I

The Problem and Its Background

THE American people stand squarely and hopefully on the threshold of an era in which the average standard of living will reach a new and higher level. Made freshly aware of their country's potential strength by the industrial and technological advances realized during World War II, they envision a future in which the comfort and security that our economy can provide will be the rule and not the exception. A reassuring prospect, to be sure, and yet not beyond the realm of possibility if the widest use of our rich natural resources is supported by the full development of the productive power of the entire population.

Educational Goals

The United States has long cherished a belief in education as a means of heightening productive power, and conviction on all sides has never been stronger than it is today that in the expansion and improvement of education lies the path to future progress. But at that point agreement ends. The direction of expansion, the content of the adjusted educational program, and the proper participating institutions are subjects of unremitting and heated debate.

The mere extension of our existing academic education is obviously not a solution. However phenomenal its development, and however great its contribution, the traditional system has failed to meet the needs of a vastly augmented school population and of a period in which new social and occupational groups have come forward to claim a significant place in a highly industrialized nation. Academic education as it has evolved in this country is so

closely oriented around the occupational needs of the professions and the commercial and clerical groups that it falls far short of providing occupational preparation for the population as a whole. The discrepancy becomes appallingly clear when one considers that approximately 70 per cent of the gainfully employed persons are not included in these groups but are, instead, engaged in work requiring manual skills and technical knowledge.

This situation is wholly incompatible with the industrial progress so earnestly desired, for the full productive power of a nation rests on a proportionate distribution of the labor force among the different occupational branches of the economy at all times. Thus any educational policy designed to serve the country as a whole must aim at increased proficiency in all trades, services, and strata of work, from the professional level to that of unskilled labor. In an effort to determine how the imbalance can be adjusted, this study is primarily concerned with that large group of workers who are not members of the professional and white-collar classes.

It is a curious commentary that for the most part the literature on the role of full employment in attaining a sound and prosperous economy has placed the burden exclusively on the *demand* for commodities, with no reference whatever to the possible effect of what labor can supply. And yet it may well be that the limitations and rigidities of labor itself restrain the productive capacity of the country and thus constitute a persuasive factor in the employment situation. Adopting that premise, the authors regard as the main objective of this study the determination of the means whereby the industry and ingenuity and occupational skills of the great body of the labor force can be developed to the fullest. Although the large manufacturing industries function mainly with semi-skilled and unskilled labor, these workers comprise only a relatively small portion of all the gainfully employed. A substantial section of the labor force must be able to initiate independent production or to perform skilled work of a diversified nature. Without a labor force so trained, any full employment policy, regardless of the amount of government funds devoted to its support, will be more

likely to result in price rises and makeshift employment than in a sound increase in useful production and services and the full utilization of the nation's labor force.

The core of this study is, therefore, occupational preparation for work, which at the same time it considers a fundamental principle and an integral part of education, inextricably linked with the economic and moral fiber of our western civilization. Any assumption, however, that only the occupational needs of a country are to be served by education would be, of course, entirely fallacious. If the last war taught us anything besides the value of a more efficient system of occupational training, it was the need for expanded moral, cultural, political, and economic education. Indeed, it is characteristic of all good education to aim at the development of balanced personalities—men who can play as well as work, consume as well as produce, appreciate as well as create. In facing this issue the authors of this study have constantly borne in mind the multiple purposes of education; and they believe that any realignment of the present system should aim at the simultaneous improvement of education for citizenship, for an understanding of human values, and for productive work.

In this connection, the study is not at odds with the views of the proponents of a liberal arts education, as represented by the Harvard report, *General Education in a Free Society*, although the approaches and emphases differ and the opinions on how to attain the educational goals are widely divergent. The Harvard report holds the humanities to be the center of all education that provides unity and direction in life. It finds, nevertheless, 'that the aim of education should be to prepare an individual to become an expert both in some particular vocation or art and in the general art of the free man and the citizen.'[1] Conversely, not even the most ardent advocate of vocational education would deny the value of general education in preparing youth for citizenship and

[1] Harvard University Committee on the Objectives of General Education in a Free Society, *General Education in a Free Society* . . . (Cambridge, 1945), p. 45.

participation in cultural life. He would, however, go further by stressing how greatly the experience of working contributes toward building character, stability, and common sense, and heightening an appreciation of democracy. This study holds, therefore, that preparation for work is an indispensable component of an education designed to give unity and direction to life. Approaching the task of education with a different orientation and a somewhat different aim, the participants in this study are no less convinced than the champions of the modern liberal arts education that there are no insurmountable obstacles to the attainment of their common goal.

Implications of the American School System for Occupational Training

In their historical development, the centers of systematic occupational preparation have undergone considerable change in all countries. As production in separate industrial workshops increased, the home, which for centuries had been the center of occupational training, offered fewer and fewer opportunities, until today, only on farms is there any identity between family life and life in the chosen trade. The industrial workshops developed their own types of training, of which apprenticeship was the most highly organized form, and during the period when handicraft was at its height, apprenticeship constituted a major part of all education. With the widespread growth of factories and the increase in mechanization, however, this system steadily declined. Concurrently, formal education was necessarily extended to larger sections of the population of industrial countries until schools were finally in a position to make a definite contribution to occupational training.

The United States, because of its swift transition from a predominantly agricultural to a large-scale industrial economy, displayed a rather different pattern of occupational training from that of European countries. Owing to its newness and vastness, this country was slow to attain the level of formal schooling that prevailed in Europe, but eventually it outstripped all other countries and has never conceded that there was a limit beyond which it was not willing to go. As shown by the accompanying figures on school attendance between 1910 and 1940, expressed in percentages of specific age groups,[2] the rise in school attendance has been

	14-year-olds	*15-year-olds*	*16 & 17-year-olds*
1910	81.2%	68.3%	43.1%
1920	86.3	72.9	42.9
1930	92.9	84.7	57.3
1940	92.5	87.6	68.7

meteoric in the last three decades. By 1940 virtually all of the fourteen-year-olds and more than 87 per cent of the fifteen-year-olds were attending school full time, while of the sixteen and seventeen-year-olds, nearly 70 per cent were still in school. On the basis of this continuous lengthening of average school attendance and in view of the current trend toward making school virtually compulsory for children up to eighteen, it is reasonable to expect that school attendance for the bulk of American youth will continue to be extended or at least to maintain its exceptionally high level—a factor that has considerable bearing on the problem of occupational preparation of this youth.

This situation is unique, and its implications are even more striking when a comparison is made with conditions in European countries, as in the accompanying figures on school attendance in the United States, England, and Germany.[3] In Germany approximately 80 per cent of the children leave school at fourteen. School attendance for the youngest group in England is comparatively high be-

[2] Computed from Fifteenth Census of the United States, 1930, *Population*, vol. 2 (Washington, 1933), pp. 1096, 1098, and Sixteenth Census . . . 1940, Population, vol. 2, *Characteristics of the Population*, Part I, U.S. Summary (Washington, 1943), Tables 11 and 12. Figures for earlier years include part-time and evening school attendance and are therefore not comparable with the figures in Chapter III, which refer only to secondary education; figures for 1940 refer only to full-time attendance.

[3] U.S. figures taken from Sixteenth Census . . . 1940, Population, vol. 2, *Characteristics of the Population* (cited above), Table 11; see Appendix I for sources of English and German figures.

	U.S.	*England*	*Germany*
	1940	*1938*	*1931–32*
14-year-olds	92.5%	36.9%	19.4%
15-year-olds	87.6	14.5	16.0
16 & 17-year-olds	68.7	6.8	5.3

cause most children do not complete their elementary education until after they are fourteen, but attendance for the older groups is virtually at the low German level. It is in the sixteen and seventeen-year-old groups that the difference between Europe and the United States is most telling, with the attendance in England and Germany averaging about 6 per cent as opposed to nearly 70 per cent in this country. Thus, in the United States, almost all children are in school full time during their formative years, while in European countries this advantage is enjoyed by only a small minority.

Quite aside from the quantitative variance, there is a vast difference in the basic structure of the American and European school systems.[4] In the United States, primary or elementary school prepares for secondary or high school, and this in turn for college, which in its turn leads to professional school, the whole progression being made within what is essentially a one-line system. In Europe, on the other hand, for the great mass of the population, there is elementary school education, terminal for most children at fourteen and from which they cannot automatically transfer to any other type of free formal schooling. Parallel to this arrangement, yet distinct from it in scope and aim since it involves only a small fraction of the youth, is the program which, after a few years of elementary education, provides eight or nine years of secondary education and extends finally to professional studies at the university level. The separation of students between these two systems usually takes place when they are ten or eleven years old. Enrollments in the secondary schools are small and can in no way be compared with those in the United States.

[4] More detailed accounts of the educational and industrial training structure in Germany, Great Britain, Switzerland, and the Soviet Union are contained in Appendices I–III.

Such a structure implies rigid social, as well as quantitative, limitations, for while most elementary education is tuition-free, secondary and university education are not. This expense, combined with the fact that the more extended course defers wage earning for a considerable number of years, rather rigorously excludes the bulk of European youth from advanced schooling—a strong contrast to the steady democratization that has marked the development of free education in the United States.

It would be unfair, however, to judge European education for work by its formal schooling alone, for the deficiencies in educational opportunities in most of the industrial countries are balanced by an elaborate system of trade training. A wide section of the working population supplements its elementary education with a four-year apprenticeship and finds this combination of schooling with industrial training the best available preparation for economic life. During the apprenticeship, some additional technical instruction is generally obtained in continuation schools, which reach a great number of persons but are limited in scope. There are also the technical institutes, which furnish more extensive technical education but are attended by only a very small proportion of the trained craftsmen.

Thus Europe has absorbed education into the industrial training process. The United States, in contrast, has approached the problem by trying to integrate occupational education into the school system. This specific orientation has marked American education from almost its earliest days, and the persistently recurrent concern with occupational training as a necessary component of general education is one of the most reassuring expressions of democratic thinking.

Character of American Educational Thinking

In order to understand fully the subsequent analysis of present-day problems of vocational education and training it is necessary to recapitulate briefly their historical origins in this country. During the colonial period, education in America was dominated by

British thought and practice. Instruction of the young was held to be the responsibility of the church, and this view prevailed even after the spread of humanism had caused the classics to replace ecclesiastical dogma as the main content of such instruction. The nine colleges and universities established in this country by 1769 were patterned after English universities; the Latin grammar schools, designed to prepare the well-to-do for college, were almost exact replicas of those in England; and the dame schools, too, drew heavily on their English heritage.

It was not until the middle of the eighteenth century, when Benjamin Franklin and Thomas Jefferson offered the first challenge to the established pedagogical order, that education in this country began to take on a characteristic stamp.[5] Both Franklin and Jefferson were aware of the burgeoning in Europe of new educational theories that stressed the unity of school and everyday living, the value of learning through doing, and the importance of mastering manual skills. As products of the century of enlightenment, both opposed ecclesiastical authority, sectarianism in education, and the tyranny of tradition, and both were keenly conscious of the implications of the increased knowledge of natural science for the individual and society.

To Franklin the formation of useful habits was more important than the mere acquisition of knowledge, though he was devoted to experimental science and the teaching of subjects by which it could be promoted. Advocate of the educational aspirations of the rising middle class, he disliked the 'useless classics' and the institutions in which they were taught, and recommended that the main emphasis be placed on English, mathematics, and science. It was Franklin's ambition to lay the educational foundations for higher proficiency in agriculture, industry, and commerce through the application of science, and for rule by reason, intelligence, and wealth. In every sense Franklin was the initiator of the utilitarian

[5] Merle Curti, *Social Ideas of American Educators*, Report of the American History Association Commission on the Social Studies, Part 10 (New York, 1935), pp. 34–47.

approach which has figured so largely in the educational creed of this country.

Jefferson's contribution, on the other hand, found expression in his 'bill for the more general diffusion of knowledge' (Virginia 1779). Opposed to a class system of education, he antedated the French revolutionaries in contemplating a state school system for all children, although, unlike the French, he was not inclined to make school attendance compulsory. With a deep faith in the reforming power of education, Jefferson believed that equal opportunity for all children to acquire a sense of the values of civilization and to enter the ranks of leadership represented the greatest force for the progress of democracy. Since he placed the emphasis on literary training, the idea of occupational training in elementary and secondary schools was beyond the scope of his planning. Nevertheless, he incorporated in his proposals for a people's university a trade or technical school designed to systematize and to subject to educational methods much of the vocational education of craftsmen.

Thus, ideologically, American educational thinking attained a character of its own. The first practical achievement, however, free of any European influence, was the academy planned and founded by Franklin in 1751. This was the forerunner of the new institutions of secondary education that were to supplant the Latin grammar schools. Although, contrary to Franklin's proposals, the academies took over the traditional college preparatory subjects, they offered additional general subjects and vocational courses designed to fit students for careers in business, commerce, and shipping. An academy opened in Schenectady, New York, in 1771 gave not only a classical but a general course of reading, writing, arithmetic, geography, history, bookkeeping, and merchants' accounts.[6] Early in the nineteenth century, the Woburn (Mass.) Academy listed navigation, surveying, and bookkeeping in its cur-

[6] George F. Miller, *The Academy System of the State of New York* (Albany, 1922), p. 15; Isaac L. Kandel, *History of Secondary Education* (New York, 1930), pp. 397–406.

riculum, and by 1829, the Regents of the State of New York recognized, among the subjects appropriate to an English education, geometry, algebra, advanced arithmetic, trigonometry, chemistry, botany, bookkeeping, surveying, mensuration, navigation, and astronomy. In the academies for girls, courses were offered in embroidery and needlework, practical and fine arts.

This recognition of the value of vocational subjects was not out of line with contemporary European pedagogical thinking, but American practice developed in a different and characteristic direction. European educators, especially the German, took a keen interest in vocational education, but they contested its general educational value and relegated it to special schools, whereas this country, in its unflinching concern for broadening the democratic basis of education and for the integration of school and life, persistently sought to incorporate vocational and vocationally determined subjects into the general school curriculum.

It must be admitted that however progressive American educational thinking and practice may have been, by the end of the eighteenth century only a narrow stratum of society had been touched by the new developments. There was no public school system to provide an indispensable minimum of education and training for the mass of the people, and the few schools that existed for the poor bore all the marks of charity.

With regard to providing education for the poor, European models again served American practice at first. In England, as early as 1601, the apprenticing of all poor children was provided for by law, as a means of reducing unemployment and of giving adequate trade training. This system took on special significance in the American colonies where laws were passed making the care of poor children a public responsibility and requesting parents and masters to teach them 'to read and understand the principles of religion and the capital laws of the country' (Massachusetts 1642) or 'to educate and instruct them . . . in Christian religion and in rudiments of learning' (Virginia 1643; later in North and South

Carolina, Georgia, and other states).[7] Thus a kind of compulsory education for the poor developed in urban centers, serving, in the first place, vocational ends and the supply of skilled labor, and granting educational objectives secondary consideration. But with the importation of Negro slaves into the South, and the development of manufacturing in the North with its progressive division of labor, apprenticeship declined steadily and with it the educational opportunities for the poor. New means of educating the masses had to be devised.

In these circumstances it became apparent to both economic and educational theorists that what was needed was universal education in free public schools, separated from religious authority and economic control, and serving moral and practical purposes. This concept fostered interest in education as a direct function of government, and with the improvement in means of transportation and communication with the growth of cities, realization of the educational ideal moved a long step closer.

Attitude toward School Training for Work

Throughout the nineteenth century, public opinion was overwhelmingly concerned with the great issues of general education: free schools, democratization of the class-torn school system in order to bring equal opportunity to all children; and training of competent teachers. Yet even early in the century, short-lived movements in support of manual labor schools and mechanics' institutes foreshadowed later trends in the direction of true vocational education. The work of the Swiss philanthropist and educator, and disciple of Pestalozzi, Philipp Emanuel von Fellenberg, set the example for manual labor schools. Thus the ideas put forth by Rousseau and Pestalozzi on the educational value of manual work found their application in this, as in all other, countries. Between 1819 and 1830, schools combining elementary instruction and farm

[7] Edgar W. Knight, *Education in the United States,* 2nd ed. (New York, 1941), pp. 99–102.

work were founded in several agricultural states, while other manual labor schools, such as those established in New York, laid stress on mechanical work. The mechanics' institutes, based on English models, were, in a sense, adult education institutions designed to give the workingmen members 'instruction in the principles of the art they practice and in the various branches of science and useful knowledge.' [8]

Both the manual labor schools and the mechanics' institutes, however, enjoyed only partial and temporary success mainly because fundamental education was still too deficient. They were, nevertheless, the first materialization of an underlying and ever-recurring idea which reappeared in the middle of the century in a new form and with more fortunate results. In 1850 and again in 1859, the state of Michigan petitioned for a grant of public land to found a college of agriculture. This was the start of a movement that culminated in 1862 in the passage of the Land Grant or Morrill Act granting to the states public land equal in area to half the size of Indiana for colleges of agriculture and the mechanic arts.

Thus the first educational idea to which the federal government extended direct aid was occupational in character. Agriculture and engineering were now accorded legislative recognition as learned professions, and high standards of teaching and research in these fields were put on a par with the traditional subjects of advanced education. The implications of the Morrill Act were especially important for agriculture in the West, where greater knowledge and skill in the farming process were required as the era of free lands drew to a close. In the East, on the other hand, the prospects for engineering had greatly increased with the transformation of a largely agricultural society into one that was mainly industrial. Backed by state and federal aid, agricultural and engineering colleges increased substantially.[9]

[8] Edwin A. Lee, ed., *Objectives and Problems of Vocational Education* (New York, 1938), pp. 10–11; Pittsburgh University, *Report of the Investigation of Engineering Education*, vol. 2 (1934), pp. 27–31.

[9] Knight, op. cit. pp. 396–7; Pittsburgh University, op. cit. pp. 810–16.

In the period following the Civil War, educational developments were largely determined by the social forces set in motion by a rapidly growing population and an enormously expanding industry. Between 1870 and 1890 the population of the country increased from 39 million to 63 million. Immigration soared. New inventions, modern machinery, improved means of communication, the evolution of densely settled cities and the growth of material wealth—all these greatly facilitated the improvement and spread of education. Yet, despite these favorable conditions, even as late as 1890, the 'average length of schooling for each individual in the nation . . . was but four and a half years . . .' [10] It was not until the urgent demands for the abolition of child labor and for the enforcement of compulsory school attendance were heeded that the average term of schooling was gradually extended to an eight-year elementary, and subsequent high school, course. In time the public schools became adequate agencies of education, reflecting in their work the effect of educational theories and of trained teachers upon an ever-growing number of children and age groups, and mirroring in their social composition the entire population of an increasingly industrialized and urbanized nation.

In the light of this situation, educators could not fail to recognize manual training and vocational subjects as necessary components of the school curriculum. As followers of Rousseau and Pestalozzi, Franklin and Jefferson, they were all in general agreement in their devotion to democratic ideals and the principle of learning by doing, and they recognized both the need for vocational education and the reforming power inherent in education itself. There were, however, strong differences of opinion on the precise role to be accorded vocational and manual training by the schools. Whereas some educators supported manual training for its general educational value, others demanded utilitarian vocational training—a stand that implied the need for the inclusion of more science, social studies, and technical, industrial, and household subjects in what was essentially a classical curriculum. They were not unaware,

[10] Curti, op. cit. p. 206.

however, of the dangers inherent in narrow conceptions of vocational education as training in manipulative skills only.

It was John Dewey who, in a remarkable synthesis of conflicting ideas, assigned to vocational education its place in his system of continuous reconstruction of experience for educational purposes.[11] He urged the integration of the basic occupational activities with cultural education, and with progressive methods in the schoolroom, in order to produce a higher type of worker and thus prepare for the democratization of industry itself.

Another group of educators favored the establishment of separate public vocational high schools, regarding this development as indispensable for industrial workmanship in a democratic society, for national industrial efficiency, and for the responsible interest on the part of the worker in the social problems of the day. Precedents for this last plan were furnished by the development of manual training schools and the experiments in technical and industrial training conducted by a few private schools in the closing decades of the last century. Courses and schools in manual training, although conceived as a part of general education, were first established by wealthy businessmen desirous of promoting more practical training for youth. The subject then gradually penetrated public school practice in the form of separate schools or as departments in the regular high schools. This modern manual training movement was supported by the Industrial Education Association, founded in 1884, which aimed '. . . to promote the training of both sexes in such industries as shall enable those trained to become self-supporting . . . and to study and devise methods and systems of industrial training and secure their introduction into schools . . .'[12] The Association thus advocated both manual and industrial training as part of general education without further elaboration.

[11] For the views of earlier educators, especially with regard to vocational education, *see* Curti, op. cit. pp. 310–498; for a discussion of Dewey's theories, *see* ibid. pp. 499–541.

[12] Industrial Education Association, New York, *First Annual Report* (New York, 1885), p. 7.

Discussion of the subject persisted in all educational circles, but for about a quarter-century it produced no notable results. Manual training high schools were thinly scattered throughout the traditional school system which by its strength threatened to assimilate and finally absorb them, while the so-called industrial and technical high schools, operated within the system, were hardly more than manual training schools.[13] Manual training and, to some degree, the improved 'practical arts' and 'industrial arts' courses which evolved from it eventually made their way down into the elementary schools where they served as a 'broadening and energizing element of general education.'[14] The fact remains, however, that all such courses served mainly to uncover special talents and in this way to furnish vocational guidance.[15] Neither manual training nor industrial arts has ever functioned effectively in promoting a direct relationship to a future vocation, which is a prerequisite for any genuine vocational education.

As is the case with all new educational work in this country, vocational training in schools was originally the product of private initiative. Interest in the problem was aroused almost simultaneously with the launching of the manual training movement in the 1880's. The first specific trade training at lower than college level was offered by the New York Trade School, which was founded in 1881 and served as a model for a number of other schools. Planned according to the needs of the community or to the theories of their founders, these schools catered either to boys who needed full-time trade training or to older boys and men who required further instruction for advancement. The development of these schools, however, was very gradual. There was no attempt to coordinate industrial training on a nationwide basis, and the number of such trade schools never exceeded a very modest figure.

[13] National Education Association, *Report of the Committee on the Place of Industries in Public Education* [Winona, Minn., 1910], p. 5; Charles R. Richards, 'Progress in Industrial Education during the Year 1910–1911,' in *Report of the Commissioner of Education* (Washington, 1912), p. 301.

[14] Charles R. Richards, 'Industrial Education,' in *Cyclopedia of Education*, vol. 3 (New York, 1918), p. 429.

[15] Lee, op. cit. pp. 35–6, 284–304.

Coincident with the growing interest in manual training, the practical arts, and vocational training in schools was the increasing attention given to the need for technical training of below-college grade. Technical schools, defined as 'schools giving training in practical industrial processes and which at the same time offer advanced instruction in the scientific and mathematical principles upon which these processes are based,' [16] also were started by farsighted individuals with a view to filling the gap between the training of skilled mechanics and that of engineers.

As a natural result of the forces that shaped the preceding century, early in the 1900's the trade training idea was taken over by the secondary branch of the public school system. But though the general high school succeeded in integrating commercial subjects into its curriculum, it made no headway in doing the same for other vocational fields, particularly those of interest to the manual labor force. Traditional teacher training and high school curriculums were too remote from the new needs and social demands of the expanding high school population to make easy adjustment possible. It became more and more obvious that in order to solve the problem it would be necessary to establish separate public high schools, contemplated and organized for vocational education as distinct from academic.

With the formation in 1906 of the National Society for the Promotion of Industrial Education,[17] the movement gained momentum. At first, this group campaigned for state-aided vocational high schools but subsequently concentrated its efforts on securing federal support. Scoring the existing school system for assuming that all children would profit by 'bookish' training, the Society held that industrial training in schools was indispensable to the future of the worker and to national industrial efficiency, and urged that separate

[16] Charles R. Richards, 'Progress in Industrial Education . . .' (cited above), p. 302. *See also* Hebrew Technical Institute, *Catalog*, 1937, p. 8.

[17] Following the passage of the Smith-Hughes Act in 1917, this organization became the National Society for Vocational Education, which, in December 1926, merged with the Vocational Association of the Middle West to become the American Vocational Association.

vocational high schools provide wage earners with practical skills as a feature of an education that would also include scientific, sociological, and cultural subjects as background for the vocations taught.

The Society soon gained sufficient influence to induce the National Education Association to devote special attention to the problem on industrial education. At the Association's annual meeting in 1908, a symposium on the place of industries in public education heard American education accused of granting equality of opportunity only to those students who were able to attend a college or university, while contributing little to help the average man in the better performance of his life work and in the full realization of his inheritance as an American citizen. Further, the public school was frankly warned that in order to hold its place in the esteem of the American people it would have to grapple with and solve the important problems of vocational education. In its subsequent activity the Association stressed that industry as a controlling factor in social progress had a fundamental and permanent significance for education and that in secondary schools industrial occupations should furnish the central and dominant factor in the education of those who made the final choice of an industrial vocation. The group held that many children should be directed by the school toward industrial life. And it recognized the imperative need for both secondary technical and trade schools.[18]

These exponents of vocational education in both organizations were primarily concerned with a type of school designed to provide wage earners with practical skills. Preparation for efficient industrial workmanship in a democratic society seemed to them more important than industrial experience as a means of cultural education. In taking this stand they were convinced that they were fully aware of the needs of the times and that they remained faith-

[18] Curti, op. cit. pp. 559–60; James E. Russell, 'The Trend in American Education,' in *Educational Review*, vol. 32 (June 1906), pp. 28–41; Charles A. Prosser, 'Education and Preparedness,' in *School and Society*, vol. 3 (3 June 1916), pp. 796–807; National Education Association, *Journal of Proceedings and Addresses of the 46th Annual Meeting* . . . 1908, pp. 155–94.

ful to the democratic ideal, for to their minds industrial education was fully capable of assuming the general function of all education by training the mind through experience related to a future vocation, in a school that would express the needs of the community.[19]

The work of the National Society for the Promotion of Industrial Education was instrumental in securing the passage of laws supporting vocational education and the establishment in several states of public vocational high schools. In 1917 its efforts were crowned by the passage of the Smith-Hughes Act (Federal Vocational Education Law) furnishing federal aid for vocational education. When the law went into effect, eight states already had a system of state-aided vocational education, and others, encouraged by the prospect of federal support, followed suit shortly thereafter. Nationwide application of the Act was soon well under way.

Indenture and Apprenticeship before 1937

The foregoing résumé of the gradual incorporation of vocational education and training into the public school system must not be allowed to obscure the fact that, until recently, industry carried the main burden of occupational training, however casual and insufficient its effort may be judged. During the period when interest in, and agitation for, in-school preparation for work involving manual skills were developing so steadily, systematic in-employment training was declining, and limited training on the job increasingly furnished practically the sole instruction for the labor force. Nevertheless, the more formal apprenticeship system did exist, but its course was consonant with the peculiar history of the country.

As has already been indicated, apprenticeship in America never acquired the scope or prestige that it enjoyed in Europe. As a means of instructing the poor it was established in most of the colonies by the middle of the seventeenth century. There was a further impetus in the practice of indenture of those persons who,

[19] Arthur D. Dean, *A State Policy of Promoting Industrial Education* (Albany, 1910), p. 68.

unable to pay their passage from England, bound themselves out to masters in the colonies for a specified period as a way of working off the debt incurred by their voyage. The terms of indenture ranged from five to ten years depending on the particular colony in question. The system was most prevalent and most rigid in the South, where it remained in effect until the importation of Negro slaves in the eighteenth century offered a new and cheaper source of labor. In the Northern colonies, the apprentice fared somewhat better, for the increase in population and growth of cities offered him more favorable economic prospects on completion of his indenture.

On the whole, however, the economic and social development of this country did not encourage the continuance of this form of craft training. The economic freedom that became relatively easy to obtain as the country expanded and the rapid spread of modern manufacture were persuasive factors in the gradual decline of the system. In the face of the advancing industrialization, a number of old trades tried to maintain their position in the economy by the extensive use of cheap apprentice labor, with the inevitable result that when organized labor entered the scene early in the nineteenth century, one of its first preoccupations was the limitation of 'apprentice breeding.' In an effort to halt the hiring of apprentices as substitutes for skilled adult workers, labor fought for the enforcement of the age limit and length of term in all apprenticeship agreements, and, after the Civil War, sought legislation to set apprenticeship standards. Some of the manufacturing states actually did enact apprenticeship laws and the labor unions themselves increasingly dealt with the problem by including apprenticeship clauses in their collective agreements.

None of these measures, however, was nearly so decisive for the later development of apprenticeship as the swiftly changing economic conditions throughout the country. As industrial production developed, the training of apprentices became less and less profitable. Neither employers nor American-born workers were eager to enter agreements that would be binding on them for a

period of years. Nor was there any pressing economic necessity for large-scale apprentice training so long as immigration provided an ample supply of journeymen.[20] Moreover, the need for skilled labor increased but slowly; to a great extent, industry could make use of semiskilled and unskilled labor, especially since many of the goods that required precision work and high skills were being imported. Labor unions cannot justly be accused of having barred American youth from learning a trade during this period, for the management-labor agreements of apprenticeship allowed for considerably more apprentices than were actually employed.

The general decline in the importance of apprenticeship after 1860 is well exemplified by the accompanying figures on the apprentices and the total labor force in the manufacturing, construction, and mining industries between 1860 and 1940.[21] It is true that

	Number of apprentices	*Total labor force*	*Ratio*
1860	55,326	1,850,034	1:33
1880	44,170	3,837,112	1:87
1890	82,057	5,091,293	1:62
1900	81,603	7,112,987	1:88
1910	118,964	11,623,605	1:98
1920	140,400	13,922,102	1:100
1930	77,452	15,094,080	1:196
1940	92,360	16,374,676	1:180

by 1920 the absolute number of apprentices had increased appreciably, but the ratio to total employment in the manufacturing, mining, and construction industries fell rapidly. The stability of the ratio between 1910 and 1920 can be explained by the effort made during World War I to cope with the dearth of skilled labor.

[20] In 1920 as much as 28.3 per cent of the labor force in manufacturing was foreign-born. In the five-year period, 1920–24, the net immigration of skilled labor, excluding farmers, professional, and commercial workers, was about 435,000 or an average of 87,000 a year.

[21] Figures for 1860–1910 are from Paul H. Douglas, *American Apprenticeship and Industrial Education* (New York, 1921), p. 74; figures for 1920 and 1930 compiled on the basis of *Statistical Abstract of the United States*, 1937, p. 56; figures for 1940 compiled from *Statistical Abstract* . . . 1946, p. 183.

The economic crisis of 1929–33 and the resulting mass unemployment temporarily reduced the system to minute proportions.

Not until the period of recovery and increased production in the thirties was the seriousness of the skilled labor shortage felt. Training in all its forms had been at a standstill for some time and immigration with its rich supply of journeymen had ceased.[22] By 1937, although unemployment was still widespread, the scarcity of skilled labor was acute in many trades. Growing public awareness of the situation finally led to the passage of the Fitzgerald Act, the first federal legislation relating to apprenticeship. The formulation of apprenticeship standards and programs under the terms of this Act involves the cooperation of national, state, and regional bodies, as well as of management and labor representatives functioning at national, local, and plant levels. In view of the recency of the legislation and the abnormal wartime conditions under which it has operated, it is not yet possible to evaluate its effectiveness, but the mere enactment signifies an intention on the part of the nation not to discard apprenticeship as a form of vocational training.

Premises and Plan of Discussion

It is against this background of American thinking and practice in the realm of vocational education and training that the present status of such training must be evaluated and its future direction determined. With regard to in-school preparation for work, although clearly there has been a steady preoccupation with both the needs of the nation and the individual, the educational system, in general, has remained far too deeply rooted in the liberal arts tradition to be wholly effective for an overwhelmingly large proportion of the working population. Industry, for its part, has failed to provide adequate systematic occupational training—a situation that may be readily explained though none the less deplored. It is, therefore, the contention of this study that at this particular stage in our history, technological and industrial developments have out-

[22] By 1930, the proportion of foreign-born in the manufacturing labor force had fallen to 23.2 per cent and in 1940 to 15.

run our educational thinking and that stock-taking and decisive action are essential to the maintenance of industrial productivity on a wide scale and a high level.

The survey of technological and economic trends and the occupational distribution of the population, which constitutes the first portion of this study, has been made in the belief that the vocational education system cannot be effective unless it is in harmony with the technological and economic trends of the country. This is not to say that all education of American youth must be strictly governed by these trends, nor to deny that the rapidly changing economic scene makes prediction a somewhat hazardous affair. The pattern of industrial development, however, is such that certain fairly reliable conclusions can be drawn with regard to the future growth or decline of occupational groups. And unless vocational education takes note of the training requirements implied by these trends, American youth will be betrayed into acquiring skills for which the economy has no use.

On the basis of a definition in broad terms of the education and training desirable for our economy, the study makes an analysis of the existing institutions of in-school and in-employment training with a view to determining how effectively they meet the nation's needs. The premise on which this investigation was based is that both in-school and in-employment training are necessary constituents of any adequate system of occupational training, and that they should be well developed, carefully differentiated, and intelligently coordinated, each institution having precedence in the sphere it serves best. Schools perform their most efficient service by teaching technical knowledge and basic skills, while in-employment training is best equipped to offer experience in special and advanced skills and to raise any skill to a level of professional speed and efficiency. It is with these objectives in mind that each of the educational institutions and each form of on-the-job training has been evaluated.

The concluding section of the book is given over to the findings and recommendations. These are offered in the sincere hope and

belief that they will not only further the American people's progress toward that earnestly desired era of economic security and well-being, but will also strengthen the educational philosophy and aspirations of a nation that seeks to build the whole man.