

VOCATIONAL EDUCATION FOR  
MISSOURI

by

Benjamin Franklin Melcher, B. S. in Education

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SUBMITTED IN PARTIAL FULFILMENT OF THE  
REQUIREMENTS FOR THE DEGREE OF  
MASTER OF ARTS

in the

GRADUATE SCHOOL

of the

UNIVERSITY OF MISSOURI

1916

## VOCATIONAL EDUCATION

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## INTRODUCTION

The problem of vocational education is of sufficient importance to render unnecessary an explanation or apology for offering this dissertation on the subject. It is discussed in popular and educational magazines, and in educational, social, and industrial meetings. There is at present a general concensus of opinion that such education is needed, but no plan is generally accepted as to how this is to be secured.

It is my purpose to deal with the administration of vocational education as found in the United States, to investigate the social, economic, and industrial conditions of Missouri, and to make a plan for industrial education in this state. The plan is to show the kinds of education and schools needed and the way in which these schools should be supported.

While vocational education is as old as the human race, only recently has it been considered a function of the public schools. Only in the last half century have nations felt that it is the business of the public to train vocational workers. The United States recognized this need as soon as other nations, but attacked the problem in a different way and at a different point. We began at the top, with the higher institutions, and established schools for the purpose of training experts and supervisors. For some time we have had engineering schools which train

persons to superintend unskilled labor. Agricultural colleges have trained superintendents and experts but not the man on the farm. If we leave manual training out of account it is only during the last decade that any constructive work has been done in this country toward training the man for vocational work. The manual training was at first brought into the schools as a vocational subject, but later was treated and taught as a cultural subject. When it is treated as vocational, it is only one small field in the great world of vocational needs.

The work which has been done by our national government for vocational education may be seen in some of the laws on this subject. While these do not meet the needs, they do show that our nation has not been indifferent and has not failed to recognize that vocational training is needed as well as cultural training. The first legal recognition of this need was in 1862 when the Morrill Land Grant bill became a law. This act gave to each state for endowing an agricultural and mechanical college 30,000 acres of land for each senator and representative in Congress. This was the beginning of federal aid for vocational education, and much has been done since. The Hatch Act of 1887 provided a direct appropriation of \$15,000 a year to each state for the maintenance of an agricultural experiment station, bearing directly upon agriculture; later this appropriation was increased to \$30,000. The Nelson Act of 1890 provided a direct

annual grant to each state for the maintenance and further support of agricultural colleges. This began with \$15,000 a year to each state and had increased until in 1907 the maximum grant was \$50,000 to each state for an agricultural college and \$30,000 for experimental work. The total appropriation in 1907 for agricultural and mechanical colleges was approximately \$4,000,000. The next step taken by Congress was the Smith-Lever Act in 1914 which enabled the agricultural and mechanical colleges through their extension department to give instruction to the farmer who is actually engaged in work on the farm. Under the provisions of this act, each state received the first year \$10,000; and this amount was to be increased each year provided the state would appropriate an amount equal to the increase. This appropriation would increase each year until 1922, when the federal government would be giving for this work \$4,580,000 and the states at the same time would give \$4,100,000 or a total for extension work of \$8,680,000. If we add to this what is given outright, the amount for agricultural and industrial work would be about \$11,000,000 without further legislation. It is very probable that the amount will not reach this figure, since some of the states will fail to appropriate the amount equal to the increase over \$10,000.

The state of Missouri during the school year ending June 30, 1916 received \$139,855 from the federal government, some of this amount from the land grant, some

for the experimental work, and some a direct appropriation for extension work. All of this amount came to the University of Missouri, except \$14,894 which went to the School of Mines at Rolla, a branch of the University, and to Lincoln Institute. Missouri will get much more than this amount in 1923 if the legislature will appropriate an amount equal to the increase provided for in the Smith-Lever Act. It should not be that the federal government takes more interest in the agricultural development of the state than does the state herself.

It is readily seen from these reports that most of the work of Congress has been for the training of experts and research workers in the field of agriculture. Industrial and trades education have not received enough attention to secure the passage of special laws. It would not be true to say that there has been no interest in this phase of education in Congress since some bills relating to industrial education have been introduced, but not one of these has become a law. The Page Bill, which was introduced in 1911, provided for, (1) college extension work, (2) industrial schools in the cities for the sons of laboring men, (3) agricultural schools in the country for the sons of farmers, and (4) district agricultural high schools<sup>1</sup>. This bill was strongly supported but did not become a law. The sentiment expressed

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1. National Society for the Promotion of Industrial Education, Bulletin Number 16, 1912.

here shows that Congress realizes that there is need for federal aid in vocational work. This is also shown when the Smith-Hughes Bill was introduced in 1914. This bill did not pass then but has again been introduced and is now pending in the present Congress.

These acts and bills show how important our Congress considers vocational education. The importance of vocational education is also shown by the organizations which have been formed in its interest. The most important of these is the National Society for the Promotion of Industrial Education, but there are other organizations of less power and influence. There are many social, commercial, economic, industrial, and educational associations whose main purpose is not to promote vocational education, as is true of the one named, but which have taken a stand for this work by resolutions.<sup>1</sup>

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1. Report of the United States Commissioner of Education,  
Volume I, p. 288, 1912.  
National Metal Trades Association.  
National Association of Manufacturers.  
American Federation of Labor.  
National Child Labor Committee.  
National Committee on Prison Labor.  
American Association for Labor Legislation.  
National Education Association.  
American Society for the Prevention and Study of  
Infant Mortality.  
Southern Commercial Congress.  
Southern Educational Association.  
General Federation of Woman's Clubs.  
United Textile Workers of America.  
American Society for Equity.  
National Farmers' Grange.  
National Farmers' Congress.  
Department of Superintendents, National Education  
Association.  
(Note continued on next page.)

Never has there been a time in this or in any other country when the demand for trained workers on the farms, in the shops, in commerce, and in the homes, was greater than at present. We now as never before realize that there are four great economic problems; namely, those of production, manufacturing, distribution, and consumption. The first of these, production of raw material, belongs to the field of agriculture, in which the limited area of tillable land and the scientific methods which must be used make it necessary to have trained farmers. The second is that of the industries, in which on account of the limited supply of raw material and the strong international competition, skilled workmen are necessary for the manufacture of commodities at a reasonable cost. The third has to do with commerce, in which trained workers are needed in order that we may have the most economical distribution of products. The fourth and last of these problems is the one, which for want of a better name we have called consumption, concerns itself with the home. In order that there may be practical economy in consumption and at the same time the best means be provided for the nurture and training of children in a complex society, we must have skilled workers

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(Note continued from preceding page.)

International Congress of Farm Women.

American Foundrymen's Association.

National Domestic Science Association.

National Committee on Agricultural Education.

American Education and Cooperative Farmers' Union.

Chamber of Commerce of the United States of America.

in the home. There is at present a constantly increasing demand for more and better products. The supply of trained workers is relatively if not absolutely decreasing. Our nation is at present feeling the economic result in a relatively low output, in increased cost of production, and in a stationary or decreasing wages as measured by their purchasing power. This condition must be met and corrected by vocational education in our high schools which are supported by public funds. In these schools all classes of vocational workers may secure the training needed to make them efficient producers in a complex civilization where international competition is very sharp.

## PART ONE

### VOCATIONAL EDUCATION IN THE UNITED STATES

#### Chapter I

##### Definition of Terms

###### 1. Kinds of Vocational Education.

With the importance of vocational education thus stated in a general way, it will be necessary to get a clear understanding of what is meant by the term. When a new subject like this is brought into the school curriculum, there are always different opinions in regard to the meaning of the terms. It is not my purpose to attempt to harmonize these different opinions, but to get before us some definitions of these terms which will be used in this paper. I shall accept the definitions formulated by a committee of the National Society for the Promotion of Industrial Education.<sup>1</sup>

"Vocational education includes all forms of specialized education, the controlling purposes of which are to fit for useful occupations, as industrial education, agricultural education, commercial education, and household arts education.

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1. National Society for the Promotion of Industrial Education, Bulletin Number 16, p 292, 1912.

"Industrial education denotes the field of education designed to meet the needs of manual wage workers in the trades and the industries, and in the household.

"Agricultural education is that form of vocational education which fits for occupations connected with the tillage of the soil, the care of domestic animals, forestry and other useful work on the farm.

"Household arts education is that form of vocational education which fits for the non-wage earning occupations connected with the household.

"Commercial education denotes that field of vocational education designed to meet the needs of the wage earner employed in such business and commercial pursuits as book-keeping, stenography, typewriting, clerical work, and salesmanship."

In the discussion in this paper attention will be given to industrial education, agricultural education, and household arts education. These three phases of vocational education have been neglected, while commercial education has received attention by both public and private schools. Industrial education has been almost wholly neglected by the public schools, and only in a few large manufacturing cities has any attention been given it by the private schools. It is only in the last decade that any attention has been given to household arts education by either public or private schools. Agricultural education has received more attention as has already been shown, but

this has been chiefly in the higher educational institutions which are too far removed from the mass of the people who need this training. Agricultural education is needed by the man who is doing the work on the farm and not alone by the expert supervisors and research workers. It is very evident that the supply of trained workers in any of these fields does not equal the demand. It is my purpose to show that education in these fields should be at public expense, in the public school system, and for boys and girls who are fourteen or more years of age.

2. Kinds of Vocational Schools.

At the present vocational education is provided in a very limited way in three kinds of schools -- all-day schools, evening schools, and part-time schools (including the continuation and the cooperative schools). It will be well to get definitions of these terms; so I again quote from a committee of the National Society for the Promotion of Industrial Education.<sup>1</sup>

"Vocational schools as referred to in this document, include all agricultural, industrial, commercial, and household arts schools, the controlling purpose of which is to fit for useful occupations and which deal with pupils above fourteen years of age and below college grade.

"An all-day vocational school is a school giving

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1. National Society for the Promotion of Industrial Education, Bulletin Number 16, p 293, 1912.

training to young persons over fourteen years of age who can give one or more years to such preparation before entering employment.

"Evening schools or classes in industry or agriculture are schools or classes attended by persons over sixteen years of age already engaged in useful employment, which provide instruction directly related to such employment. Evening schools or classes in household arts are schools or classes giving instruction in home making to pupils over sixteen, however employed during the day.

"A part-time vocational school is a school for persons engaged in useful employment, which affords instruction during a portion of the working time of the pupils that is supplementary to such employment."

While I shall give some attention to each of these schools, it will be the all-day schools which will receive the most attention. It is to the all-day schools that we must look for the supply of trained workers. These schools supply workers who are trained before they enter employment, so the training is more thoroughly done. The part-time and the evening schools are good to supplement the practical experience which these people are getting, but they can never supply the number of trained workers needed to maintain the standing of our nation and to keep up the present standard of living. The great mass of trained workers must receive this education before they begin work, and this must be had in the all-day schools.

## Chapter II.

### The Need for Vocational Education and Vocational Schools.

This nation has been and is still a great nation in the agricultural, industrial, and commercial fields. The reasons for this have been, first, that her agriculture rested upon a basis of the richest soil in the world -- a fertility which has been treated as if it were inexhaustable. The supply of virgin soil for unintelligent exploitation is no longer available, and in the future a profitable and productive agriculture can be achieved only by scientific work. Science in this field has passed the experimental stage and is now far in advance of practice. It is now essential that a study be made of scientific work that it may be able to contribute all that our increasing population needs from a soil that has been rapidly depleted.

The American manufacturing of the past has been prosperous because of the great inventions, the supply of cheap foreign labor, and the great abundance of cheap raw material. Our advantage from the cheapness of raw material is rapidly passing. If we are to continue as an industrial nation, we must have a great supply of trained workmen from our home population.

In discussing the industrial condition of our nation Mr. A. D. Dean states the problem in the following clear, forceful manner.<sup>1</sup>

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1. Dean, A. D., *The Worker and the State.* p 155, 1910.

"There are three ways in which we can dispose of the wealth of natural resources. First we can let other countries manufacture from our raw products and we can buy the finished article from them, paying the expense of the product's trip across the ocean, forward and back, as well as giving those countries a large bonus for manufacturing them for us. Second, we can import foreign mechanics, employ their skill in our mills, build up other mills for them and enable them after a few years to take the best industrial positions; in short to hand over our industries to foreign born. Third, we can educate our children to shape these materials into finished fabrics and to become sellers of these articles to the rest of the world instead of buyers. Obviously the third plan must appeal to every American citizen."

The preceding statement deals with the problem from the side of the industries. From this view point the problem is well stated, but the problem of vocational education in our nation is much broader. The following statement is much more inclusive than the preceding one.

"The conservation and full utilization of our natural resources can be accomplished only in proportion as we train those who handle them. Public discussion and legislative fiat must be supplemented by an agricultural education which will teach the farmer how to make the soil yield an abundance and at the same time leave it rejuvenated and by an industrial education which will

teach our workers in the shops and factories how to use material without waste and how to turn the products of our forests and our mines into articles of higher and still higher value."<sup>1</sup>

It is a well known fact that those who enter these vocations do not have the training necessary to make such workers as are called for in the preceding statements. It is necessary for more to be done by the public schools in the future. The traditional education will no longer suffice; we must have education which will train for more efficiency in the vocations. I do not mean that traditional courses must be supplanted by vocational courses, but that there must be a place for both in our school system. President Nicholas Murray Butler says,<sup>2</sup> "It will be a grave error to set vocational training and liberal training in sharp antagonism to each other. The purpose of the former is to pave the way to some appreciation of the latter and to provide an economic base for it to rest upon. The equally grave error of the past has been to frame a course of study on the hypothesis that every pupil was to go forward in the most deliberate and amplest fashion to the study of the products of the intellectual life regardless of the basis of economic support."

There was a time when the apprenticeship system would supply all the vocational workers needed. The

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1. Report of the Commission on National Aid to Vocational Education, p 19, 1914.

2. Dean, A. D., The Worker and the State, p 56, 1910.

stationary agricultural area and the rising cost of living, both in food and in manufactured products, are evidence that there has been a breaking down in the apprenticeship system. The schools must supply the demand for trained workmen who are able to supply the articles needed by our one hundred million population, and supply these at a more economic price than at present.

It is no small problem to train the workers for the various vocations when we consider that there are in the United States more than twenty-five million persons over eighteen years of age engaged in farming, mining, manufacturing, mechanical pursuits, trade and transportation.<sup>1</sup> This means that there must be about one million persons prepared each year for the vocations. If these persons are given three year's training, there must be education provided for three million persons each year. Although the problem is a large one, when it is properly solved and trained workers are supplied, we shall be able to maintain our present social and economic position among the nations of the world. Without these schools to train the workers needed, the relative position of our nation must be lowered. In Germany we see how trained workers effect the standing of a nation. The Commission on National Aid to Vocational Education says, "There are more workers being trained at the expense of the city of Munich alone than

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1. Report of Commission on National Aid to Vocational Education, p 17, 1914.

in all the large cities of the United States representing a population of more than twelve million. It is substantially true that practically every German citizen who could profit by it may receive vocational training for his life work in schools and classes supported out of the public treasury.<sup>1</sup> The standing of Germany is due, not to cheap virgin soil or to her cheap raw products, as is the standing of the United States, but to her trained workers.

Our schools do not keep the boys and girls until they are trained for some vocation. Many pupils who enter our schools get no farther than the sixth grade. Some of these have been retarded; and when they reach the limit of the compulsory age, they drop out.<sup>2</sup> Professor Edward L. Thorndike has very well stated the condition from the age point of view. "It is certainly not far from the truth to say that of pupils entering these city schools one-tenth leave before thirteen years of age, one-fourth before fourteen, one-half before fifteen, two-thirds before sixteen, and five-sixths before seventeen."<sup>3</sup> How much of this elimination is due to our courses of study would be difficult to estimate. "Heretofore," says Professor Paul H. Hanus, "we have planned the work of our public schools almost entirely with reference to culture; we have done very little to stimulate a vocational

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1. Report of Commission on National Aid to Vocational Education p 17, 1914.

2. Ayers, Leonard P., Laggards in our Schools, pp 12 ff, 1910.

3. Strayer and Thorndike, Educational Administration, p 22, 1913.

purpose and still less to provide for the realization of that purpose. Schools should be provided for boys and girls who are fourteen years of age and above, where they may learn a trade. Many boys leave school at fourteen, the end of the compulsory school age; and for the next two years they drift from one occupation to another or are idle, as the industries do not want them under sixteen.<sup>1</sup> Our courses have been arranged for those who are going through high school and then to college. The boy or girl who must leave school and seek employment at the age of sixteen has received no consideration in our scheme of education. A judge of a Juvenile Court in Wisconsin says, "We have almost no trouble with boys and girls, in this court, who are enrolled in your schools. In the majority of instances a delinquent boy or girl who can be induced to enroll in the industrial school ceases almost immediately his or her career of waywardness and is greatly benefited."<sup>2</sup> It is the business of the school to give to the people what they need to make them efficient members of society. Both liberal and vocational education are needed.

Professor Eugene Davenport says, "I greatly prefer that theory of social and industrial development which would establish and maintain a single system of schools wherein the people of all classes should be educated, together,

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1. Hanus, Paul H., Beginnings of Industrial Education.

2. Report of the Committee on Industrial Education at the Twelfth Annual Convention of the National Association of Manufacturers, p 10, 1915.

distinct courses being framed and conducted for the benefit of each in so far as the interests differ from those of the common mass or of other professions."<sup>1</sup>

The changed condition of society in the United States will show more why we need vocational education. At one time in this country when agriculture was self sufficing, the family on the farm produced all the food and clothing it needed. As practically all the people lived on farms, and there were few markets, a surplus of commodities was not needed. The following table will show how this condition has changed.

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Table Number 1.

Increase in Urban Population in the United States.

<u>Year</u>	<u>Pop. of U.S.</u>	<u>Urban Pop.</u>	<u>Rural Pop.</u>	<u>Percentage</u>	
				<u>Urban</u>	<u>Rural</u>
1790	3,929,214	117,876	3,811,338	3	97
1840	17,069,453	1,451,903	15,617,550	8.5	91.5
1880	50,155,783	14,772,438	35,383,345	29.5	70.5
1890	62,947,714	22,720,223	40,227,491	36.1	63.9
1900	75,994,575	30,797,185	45,197,390	40.5	59.5
1910	91,972,266	42,623,383	49,348,883	46.3	53.7

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Of the 42,623,383 people in the cities in 1910 there were 14,261,376 of the number engaged in mechanical and manufacturing pursuits and allied industries. The Commission on National Aid to Vocational Education states, "It is equally correct to say that not one out of every hundred

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1. Davenport, E., Education for Efficiency, p 120, 1909.

of these workers has had, or is having at present time any adequate chance to secure training."<sup>1</sup> A Report of the Committee of the National Association of Manufacturers says, "There are between two and three million hoboes in this country -- men who want to work and who do work. But they have been buffeted from job to job until the habit of change is fastened upon them and they can not endure to remain on any job for more than two or three weeks. Seventy per cent of these are American born. Not one in a hundred ever learned a trade."<sup>2</sup>

It is very evident that the demands of our population in the fields of agriculture and industry have outgrown the means of supplying trained workers. When our schools are planned and courses are offered so that we can train for the great number of vocations, then will our nation continue to hold the place she has occupied for many years in the agricultural, industrial, and commercial world. This condition will not then as in the past be due to the great abundance of her natural resources but to her trained workers. The natural resources in the United States will if properly conserved continue her as one of the foremost nations of the world for many centuries.

To summarize the needs for vocational education

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1. Report of the Commission on National Aid to Vocational Education, p 17, 1914.
  2. Report of the Committee on Industrial Education at the Twelfth Annual Convention of the National Association of Manufacturers, p 21, 1915.

in the public high schools, we may use the following points  
as given by Dutton and Snedden.<sup>1</sup>

1. The Breakingdown of the Apprenticeship System.  
This breakdown is largely due to the great increase in the  
use of machinery.

2. The Application of Science. The old knowledge  
which is handed down from father to son is no longer suffi-  
cient, but more scientific knowledge is needed by the people  
who are successful.

3. Occupationsless Classes. The present organ-  
ization of industries does not offer an opportunity for boys  
and girls to receive training in the industrial work.

4. International Competition. The markets held  
by any nation are secured by the superiority of her products,  
and the production of a superior product calls for skilled  
workmen.

5. The adjustment of the Home. Modern conditions  
are so complex that again the knowledge which is handed down  
from parent to child is not sufficient to meet the needs.  
The nurture of children, the economizing of consumption, and  
the development of rational standards of living are all vital  
to the social welfare.

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1. Dutton and Snedden, Administration of Public Education  
in the United States, pp 406-407, 1912.

### Chapter III.

#### Vocational Work in the High Schools of the United States.

When the work of our public high schools is inspected and an estimate is made of the work which should be classified as vocational, we find that in comparison with academic work it receives little attention. When we judge this work alone from reports of the schools, it is not possible to tell to which of these two classes it belongs. In 1914 there were 1,677 high schools giving courses in agriculture to 34,367 students. The report of the Commissioner of Education states, "Most of these courses comprised brief text-book work extending over a quarter to a full year."<sup>1</sup> In many of the states aid is given for instruction in this work. The subject of household arts has been offered during the last decade in a number of high schools; but evidently it has not been considered of very great importance by the states, or at least has not been ranked with agriculture, for the states have not seen fit to grant aid for such instruction except in a very few places. Industrial education has been almost wholly neglected by the public high schools, only a very few of the largest cities having attempted instruction in this branch. Private schools, on the other hand, have been doing some work in the industrial field; in fact, most of the work done in this line in the United States is by these

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1. Commissioner of Education Report, p 10, 1914.

schools and not by the public schools. The private schools are largely supported by philanthropists or by industrial corporations. The philanthropic industrial schools will never be able to supply the demand for industrial workmen, and it is not right that industrial corporations by the use of corporation schools, should exploit the labor market for their own mercenary gain. Commercial education has received more attention by both public and private schools, than has any other kind of vocational education. Most of the larger and many of the smaller high schools at present have commercial departments, so that this line of work, while not all that it might be, is more satisfactorily done than other forms of vocational education.

The importance of subject matter as treated by the high schools is clearly shown in the following table and graph, which are taken from a study of the high schools in the North Central Association.<sup>1</sup> The table shows the per cent of units in each subject in schools of different enrollments. As has already been stated, it is not possible to tell from the name alone whether the subject is academic or vocational; but if we take those in this table whose names indicate that they are vocational, we find commercial subjects are the only ones which rank high in the number of units offered. All others which may be vocational are given less importance in the course of study than English, Latin, History, German, Algebra, and

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1. United States Bureau of Education Bulletin, Number 6, p 106 ff. 1915.

Geometry. While these figures do not give an exact condition which exists in all the high schools of the United States, it is a condition which does exist in some of the best high schools in seventeen of the central states. If the total number of high schools were considered, there would be many smaller ones on the list; then these vocational subjects would rank still lower, for the smaller schools do not give much consideration to vocational subjects.

The graph shows in a condensed form what has been worked out in the table. The language curve represents a combination of English, Latin, German, and French. The science and mathematics curve includes Algebra, Geometry, Physics, Chemistry, Botany, Physical Geography, Physiology, and Zoology. The history and civics curve includes the two subjects. The technical subjects curve is a combination of commercial subjects, Manual Training Domestic Science, Cooking, Sewing, and Agriculture. The graph shows that the technical subjects are given much more time in the larger schools.

Table Number 2.

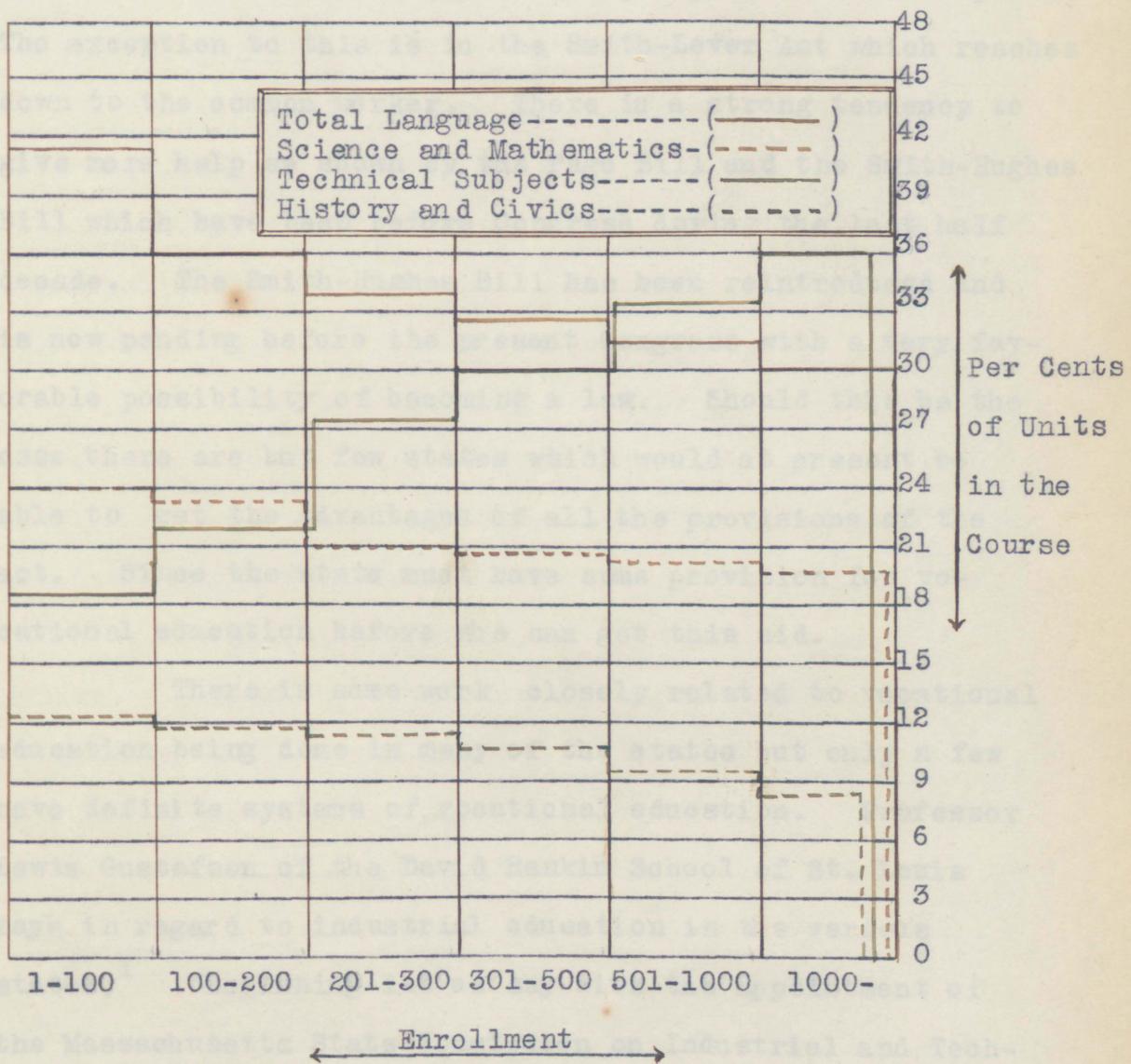
Showing the Per Cent of Units of Different Subjects in  
Schools with Different Enrollments and the Per  
Cent in all the Schools.

<u>Per cent of Units of</u>	<u>-- to</u>	<u>1</u>	<u>101</u>	<u>201</u>	<u>301</u>	<u>501</u>	<u>1001</u>	<u>and over</u>	<u>Total</u>
		<u>100</u>	<u>200</u>	<u>300</u>	<u>500</u>	<u>1000</u>			
English.....		15.3	14.5	13.1	12.0	10.7	10.0		13.1
Latin.....		13.0	12.6	11.9	11.0	9.4	7.8		11.5
History.....		10.6	10.3	9.8	9.0	8.2	7.1		9.5
Commercial course...		5.6	7.4	10.4	11.4	11.9	8.7		9.2
German.....		9.6	8.5	8.3	8.3	8.6	7.4		8.5
Algebra.....		6.4	5.7	5.1	4.8	4.8	4.2		5.2
Geometry.....		5.8	5.3	4.7	4.4	3.9	3.6		4.8
Manual training.....		2.7	3.5	4.6	5.5	6.2	9.1		4.7
Physics.....		3.3	3.7	3.3	3.0	2.9	2.7		3.3
Domestic science....		2.2	2.8	3.1	3.3	3.7	3.1		3.0
Chemistry.....		2.7	2.3	2.8	2.7	2.8	2.6		2.6
Cooking.....		2.0	2.3	2.6	2.8	3.1	3.2		2.5
Drawing.....		2.0	1.4	1.8	2.5	4.5	7.8		2.5
Sewing.....		2.2	1.9	2.3	2.7	3.4	3.3		2.4
Normal subjects....		1.1	2.9	3.4	2.6	.9	1.0		2.4
Agriculture.....		1.8	2.6	2.4	1.9	.5	.4		2.0
Botany.....		2.0	2.2	1.9	2.0	1.9	1.8		2.0
French.....		3.2	.8	.6	1.5	3.1	5.1		1.7
Physical geography..		1.4	1.8	1.7	1.6	1.7	1.8		1.7
Music.....		1.5	1.4	1.2	1.7	2.3	2.1		1.6
Civics.....		1.6	1.7	1.5	1.3	1.4	1.1		1.5
Physiology.....		1.1	1.1	1.0	1.1	1.3	1.7		1.2
Zoology.....		.7	.8	.8	1.0	1.2	1.3		.9
Education.....		.7	1.2	.8	.7	.4	.3		.8
Other subjects.....		1.5	1.3	.9	1.3	1.7	2.7		1.4

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Figure Number 1.

Showing the Per Cents of Units of  
Four Groups of Subjects.



The United States as a nation has done very little to foster vocational education. It has already been seen that most of her work has been done in agriculture in the higher institutions for training supervisors and experts. The exception to this is in the Smith-Lever Act which reaches down to the common worker. There is a strong tendency to give more help as shown by the Page Bill and the Smith-Hughes Bill which have been before Congress during the last half decade. The Smith-Hughes Bill has been reintroduced and is now pending before the present Congress with a very favorable possibility of becoming a law. Should this be the case there are but few states which would at present be able to get the advantages of all the provisions of the act. Since the state must have some provision for vocational education before she can get this aid.

There is some work closely related to vocational education being done in many of the states but only a few have definite systems of vocational education. Professor Lewis Gustafson of the David Rankin School of St. Louis says in regard to industrial education in the various states,<sup>1</sup> "Beginning let us say with the appointment of the Massachusetts State Commission on Industrial and Technical Education in 1905, state activity has spread until now at least twenty-seven states in the Union have some legislative provision for the teaching of industrial subjects as a part of the regular instruction in the public

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1. Vocational Education, Volume I, p 148, 1912.

schools, and in at least sixteen of these states is there a provision for special state aid for industrial training in elementary and secondary schools." In at least six states there has been legislation since that just mentioned. In some cases it has been to extend the system already existing and in others to provide for such training where none existed.

In ten states given in the following table some legislation has been enacted, establishing a system of vocational education for the state. There are other states where financial support has been given; but without a bureau or division of the State Department of Education to supervise this work, an efficient system throughout the state will not be possible. The following table<sup>1</sup> gives the states, the name of the division, the number of persons in the division, and the date when this division was created.

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1. Commissioner of Education Report, p 254, 1914.

Table Number 3.

<u>State</u>	<u>Division Designated</u>	<u>No. of Persons</u>	<u>Date</u>
Indiana	Vocational Division, State		
	Department of Public Instruction	1	1913
Massachusetts	Department of Vocational Education,		
	State Board of Education	4	1911
New Jersey	Division of Industrial Education,		
	State Department of Public		
	Instruction	2	1913
Pennsylvania	Vocational Division of the State		
	Department of Public Instruction	2	1911
New York	Division of Vocational Education,		
	University of New York	6	1909
Wisconsin	Department of Industrial Education,		
	State Department of Public		
	Instruction	1	1912
California	Division of Vocational Education,		
	Department of Public Instruction	1	1913
Connecticut	State Board of Education	1	1912
Maine	Vocational Division, State Department of Public Instruction	1	1914
New Mexico	Division of Industrial Education,		
	State Department of Education	1	1912

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A report from Wisconsin will show what the vocational schools mean to the boys and girls of that state. The report shows the growth of the attendance in the vocational schools from June 30, 1913 to June 30, 1914.<sup>1</sup> The classification of schools used here differs from that which has been used in this discussion.

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Table Number 4.

<u>Schools or Class of Pupils</u>	<u>Enrolled</u>		<u>Weekly Attendance</u>	
	<u>1913</u>	<u>1914</u>	<u>1913</u>	<u>1914</u>
Permit (Continuation).....	5223	9461	3659	4458
Industrial.....	513	1158	221	489
Apprentices.....	274	558	192	343
Evening.....	6209	14276	3263	6712
Total.....	12219	25453	7335	12004

The table gives an increase in enrollment of 108% and an increase of weekly attendance of 63%. This evidence shows that there is a need for these schools and that the boys and girls are ready to take advantage of the opportunities offered. Reports similar to this can be had from other states, but it is not necessary to give additional proof of the demand for this type of school and education.

A report of the states which have provided for industrial education has been given, but more attention should be given as to how these schools are administered.

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1. Biennial Report of the State Board of Industrial Education of Wisconsin, 1914.

It is at present a problem of organization and administration of vocational education more than ever before. If these schools are to be for all people they should be under public control and at public expense. Professor Eugene Davenport says, "We are now engaged in the most stupendious educational, social and economic experiment the world has ever undertaken -- the experiment of universal education; and whether in the end universal education shall prove a blessing or a curse to us will depend entirely upon our skill in handling the issues it has raised for our solution."<sup>1</sup> This statement is most true with reference to the problems of vocational education.

Some people believe that it is best for vocational education that it be in a school separate from the academic work, and that this vocational school be under a separate board. The Wisconsin system is generally known and spoken of as a dual system, whereas the Wisconsin reports deny that such is the case.

In that state the regular school board must appoint a local Industrial Education Board, which must be made up of two employers, two skilled employees, and the superintendent of schools ex-officio. In the report of the Board of Industrial Education of Wisconsin we find the following: "The Associate Board has been understood in various ways, since the adoption of this plan for promoting the vocational education. It has been

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1. Davenport, E., Education for Efficiency, p 13, 1909.

called 'Separate Board' and the plan has been termed 'Dual Control' but neither of these interpretations is correct according to the way the plan has worked out in practice. A better designation would be 'Associate Control'.<sup>1</sup> It would certainly not be right to say that Wisconsin has a dual system, since the state superintendent of public instruction is ex-officio a member of the state commission on industrial education, the city superintendent of schools is ex-officio a member of the local board of control for vocational schools, and the law provides that the other member of this board shall be designated by the local board of education. Moreover the state official in charge of the administration of the law governing vocational education is a deputy in the office of the state superintendent of public instruction.

The state of Massachusetts has or did have a better example of dual control. At first she began with a special commission on industrial education for the purpose of administering the law and promoting the development of independent industrial schools. The separate commission has been abolished; the responsibility for control and administration of all forms of education is with the State Board of Education; and local boards are given power to organize vocational schools in connection with the regular public school system.

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1. Biennial Report of the State Board of Industrial Education of Wisconsin, p 24 f, 1914.

While at the present time there are various systems of vocational school administration, the tendency is toward unit control. The United States Bureau of Education has summed up in Vocational Education Letter Number Three arguments for and against the unit system of control. There are fourteen arguments for the unit control. These are points made by two champions of the unit system, -- Professor Eugene Davenport and Doctor John Dewey. There are eleven arguments against the unit system. These are points made by the champion of the dual system, -- Professor Edward G. Cooley.

The great important fact is not whether we are to have the unit or the dual system of control. The most important thing is to secure a system of vocational education supported by all forces and equipped with qualified teachers and funds for maintenance. This system should provide as good education for the boys and girls who are to enter the vocations as is provided for the other boys and girls.

## Chapter IV.

### The Training of Vocational Teachers.

The movement for vocational education has outgrown the supply of teachers, and there is at present a pressing demand for the training of vocational teachers. More schools are being established rapidly; so there is an immediate need for a system of schools for this work. There are at present in operation some means for training teachers for these subjects, but with the increasing demand for teachers these agencies will not be able to give us all that are needed. These teachers must have not only a technical knowledge of the vocation but also a practical knowledge of the work. They must have an academic as well as a vocational education. They must have a knowledge of the methods of instruction and of the development of the child. This means that the vocational teacher must have a three fold preparation, -- liberal education, pedagogical preparation, and knowledge and skill in his vocation. This calls for more preparation than is usually demanded of other teachers, with whom it is generally two fold, academic and pedagogical.

The present vocational teachers must come from four sources -- the vocations, the technical schools, the teacher training schools such as normal schools and schools of education, and the present teaching force. Those who come from the vocations as a rule have little academic

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education and no pedagogical training, but are skilled workmen. Those who come from the technical schools have the academic education, a knowledge of the technique of the vocations, and are usually skilled workers, but do not have pedagogical training. The normal schools and schools of education equip persons for teaching but often fail to make them skilled workmen, and there are too few even of these to meet the needs. The greater part of those teachers who come from the present teaching force do not have the technical knowledge of the vocations and are not skilled workmen. This latter class will need vocational training and experience to make them most efficient. The qualifications of a shop teacher are very well stated in general terms by Mr. A. D. Dean.<sup>1</sup> "If possible no man should be permitted to teach who does not possess the following qualifications: practical knowledge of his subject; skill in teaching; tact in the management of boys and men; a good moral character, including freedom from all bad habits."

A more definite statement of the qualifications of the vocational teacher was made by Mr. L. J. Corbly in discussing the subject of The Preparation of Teachers and Supervisors for Industrial Branches and Other Special Lines.<sup>2</sup> His six points are as follows:

1. An acquaintance with life and problems of laymen.

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1. Dean, A.D., The Worker and the State, pp 341-2, 1910.
2. National Educational Association, 1914.

2. Maturity.
  3. Liberal Training.
  4. A mastery of academic requirements, at least two years above what is to be taught.
  5. Familiarity with his special subject and training in the fundamentals of teaching.
  6. A genius and natural desire to teach, and a mind, a body, and a personality fitted for the nigh calling.
- Qualifications as thus stated call for schools which will give this training to those who are to do the work. The industries as we have seen give us some teachers, many of whom are very good; but the demand can never be supplied from this source. The graduates of technical schools, of engineering schools, of our universities, and of our state agricultural and mechanical colleges do not often go into teaching, since they can market their assets in a better place; they seem to be too valuable to society to use their ability and equipment in this line of work. Should these persons choose to enter teaching, they would not make the most efficient teachers for these schools have given no attention to the training of teachers. They would fail in two of the qualifications, pedagogical training and experience as a wage earner. It is necessary for a vocational teacher, in order to be most efficient, to have done the work he expects to train others to do. The normal schools are prepared to give the pedagogical training, but at present few of them are prepared to give

the shop experience needed. The courses here offered consist largely in manual training and a brief course in a few fundamental principals of agriculture. It has been shown that the manual training at present is cultural rather than vocational. A change in the work given, the equipment of shops, and a more practical course in agriculture would not supply the demand for vocational teachers unless at the same time the length of the course be greatly extended, so that the person preparing for vocational work would have time to get academic, pedagogical, and practical training.

There must also be teachers for the non-vocational subjects in the vocational school. These teachers must not only know the subjects which they are to teach but also have pedagogical training and acquaintance and sympathy with the vocations. The normal school will furnish the knowledge of subject matter and the pedagogical training, but will not as now organized provide the contact with the vocations. The college graduate will lack both pedagogical training and contact with the vocations, and will often not be in sympathy with the vocations. The vocational teachers must be supplied largely from the present public school teachers. These will have some advantage because of their experience, pedagogical training, and knowledge of the subjects, but will often lack acquaintance and sympathy with the vocations. Many of these will make good teachers, but will need more vocational training. We

must have other sources than the normal schools, and universities or these must be enlarged if we are to secure a sufficient supply of efficient teachers.

The teacher of allied subjects must get his training in a school which is closely related to the shop, so that he will be able to know what the shop problems will be for the laymen. It is not so essential that he should have experience in the commercial shop, but he must be a skilled workman. This skill may be gotten in the school shop.

This training may be given by departments of the universities when they are equipped for this work. Most of our universities give some vocational work but do not give training for teachers of these subjects. Agricultural colleges do not usually offer courses for teachers. The schools of engineering train skilled supervisors but do not give courses needed by teachers. Our schools of commerce are training people in the commercial field but not teachers. The departments of home economics and manual arts, however, are doing some work to train teachers of subjects included under these heads. Nevertheless the present equipment of these schools will never enable them to give the work which will be needed to supply the demand for teachers. If these schools are to supply our vocational teachers, more must be done in them to meet the demand for teachers.

In a few of our normal schools some vocational work is being done, but these schools are not well equipped in this respect. Only a very few have the shops needed to train industrial workers. The extent of the vocational equipment of most of these schools is a manual training department, a home economics department, and an agricultural department. The work found here is more cultural than vocational. It will be necessary to spend much on our present normal schools to equip them to meet the needs.

Our technical schools are furnishing the skill and technical knowledge. If there should be placed in these schools a department for the training of teachers, these schools would supply many of the needed vocational teachers.

The present schools may be better equipped or a new school may be provided for this work. The new school that would meet this need has been termed an industrial normal school. In such a school there would be the shop for practical work for those who were preparing to teach the vocational and allied subjects. The teacher of non-vocational subjects would have the opportunity to get acquainted with shop work, to know the problems of a vocational worker, and to be in sympathy with the laymen. This school should also be so situated that one who is prepared to become a teacher of vocational subjects may spend some time in the shop, in the business office, on

the farm, or in the home in order better to understand the work of the layman.

This school should be open in the evening, so that some who are now employed may fit themselves for teachers. It has already been shown that we must depend upon those who have already had experience for our supply of teachers. Many of these now employed will make good teachers, but they will not leave employment to take preparatory work. They will often take this training if it can be done while they continue work. This is another reason for having such schools located near some industrial center.

Vocational schools are expensive whether for the training of workers or teachers. Mr. H. C. Brandon made a study of the cost of industrial education in fifty typical cities of the United States.<sup>1</sup> Because of insufficient data he was unable to make a definite study, but he does show that industrial education is much more expensive than other forms of education. The mobility of labor is so great that it is best for the state and the nation to provide the greater part of the financial support for vocational schools. Especially those schools which provide for the training of vocational teachers should be supported largely by the federal government. The Smith-Hughes Bill now before Congress provides that \$500,000

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1. Teacher's College Record, p 240 ff, 1911.

shall be appropriated to the states the first year after its passage for the training of vocational teachers, and that this amount shall be increased annually for four years when it would reach \$1,000,000, and that the appropriation shall continue at that amount thereafter. The burden would fall upon the state and the nation rather than the local community. The mobility of labor is shown by the investigation of the Russell Sage Foundation, in seventy-eight American school systems, during the closing weeks of the school year of 1912-13, when it was shown that of 22,027 cases of boys aged thirteen, only 16 per cent of their fathers were natives of the city and only 24 per cent natives of the state in which they were then living. In four of the cities the percentage of natives was from one to three. This mobility makes it very essential that the state and the nation should support vocational schools and schools for the training of vocational teachers.

## PART TWO

### VOCATIONAL EDUCATION IN MISSOURI

#### Chapter I.

##### Conditions in Missouri

The vocational needs in Missouri are not materially different from those found in the United States as a whole. The problem before us here however, is much greater than in some states; first, because so little has been done and, second, because of our undeveloped natural resources. I shall show briefly what some of our resources are, and what our state is doing at present to train individuals for the vocations.

We are situated in the southern half of the North Temperate zone where the climate is mild, favoring the growth of a great variety of plants. Here is found rich soil of many kinds, which add to the profitableness of many industries. Missouri with an area of 69,420 square miles ranks eighteenth in size, while in 1909 her rank in value of live stock was fifth and in manufactured products tenth. At this time her farm property was valued at \$2,052,917,488, and from these farms in 1909 there were produced crops valued at \$220,663,724. In the same year the value of all domestic animals including poultry and

bees was \$306,637,017. During the same year the value of all products from mines and quarries was \$31,667,525. These figures show the importance of her natural resources, which, it is well known, are not yet fully developed. It is possible to more than double the present products of the state. Her central position in the United States gives easy access to all the markets of the nation, thus making it desirable to develope all of her natural resources.

As an agricultural state, Missouri has ranked high and continues to do so; but this industry does not occupy as important a place relatively as it once did. Other industries are growing more and more important; and while this fact lessens the importance of agriculture, it tends to increase its absolute importance. A comparison of the rural and urban population, as in the following table,<sup>1</sup> will make this point clear.

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Table Number 5.

<u>Census Year</u>	<u>Population</u>		<u>Percentage of Population</u>	
	<u>Rural</u>	<u>Urban</u>	<u>Rural</u>	<u>Urban</u>
1890	1,822,219	856,966	68	32
1900	1,978,561	1,128,104	63.7	36.3
1910	1,894,518	1,398,817	57.5	42.5

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The rural population in twenty years, from 1890 to 1910, changed from 68 per cent to 57.5 per cent of the total population of the state; and at the same time the urban population increased as much. Such change is

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1. United States Census, 1910.

accompanied by a change in the occupation of the people. A smaller number of people are now employed in agricultural pursuits while those who have gone to the cities must find employment, often in the manufacturing industries.

There are several causes for this change in rural and urban population. The improvement in farm machinery has been a great factor. In the period of ten years from 1900 to 1910, the number of farms in Missouri decreased 7,842 while the average size of the farm had increased from 119.3 acres to 124.3 acres,<sup>1</sup> indicating that large scale farming is becoming more common. Such farming calls for men who are acquainted with scientific methods. They must know how to treat the various kinds of soil, how to improve crops and live stock, and how to manage a farm in the most economical manner. Consequently there must be schools where these farmers will be trained in scientific methods. It is not practical for the great mass of those who are to be the future farmers to attend colleges of agriculture, nor would it be necessary for them to do so if the courses offered in our public high schools and in other schools of equal rank included this training. The agricultural training now provided in our schools consists of one or two units of text-book work, but there should be provided four or more years of practical laboratory or field work

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1. United States Census, 1910.

in agriculture especially in our rural high schools.

The statement has been made that of the 600,000 increase in urban population between the years of 1890 and 1910, many find employment in the manufacturing industries. In 1849 there were in Missouri 2,923 manufacturing establishments employing 15,808 wage earners. This number had increased in 1909 to 8,375 establishments employing 152,993 wage earners while the industry gave employment to a total of 185,705 persons. These manufacturing establishments represent more than sixty different industries. The greater part of these employees have entered these industries with no previous preparation for the work. The industries, therefore, must train their workmen after they enter upon their work. This means lower wages, less efficient workmen, a poorer commercial product, and smaller profits while a greater amount of raw material is used because of the greater waste. The more efficient the workmen the higher will be his wages. It is the business of the state of Missouri to prepare these workmen before they enter employment.

In 1909 ten of the largest cities<sup>1</sup> of Missouri had 4,897 manufacturing establishments employing 106,250 persons, and the value of the product was \$330,078,000. The work given in only two of these cities, St. Louis and Kansas City, could be classed as preparation for the

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1. St. Louis, Kansas City, St. Joseph, Joplin, Hannibal, Springfield, Sedalia, Moberly, Webb City, Jefferson City.

vocational work which this more than one hundred thousand persons were doing. The other cities have some courses in manual training which are more cultural than vocational. There is certainly a need for industrial courses in the schools of these eight cities in which there are from twenty-five to two hundred sixty-one establishments employing from one hundred seventy to five thousand three hundred ninety persons.

The natural resources of Missouri will continue her as a great industrial state. Her rank in manufacturing was tenth in 1849. Since that time her rank in population has changed, but her rank as a manufacturing state continues the same. From 1870 to 1900 her rank in population was fifth but from 1900 to 1910 this rank was reduced to seventh while her rank as a manufacturing state did not change.

The mines and quarries are important in the vocational work of Missouri. In 1909, there were engaged in this work 30,697 persons, while the value of the product of the mines and quarries was \$31,667,525; and since that time there has been a great growth in this industry resulting not only in greater mineral production but also in increased manufacturing.

The total number of persons over ten years of age engaged in gainful occupations in Missouri in 1900 was 1,121,392, and in 1910 this number had increased to 1,288,336.

This shows a gain in ten years of 166,944 persons or 15 per cent while the increase in population of the state was only about 6 per cent. It is natural to ask at this point, what is the state doing to make efficient workers of this 40 per cent of her population? The work which is being done in the public schools of the state indicates that so far as the state is concerned this great army of workers is receiving but little aid, in most cases, no help.

The following table will show some of the educational conditions.<sup>1</sup>

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Table Number 6.

	<u>Population</u>	<u>In School</u>	<u>Per Cent in School</u>
6 to 20 years of age.....	993,998	646,866	65.1
15 to 20 years of age.....	401,195	142,022	35.0
15 to 20 <sup>Urban</sup> years of age.....	165,251	43,258	26.2
15 to 20 <sup>Rural</sup> years of age.....	235,944	98,764	41.9

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Table Number 7.

The Following Table Shows the Condition in 1914.<sup>2</sup>

Enumeration.....	923,963
Enrollment.....	706,364
Enrollment in high schools.....	47,431

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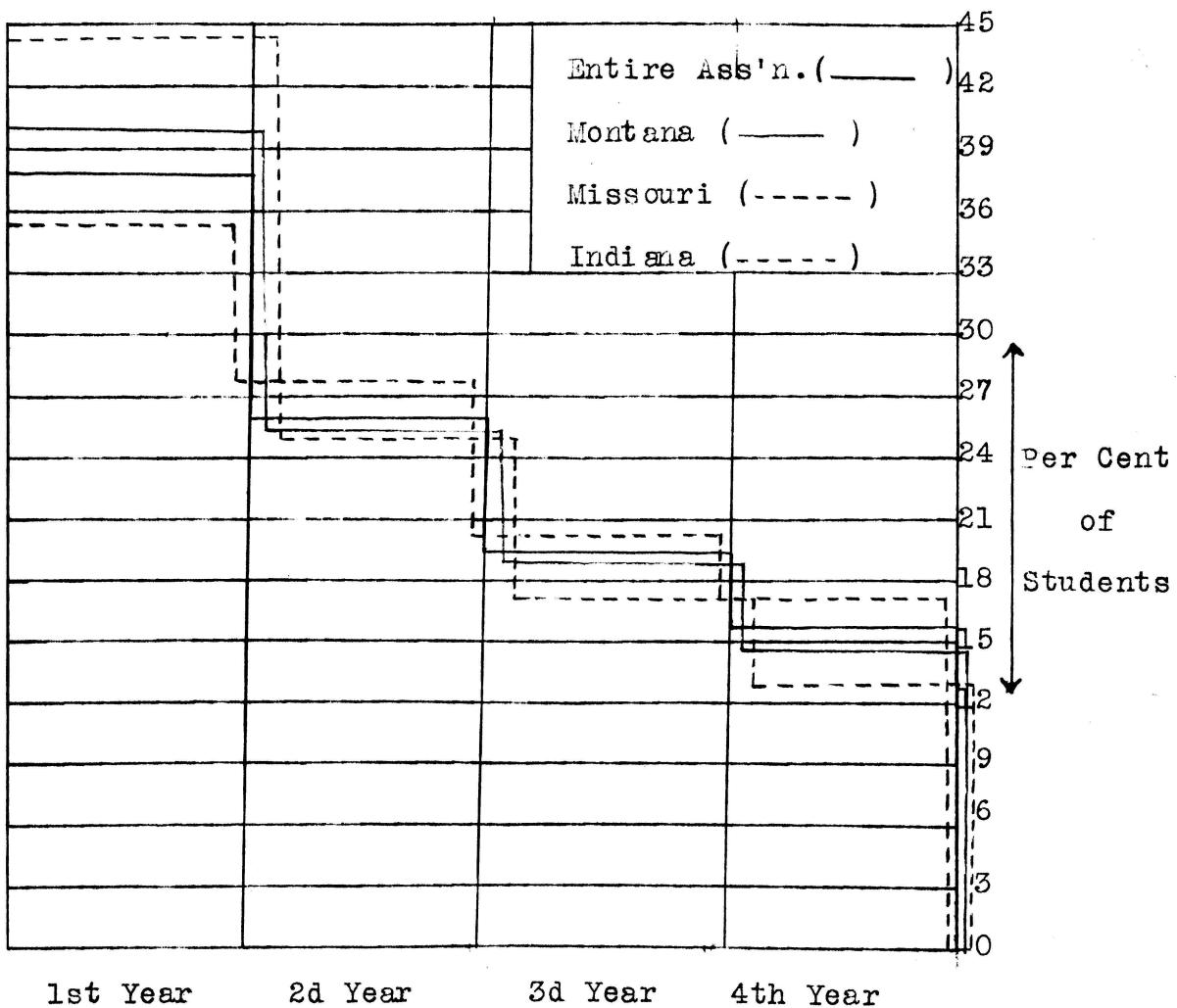
1. United States Census, 1910.

2. Superintendent of Schools Report, 1915.

These figures show that in 1910, forty per cent of all school children were from 15 to 20 years of age, and that only thirty-five per cent of these were in school. We find from the superintendent's report that for this same year there were 39,294 pupils enrolled in the high schools of the state. This number is only 9.8 per cent of those from 15 to 20 years of age and only 4 per cent of the total population. In 1914 there had been some increase in high school enrollment. At this time the enrollment in high schools was 12.8 per cent of the enumeration of pupils from 15 to 20 years of age and 5 per cent of the total enumeration of school children. Only a small percentage of the children are in the high schools of the state. There are no statistics to show to what extent this condition is due to the fact that we do not have vocational education in our high schools. The following graph will show that the state of Indiana , which has a system of vocational education, has the highest percentage of pupils in the fourth year of high school while Missouri with no system of vocational education, has the lowest percentage of pupils in the fourth year of high school. No doubt there are other reasons why Missouri does not hold her high school pupils, but the fact that her schools do not offer vocational training probably has something to do with it.

Figure Number 2.

Distribution of Students in the Four High-School  
Years in Montana, Indiana, Missouri and the  
Entire North Central Association



The following table shows the number of high schools of Missouri, the number of pupils enrolled, and the number of pupils enrolled in each subject.

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Table Number 8.

Schools.....	584	<u>Special Subjects</u>
Pupils.....	47,431	
English.....	44,955	Music.....2,548
Mathematics...	41,845	Drawing.....5,271
History.....	33,303	Manual
Science.....	16,847	Training...4,047
Agriculture....	8,047	Domestic
Latin.....	18,397	Science....5,774
German.....	7,913	Book Keeping.2,955
French.....	872	Shorthand....1,950
Education.....	1,582	Typewriting..2,637

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In this list of subjects the following may be treated as vocational: education, book-keeping, shorthand, and typewriting. In these courses there are 9,124 pupils, only one fifth of all pupils enrolled. When we add to this list agriculture, manual training, and domestic science, we then have 26,992 pupils, which is about 57 per cent of the pupils enrolled in school. It is probably true that in this number the same pupil is counted two or three times, so that the number of different pupils taking these courses is much less than the number given. In some schools these last courses are vocational, but in most schools they are cultural. If these persons were all getting vocational training, there would be only one seventh as many persons getting

training as there were employed in manufacturing industries in Missouri in 1910.

When the people of the state lived on farms and there was plenty of rich soil for all, it was not necessary for people to be trained; but with the changed conditions there is a greater need for more skilled workmen. Our state should train her citizens so that we shall not need to go to states and countries which have systems of vocational education to get a supply of trained workers. We should have a system of vocational education such that our own boys and girls will get as good training as boys and girls of other states. Our own citizens should be so trained that they may be able to compete with those of other nations. We should have a system such that, if the Smith-Hughes or any similar bill should become a law, we should be able to get our part of the federal appropriations. As educational conditions are at present, our people do not have equal opportunities with citizens of other states, and we should get but little benefit from such an act as the Smith-Hughes Bill. In the next chapter I shall outline a system of schools required to meet the needs of Missouri.

## Chapter II.

### A System of Vocational Education For Missouri.

The conditions shown to exist in Missouri prove clearly that the schools are not meeting the needs of the people. The schools are not offering the courses which the people feel they need as preparation for their work. If the schools were actually meeting the needs of the people, we should find a greater number completing the high school course. We now find that some who should be in school are employed, while others are idle. Many idle ones and some of those employed would be in school if they could see that the school was giving work which would make them more efficient in some vocation. The system of schools needed and recommended for Missouri is in keeping with the requirements of the Smith-Hughes Bill, so that if this or some similar bill should become a law, Missouri would be prepared to get her part of the federal appropriation, and at the same time would be giving her people such education as makes efficient workmen and honorable members of society.

The number of industrial workmen needed in the state calls for industrial courses in the high schools. These courses should be such as will provide training for those who are to enter the manufacturing industries. The census report shows more than sixty industries in the state,

but probably it will not be necessary for one community to offer training for all of these. An industrial survey of the community should be made for the purpose of determining what courses should be given.

There should be agriculture in all high schools which are attended by pupils who come from the farm or in any high school where there are several pupils who expect to make farming their vocation. The courses here given should not be text-book courses of one year in length but laboratory courses of four years. Agricultural courses should be largely confined to all-day schools; but where there is enough demand for part-time and evening courses, provision for these should be made. There should be short courses for farmers in the all-day schools during the winter season, provided a sufficient number should be interested in such work. The school must co-operate with the farmers. It must be ready to help, and in fact it is part of the work of the school to aid any farmer where such service is needed. This may be in such work as planning the farm, spraying and pruning fruit trees, and testing dairy cows. This cooperation provides the pupils with valuable practical work and at the same time teaches the farmer how the work is done in a scientific manner. Such plan of work is now in use in the high school of Boise, Idaho.

In practically all of the high schools of the state there should be courses in household arts. These

courses should be given in all-day, part-time, and evening schools. The courses should be laboratory courses four years in length, and not merely a brief course in cooking and sewing.

In almost every four-year high school there is need for commercial courses. There should be four year courses so planned that they will give a knowledge of commercial business, and not brief courses in shorthand, book-keeping, and typewriting. These courses should be made most practical and be given in all-day, part-time, and evening schools.

The cooperation of the school and the community must be brought about whenever possible. It has already been indicated how this may be done in the agricultural school. Similar plans should be used in the industrial, commercial, and household arts schools.

The all-day vocational schools should be open for any one who has finished the eight grades of elementary school work, regardless of age, and for any one who is fourteen or more years of age. The part-time and evening schools should be open for those who are sixteen or more years of age.

The purpose of restricting the part-time and evening schools to those who are sixteen or more years of age is as far as possible to prevent younger individuals from entering the vocations. The industries do

not want persons under sixteen. It has been found that those below this age are not an industrial asset, and many industries are now refusing to employ them. When a system of vocational schools is fully established in the state, it may then be desirable to raise the age limit to seventeen as has been done in Wisconsin and Pennsylvania. When pupils are held to the age of seventeen, they will then have had three years of vocational education, and in most cases they will continue another year so that they may get the full four years' work. Where this is not possible many will continue their work in evening schools or in part-time schools. It has also been found that many who get four years of vocational training enter special technical schools for advanced work. This continuation is most desirable since under present conditions the most skilled workmen in our state come from other states and from foreign countries.

There are two great difficulties which confront every state and every community which attempts to give the training above named. The first of these is a lack of trained teachers and the second a lack of funds. It has been shown that vocational courses are more expensive than traditional ones. At present in Missouri it is difficult to secure good competent commercial teachers. So in considering the needs of Missouri, we shall first

treat of the schools needed for the training of teachers.

A survey of the courses offered in the schools of the state, the university and the normal schools, will show that they are not sufficient to meet the needs for vocational teachers. In the university will be found two years of manual arts, while only about one-fifth of this work is designed especially for the person who is preparing to teach. The capacity of the plant at the university would be entirely inadequate to meet the needs for trained vocational teachers when these courses are placed in more high schools. The College of Agriculture, the School of Commerce and the Department of Home Economics are training vocational workers but do not offer special courses for training vocational teachers. Each of the normal schools is doing some work in manual training, but not one of them is prepared to do as much of this work as is the university. The normal schools are doing some work in agriculture, home economics, and commercial subjects, but not all that is needed. Our present system is inadequate for the training of teachers for the vocational work which is needed in the state.

Schools for this work may be provided in two ways; first by increasing the capacity of the training schools and, second, by establishing new schools for this purpose. The first plan may be the better for our

state at the present time. To carry out such a plan it will be necessary to make some changes in the work of these schools. A plan similar to that of Wisconsin could be followed. One of our present normal schools should be made a school of manual arts, one a school of home economics and household arts, and one a school of educational agriculture; the remaining school should do the work at present done by all; i.e., it should train teachers for the traditional subjects. Possibly there will be needed more than one agricultural normal school, and this need may be met by enlarging the capacity of the agricultural and household arts normal schools, so that each of these will be able to give the work in both agriculture and household arts. This plan would permit the university to offer higher courses for experts and research workers. The men and women here trained would be supervisors and administrators, not only for schools but also for factories, commercial enterprises, large scale farming, and construction work. Men and women must be trained for survey work in the vocational field, and this training should be given by the university.

Each of these schools should be so equipped that persons will work as nearly as possible under the conditions found in real life. Each institution should have a training school where these prospective teachers will be trained in the art of teaching one or more vocational

subjects. All related subjects, -- drawing, arithmetic, economics, sociology, and civics, should be taught as an aid to the main problem of vocational education. All courses in methods, management, administration, and supervision should be presented from the view point of vocational work. The courses in these subjects as generally found in the normal schools are not what is needed in the training of vocational teachers.

In addition to this training in school, all persons, before they receive license to teach, should be required to spend at least one year as wage-earner in their particular fields. The purpose of this last requirement is to bring them into sympathy and to acquaint them with the problems of the vocation. This work may be done at any time but preferably before the senior year; at least it should be done before the school work is finished though not until the course has been partially completed. Vacations may be spent in practical work. The completion of such a course is evidence of ability to do the work and entitles the individual to a certificate for vocational teaching in secondary schools.

There would be some who not having had a course in such schools as those named above, would still desire to do this work. The State Board of Education should have power to grant vocational certificates to such persons as can furnish evidence of sufficient knowledge of

the subjects. In no case should a certificate be issued to one who has less technical training, less teaching experience, or less practical work than those who take the work in the training schools provided by the state. The board shall have power to require of the candidate as they may see fit, an examination, a demonstration of technical knowledge of vocational subjects and of actual teaching ability, and records of work done as student and teacher, but must under no condition grant a certificate to one who has had less than these requirements.

These vocational schools should be under the administration of the State Board of Education. This board should be taken out of politics, and should not be, as now, an ex-officio board of officers with little interest in the schools. The board should appoint the State Superintendent of Schools who should also be secretary of the board. The Superintendent of Schools should appoint a supervisor of vocational education, whose appointment should be ratified by the Board of Education. This supervisor should be chosen for his qualification and need not be a resident of the state at the time he is chosen. The Board of Education should determine how many and what assistants the supervisor needs in his work. The supervisor should have the power to appoint these with the consent of the State Superintendent of Schools. These assistants need not at the time of appointment be residents of the state. Supervisors and assistants should

be specialists in their fields and should have not less than four years training beyond a secondary course. The supervisor with his assistants should be a department in the State Superintendent's office.

While the State Board of Education should have control over the vocational schools of the state, these schools are a part of the regular school system and are under the direct control of the local school board.

Any school district which desires to give vocational work should submit to the state board a request for the courses desired. When the state board approves of the courses, the local district may proceed to equip for the work approved; but this step must be taken in accordance with rules established by the board. If there be any question about the needs of the community asking for the vocational school, the board may require the vocational supervisor to make a survey of the district in order to determine what courses should be offered. All survey work should be under the direction of the supervisor; but if he needs more than his regular force in doing the work, he may, with the consent of the State Board, appoint experts to assist him in the survey.

When the vocational courses are introduced with the consent of the State Board of Education, they become a part of the regular school system of the district and are under the control of the local board. The local board

may appoint an advisory committee when it sees fit to do so. This committee should consist of both employers and employees, and should have no power except as an advisory body. The purpose of such a committee is to enlist the harmonious support of both employers and employees. In case both of these classes are represented on the board it may not be necessary to have such a committee. The matter of appointing the committee is in the hands of the local board, but this board may be advised by the State Vocational Supervisor.

The Supervisor and his assistants should inspect and supervise all vocational schools. The equipment, the teachers, and the methods of instruction should be approved by the Supervisor before the school should receive aid from the state. It should also be the duty of the Supervisor to collect statistics regarding vocational work throughout the state and elsewhere. He should also collect information in regard to vocational education and vocational schools in other states. All information collected, together with a report of the vocational schools of the state, should be submitted to the State Board of Education. The board should cause such parts of this report to be published as will be of benefit to the state.

The Board should make rules and regulation in regard to the buildings, the equipment, and the qualifications of teachers, which should be published and distributed to all schools giving vocational courses. This does

not mean that the work is not supervised by the superintendent of the district or city as is done in other courses. The management of these courses is to be put upon a basis similar to that of the present teacher training courses.

The second great difficulty to be met in vocational education is the lack of funds. The support of these schools should come from three sources, -- the local community, the state, and the federal government. Until our systems of taxation and education are changed, the burden of support must fall upon the local community; but there must be much aid from both the state and federal governments. The local support of these courses must be furnished in the same manner as in the case of other courses.

The initial cost of buildings and equipment for this work is great. The buildings are more expensive than ordinary school buildings, and there must be much apparatus and machinery which are expensive. Where agricultural schools are introduced there should be land for experimental and practical work. There should be not less than ten acres for each one hundred agricultural pupils enrolled. The state should encourage this work by paying one-half of the original cost of buildings and equipment. If the district already has buildings which may be remodeled satisfactorily, the state should pay one-half the

cost of the changes needed and one-half the cost of equipment. When the site, buildings, and equipment have once been provided, the local community should keep up the equipment and maintain the school, excepting the payment of teachers' salaries.

The salaries of all vocational teachers should be paid by the local district; but when the work has been inspected and approved by the State Supervisor of Vocational Education, the state should reimburse the district the amount paid in salaries. This amount should be applied to strictly vocational subjects and not to related subjects. The expense of all related subjects, including both equipment and salaries, should be paid by the local district. The state and federal governments should pay for the equipment and teachers of vocational courses only. In order to determine what are vocational courses the State Board should make rules and regulations defining them. These regulations should be accepted by the Federal Board for Vocational Education before they become binding.

The Smith-Hughes Bill, which is now pending in Congress, provides for an annual appropriation after 1924 of \$3,000,000 for teaching agriculture, \$3,000,000 for teaching trade and industrial subjects in secondary schools, and \$1,000,000 for the training of vocational teachers for agricultural, commercial, industrial subjects, and home economics. This \$7,000,000 for vocational education

is to be distributed among the states in proportion to the population, but each state may after 1924 receive not less than \$30,000 provided the state spends a like amount. The bill provides that any state having a part in this appropriation must accept the provisions of the appropriation. She must spend as much for vocational education as is received from the federal government. The state as has been indicated must provide for a system of vocational education which must be supervised by a board and the system of vocational education planned by the State Board must be submitted to the Federal Board for approval.

According to the bill, the Federal Board for Vocational Education is composed of the Postmaster General, the Secretary of the Interior, the Secretary of Agriculture, the Secretary of Commerce, and the Secretary of Labor. The Commissioner of Education shall be the executive officer of the board and shall carry out the rules, regulations and decisions which the board may adopt.

This bill will probably become a law before the close of the present Congress; but if it should not, we may expect that some similar bill will be passed before many years. Such a bill should make provision for the federal government to pay a great part of the salaries of all vocational teachers. This provision is just and

is needed because of the mobility of labor.

Our present State Board of Education is not qualified for the work that is to be done. The present board should be abolished and a new board created, the members of which should be appointed by the Governor. Such a board is needed to supervise and control vocational education and to perform other duties which can not be performed by our present board of politicians. The members of the new board should be chosen for their knowledge and interest in educational affairs.

The plan here submitted for the training of vocational teachers in our present normal schools will necessitate a change in the management of these institutions. There should be one Central Board of Control for all the higher educational institutions of the state. This board could so plan and supervise the work in the various institutions that there would be no duplication of courses. A total of more courses could be given at less expense to the state. Greater harmony would then prevail among the state institutions, and better appropriations would result.

A system of vocational education in the state will call for more funds. Our General Assemblies have been as liberal in making appropriations for the schools of the state as the funds of the state would permit, but there should be more money to meet the needs of the system. I do not care at this point to enter into a full discussion

of the subject of funds, which would involve the whole problem of taxation, but only to suggest two means of providing the funds needed; namely, to raise the rate of taxation or to raise the valuation of property.

The second method would call for no change in laws, for, in spite of the fact that in Missouri the average assessed valuation of property is approximately thirty per cent of its actual worth, the law requires that property be assessed at its full value. If the first plan is used, however, some legislation will be needed.

Throughout this paper I have considered vocational education in secondary schools only. I do not desire to discuss vocational education in the elementary schools, or what has been called prevocational education, but to indicate briefly what could be done in this line. The term prevocational education has not been clearly defined. It is not at all evident that any system of vocational education is needed in the grades, but it will be well for the work of the elementary schools to be reorganized. The supervisor of vocational education should aid the state superintendent and city superintendents in their work. This does not mean so to reorganize the work that it leads to vocational courses, but so to plan it that pupils may get not only the liberal subjects now offered in the grades, but also at the same time work which will better prepare for vocational courses if they desire to take them. Some courses which need to be

greatly modified are reading, history, arithmetic, nature study, drawing, and manual training. The liberal training given through these subjects should be no less, but the preparation for vocational work should be much more.

CONCLUSION

The present conditions of society clearly indicate that vocational work has been and is at present very much neglected. The natural resources and the great lack of trained workers in Missouri make the vocational problem very acute in this state. A system of vocational education should be established by a State Board of Education. The members of this board should be appointed by the Governor of the state, and this board with the State Superintendent of Schools should have charge of all public school work. The vocational courses should form a part of the regular school work and be under control of the local school board.

These courses should be supported by the local district; but when the work has been approved by a vocational supervisor appointed by the State Board of Education, the local district should be reimbursed by the state and federal governments for the salaries of vocational teachers.

Our higher educational institutions should be placed under a Central Board of Control. The work of these schools should be reorganized so that vocational teachers would be trained by the various normal schools of the state. The university should train experts, supervisors, and administrators for vocational work. These training schools for teachers should be supported by the

state and federal governments. The federal government should appropriate liberally for this work because of the mobility of labor.

END

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DEPARTMENT OF HOME ECONOMICS

May 17, 1916.

Dean Walter Miller,  
Graduate School,  
Academic Hall.

Dear Mr. Miller:

I am returning herewith a copy of the thesis submitted by Mr. B. F. Melcher for the degree of Master of Arts, which you asked me to examine. I feel that this thesis is up to the standard set by the University of Missouri for the Master's dissertation.

There is one slight change which I should like to suggest to Mr. Melcher. It seems to me that line 3 of the footnote on page 9 should read: "American Home Economics Association" instead of: "National Domestic Science Association". So far as I know there is no such thing as a National Domestic Science Association. I do know, however, that the American Home Economics Association has passed a resolution supporting the Smith-Hughes Bill.

Very truly yours,

*Louise Stanley*.  
Chairman Department Home Economics.

LS/R

UNIVERSITY OF MISSOURI  
COLUMBIA

HIGH SCHOOL VISITOR  
PROFESSOR HIGH SCHOOL ADMINISTRATION

gf

May 12, 1916

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Dear Dean Miller:

I am sending you herewith Mr. B. F. Melcher's Master's thesis. Enclosed you will find the receipt for binding. I recommend the acceptance of this thesis.

Very truly yours,



University of Missouri - Columbia



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Color settings grayscale, 8 bit and color, 24 bit  
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