules, regulations, and decisions which the board may adopt. The Federal Board for Vocational Education shall have power to employ such assistants as may be necessary to carry out the provisions of this Act.

Sec. 7. That there is hereby appropriated to the Federal Board for Vocational Education the sum of $200,000 annually, to be available from and after the passage of this Act, for the purpose of making or cooperating in making the studies, investigations, and reports provided for in section six of this Act, and for the purpose of paying the salaries of the officers, the assistants, and such office and other expenses as the board may deem necessary to the execution and administration of this Act.1

Sec. 8. That in order to secure the benefits of the appropriation for any purpose specified in this Act the State board shall prepare plans showing the kinds of vocational education for which it is proposed that the appropriation shall be used; the kinds of schools and equipment; courses of study; methods of instruc-

1 Sec. 7 was amended by Act, Public, No. 473, 73d Cong. approved June 26, 1934, so as to change the permanent appropriation to a permanent authorization.
tion; qualifications of teachers; and, in the case of agricultural subjects the qualifications of supervisors or directors; plans for the training of teachers; and, in the case of agricultural subjects, plans for the supervision of agricultural education, as provided for in section ten. Such plans shall be submitted by the State board to the Federal Board for Vocational Education, and if the Federal board finds the same to be in conformity with the provisions and purposes of this Act, the same shall be approved. The State board shall make an annual report to the Federal Board for Vocational Education, on or before September first of each year, on the work done in the State and the receipts and expenditures of money under the provisions of this Act.

SEC. 9. That the appropriation for the salaries of teachers, supervisors, or directors of agricultural subjects and of teachers of trade, home economics, and industrial subjects shall be devoted exclusively to the payment of salaries of such teachers, supervisors, or directors having the minimum qualifications set up for the State by the State board, with the approval of the Federal Board for Vocational Education. The cost of instruction supplementary to the instruction in agricultural and in trade, home economics, and industrial subjects provided for in this Act, necessary to build a well-rounded course of training, shall be borne by the State and local communities, and no part of the cost thereof shall be borne out of the appropriations herein made. The moneys expended under the provisions of this Act, in cooperation with the States, for the salaries of teachers, supervisors, or directors of agricultural subjects, or for the salaries of teachers of trade, home economics, and industrial subjects, shall be conditioned that for each dollar of Federal money expended for such salaries the State or local community, or both, shall expend an equal amount for such salaries; and that appropriations for the training of teachers of vocational subjects, as herein provided, shall be conditioned that such money be expended for maintenance of such training and that for each dollar of Federal money so expended for maintenance, the State or local community, or both, shall expend an equal amount for the maintenance of such training.

SEC. 10. That any State may use the appropriation for agricultural purposes, or any part thereof allotted to it, under the provisions of this Act, for the salaries of teachers, supervisors, or directors of agricultural subjects, either for the salaries of teachers of such subjects in schools or classes or for the salaries of supervisors or directors of such subjects under a plan of supervision for the State to be set up by the State board, with the approval of the Federal Board for Vocational Education. That in order to receive the benefits of such appropriation for the salaries of teachers, supervisors, or directors of agricultural subjects the State board of any State shall provide in its plan for agricultural education that such education shall be that which is under public supervision or control, that the controlling purpose of such education shall be to fit for useful employment; that such education shall be of less than college grade and be designed to meet the needs of persons over fourteen years of age who have entered upon or who are preparing to enter upon the work of the farm or of the farm home; that the State or local community, or both, shall provide the necessary plant and equipment determined upon by the State board, with the approval of the Federal Board for Vocational Education, as the minimum requirement for such education in schools and classes in the State; that the amount expended for the maintenance of such education in any school or class receiving the benefit of such appropriation shall be not less annually than the amount fixed by the State board, with the approval of the Federal board as the minimum for such schools or classes in the State; that such schools shall provide for directed or supervised practice in agri-
culture, either on a farm provided for by the school or other farm, for at least six months per year; that the teachers, supervisors, or directors of agricultural subjects shall have at least the minimum qualifications determined for the State by the State board, with the approval of the Federal Board for Vocational Education.

Sec. 11. That in order to receive the benefits of the appropriation for the salaries of teachers of trade, home economics, and industrial subjects the State board of any State shall provide in its plan for trade, home economics, and industrial education that such education shall be given in schools or classes under public supervision or control; that the controlling purpose of such education shall be to fit for useful employment; that such education shall be of less than college grade and shall be designed to meet the needs of persons over fourteen years of age who are preparing for a trade or industrial pursuit or who have entered upon the work of a trade or industrial pursuit; that the State or local community, or both, shall provide the necessary plant and equipment determined upon by the State board, with the approval of the Federal Board for Vocational Education, as the minimum requirement in such State for education for any given trade or industrial pursuit; that the total amount expended for the maintenance of such education in any school or class receiving the benefit of such appropriation shall be not less annually than the amount fixed by the State board, with the approval of the Federal board, as the minimum for such schools or classes in the State; that such schools or classes giving instruction to persons who have not entered upon employment shall require that at least half of the time of such instruction be given to practical work on a useful or productive basis, such instruction to extend over not less than nine months per year and not less than thirty hours per week; that at least one-third of the sum appropriated to any State for the salaries of teachers of trade, home economics, and industrial subjects shall, if expended, be applied to part-time schools or classes for workers over fourteen years of age who have entered upon employment, and such subjects in a part-time school or class may mean any subject given to enlarge the civic or vocational intelligence of such workers over fourteen and less than eighteen years of age; that such part-time schools or classes shall provide for not less than one hundred and forty-four hours of classroom instruction per year; that evening industrial schools shall fix the age of sixteen years as a minimum entrance requirement and shall confine instruction to that which is supplemental to the daily employment; that the teachers of any trade or industrial subject in any State shall have at least the minimum qualifications for teachers of such subject determined upon for such State by the State board, with the approval of the Federal Board for Vocational Education; Provided, That for cities and towns of less than twenty-five thousand population, according to the last preceding United States census, the State board, with the approval of the Federal Board for Vocational Education, may modify the conditions as to the length of course and hours of instruction per week for schools and classes giving instruction to those who have not entered upon employment, in order to meet the particular needs of such cities and towns.

Sec. 12. That in order for any State to receive the benefits of the appropriation in this Act for the training of teachers, supervisors, or directors of agricultural subjects, or of teachers of trade, industrial, or home economics subjects, the State board of such State shall provide in its plan for such training that the same shall be carried out under the supervision of the State board; that such training shall be given in schools or classes under public supervision or control; that such
training shall be given only to persons who have had adequate vocational experience or contact in the line of work for which they are preparing themselves as teachers, supervisors, or directors, or who are acquiring such experience or contact as a part of their training; and that the State board, with the approval of the Federal board, shall establish minimum requirements for such experience or contact for teachers, supervisors, or directors of agricultural subjects and for teachers of trade, industrial, and home economics subjects; that not more than sixty per centum nor less than twenty per centum of the money appropriated under this Act for the training of teachers of vocational subjects to any State for any year shall be expended for any one of the following purposes: For the preparation of teachers, supervisors, or directors of agricultural subjects, or the preparation of teachers of trade and industrial subjects, or the preparation of teachers of home economics subjects.

SEC. 13. That in order to secure the benefits of the appropriations for the salaries of teachers, supervisors, or directors of agricultural subjects, or for the salaries of teachers of trade, home economics, and industrial subjects, or for the training of teachers as herein provided, any State shall, through the legislative authority thereof, appoint as custodian for said appropriations its State treasurer, who shall receive and provide for the proper custody and disbursements of all money paid to the State from said appropriations.

SEC. 14. That the Federal Board for Vocational Education shall annually ascertain whether the several States are using, or are prepared to use, the money received by them in accordance with the provisions of this Act. On or before the first day of January of each year the Federal Board for Vocational Education shall certify to the Secretary of the Treasury each State which has accepted the provisions of this Act and complied therewith, certifying the amounts which each State is entitled to receive under the provisions of this Act. Upon such certification the Secretary of the Treasury shall pay quarterly to the custodian for vocational education of each State the moneys to which it is entitled under the provisions of this Act. The moneys so received by the custodian for vocational education for any State shall be paid out on the requisition of the State board as reimbursement for expenditures already incurred to such schools as are approved by said State board and are entitled to receive such moneys under the provisions of this Act.

SEC. 15. That whenever any portion of the fund annually allotted to any State has not been expended for the purpose provided for in this Act, a sum equal to such portion shall be deducted by the Federal board from the next succeeding annual allotment from such fund to such State.

SEC. 16. That the Federal Board for Vocational Education may withhold the allotment of moneys to any State whenever it shall be determined that such moneys are not being expended for the purposes and under the conditions of this Act. If any allotment is withheld from any State, the State board of such State may appeal to the Congress of the United States, and if the Congress shall not direct such sum to be paid it shall be covered into the Treasury.

SEC. 17. That if any portion of the moneys received by the custodian for vocational education of any State under this Act, for any given purpose named in this Act, shall, by any action or contingency, be diminished or lost, it shall be replaced by such State, and until so replaced no subsequent appropriation for such education shall be paid to such State. No portion of any moneys appropri-
ated under this Act for the benefit of the States shall be applied, directly or indirectly, to the purchase, erection, preservation, or repair of any building or buildings or equipment, or for the purchase or rental of lands, or for the support of any religious or privately owned or conducted school or college.

Sec. 18. That the Federal Board for Vocational Education shall make an annual report to Congress, on or before December first, on the administration of this Act and shall include in such report the reports made by the State boards on the administration of this Act by each State and the expenditures of the money allotted to each State.

Approved, February 23, 1917.
THE SHOPS

The work in this department is divided into two classifications—the Industrial Arts section and the Vocational Training or Smith-Hughes work.

The industrial work includes all the shopwork and mechanical drawing that form integral parts of our technical high school department. In it are included 11 types of shops and mechanical and freehand drawing.

The technical course here calls for six semesters of required and elective shop courses and six semesters of mechanical drawing, including one semester of freehand or shop sketching work.

This course in detail is as follows:

First semester: Woodwork. (Required)
Second, third and fourth semesters: Advanced woodwork, upholstery, pattern work, foundry, auto, aeronautics, forge and welding, and printing. These are all electives.
Fifth semester: Machine shop. (Required)
Sixth semester: Electric shop. (Required)
Additional work may be taken in the fourth year as electives in machine shop, electric shop, radio, etc.

The mechanical drawing work of our technical course calls for five semesters of machine and architectural drawing and one semester in the 3B semester of freehand, or so-called shop sketching work. These are required for graduation and may be followed by elective work of an advanced nature in the fourth year.

VOCATIONAL TRAINING COURSES

After the first two years of the above work in the technical department, a student may elect to enter the trade courses for the remaining two years of his schooling here. He will be given four semesters of intensive instruction in the trade selected, and required to attend classes in related classroom subjects closely allied to the trade instruction received in the shops.

These unit trade courses require three clock hours of actual shopwork, and one and one-half clock hours work in the related subjects. The remaining periods of the school day may be devoted to additional and related instruction, or, if the student feels that he may wish to enter college on leaving high school, to acquiring the necessary college entrance credits.

Our trade courses, with the required related work, are as follows:

<table>
<thead>
<tr>
<th>Trade Course</th>
<th>Related Work</th>
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<tbody>
<tr>
<td>Machine shop</td>
<td>Four classes</td>
</tr>
<tr>
<td>Electric shop</td>
<td>Five classes</td>
</tr>
<tr>
<td>Printing</td>
<td>Four classes</td>
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<tr>
<td>Foundry</td>
<td>Two classes</td>
</tr>
<tr>
<td>Commercial Photography</td>
<td>One class</td>
</tr>
<tr>
<td>Architecture</td>
<td>One class</td>
</tr>
<tr>
<td>Automobile</td>
<td>One class</td>
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In the related work we offer the following:

- Science, including physics and chemistry
- Mechanical drawing
- Mathematics
- Trade information
- Printers' English

Additional classes are being formed as fast as the demands arise and our facilities will permit. It is anticipated that classes in upholstery, air conditioning and refrigeration, sheet metal work, pattern making, acetylene and electric welding, commercial art, and other courses will be introduced in the near future.

WOODWORK

The course in woodwork for the first semester is general in nature. The first four weeks are spent in learning the use of tools and in making common joints. After a technique is acquired, such useful articles as footstools, bookracks, and end tables are made. The last few weeks of the semester are devoted to making some of the more simple patterns and core boxes. The method of making castings, the shrinking of metals, and the drafting of patterns are explained. All work is preceded by a lecture.
demonstration, in which the different operations are performed in their proper sequence.

Woodshop teaches the care and use of tools, the knowledge of woods, their hardness, strength and beauty, and the application of stains and varnishes. Likewise, a coordination of hand and brain is effected by tool practice and drawing.

PATTERN MAKING

In this course, a practical demonstration is given in the care and use of tools. The application of bench practice is outlined in a series of exercises through which the students learn the principles of pattern making as related to industrial practice. All problems are discussed and the proper methods worked out for making the patterns and the core boxes to be used in the production of castings.

In the advanced pattern shop, considerable time is spent in the study of shop drawings and in learning the basic principles underlying design of patterns and core boxes. An advanced set of progressive exercises gives the student drill in the difficult problems which arise in the making of patterns.

UPHOLSTERING

In upholstering many types of chairs are constructed: hard seats without springs, spring upholstering, the cushion type of chair, slip seats, etc. An attempt is made to allow a boy to make a type of chair suitable to his wants and needs.

It is generally preferable to do a spring stool as a beginning project. This is about 15"x20" and stands 12" high. It is made in the 1B and 1A semesters. The value when completed is about ten dollars but the cost to the student for materials is only a fraction of that sum.

The second year student constructs the frame of the chair which he has chosen to complete and then upholsters it. The material with which it is upholstered must be purchased by the pupil but the cost is very little compared with the commercial value of the chair when finished. A spring upholstered stool may be constructed to match the chair if time permits.

Pupils learn types of upholstery materials and learn to recognize the quality of materials and workmanship. They have recovered chairs in their own homes as a result of this training and those who have gone into it professionally have found it to be one of the best trades connected with woodworking.

PRINTING

Our printing course is divided into two types—unit trade (preparing for apprenticeship) and industrial arts. In the former the student spends three hours in the shop and three hours in related subjects. In the latter the student conforms to office regulation as heretofore.

The course aims to give the student a working knowledge of hand and machine composition, distribution of
type, locking up form, feeding press, making jobs ready on the press as well as to have the student conform to shop discipline and routine. The linotype course teaches the student to set type by machine and is regarded as an advanced course in printing, the pre-requisite being the beginning course in hand composition.

Hand Composition

In the composing room the student is taught first the layout of the type case, placing type in the composing stick, emptying stick and tying up the type matter, after which he proceeds with the graded job sheets that carry him from the very beginning up through paragraph composition, hanging indentation, poetry, use of leaders, figure alignment and use of the initial letter. After the job is set up the boy is taught how to take a proof at the proof press and in reading the proof learns the use of the proofreader's marks or symbols. In composition he is taught how to lock up a form of one page, two pages, and four pages; how to place the quoins and prepare the form for the press.

The student taking advanced hand composition is taught the principles of design, the basic principles of good typography, the point system, use of color in printing, etc. His practice work will cover all kinds of job work and display typesetting and advanced stonework.

On the cultural side the student is taught "Process of Typemaking," "History of Printing," "Imposition," "Printers' Terms," etc.

Presswork

The equipment in our pressroom consists of eight Chandler & Price Platen Presses, one Miehle Flat Bed Cylinder Press, a Diamond Power Paper Cutting Machine, and a wire stitching machine.

This equipment enables the student, who chooses the Pressroom for his vocational training, to receive extensive instruction in this branch of the printing industry.

The student progresses through the following units of shop work: Platen press feeding, makeready on various forms of type and plate printing, scoring, perforating, and care of the presses and equipment. School projects are carried on such as the making of tickets, cards, envelopes, letterheads, office forms, booklets, etc., and the printing of our daily paper.

The operations of a job of printing consist of placing the packing, setting the guides, underlaying, overlaying, spotting, mixing ink, adjusting ink fountain, keeping uniform supply of ink on the job, and handling and jogging paper stock.

The students receive a general knowledge of the finishing of printed products: folding, padding, stitching, trimming, and wrapping the finished product in neat packages.

Paper cutting and estimating is included in this branch of our Printing Course.
LINOTYPE

In the linotype room the course is unit trade entirely. The student is taught to operate the keyboard and understand the mechanism that controls it, the casting of the slugs, distribution operation, etc. The accuracy demanded in this course makes the training invaluable.

FORGE

In general, forging treats of hammering, working, or forming of heated metals. The materials upon which forging is done are wrought iron, mild steel, and tool steel. The steps in the forging of an S-hook, a staple, a drawspike, a gate hook, a hexagon bolt, a grab hook, and chain are shown on the board of exercises in the forge shop. Each step in the forging of the above projects is demonstrated. These forge jobs require the following operation: drawing out, upsetting, twisting, bending, punching, and welding. All this work is done by hand.

Chisels, punches, etc. are made from tool steel and demonstrations are given on the proper heating, hardening, and tempering of the same.

Art metal work is another branch of blacksmithing. Flower stands, wall hangers, smoke stands, lamps, door knockers, and magazine racks are some of the projects made by the pupils in the forge shop. This class of work requires the following operations: shaping, forming, drilling, brazing, soldering, welding, assembling, riveting, etc.

FOUNDRY

Founding is the art of forming molten metal into the desired shape by pouring the metal into molds or "forms" made of molding sand and, in some cases, of metal. This latter type is commonly known as die casting. Slush casting is another phase of the foundry industry.

The student receives valuable hand training through the ramming of the mold, drawing of the pattern, and finishing of the casting.

Crane's foundry is one of the best equipped high school shops in the city and the course as now given, with its bench, floor, and lecture work, constitutes a balanced introduction to the foundry industry.

Bench Moulding

Students have the opportunity of working at modern benches constructed by the Board mechanics and patterned after benches used at the University of Illinois foundry. All tools are in convenient places on the benches and the construction is such that both are easily kept clean. The work progresses from simple "flat backs" to the split pattern, to the irregular parting. The range of molds made, gives the student valuable experience. After this he is allowed to make castings of an ornamental nature, such as: book ends, ash trays, heads, etc. Aluminum and bronze are melted in a crucible furnace and the bench molds are poured with these metals.
Floor Molding.

The floor work consists of molds too large to handle on the bench. Among the patterns used are: motor ends, propellers, two-flange pipes (made in a three-part flask), and sheave wheels. Some of the work of Foundry 1 students is poured in iron.

Lectures.

The work in the lecture room covers: safety, the relationship of the student to his fellow student and to the school, molding sand, the history of the foundry industry, mixing and melting, and the construction and operation of the cupola and blast furnace. Movies of modern industrial plants and of the mining and smelting of various ores are shown.

Smith-Hughes.

Two classes of Smith-Hughes students are receiving valuable training in molding, the operation of the cupola (which is "run" every Friday), the cleaning and chipping of castings, and sand testing for bond and permeability. They get practical shop experience in the making of cores and the mixing of facing sands.

Shop Equipment.

The shop equipment consists of one #0 Whiting cupola for the melting of iron; a #35 Stewart pit gas fired furnace for the melting of aluminum and bronze; a small drawer type core oven (sufficient at the present for our work); one grinder for snagging gates, risers, and fnnns; a scratch brush for removing sand and giving a satin finish to bronze and aluminum castings; two buffing wheels for work requiring a high polish; and one drill press. The shop has one molding machine which gives the student some idea of production work. A Simpson intensive mixer and a power riddle are used to temper the sand.

WELDING

The oxyacetylene method of welding is now being taught in conjunction with the forge work, half of the semester being given to each of these subjects.

Crane High School has a modern installation of this equipment to teach the most modern methods adopted for production work.

All the fundamentals are taught as well as the care of equipment, including gas regulators and torches used on portable work. The welding course includes the completion of several welded projects over a period of ten weeks as well as a great deal of actual practice with the welding torch. Some knowledge of heat treating is acquired as well as an understanding of the flow of liquid metals. As tools are now being hardened by heating with the acetylene torch, and as this method is growing fast, we teach some of the metallurgy of iron and steel.
AUTO SHOP I

Our auto shop course is organized to give the student a general knowledge of automobile construction and operation and sufficient practical work on cars and car units to enable him to do his own minor repair work and to keep his car in good condition. The course is divided into two parts: six weeks of electrical work and twelve weeks of mechanical work. The different units and systems are as follows:

1. The theory and operation of the four cycle engine.
2. The names and purposes of all the different parts of the engine.
3. Lubrication systems: pump and circulating force feed and full force feed, different types of oil pumps, oils, etc.
4. Fuel supply systems, including the gravity feed system.
5. Cooling systems: radiators, thermostats, and anti-freeze solutions.
6. Fuels: the different types of gasoline, ethyl and benzol; octane rating.
7. Carburetors: types, their operation and adjustment, air cleaners, and automatic chokes.
8. Brakes: mechanical and hydraulic, the care and adjustment of brakes, brake troubles.
9. Clutches: their construction and operation, synchro-pedal adjustment, the use and abuse of the clutch while driving.
10. Transmissions: their use and operation, synchro-mesh and free wheeling.
11. Universal joints, differentials, rear axles, and steering gears.

Most of the car units are shown in cut-away sections so that the student can easily see their operation.

In the Smith-Hughes classes from fifteen to twenty cars per semester are brought in for general overhauling and repairing. These cars are also used by the Auto I classes for adjusting valve tappets, cleaning carbon, grinding valves, adjusting carburetors, checking brakes, cleaning spark plugs, removing batteries and putting them on charge, repairing tires, etc.

SMITH-HUGHES AUTO SHOP

The Smith-Hughes Auto Shop Course is for those boys who have definitely decided to go into some one line of auto work. Here they are trained as auto mechanics, service station owners or operators, garage owners or operators, or in some line of automobile engineering work.

Regular garage practices are followed. Cars are taken in for any repair work that they may need. Some of the work done is as follows:

1. The complete overhauling of an engine, including the installation of new pistons and rings.
2. The trueing of valves and seats.
3. The adjusting of rod bearings.
4. The tuning up of ignition systems and carburetors.
5. The relining and adjusting of brakes, both hydraulic and mechanical.
6. The replacing of the clutch plate and adjusting the clutch.
7. Removing and repairing the transmission.
8. Systematic checking and testing for engine troubles.

**MACHINE SHOP**

**INDUSTRIAL ARTS AND SMITH-HUGHES COURSE**

This course is planned so that a desirable amount of individual instruction is given to both Industrial Arts and Smith-Hughes students. The elementary work affords an opportunity for the student to become familiar with the various tools and appliances used in the study of engineering problems. In the Smith-Hughes course more difficult problems are necessary in order that a student may acquire skill and knowledge of machine construction to increase his ability in developing apparatus to a considerable degree of accuracy.

The machine shop is equipped with standard tools, motor driven engine lathes, shapers, planers, milling machines, drill presses, speed lathes, grinders, power hack saws, and an adequate supply of small tools suitable for work of varied character, thus making it possible for the student to develop initiative, efficiency, and mechanical inventiveness.

**Outline of Course**

**Bench Work**

a. Laying out, methods, names and uses of tools, surface plates.
b. Chisels, cutting edge principles, kinds, shapes, and uses, factors which determine cutting angle, tempering and grinding.
c. Files, principles of construction, forms and uses, definitions, degree of cut, care.
d. Hack-Saws, factors that enter into use of hack saw selection, effect of weight and pressure.
e. Screw Threads, forms, taps and dies, measuring.
f. Assembling, fitting, hand reamers, scrapers, materials of construction.

**Machines:**

a. Drill press, types, theory of design and twist drills, speeds and feeds, drills and sockets, chucks, drill grinding, jigs and fixtures.
b. Lathes, classification, use of principal parts, mechanisms, theory and principles of cutting tools, calipers and their uses, micrometers, gauges, classes of fittings used in machine construction.
c. Taper turning, standard tapers, calculating, methods, measuring.
d. Screw threads, cutting in lathe-pitch, lead, etc., gearing, proportions.
e. Lathe chucks, classifications and uses, drilling, boring, internal thread cutting, boring bars, machine reamers.
f. Lathe arbor (mandrel), definition, types, surface plates and their use.
g. Lathe faceplate, clamping devices, balancing of irregular castings, testing work for accurate setting.
h. Shaper, types in general use, operation, special attachments, method of holding work.
i. Planer, types, care of tools and equipment, safety precautions, planing surfaces.
j. Milling machine, construction and uses, care of machine and equipment, analysis of the process of milling, speeds and feeds of milling cutters, classes of cutters, use of dividing head, sizing and cutting of gears, milling jigs and fixtures, working properties of stock.
k. Tool and cutter grinder, types of machines in use, care of machine and attachments, shapes and grades of grinding wheels, grinding allowances, selecting of grinding wheels, speeds, abrasives.
l. Bench grinder, mounting wheels, grade and care of wheels, safety precautions.
m. Power hack saw, types, selection and speed of saws, care in using saws, stock recognition and working properties.

AERONAUTICS

Aeronautics as it is taught at Crane is valuable because it touches so many branches of science. It involves physics, chemistry, mathematics, drafting, engineering, all kinds of shop work, meteorology, navigation, power plants, etc. When designing and flying a small ship, the student makes a practical application of nearly everything he has learned in his high school courses.

A boy who takes up the study of aeronautics is not necessarily preparing to be an airplane pilot, for there are more jobs on the ground than in the air. In order that ships may fly, there must be engineers, draftsmen, mechanics, radio operators, meteorologists, airport managers, passenger salesmen, reporters for air news, and people in Chambers of Commerce interested and informed on air transportation.

Safety in the air depends on cleanliness and careful habits. In aeronautics, a student develops these traits. Before he is given credit for this course, he must have constructed a model ship that can fly, the ribs of which are able to stand the sandbag test, and whose propellers must check on the protractor for pitch angle. A model is first built to blue print, and must check for specified weight as well as wing and rudder angles.

The actual student work is supplemented by lectures from the instructor which explain the scientific principles upon which the apparatus used in airplanes is built.

SMITH-HUGHES ELECTRIC SHOPS

In common with other vocational courses, the Smith-Hughes Electric Shops undertake to train students for the
electrical trades. The shop work is planned to duplicate, as far as possible, actual trade conditions.

Thus, the work is entirely practical in nature, in order that the graduate may find immediate employment in one of the numerous branches of the electrical trades. Entering this course in his 3B semester, the student is taught the rudiments of soldering and splicing. This is followed by the wiring of numerous simple circuits, such as bells, buzzers, annunciators, call systems, door locks, and similar layouts. The student also undertakes a simple construction project, such as an electric soldering iron or some other simple device.

This circuit work is followed, in the 3A semester, by the design and construction of a transformer, and the construction of a small universal motor. Other similar projects are also undertaken.

Having received a general training in the simple electrical work, the student now begins to specialize in some particular branch of the electric trade. He may, for example, choose to take up radio work, motor and transformer repairing, light and power wiring, and so on. In the radio shop, the boy constructs modern receivers, "services" various radio apparatus, learns the use of special testing apparatus, and studies the principles of radio transmission.

The motor shop trains the student to re-wire and repair various types of direct and alternating current motors. Similar work is given in connection with transformers. In the wiring shop the student works with conduit, BX, loom, and other types of metallic and non-metallic ducts. He also plans wiring layouts, makes cost estimates, and so on.

The work of this course will be altered as continued experience shows the need for revision to suit modern conditions in the trade.

RADIO

Modern business and society depend on radio for their advancement through the transmission of knowledge and understanding. Industry has turned to radio principles for manufacturing techniques, procedures, and tests. Commerce, travel, recreation, geology, medicine, etc., all have turned to the radio field for their development. Radio is a branch of our electrical industry, and is creating opportunities through its scientific achievements.

Our high school pupils living in this scientific age place an obligation on our school, so that they may understand and live, to interpret, to be able to judge, and to decide the destinies of their own lives. Since radio is a branch of electricity, we try to satisfy this obligation through the inception of our radio course, as a branch of our electric shop organization. Foundational and fundamental knowledge is taught through suitable shop activity. Radio sets are built and serviced. Public address systems, sound recording and transmission, are all integral parts of a student's work not only in theory but in manipulative practice.
The success of this department is dependent upon the related work carried on in other parts of the school, such as mathematics, science, drawing, etc., all of which are contributing elements to the goal obtained by the boy taking the course in radio. The progress of achievement is also dependent on individual ability, capacity, and interest.

The course is designed to be flexible in training the boy, to give him a functioning knowledge so that with the opportunity he can take his place in local industry. A study was made of local industrial requirements and our course is a result of that study.

With the completion of the work at Crane our boys are not only versatile and intelligent consumers or users of radio designed apparatus, but have proficiency in their use of the basic knowledge and trade techniques.

**MECHANICAL DRAWING**

The broad objectives of the mechanical drawing courses at Crane are: vocational fitness, worthy citizenship, consumer values, culture development, exploratory and self-discovery values, and mastery of fundamental processes.

In planning the courses in mechanical drawing, we are guided by the needs of the students. These needs are of various kinds and provision is made in the courses to meet all of them. While enough time is given to the subject to permit worthwhile vocational training, the need of a greater proportion of the students is that of general training for life.

In training for vocational fitness two groups of students are recognized: (1) Those who expect to follow the study of architecture or engineering in college and (2) Those who expect to enter the technical field upon graduation from high school.

In addition to the purely vocational objectives the course provides for that larger group of students who should be trained to become intelligent consumers and who need the cultural advantages of a broadened experience in the more practical branches of the study. Further, it is recognized that for many students, their work in mechanical drawing serves as an opportunity to become acquainted with many related fields and in so doing, to discover their capabilities and limitations, likes and dislikes, interests and disinterests.

Finally, as is true in all educational subjects, it is recognized that there are many fundamental processes, skills, and techniques to be mastered which are ends in themselves. In view of this fact problems are carefully selected and graded to facilitate learning, and the pupil is given sufficient drill to insure mastery.

Six semesters of drawing are required in the Technical Course. Five of these are devoted to mechanical and architectural drawing, and one semester to freehand.

**MECHANICAL DRAWING 1**

The immediate aims in the first semester are: to teach fundamental processes and good drawing technique, to de-
velop good habits and proper attitudes and to train the students to distinguish between various types of pictorial drawings.

The units of subject matter cover lettering, use of instruments, technique of lines, dimensions, orthographic projection, and geometric constructions.

MECHANICAL DRAWING 2

The immediate aims of this semester continue toward the achievement of the aims of the first semester. In addition, the aims are: to develop an appreciation of the importance of centers, center lines, and arc tangents, not only in mechanical drawing but in the layout of work in the shop; to teach more extensive means of shape description such as sections, revolved views, and auxiliary views; to teach the principles of line intersection and the use of cutting planes in the location of such lines; to teach the principles underlying the "true length of lines" and the fundamental processes of parallel and radical line development.

The units of subject matter include: auxiliary views, center lines, center tangents, revolution of solids, auxiliary views, true lengths and sizes, cutting planes, developments, and conic sections.

MECHANICAL DRAWING 3

Here in addition to completing the aims listed in the 1B and IA semesters, the student is taught fundamental processes and the theory of isometric drawing.

The units of subject matter include: auxiliary views, lines of intersection, development of intersecting objects and isometric drawing.

MECHANICAL DRAWING 4

The immediate aims in this semester are to teach: the theory and application of the helix, the theory and practice employed in the representation of machine fastenings, and the theory and practice involved in the details and assembly of a simple machine.

The units of subject matter are: the helix, the application of the helix to the development of sharp "V" threads, multiple threads, conventional threads, standard bolts and nuts, cap screws, set screws, simple machine details and assembly drawings.

MECHANICAL DRAWING 5

This semester is devoted to freehand drawing and is covered under that heading.

MECHANICAL DRAWING 6

The immediate aims in this semester are: intensive practice in good drafting room procedure, intensive study of standard machine parts, and work confined to static machine parts.

The units of subject matter include: instruction and drawing in the field of machine design, such as shaftings and couplings, bearings and pulleys, fittings, details, and assembly of machine parts and tracings.
FREEHAND DRAWING

Freehand Drawing is a required subject in the 3B semester at Crane. One of the most important requirements for the success of those engaged in securing a technical education is the ability to visualize material forms, and the most satisfactory method of developing this faculty is through the study of freehand drawing.

The immediate value of being able to do freehand sketching should appeal to many who have not wanted to pursue all the requirements for draftsmen and designers. Freehand drawing is based upon the same theory and conventional practice as mechanical drawing; however, the sketches are not restricted by the use of instruments and therefore permit a greater freedom of treatment. It also provides a quick and convenient means of description or explanation for engineering and industrial purposes.

The course of study consists of a few lettering plates because no drawing or art course would be complete without a working knowledge of the basic alphabets. The students then learn isometric, oblique, perspective, and projection drawing. The aim is to teach the fundamentals of the above mentioned methods so that freehand sketches may be made quickly and accurately.

ARCHITECTURAL DRAWING

The Architectural Drawing Course as given at Crane is planned to give a training which will have a variety of uses to the student.

It is not a vocational course which would limit students to work only along the line of architecture and the building trades, but covers various fields. While it does provide a good preliminary training for a college course in architecture this is not the full purpose of the course.

An examination of this course of study will show that it is almost the same as the technical course except that after the first year the student takes architectural and freehand drawing in place of shop work; with this exception, the boy in the architectural course receives the same training as the boy in the technical course.

Therefore, the following groups of boys should be particularly interested in registering in the Architectural course:

(1) Those who expect to study the profession of architecture in college—architects.
(2) Those who would like to find work in the building trades—carpenters, masons, plumbers, contractors, etc.
(3) Those who plan to sell building materials or engage in the many lines of work related to the building industry—salesmen, installation workers, etc.
(4) Those who like to draw and want to develop their ability in both mechanical and freehand drawing, with the expectation of doing such work after leaving school—poster and magazine cover designers, cartoonists, advertising artists, draftsmen, etc.
(5) Those who do not necessarily expect to work in any of these lines but would like to understand better how buildings are designed and constructed. Knowing something about materials that are used, the history and development of the art of building, and what constitutes good construction, should prove of value both from a practical and from a cultural standpoint.

All students should be interested in acquiring the ability to read all kinds of working drawings because, next to English composition, drawing is the most useful way of expressing one's ideas.

Students should understand that the Architectural Course is a general high school course in which the student gets all the regular academic subjects necessary for college entrance, plus an opportunity to develop his ability to draw and investigate the many interesting phases of the building business. The training and information gained, will prove useful to a person engaged in any line of work.

SMITH-HUGHES ARCHITECTURAL DRAWING

Students entering the 3B semester may elect the Smith-Hughes Architectural Drawing Course which is designed to provide an intensive training in architectural drawing and allied branches of study.

In planning the course an attempt has been made to broaden the scope so that the course may more nearly approach the current concept of a vocationalized general training.

While emphasis is placed upon accepted techniques, trade information, and good drafting-room procedure, the subject matter is broad enough to provide a training which may be applied outside the confines of the drafting room. A wide acquaintance with building materials, the ability to read drawings, to estimate quantities and costs, and a general knowledge of building procedure, may find ready application in the field of salesmanship, as well as in the architect's office.

The study of air-conditioning in conjunction with the architectural course provides an introduction to one of the most modern and rapidly expanding occupational fields. The course is an excellent preparation for those desiring to enter one of the building trades.

The elements of design, aesthetics, historical background, building laws, and social considerations are touched upon to broaden the student's point of view and cultural attainment.

When individual students show special aptitudes the work is adjusted to meet their particular needs and interests. Students demonstrating exceptional ability are advised to meet college entrance requirements so that they may continue their professional training should they later desire to do so.

COMMERCIAL ART

The Commercial Art Course in the third and fourth
years is planned to familiarize the student with the basic principles of art and to help him apply his knowledge and technical skill to the preparation of layouts and designs that will sell merchandise through advertisements in such media as magazines, newspapers, booklets, billboards, and car cards.

After the student has explored the various fields of commercial art, he may select one of the following branches for specialization:

- Layouts
- Lettering
- Illustration
- Design or Fashion Illustration
- Poster Work

Where special inclination is shown for pen and cartoon work, the pupil in his second year may do story illustration, caption, cover, and page work for school publications and receive credit for same.

The student will be encouraged to keep his own scrapbook of pictures, photographs, and clippings arranged in order for quick reference. When convenient, work will be done in small groups on a single job, one handling the layout, another the lettering, a third the illustration, etc.

Students of the department of photography will occasionally work with the art students when a photograph of the product to be advertised is needed. The artist will work with the photographer in getting correct angles and in securing good composition. A print of the size will then be made for the layout.

Other projects will be making of film titles for the Crane Newsreel, the arranging of backgrounds for still life "shots," and photo retouching.

The drawing will be supplemented, when time and facilities permit, with motion picture lectures and talks on art subjects and principles.
## APPENDIX V

COMPARATIVE MEMBERSHIP AT THE HIGH SCHOOL LEVEL
CLASSIFIED BY GRADE FOR SCHOOL YEARS
1961, 1962, AND 1963

### REGULAR HIGH SCHOOLS:

<table>
<thead>
<tr>
<th>Grade</th>
<th>1963</th>
<th>1962</th>
<th>1961</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ninth</td>
<td>42,677</td>
<td>33,735</td>
<td>32,955</td>
</tr>
<tr>
<td>Tenth</td>
<td>31,263</td>
<td>30,028</td>
<td>24,717</td>
</tr>
<tr>
<td>Eleventh</td>
<td>25,352</td>
<td>21,172</td>
<td>18,819</td>
</tr>
<tr>
<td>Twelfth</td>
<td>18,384</td>
<td>15,936</td>
<td>15,982</td>
</tr>
<tr>
<td>Educable mentally handicapped</td>
<td>451</td>
<td>517</td>
<td>459</td>
</tr>
<tr>
<td>Specials</td>
<td>118</td>
<td>127</td>
<td>163</td>
</tr>
<tr>
<td>Social Adjustment</td>
<td>10</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>118,255</td>
<td>101,526</td>
<td>93,095</td>
</tr>
</tbody>
</table>

### VOCATIONAL HIGH SCHOOLS:

<table>
<thead>
<tr>
<th>Grade</th>
<th>1963</th>
<th>1962</th>
<th>1961</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ninth</td>
<td>4,918</td>
<td>4,216</td>
<td>3,895</td>
</tr>
<tr>
<td>Tenth</td>
<td>3,426</td>
<td>3,252</td>
<td>3,036</td>
</tr>
<tr>
<td>Eleventh</td>
<td>3,013</td>
<td>2,790</td>
<td>2,568</td>
</tr>
<tr>
<td>Twelfth</td>
<td>2,174</td>
<td>1,919</td>
<td>1,981</td>
</tr>
<tr>
<td>Veterans</td>
<td>32</td>
<td>58</td>
<td>107</td>
</tr>
<tr>
<td>Educable mentally handicapped</td>
<td>21</td>
<td>21</td>
<td>27</td>
</tr>
<tr>
<td>Specials</td>
<td>45</td>
<td>14</td>
<td>103</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>13,629</td>
<td>12,270</td>
<td>11,717</td>
</tr>
</tbody>
</table>

| Spalding High School—crippled and cardiac children | 488 | 428 | 333 |

| **Total high school level except continuation and apprentice** | 132,372| 114,224| 105,145|

| **Continuation and apprentice schools** | 5,481 | 5,514 | 5,235 |

| **Total high school level** | 137,853| 119,738| 110,380|

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APPROVAL SHEET

The dissertation submitted by Edward John Kosell has been read and approved by five members of the Department of Education.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated, and that the dissertation is now given final approval with reference to content, form, and mechanical accuracy.

The dissertation is therefore accepted in partial fulfillment of the requirements for the Degree of Doctor of Education.

June 3, 1965

Date

Signature of Adviser