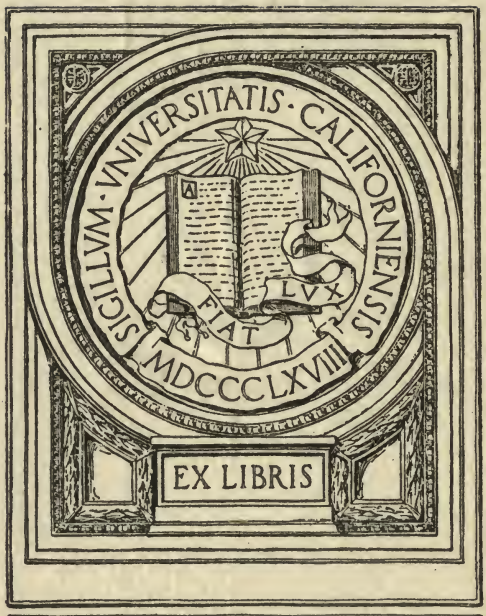
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THE PROBLEM OF VOCATIONAL EDUCATION

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INTRODUCTION

It is life which trains men — life abounding in deeds and thoughts, among men and things. Wherever there is vital interaction between a mind and its world there is real education. Educative power is, thus, broadly distributed. Its centres of influence are the social institutions — school, home, church, vocation, and neighborhood life. Together they bear the total work of training men, with all the economy and efficiency which comes through a division of labor. In proportion to the relative strength and weakness of their structures, they supplement and reinforce one another.

This distribution of educative power among the social institutions is by no means a fixed division of burdens, set once and for all by tradition or reason. The needs of society lay their heavy demands now upon one agent, now upon another. And in the shifting currents of social progress, some institutions once powerful are left weakened, if not helpless, while other institutions wax strong to meet the demands of the time. The homes of the urban industrial classes have

not the moral influence over children exercised by the family life of the farmer; the church grips fewer members with its theological doctrines than it did a century ago; the trades do less for their apprentices in the modern factory than they did when lodged in the household; the press has more influence; libraries are more plentiful; and the school has grown to be a modern giant where once it was a puny babe. The same old institutional forces beat upon the nervous systems of men, but the relative distribution of their work has changed, and is changing.

In all these variations of influence, one striking tendency stands out clearly: As the agencies for incidental and informal education become incapable of training men for their complex environment, society, becoming increasingly self-conscious, gathers up the neglected functions and assigns them to the school, the one institution entirely under its control. As church and family life ceases to keep pace with the moral demands of our intricate social life, the problem of moral education becomes conspicuous in the schools. As the work and play of children, under the conditions of city life, become restricted so as to deprive them of robust physical activities in the fresh air and sunshine, the school is called upon

to combat the danger with systematic physical training. As factory and shop employment becomes specialized and scientific, and the system of apprenticeship fails to make good workmen, the obligation to train efficient employees is thrust upon the schools.

Just now the shifting of vocational education from the field of industry to the school is the crucial problem of our school organization. The schoolmaster is confronted with the task of dealing with a problem alien to his experiences and contrary to his traditions. Our schools have always been dominantly cultural in their aims, but the new vocational training must be practical. The old education, in order to maintain national solidarity, dealt with a common stock of facts, habits, and ideals necessary to all men; the newer type of training, which is to supplement this traditional culture, is as variable and as specialized as men's occupations.

A thousand difficult questions are raised that school tradition cannot answer. The schoolmaster must grope for his solutions in the few established facts of his new case and build new methods, which will often be radical departures from all that his conservative mind has known and revered in scholastic standards. In accept-

ing responsibility for the vocational training of American children, the school plunges itself into a period of transition, in which old ideals are futile and new ideals but half-discovered. Clear thinking, the great need of the moment, is obscured by the controversies that inevitably arise when two sets of traditions, born of two separate institutions, are suddenly thrust together in a conflict which dulls tolerance, increases vehemence, and destroys poise. Only slowly, and under careful leadership, are the fundamental lines of solution laid bare.

Already, however, the fundamental principles that must guide us in the organization of vocational education have been revealed. A broad social point of view, more inclusive than the narrower visions of either the traditional schoolmaster or the industrial leader, tempers local traditions, reconciles opposition, and constructs new policies. A close study of experience at home and abroad in the matter of industrial training is concretely suggestive of what can and cannot be done in the domain of organization and teaching method. Such a measure of our educational experience in vocational training, as may be conservatively presented at the present time, is here outlined, with suggestive interpretations and

clarifications of the necessary terminology. It is offered in the faith that it will be of practical assistance in leading both the public and the professional mind into safe channels of thought and action.

THE PROBLEM OF VOCATIONAL EDUCATION

Some General Distinctions

If we consider the educative process broadly, we discover that a variety of agencies contribute to it. Under ordinary circumstances, the child learns writing in the school, language in the home, religious ideas in the church, games on the playground, and practical skill in the workshop. The theatre, the newspaper, and the club also contribute to his stock of knowledge, ideals, and habits. Within limits, the educative function of these various institutions is specialized. In the home, the child acquires the fundamentals of moral training, as well as a variety of physical habits and accomplishments. The home being woman's chief workshop, the girl acquires there also the knowledge and skill that make for her eventual vocational efficiency. Some homes also contribute the manners, interests, tastes, and knowledge that we call culture. In the workshop or on the farm, the boy ordinarily acquires the kind of education that eventually fits him to earn

a livelihood, to be a producer. The school gives its share of education in the school arts (reading, writing, number, drawing, etc.), and the beginnings of literature, history, and science, as elements of culture. The playground gives not only skill and means of physical development, but on it are developed a variety of the habits and attitudes which are moral or social in their nature. The newspaper, library, and the stage give not only a range of knowledge, good or bad, but also contribute to the unfoldment of vocational and social ideals and appreciations.

A further examination of the entire educative process will show that, as developed by each of the above agencies, it varies largely in degrees of purposiveness and artificiality. The child learns the family language through the simple and easy exercise of the instincts of imitation; the beginnings of vernacular language require no salaried teacher. On the other hand, the teaching of Greek requires specially trained teachers, and a conscious adaptation of means to ends; it presents the aspects of an artificial and regulated process. The normal child on the playground, with no oversight, and no artificial direction, acquires a wide range of powers and knowledge; but special instruction and appliances are neces-

sary to teach military drill or various forms of gymnastics. The teaching of reading is a process requiring usually much skill and conscious method; but once the mechanics are acquired, the growth of reading habits and the acquisition of knowledge in this field may proceed to a certain extent without teachers in an environment of books and newspapers. The boy on the farm acquires many forms of vocational skill with practically no conscious or purposive teaching; but the metal-worker's art, and the engineer's knowledge require careful and expensive education of an artificially organized kind. We thus see that a consideration of the educative process in any field requires that we consider the learning which is possible without expensive and purposive adjustments (unorganized education), and that which in greater or less degree demands them (organized education).

Again we may consider the entire educative process from the standpoint of the various ends or purposes which may be kept in view in selecting and appraising means and methods. All ordinary education readily lends itself to a fourfold division in this connection. (a) There is the kind of education whose chief aim is to produce and preserve bodily efficiency, such as health,

strength, and working power. This we call broadly, physical education. (b) Next is the kind of education whose chief aim is to promote the capacity to earn a living, or, expressed in more social terms, the capacity to do one's share of the productive work of the world. (c) A third form of education is that designed primarily to fit the individual to live among his fellows. Religious education, moral instruction, and training in civics contribute to this end. (d) There is furthermore the kind of education that aims to develop intellectual and æsthetic capacities, apart from any practical use to which these may be put. This education is frequently designated by the term "cultural," but in a somewhat special sense of that word. The two last divisions, which contribute respectively to the improvement of social life and to the development of personal culture, will in this discussion be grouped together under the general designation, "liberal education." That education whose chief aim is to fit for productive capacity will be designated as "vocational."

What is Liberal Education?

Historically speaking, a liberal education is that which aims to broaden the intellectual and emotional horizon of the individual, and espe-

cially in those fields that are not involved in the earning of a livelihood. Schools of liberal arts have always sought to remove youths for some time from the pressing necessities of practical life, and to open up to them the traditions, sciences, and arts which are part of the common heritage. We commonly associate the idea of liberal education with leisure, because some leisure is and has been necessary to its acquisition, and in the leisure periods of life liberal education finds its greatest opportunities for expression and application. It is the aim of liberal education to give mastery of those arts — reading, writing, number, drawing — which constitute the open doors to the world's stock of knowledge and ideals; and to add the beginnings of those studies — history, literature, science, art — which contribute to the enlightenment and enlargement of the individual, for the purpose both of personal gratification and enjoyment, and of giving him the outlook, the ideals, and the knowledge which render him a better member of the social group to which he belongs.

Liberal education may be interpreted as that which concerns itself with the consuming, as opposed to the productive processes in life. Each individual uses in greater or less degree, accord-

ing to his cultivation and social capacity, the world's stock of literature, history, music, art, science, and human associations, as well as the embodiments of these in more material forms. It is the function of liberal education to teach persons how to use or consume to the best individual or social advantage the work of others. Liberal education is not primarily concerned with the making of the efficient producer, although it makes important indirect contributions to that end; but it is vocational education which aims to train the producer as such, and it looks primarily towards specialization. It has, as will be shown later, its own pedagogy; and its methods may even be in opposition to those of liberal education.

Those teachers and leaders, who have developed for the world its systems of liberal education, have often felt obliged to preach a certain unworldliness to their disciples. To them, as to the religious devotees of all ages, the practical affairs of life were apt to be associated with something that was common and vulgar. The schoolmaster of the past not only was not a practical man, but, to a certain extent, his success in his work depended upon his contempt for things practical. It was his mission to uphold the de-

sirability of those activities which are not connected with bread-winning, and which, at least from a short-sighted point of view, are even in opposition to it. The home and the shop, where the practical affairs of life controlled, were always calling the schoolmaster's followers away from him; consequently, in time he grew to distrust them, and naturally to undervalue their part in the integral process of the development of the individual.

In these later days, we have learned more about the psychological side of liberal education. We have discovered that, so far as large numbers of individuals are concerned, the truest form of liberal education does not consist in dealing with those things which are most remote from the practical affairs of daily life. But it nevertheless remains true that there lingers a considerable hostility, on the part of those who promote liberal education, to that teaching and those activities which are controlled by the obvious necessity of contributing to the world's practical work. A man may not be trained as a bookkeeper, or a machinist, or a farmer, at the same time that he is learning to be a student and lover of music. For him who would indulge in the pleasures of literature, time must be set apart from the prac-

tical affairs of life. Too early devotion to bread-winning occupations, even as a learner, may deprive the boy or girl of the opportunities to open doors of science, art, literature, history, and social knowledge. Consequently, we may affirm that not only does the schoolmaster still inherit an opposition to vocational education, but within limits, his opposition is justified by the fact that liberal education and vocational education represent somewhat different aims, and, historically speaking, involve different systems of pedagogy. As will be shown later, each contributes somewhat to the other; but in spite of the demands of the practical man, the world needs more, rather than less, of liberal education, provided it does not close the door to ultimate vocational efficiency.

What is Vocational Education?

In vocational education, the choice of materials and methods is primarily determined by the necessities of some of the numerous callings or groups of related callings, into which the workers of the world have divided themselves. That vocational education which is specialized to the preparation of lawyers, physicians, and teachers, we call professional; that which is designed to train the bookkeeper, clerk, stenographer, or commer-

cial traveler, including business leadership, we call commercial; that which is organized with reference to the needs of the bricklayer, the machinist, the shoemaker, the metal-worker, the factory hand, and the higher manufacturing pursuits, we call industrial education; that which conveys skill and knowledge looking to the tillage of the soil and the management of domestic animals, we call agricultural; and that which teaches the girl dressmaking, cooking, and management of the home, we call education in the household arts.

In some form or other, vocational education is older than liberal education, for the simple reason that men have always had to have occupations involving more or less skill, by which they could earn a livelihood. In the primitive wilderness, the boy followed his father in hunting and fishing and, in time, by processes of imitation and suggestion, coupled with the learning which comes from trial and error, he became himself a fairly efficient hunter or fisherman. At the same time, the girl was at work with her mother, acquiring the simple arts of preparing food, dressing skins, and tilling the soil, which were the woman's contributions to the necessary work of the time. By and by, some of the arts became highly complex, and the processes of transmitting them from

father to son necessitated better organization. There grew up in the ancient crafts the system of apprenticeship, which directed and organized the efforts of the young learner. The apprenticeship system, as inherited by certain of the great vocations of the Middle Ages, was undoubtedly the most perfect system of vocational education that the world has ever seen.

From what has been said, it is obvious that other agencies than schools have long been responsible for vocational education. The home was the first great instrumentality to this end. This was supplemented and, at times, succeeded by the systems of apprenticeship which have been mainly carried out, under the sanction of the law, by private or philanthropic agencies. Society has always recognized the very great necessity of some form of vocational education, but both the interests and capacities of those concerned have commonly made it possible to dispense with State control and support of it. Private and philanthropic agencies have usually been sufficient.

It is true that certain of the higher vocations have long been acquired under school conditions and, not infrequently, at public expense. The mediæval universities had their professional schools of law, medicine, and theology. The mili-

tary education of leaders was long ago made a national obligation. Not a small part of the preparation of architects, artists, and, sometimes, literary leaders, has been deliberately assumed by governing bodies. In America, where private and philanthropic effort was not sufficient, even the national government has assisted in the founding of schools of agriculture and engineering — essentially schools of higher vocational education. Three fourths of a century ago, Massachusetts began to prepare at public expense teachers for the public schools, — a special form of vocational education. In all these instances, the State has stepped in to supply a well-defined need in fields where private effort did not suffice. The State did not do this for the sake of the individuals who were to be educated, but in its own interest, inasmuch as it greatly needed these highly trained leaders.

But in another field, society early found public action necessary for the development of vocational education. There are those unfortunates — delinquents, dependents, and defectives — for whom the home no longer exists, or for whom the home is a wholly insufficient instrument of education. First under philanthropy, and then under State action, schools arose for the purpose of giving

what was conceived to be the necessary education for these classes. But liberal education was soon found to be inadequate, because it left the individual unprepared for the practical affairs of life: so in almost all cases, institutions attempting the education of the orphan, the cripple, the deaf, the blind, and the young delinquent, have found it necessary to evolve vocational education. These institutions have done a remarkable amount of experimenting, and the results of their efforts, inadequate though they yet be, are worthy of profound study on the part of all who are interested in the general theory of vocational education.

In another field, vocational education under school conditions has justified itself. At the close of the Civil War, the social life and organization of the negro people of the South were in a badly disorganized condition. Family relationships had been much impaired, and were frequently non-existent. In other words, the home as an agency of education, vocational or otherwise, was unable to perform its customary functions. Apprenticeship agencies had not developed; consequently, the acquisition of vocational skill and interest was not provided for among the negroes. The most successful schools that grew up to meet this need were those

which offered both liberal and vocational education, and in a sense made the latter the groundwork for the former. In the best negro schools of the South to-day, one will find many vocations taught in a very practical and effective manner, and it is generally conceded that the social effects of this training are genuinely worth while.

We may sum up by saying that the education whose controlling motive in the choice of means and methods is to prepare for productive efficiency is vocational; that vocational education, more or less unorganized and resting largely on native instincts and capacity, has always existed; that it tends to be organized under school conditions only where special demands or necessities exist; and that from the standpoint of social necessity, vocational education given by some agency is indispensable.

The Modern Social Need of Vocational Education under School Conditions

It must be acknowledged that there is abroad in all civilized countries a growing conviction that vocational education should be better organized and more efficient. If this conviction is well founded, it rests upon one or both of two conditions: Either the older agencies — the home, the

shop, and other forms of participation in productive industry — have lost their efficiency; or else the demands of modern life are changing, and imposing requirements which can be no longer met by these agencies. An analysis of the various types of productive effort will show that in some cases one, and in some the other, condition prevails; while in not a few instances, the contemporary situation is the result, on the one hand, of the decay, in old institutions, of vocational teaching, accompanied by a corresponding increase in the complexity and more scientific character of the industries themselves.

It is a matter of common observation, for example, that the apprenticeship system in many trades has been rendered ineffective by the disappearance of the old form of industry in its complicated form. What is known as the factory method of production has to a large extent eliminated the handicrafts in which apprenticeship had attained its better development. Specialized production prevents the shop from offering opportunities for a rounded or efficient vocational education.

On the other hand, the home as an educational agency breaks down in those cases where the industry is centralized, and the growing

child no longer participates in the processes carried on in proximity to the home. Under more primitive industrial conditions, the weaver, the metal-worker, the baker, the cabinetmaker, the blacksmith, and the printer worked in or adjacent to the home; the boy early became an assistant and with alert instincts soon acquired a considerable insight and experience, which contributed a valuable foundation for subsequent study. But the urban home offers no such opportunities; the father goes far away to his work, and, from the boy's point of view, the most conspicuous fact about the factory, is the sign of "No Admittance" over the door. Here we have a well-defined instance of the loss on the part of the home of its power to perform its part in the educational process.

The farm furnishes an instance of another kind. It has always been regarded as a valuable agency in vocational education, because of the richness of experience, and the necessary obligation for participation in productive industry to be found there. The farm of to-day is, at its best, as effective as it has ever been to transmit from father to son the simple arts of agriculture and stock-management.

But modern agriculture has tended to become

more than a simple art; it is increasingly a field of applied science. The father of to-day may be fairly competent in the old type of farming, but be quite incompetent to convey to his son the scientific principles and practices on which the new and successful type of agriculture must rest. The tillage of the soil, the selection of seed, the rotation of crops, the destruction of insect pests, the harvesting and curing of various products, the feeding of stock, the packing and marketing of things to be sold, —all these involve more and more a kind of scientific insight and training, which can be acquired only under special conditions of education. Here the home has not declined in efficiency, but the demands of modern life are such that it can no longer meet the modern need for vocational education.

Everywhere the social worker is confronted by deplorable consequences of these developments of the modern economic system. These are the incidents and not the necessary products of that system, however, and it would be the sheerest folly to desire to restore the old and less effective forms of production for the sake of the educational possibilities which they contained. Everywhere we see thousands of boys growing up through the critical years, with no

opportunity for effective training for a vocation. They enter the non-educative occupations only to emerge therefrom as handicapped, unskilled laborers. Everywhere under city conditions, we find girls less and less qualified to enter on home-making, because of the lack of educational opportunities in this field, for the want of which the home can, in relatively few instances, be held responsible. The agricultural population of competing areas succeeds only in proportion as the opportunities for agricultural education have been made available to considerable numbers of those who choose this field of productive effort. In many lines of modern industry as practised in the United States, only the lower forms succeed, owing to absence of skilled labor. American manufacturers do not choose unskilled labor, but have been compelled, in many instances, to adapt themselves to it, wasteful and unsatisfactory though the process may be.

The evidence that the old agencies of vocational education — the home, the shop, and other means of participation in productive industry — are no longer sufficient, could be multiplied. It is one of the certain social facts of our age. There can be little doubt that, in the process of social evolution, the time has arrived when voca-

tional, as well as liberal education must be conferred, so far as the large majority of people are concerned, by institutions especially devoted to this end. But these institutions must be schools. They must be specially organized for the purpose of this education, and they must select their courses and methods and teaching staff with this end in view. In other words, the period when vocational education must, of necessity, be carried on under school conditions has arrived, so far as the majority of callings are concerned, as it arrived decades ago in the matter of professional education, which is only one division of vocational education.

Should the State Support Schools for Vocational Education?

It is a significant fact that liberal education has attained its profoundest development under the auspices of the State. As long as society in its corporate capacity refused to interfere in this field, liberal education was a matter for the select few — the so-called leisure class. We well know the history of the evolution of the State's support and control of liberal education. Prior to the Reformation, the family and philanthropy (largely represented by the church) did good service in

this field, but after the Reformation, it was seen by those who were concerned in producing in society the largest number of able citizens, that the State itself must guarantee the opportunities for liberal education to all. Hence evolved the public school system, from its early beginnings in America and Europe into the magnificent institutions of to-day. Under public support, were first offered the opportunities for the simple school arts; but the public school system has gradually been extended to include all that which is now comprised under the conception of secondary education, and in many parts of the world, also includes the higher, or collegiate stages of liberal education. The policy of the State in this field in all civilized countries has been distinctly opposed to the principle of individualism, or *laissez faire*. More and more the competition of public effort has made difficult, if not impossible, private activity in the conduct of schools. More and more, the schools, the teachers, the material equipment of elementary, secondary, and higher liberal education, have been made freely available to the youth of the community. If the principle be called socialistic, the modern civilized State has committed itself certainly to a highly socialistic policy in liberal education, and it has

pursued this policy, partly out of regard for the individual, but largely animated by the spirit of the higher social self-preservation.

During the same time, however, with reference to the education which could be called vocational, the modern State has, with certain exceptions, followed if anything an opposite policy. It is true, as previously indicated, that there have been fostered public professional schools, normal schools, and those for the higher agricultural and engineering callings; and that the State has made vocational education a part of its contribution to the education of the mass of helpless children of the community; but, in all other respects, America and Great Britain, and to some extent the continental European nations, have only grudgingly recognized any obligation on the part of the State to lend its aid to a development of vocational education, as it does to that of other forms. Philanthropy has contributed to the establishment of some schools and in certain directions, as in commercial education, private effort for gain has been sufficient to procure some very respectable developments. On the whole, however, it seems to remain true that vocational education in schools under private or philanthropic effort will remain as circumscribed and partial as was

liberal education before the State entered the field.

Within recent decades, the continental European countries have increasingly assumed responsibility for vocational education under State support and control. The story of this needs no elaboration here, but it is a fact that in Germany, Denmark, Switzerland, France, Norway, and Sweden, a great variety of schools with vocational intent have arisen, which claim and obtain substantial aid from the State. To a certain extent, Germany has made the acquisition of vocational training an obligatory matter which the family may not disregard.

In America there is a growing conviction, on the one hand, that vocational education under school conditions is a necessity for the great majority of workers, and on the other, that these schools can be provided adequately only by State support. It is a generally accepted political principle that the State should not perform those functions which private effort can willingly and efficiently accomplish; that the State should reserve as its province those fields of human necessity where private and philanthropic powers are insufficient to the social needs of the time. It is from this point of view that the desirability of

State action in the sphere of vocational education must be judged. We have first to answer the question: Is vocational education a social necessity? and in the second place: Can other agencies than the State effectively carry it on? A variety of keen social observers have practically come to the conclusion that State action is now necessary under American conditions in this field. They are convinced that the safety of the State and the happiness of individuals demand a better vocational education than is now obtainable; they cannot see that the older non-school institutions are or can be made competent to this end; they are convinced that, under the conditions as they exist in a large majority of callings, vocational education must be obtained under school conditions; and they believe that these can be successfully developed, maintained, and controlled only by that agency which expresses the collective wisdom and power of society, namely, the State.

Types of Vocational Education

For convenience of discussion, it is desirable to classify the callings, into which nearly all men and women enter, into five great divisions.[1] These are: —

[1] In current discussion in France, a sixth division — the marine callings — is made.

(*a*) The professional;

(*b*) The commercial;

(*c*) The agricultural;

(*d*) The industrial, or those connected with manufacturing and the mechanic arts;

(*e*) The household.

It is obvious that each one of these great divisions possesses a number of distinctive characteristics. The professional callings are noted for the elaborate development of the educational means to be employed in them, and the length of time given to preparation for them. The commercial callings range from those into which girls and boys enter at the age of ten or twelve — street trading, department store work, and the like — to those which are, in themselves, *quasi* professions. The agricultural group comprises a variety of specialized occupations, involving tillage of the soil, care of animals, and the like; also ranging in complexity from the relatively simple and unskilled to those which involve almost professional capacity. The most complex group is that here called the industrial, — embracing the great variety of crafts, trades, and manufacturing pursuits. As is well known, these range from the highly specialized occupations, into which children, women, and untrained men may enter with little or

no preparation, to the higher mechanical and engineering callings which possess an elaborate technique. The household arts division here embraces mainly the group of callings that centre around the home, and is intended to exclude those processes which, like weaving, spinning, clothing-making, fruit-preserving, baking, and the like, have become separated from the home, and are to be classed as manufacturing occupations. The phrase "home-making," however, still implies the possibility of considerable attainment in applied art and science, when these are involved in the preparation of food, dressmaking, the care of children, and, in general, the management of a home. In the interest of logical completeness, a sixth division should be recognized, as in France, to embrace the callings, like those of the fisherman and the sailor, which have to do with the sea.

For further convenience, we may consider various stages, or degrees, in the educational preparations for the above groups of occupations, corresponding to the terminology now used in liberal education: We may call that vocational training, which is adapted to persons of average capacity under fifteen years of age, "elementary"; and that which takes youths regularly from fifteen to eighteen or nineteen, "secondary";

while that which presupposes an age more than eighteen, and corresponding attainments, may be called the "higher vocational training."

Professional education is commonly classed as higher education; that is, it receives students after the completion of a secondary and sometimes collegiate education; but it is also true that, under some circumstances, the character of the elementary, and especially of the secondary stages, is determined somewhat by the probable requirements of the profession subsequently to be studied.

We now have under school conditions higher agricultural education, and the beginnings of that of elementary and secondary grade, these terms being partly determined by the age of pupils concerned, and partly by the degree of intellectual advancement required before the vocational study may be taken up.

In the commercial callings, schools are found for the higher, but only rarely for the lower levels, notwithstanding the fact that the bulk of workers are found in the lower grades of these callings. Certain specialized phases of commercial education, like bookkeeping, typewriting, and stenography, have already been well developed under school conditions.

In the industrial group, the higher levels (if we may so classify the preparation for the engineering and technological occupations, which might also fairly be classed as professional) are already well supplied with schools. It is the aim of contemporary movements in the United States to supply more extended opportunities in the secondary field, where wage-earners may be reached.

In the household arts, there exist at the present time almost no genuine vocational schools, although there are widespread opportunities for some partial study and practice of these arts, as phases of liberal education.

Pedagogical Divisions of Vocational Education

Vocational education under school conditions presents a wide range of difficulties, many of which grow out of the peculiar pedagogy of the subject. It is well known that in vocational education, as carried on in the home and the shop, the strong feature is still to be found on the practical side; that is, most of what the student learns, he learns by actual participation. The weak side of this vocational training is its absence of theory, its inability to give the student a comprehension of the laws and principles involved. On the other hand, the school is peculiarly strong

in its ability to impart the theory or abstract phases of the vocation, but is only partially adapted under existing conditions to give concrete participation.

In the study and practice which contribute to vocational efficiency, we may distinguish three aspects, each involving distinct pedagogical characteristics and special problems of administration. To train the horticulturist, for example, it is necessary to give him a variety of practical experiences in working with soil and plants and with the problems of marketing. In addition, he may, and should, study those phases of botany, physics, chemistry, entomology, bacteriology, meteorology, economics, etc., which contribute useful technical information and principles. A further field of possible study is found in the history of horticulture and the practice of that craft in other parts of the world, the evolution of plant life, etc. The first group of studies and practices may be called the concrete, specific, or practical; the second group, the technical; and the third, the general vocational studies.

In the preparation of the machinist, practical work will be suggested in connection with the use of the lathe, the forge, the drill press, and other tools regularly employed in that calling.

The technical studies will be found in drawing, shop-mathematics, the principles of mechanics, etc. The general vocational studies may consist of readings in the history of metal-working, the evolution of modern industry and the place of iron and steel therein; in the potentialities of trade-unionism, industrial coöperation, and the like.

For the youth who is preparing to work in a commercial calling, practical studies are to be found in the actual work of bookkeeping, typewriting, business practice, and salesmanship. Technical studies may be derived from these; also German, higher mathematics, commercial law, etc., may be pursued as technical studies. General vocational studies may be found in the history of commerce, geography (which for some callings would be a technical study), readings about industry in other fields, and the evolution of transportation and exchange.

In the study of home-making, the girl would, in the actual performance of household tasks such as needle-work, cooking, cleaning, nursing, and the like, find the concrete basis in experience for complete vocational study. Related technical studies will be found in those phases, however simplified, of chemistry, physics, bac-

teriology, economics, architecture, and exchange, which contribute to the larger vocational efficiency. As general vocational studies, a variety of readings in the historic aspects of the household, the achievements of modern sanitation, the work of charity and philanthropy, and protective legislation suggest themselves.

In existing schools where a complete vocational education is carried on, these three aspects are already found. In the training of teachers, for example, the practical work is found in the practice school, and other forms of apprenticeship. Technical studies are usually found in the fields of applied psychology, method, and special studies in subject matter. The history of education, sociology, educational practices in foreign countries, and the writings and biographies of educational reformers constitute the general vocational studies. In the training of the physician, the dissecting-room, the clinic, and hospital practice provide the concrete elements. Anatomy, materia medica, chemistry, and other studies supply the need for technical information and principles; in addition, the history of medicine, medical sociology, and medical jurisprudence, as well as biology and psychology, may be regarded as general vocational studies.

From this analysis, certain conclusions may be drawn. In the first place, as regards the general vocational studies, it will be apparent that these involve methods and administration not unlike those found in the field of liberal education; they are based largely on books, and have as their aim, the stimulation of ideals and vocational interests, rather than the acquisition of useful information. From some points of view, these general vocational studies may be regarded as the luxuries of vocational education, although there can be no doubt that they have a direct usefulness because they stimulate the interests which tend to make a vocation attractive, and which undoubtedly broaden and prolong the productive life of the worker.

In the second place, it may be noted that the technical studies as described, however they may vary for different vocations, may also be pursued largely under school conditions. To a large extent, these technical studies consist of art, mathematics, and science, in their various applications. It will be noted, however, that in vocational preparation, not so much of pure science and its fundamental principles, as applications, are implied. Bacteriology, for example, as a general science, may be pursued by but few people,

but there are certain applications of bacteriology which every nurse, housekeeper, and farmer may, and should, learn. Meteorology is a difficult science, but from meteorology may be taken certain specific situations which may, and should, be taught to every farmer. The same principle applies in the case of mathematics, although its application is yet obscured by the traditions of teaching in this field. For vocational purposes, the mathematics needed by the machinist differs widely from that needed by the farmer; how far the bookkeeper may need algebra in any way may be questioned; and on the other hand, the housekeeper needs a form of applied mathematics essentially different from all of the foregoing.

In the third place, the concrete or practical work as outlined above involves a pedagogy and administration fundamentally different from that found in most existing schools. It is at this point that the traditional forms of education practically break down; and it is in this respect that the problem of vocational education, especially in connection with the training of youths between the ages of fourteen and eighteen, presents its greatest difficulties. Modern experience, as well as theory, tends to demonstrate that vocational education which ignores or slights this

phase of practical training is largely futile. Furthermore, the same experience seems to indicate that the concrete and practical must not follow at a considerable distance technical and general vocational studies, but rather accompany, and in many cases, precede the same.

The Order and Relation of the Pedagogic Stages in Vocational Education

We have seen that, historically, the institutions which in the past gave vocational education were especially strong in the practical or concrete aspect of their subject, and weak in the more abstract phases. The home, farm, and shop have always provided an abundance of practical tasks and examples whereby to teach boys and girls the simple vocational arts. Under the apprenticeship system, as fostered by guilds and governments in the past, the courses in practical work were especially complete as respects length, comprehensiveness, and thoroughness.

On the other hand, the school has often been well equipped to give readily many of the theoretic or more bookish phases of vocational preparation. Many types of complete vocational education have involved the coöperation of the two kinds of agencies. Evening schools, for

example, have often taken mechanics who are already employed, and have given them something of the drawing, mathematics, and science, which they might need to supplement the practical learning of their craft. Correspondence schools have flourished owing to their ability to give to the employed worker just the facts in drawing, science, and other theoretical studies which he might need. To a large extent, the continuation work in the German schools is of this order. It takes various groups of boys and girls, who are employed in the trades, and gives to them the needed supplemental education.

In England, a considerable range of what are termed engineering or higher mechanical occupations involve the requirement that stages of study shall be alternated with periods — sometimes as much as a year in length — of actual apprenticeship in the industry itself. So widespread have been developments of this sort, that it not infrequently happens that educators and others think of vocational education solely in terms of the general and technical studies involved. This notion has received added emphasis from the fact that the higher reaches of all vocations require relatively so much theoretical preparation as to make it appear that

the theoretical study is the essential and vital part.

It is becoming apparent, however, that a more satisfactory theory of the pedagogy of vocational education must be developed. So far as the rank and file of students is concerned, it is increasingly evident that the more abstract studies, when not intimately related with concrete practice, fail to work out into the results expected.

The abstract studies are necessary, but they must accompany, or be preceded by, a considerable amount of actual participation in productive work, to the end that genuine vocational efficiency may result. It is even apparent that those modified forms of participation, such as are often found in business schools, manual training schools and classes, agricultural schools, and household arts schools, are of little service in vocational education because of their remoteness from the conditions of genuine productive work. These courses and studies will undoubtedly be found to have value, when they are arranged to follow, rather than to precede, a considerable amount of actual participation: *e. g.*, it is not impracticable that, for a young apprentice who is working under shop conditions, a certain amount of work devoted to special exercises for the attainment of

particular types of efficiency might well be worth while. For the farmer's boy, who brings to the agricultural school a considerable body of experience acquired under conditions of reality, the exemplification of modern processes as school exercises may have decided value.

It is, furthermore, becoming more and more evident that the technical studies, such as mathematics, drawing, physical science, biological science, art, and the rest, have a genuine functional value in vocational education only when they are closely integrated with the educational results acquired through participation in the productive processes themselves. It is probably psychologically true that, for the average person, the study of these applied arts and sciences, quite apart from and anterior to any participation in the productive processes, is futile and unproductive so far as vocational efficiency is concerned. Nothing can be more certain, however, than that the study of these same subjects, in close interrelation with the productive processes, tends to expand rapidly the capacity of the worker. We may then base on these considerations a tentative theory of vocational education.

When the time arrives in the development of the boy or girl that he should seriously under-

take preparation for a calling, it is necessary that somehow and somewhere he should be able to devote a considerable time to actual participation in the concrete processes of the calling itself. He should get very near to reality, not only as regards the external characteristics of the work produced, but also as regards its market value, its rate of production, and the social circumstances attendant upon its production. Having thus come intimately into contact with reality, he should have time set apart in which to study the more theoretical aspects of the calling. Here again, however, a sound theory would seem to require that mathematics, science, art, history, and other related subjects should not require such an order of presentation as to detach them from the experience of the young worker. This has undoubtedly been the vice of a great deal of the technical study carried on in schools for the purpose of supplemental education. Between the experience of the worker and the studies in the schools, there have been too few points of contact to serve to create true pedagogical efficiency.

From this point of view, for example, in the making of the true agriculturist of middle rank, we should expect the boy to participate for a part of each day, or week, or month, or year, in the

actual productive work of the home or school farm. We should expect him to study, not general botany, but that botany which is naturally suggested by the conditions under which he works; his study of fertilizers, from the chemical and economic point of view, should begin with the fertilizers which he uses and the conditions under which, in attaining practical results, he uses them; his study of bookkeeping should grow out of the income and expenditure conditions under which the work in which he participates is carried on; his study of physics should rest on the foundation of his actual experience.

Similarly, in the making of the mechanic, we should expect the boy to go to work either in a school, a shop, or a factory, where he could begin at the simpler stages of productive work, and where, from day to day, his work should be squared up with the conditions of actual production. This phase of his training should be such as to require shop clothing, shop hours, shop associations, the standards of shop production, and some knowledge, and perhaps some sharing, of the actual value of his output. Under the phases of this experience can be collected related studies in drawing, applied science, art, bookkeeping, economics, the ethics of trade-unionism, and all

the other studies which have a greater or less vocational significance.

In the preparation of the girl for the specific work of home-making, a variety of opportunities for concrete participation suggest themselves. Already in this field, we have a considerable variety of technical studies; but, in so far as these are ineffective at present, their weakness is due to the lack of correlation between them and the home experience on which they are presumed to build.

The commercial callings now present, for certain occupations, well-worked-out school conditions of participation, especially in typewriting and certain forms of bookkeeping. On the other hand, it is evident that we have yet by no means solved the problems of providing the right kind of experiential basis for a considerable range of the clerical occupations.

It must be at once admitted that, for a great variety of vocations, we can yet hardly see how, under school conditions, the concrete basis of participation in productive work can be found.

Coöperation of Agencies in Vocational Education

The foregoing analysis suggests that in many fields, the most effective vocational education might be achieved by the systematic coöperation

of agencies. We already have, in the United States, for example, schools in which the boys give a part of the time — a half of each day, or alternate weeks — to shop-work in actual shops, and the remaining time to schools, whose theoretic work is intimately connected with that of the shops. Where great manufacturing, transportation, or commercial agencies have developed private schools of their own, these schools have almost invariably been evolved so as to take the boys and girls who are already giving a considerable amount of time to the study and practice of the more practical aspects of the calling.

It has already been shown that in England, the study of engineering callings requires part-time participation in productive industry. In some countries, in the marine callings, before the student may enter on theoretical study, he must have had a considerable time as an apprentice in practice.

In a large range of German intermediate technical schools, one of the requirements for admission is that the student shall have served one, two, or three years as a worker, and, as such, must have demonstrated his capacity for the further theoretic studies. Where correspondence work is successful, it is so mainly because it ap-

plies to a limited number of workers who have already achieved success along practical lines, and who, on the basis of that practical experience, are able to acquire technical power. In some of the best work in household arts in England, the school and the home, or the school and the employer, now coöperate so intimately that the net effect is an integral vocational education. Some of the best continuation work in the United States practically accomplishes its results in the same way.

It is, of course, not yet apparent how far this coöperative management is possible in various types of industry. The individualism of the American employer and the lack of paternalistic attitude in the Government may make it impossible to achieve this form of coöperation, even if it were not open to objections on the grounds of its practicability. If that should prove to be the case, it will undoubtedly be necessary, in the interests of complete vocational education, to develop facilities for the acquisition of practical experience in the schools themselves, and herein lies the greatest administrative difficulty to be encountered by these schools. To achieve this end, they must abandon a variety of traditions which are dear to schoolmasters and school administrators. The

proposed school must have the aspect of a shop rather than a school. In the length of day, shop surroundings, the disposal of product, the training of teachers, and the maintenance of discipline, shop standards rather than school standards will have to prevail. So radical a departure will this be that many of the ablest students of the situation are convinced that a separate system of administration from that of the schools of liberal learning may prove to be necessary, temporarily, at least.

For a long time, we may expect so-called vocational education to tend to be theoretic and bookish, unless we frankly accept the notion that the study of theory must rest on and intimately blend with conditions which are eminently practical. It will be seen that no one can yet prophesy what will be the type of vocational arrangement for any given industry. It may prove highly practicable to bring private agencies into coöperation with the schools; on the other hand, it may prove indispensable that the vocational school shall reproduce all the conditions, practical and theoretical, necessary for the giving of complete vocational efficiency. We are still dealing with only the beginnings of these problems.

The Relation of Vocational Education to Manual Training

In modern educational doctrine, manual training occupies an intermediate field between vocational and liberal education. In the minds of many, who were originally influential in introducing drawing, manual training, household arts, and mechanical arts, these studies were designed to contribute to vocational efficiency. By schoolmasters and educational administrators, their contributions to liberal education have been constantly exalted, and these subjects have been largely divested of vocational significance. It is undeniable that manual training, rightly conducted, is an important modern contribution to liberal education, and especially in proportion as the limitations of the home deprive the child of opportunity for experience in the field of constructive and manual activities.

Few will doubt that a wide range of contact with tools and the materials to which tools are applied, as found in the hand-work, bench-work, gardening, cooking, and in the machine-shop work of the modern schools, is exceedingly desirable. It is a fact, however, that the manual training so given is rarely controlled by the motive of voca-

tional training, and that it rarely results in any recognizable form of vocational efficiency. In its contributions to vocational education, it is more nearly comparable with the development which results from play and other forms of spontaneous experience-getting.

The mechanic arts and technical high schools, which were originally expected to train the higher ranks of factory- and trade-workers, have generally failed to achieve this end. These magnificent schools have been sought in increasing numbers by youths so situated as to be capable of an extended liberal education. They have offered kinds of liberal education which function more vitally, in many cases, than do the classical studies offered by other schools. Manual training, however, has seldom been more than an incident in such general education. Only a few hours of work a week, at best, have been allotted to it. The spirit of approach has been that of the amateur, or dilettante, rather than of the person interested in attaining vocational fitness. Only slowly has the work been removed from the field of amateurish effort. Much of the original manual training was affected by the arts-and-crafts movement, which is fundamentally important to the consumer of products rather than

to the producer. Much of the household work was impracticable, when considered from the standpoint of household necessities. Throughout, it has been dominated by the ideals of liberal education rather than of vocation, and as such, it has in spite of a certain artificial character and a considerable disregard of pedagogic principles, made important contributions. It can hardly be doubted that a place of increasing importance is still reserved for manual training, as part of a liberal education. It will be remembered that liberal education functions in the avocational, as contrasted with the vocational side of life. For the prospective lawyer, gardening, cabinetwork, or pottery may be important and suggestive activities. A small amount of gardening would probably make all people more intelligent consumers. A vital form of constructive work in the manual training field will enhance the powers of all people to appreciate the material surroundings in which they must live.

For girls, a wide range of activities can be devised on the manual training basis which will make them more judicious consumers. Furthermore, a generous course in manual training actively followed provides a variety of suggestions for subsequent choice of a vocation. Through it,

many boys will discover a bent, or capacity, along which a vocational education may be carried out.

All this assumes that manual training, like the other factors in a liberal education, will be made progressively more vital; will divest itself of formal and pedantic elements; will cease to rely upon a discredited psychology; and will take advantage of fundamental instincts and interests in those to whom it applies. Manual training will be taken, not in the spirit of the vocational worker, but in that of the liberal student, thinking of and comprehending the world in which he lives. It will preserve many of the elements of a high-grade play or avocation. If we assume that little distinctively vocational education will be found in the elementary schools, we may also assume that many pupils will be allowed even greater opportunities than are now available for the development of their capacities in the field of the industrial arts, studied mainly from the point of view of gaining variety and range of experience, and a basis for the subsequent selection of vocational activities.

During the high school period, it is highly probable that an increasing number of boys and girls will find in enriched manual training a

means of liberal education, such as now the traditional studies can hardly be said to contribute. This enriched manual training will be more and more correlated with mathematics, science, art, history, and economics in such a way as to cause these to function more certainly as elements in a liberal education.

Here again, as in the last section, it must be asserted that manual training and vocational education should be controlled by different purposes to a considerable degree, though each contributes measurably to the purposes of the other. If manual training is designed to give the breadth of experience, to evoke the interests, and to stimulate the forms of appreciation desired, then it cannot be identified with the intensive and purposive character of vocational education. Vocational education must be carried on, as far as possible, under the conditions of a workshop. Manual training, as a part of liberal education, must not divorce itself from contemporary life; but, on the other hand, it must be approached from the standpoint of the breadth and interest inherent in the true instrumentalities of liberal education.

Problems of Intermediate or Introductory Vocational Education

While for many types of vocational education it will be possible to assume the completion of a high school course, it will probably remain true for a long time that large numbers of children, owing to predisposition, or the economic situation in which they find themselves, will desire to make beginnings of vocational training shortly after passing the age of fourteen; on the other hand, in many industries and commercial fields, children are not desired under the age of sixteen. It has been pointed out in the report of the Douglas Commission (of Massachusetts), as well as elsewhere, that the period from fourteen to sixteen is a critical one in the vocational development of large numbers of children. This is the period when economic necessity or ambition tempts children into callings which are temporarily quite remunerative (in a relative sense for these children), but which are essentially non-educative. The development of factory production and business on a large scale has opened a great many avenues of this sort, which are tempting to youth, but the outcome of which is the unskilled worker. Intermediate vocational edu[illegible]n

adapted to children from fourteen to sixteen, which should be practical and productive, and at the same time, lead towards profitable occupations, is highly desirable, but its development at the present time is beset with difficulties and uncertainties. We know, for example, that in the industries, specialization is the rule, but during this introductory period, it would seem undesirable for pupils to specialize much in their work; rather, from the theoretical standpoint, this introductory preparation should be broad, and, as far as possible, lead to fundamental forms of skill and comprehension of large principles. To reconcile this demand with the other requirement previously mentioned, that the work should be productive and in accord with prevailing industrial tendencies, is difficult. A typical example may be found in the shoe-manufacturing industry. This industry is now subdivided into nearly one hundred distinct branches, each one of which possesses some of the characteristics of a trade. Assuming that the specialized workers in this field usually begin at sixteen or seventeen, it is questionable if, at the age of fourteen, in commencing industrial preparation for this work, the young worker should be specialized; on the other hand, how may the beginner engage in pro-

ductive work in this field which has a marketable significance?

There is also the very great administrative difficulty of providing, under public school conditions, for a wide range of industries with their expensive equipment. The probabilities are that in time we shall discover a relatively small number of groups of industries, in each one of which a sufficient scope and variety of projects can be evolved around which the future worker can perform practicable and profitable operations, while, at the same time, getting a fundamental vocational training. We know that such groups of related industries exist. In the United States, for example, over a million workers are found in the wood-working callings. Many of these are extremely specialized but, at bottom, they rest on a few tool-forms — hand and power — and on certain general knowledge and experience with materials. It seems highly probable that boys of fourteen, when beginning their vocational training, can be set to work on projects involving wood and wood-working tools in such a way as to produce a marketable product and that, by gradual intensification and specialization of effort, they can be made ready by the age of sixteen for more specific trade instruction in building, cab-

inetmaking, etc. A similarly large group of workers employ iron and steel, and the tools related thereto, as basal elements. Other great groups are found in the factory production of textile goods; in the manufacture of textile goods into clothing; in the minor metal industries (ranging from jewelry to tinsmithing); in the industries employing clay and furnace heat (glass, pottery, etc.); in the semi-mechanical industries, involving the control of steam and other power-supplying agencies; in the food-packing industries (including fruit, vegetables and meat); and several other divisions.

It is also quite possible that a combination of public and private effort, in the form of coöperation discussed above, would enable the prospective worker at the age of fourteen to get, in the factory, by passing from one specialized product to another for two or three years, a fundamental form of training and a wide range of experience, which would make the most satisfactory foundation for subsequent specialization. This discussion, of course, applies merely to the difficulties of giving the concrete or practical side of vocational training; the theoretical, or more abstract forms, are relatively easy of achievement.

The Problem of Women in Industry

Any discussion of contemporary industry must take account of the fact that, under modern economic conditions, women are to an increasing extent drawn away from the home and into other productive callings. It has been pointed out by some clear-sighted writers that, to a large extent, women have simply followed the industries away from the home, as these have been organized more and more under factory conditions. It is well known, of course, that textile manufacture, garment-making, food-preserving, and industries like baking and brewing have been detached from the home, leaving it relatively poorer in industrial opportunity. From the social point of view, it must be expected that all women, as well as men, will somehow and somewhere be producers, it being assumed, of course, that home-making is one of the productive callings.

It is, therefore, not unnatural that women should be found in increasing numbers in the industries, but a peculiar problem arises in connection with their education therefor. The fact is, that while enormous numbers of girls and young women may be expected to take up wage-earning careers, it must also be expected, in normal so-

ciety, that large numbers of these will become home-makers after a few years in wage-earning callings. Among factory populations, it is a well-known fact to-day that the great majority of girls begin as wage-earners at from fourteen to sixteen years of age; that they continue as such for from five to eight years, after which they marry and, if conditions are at all prosperous, they devote themselves henceforth to home-making. Only under economic conditions of severe stress is it necessary that a woman, who must care for children, is obliged also to supplement that responsibility with work outside the home; and this is a condition which it must be the aim of social effort to disapprove, and reduce where possible, in the interests of the well-being of the home and its children.

We now see, therefore, the twofold character of the education which must be designed for large numbers of women: they must be prepared, as it were, for two careers, the first of which will continue for a few years only; the other of which must be prolonged and for which a proper education is highly desirable. Under primitive conditions, the wage-earning career of the girl was usually spent in some home where she continued to learn the arts that would subsequently be of

service in her own home. Under modern wage-earning conditions, it can hardly be said that the girl who becomes a worker in the factory, department-store, or the clothing-making establishment, is getting therefrom even a small part of the equipment that will help her in home-making; as a matter of practical experience, it is known that during this period she may be positively unfitted as regards the thrift and practical qualities required in the home-maker. Already a few vocational schools for girls have been established, having reference to the wage-earning callings. As a part of liberal education, increasing attention is given in all types of schools to preparation for household occupations. For the girl so situated as to be able to take considerable part of a general secondary education, the opportunities for training for the household seem somewhat promising, but, for that large number who desire, or who are obliged to begin wage-earning shortly after fourteen years of age, the opportunities for satisfactory home-training seem to be very limited. It has been suggested that this problem will, to some extent, be solved by accepting what seems to be a present tendency of the industries to put the girls into highly specialized occupations, requiring little or no educational

preparation; and to provide these same persons, by extension classes and otherwise, during the wage-earning period, with some training for home-making. To an increasing extent, it seems probable that the protection of the law will be thrown around the working girl, as regards hours of labor, physical conditions, and, it may be expected, opportunities for necessary continuation education. It certainly seems impracticable to deprive girls from fourteen to twenty of the opportunities for wage-earning; on the other hand, it is certainly undesirable that, during this period, there should be no preparation for home-making interests. Society will undoubtedly require that the two functions become harmonized, to the end that the welfare of the individual and the soundness of society may at the same time be conserved.

Problems of Agricultural Education

Great interest attaches at the present time to agricultural training, as a phase of vocational education. America is peculiarly adapted to the agricultural pursuits, and it is increasingly evident that it is socially wholesome for the State to have a considerable number of its members in this field of productive work. It has been previously pointed out that education for the agricultural

callings is no less necessary than for the trades, and that the increasing application of science makes greater demands on the technical side of this training. The administrative problems of agricultural education are, however, somewhat peculiar. In manufacturing areas and cities, where the population is dense, the specialized industrial school is feasible; in rural areas, if the youth are to remain at home, it becomes an administrative problem of great difficulty to provide the special facilities for agricultural education.

The American rural community has not only developed a system of elementary education, but has, almost everywhere, in recent years, provided the opportunities for secondary education in the liberal arts. Now that agricultural education is also demanded, the question arises as to whether it can be integrated with the existing liberal arts schools, rather than organized on a separate basis. It will later be shown that for many types of vocational education, a certain amount of separation in administration from the ordinary school system is necessary, in order to insure a successful development. In the case of agriculture, however, it must be remembered that the boys and girls come usually from farm homes, where

a certain amount of home vocational training, or, at least, the opportunities for it, still exist. Some careful students of the subject insist that if, in an ordinary high school, a department of agricultural training under competent direction be organized, and if the work be so conducted as to take advantage of the concrete experience obtained in the home and on the farm, excellent results of a vocational kind will follow. On the other hand, it is feared by many of those genuinely interested in agricultural education, that the liberal-arts atmosphere of the high school will tend to make of the agricultural education an unsubstantial article, formed largely in imitation of the other studies; that, in spite of good intentions, it will tend to become bookish and unreal; that the older theory of correlating cultural and vocational education will be the undoing of the latter. From this point of view, general agricultural education can be carried on only in the separate institution which is more farm than school, and in which the conditions of practical participation in productive work form the controlling element in the total programme. Both forms of organization are at present having experimental development, and it is quite possible that within a few years, we shall know, on the basis

of practical results, what is desirable. It is not impossible that a place will be found for each form of organization. The high school, with an agricultural department, may prove to form an excellent institution for almost any rural community, where coöperation with home activities is practicable; and on the other hand, this type may be supplemented, for somewhat older children, by a centralized institution, whose opportunities for vocational training will be more concentrated and effective, and which shall, by short courses and special opportunities, give the kind of training which is impossible to the first.

Problems of Administration

The administration of American education is commonly democratic and local, by which is meant that ultimate control lies in the hands of representatives of the people, and the units of administration are small rather than State-wide. From what has already been said, it is evident that vocational schools, under public support, will present many points of difference, if not of contrast, to schools now in existence, which were founded to perpetuate and develop the traditions of liberal education. Such schools must approximate shop conditions in their arrangements; their hours per

day, and days per week, must gradually approach those of productive industry, rather than those of ordinary schools; the clothing must be that adapted to practical work; and the teachers must be, primarily, efficient workmen and, secondarily, trained in the art of teaching and controlling young people.

It may well be questioned how far education of this sort may require special administrative machinery for its conduct, direction and inspection, both as respects lay boards, on the one hand, and its expert managers and teachers on the other. It is feared, and not unjustly, that boards of education accustomed to the traditions of liberal education may allow the vocational training to become bookish and impractical. Men engaged in productive industry and who, therefore, comprehend some of the limitations and necessities of the training required for practical efficiency, may well be excused for their present distrust of superintendents of schools and principals as administrators of these vocational types of education. In time, it will undoubtedly prove true that men of capacity as school administrators will come fully to understand the philosophy of vocational education, after which they will become competent as directors of the same. In the mean time,

it is a practical and pertinent question, how far vocational education should be separated from liberal, in administration.

It is generally agreed that the vocational school should develop amid its own surroundings, in order that it may preserve its contact with productive industry. Furthermore, it is generally agreed that a vocational school or system of schools should have, either as a board of control, or as a board in an advisory capacity, a body of persons who, as employers, employees and independent workers, should have a close contact with productive industry of the type concerned. It may be found administratively feasible to allow the existing boards of education, and the boards which provide support, to oversee, in a general way, the vocational schools, provided opportunities can be developed whereby the advisory committees can stand in some effective relation to the admission of students, the selection of teachers, and the determination of the practical pedagogy of the school. A somewhat similar question arises with regard to the expert direction. Should the manager of a vocational school who must be, primarily, an administrator in sympathy with vocational education, be under the same general direction as are the heads of other schools? In some places,

a superintendent of schools can be found, who has correct perspective and insight regarding vocational education; in other places, the superintendent is dominated by academic traditions, and finds it practically impossible to enter into sympathetic connections with the aims and methods of vocational schools.

The question of inspection, or State supervision, presents like difficulties. From the standpoint of general administration, it is highly desirable that all general educational forces should be unified in one State body, acting through a single general agent; on the other hand, this again may fail to guarantee the sympathetic and practical oversight which is necessary for the evolution of a true vocational education. The difficulty may be solved by the creation of supplemental advisory boards, and by the employment, under the State Board, of one or more experts to direct vocational education as specialists, who shall act in a coördinate capacity with other experts.

The probabilities are that the American States will refuse to erect a complete, independent machinery for the conduct of vocational education; that, on the other hand, in all States, there will be attempts to introduce, in professional and ad-

visory capacities, experts and bodies of laymen who may be expected to preserve a sympathetic attitude towards these newer types of schools, and to promote the ends for which they exist. To entrust vocational schools entirely to those familiar with the administration of liberal education only, will undoubtedly often prove unwise; on the other hand, to endow both expert and lay bodies with definite responsibilities, and to require that they coöperate effectively with industrial and other agencies having a special contact with and interest in vocational schools, will tend undoubtedly to give the maximum of efficiency.

Miscellaneous Problems

Several other special problems will appear in connection with the organization and conduct of vocational education: —

(*a*) It has been already pointed out that the practical work of the vocational school should conform approximately to the prevailing conditions of industry. This also involves the idea that the output should have a market value, and that it should be disposed of, partly to the profit of the school, and partly to the profit of the individual worker. It should be quite clear that the motive of the student can be greatly

stimulated by this procedure, and that it is socially uneconomical to have students in this work confine their efforts to unproductive exercises. But the disposal of product presents many difficulties. A part of it can doubtless be absorbed into the public utilities of the community, as, for example, in wood-working shops, where bookcases and other forms of furniture can be made for use in local public schools. In some schools, repair work comes into this category. Agricultural schools, with boarding facilities, supply a considerable amount of the food stuffs and tools necessary to their work. On the whole, however, these methods of disposal will doubtless prove inadequate. It will be necessary that the product of the school find its way to market, in competition with the output of the industries. This form of disposition will require exceedingly careful management, in order that the advantages of the school may not be used to the detriment of producers outside. In any event, it would seem that the total output of such schools must be so small as to present but a small element of danger in this connection, provided the marketing is so carried on as not to disturb prevailing market rates.

(*b*) Vocational education will have to be varied

in kind, according to the variety of callings for which preparation is given. It would also appear that it must be varied in degree and aim, in order to adapt it to the varied capacities and economic needs of those who seek it. This means that preconceived notions as to length of courses and organization of work must give way to the necessities disclosed by experience. It must be recognized that it will be desirable to maintain short courses for workers already in the industries, and these may partake of a highly specialized character. Young men who have been farming for some years may desire six-weeks or three-months courses in the technical aspects of poultry-raising, bee-keeping, and the like. Such short and intensive technical courses are already occasionally found, and are exceedingly valuable. Again, it may happen that a man already employed in a manufacturing industry may desire a short and intensive course in the use of some particular tool or process. These short courses may either take the part-time form, or may involve the worker's taking a furlough from his employment. Private efforts, like those of the Young Men's Christian Association, already give many suggestions as to the feasibility of these short courses. It will be evident that, as vocational education develops

and schools become equipped, a constantly increasing range of opportunities will present themselves for useful service.

(*c*) In view of the fact that the technical studies, in a satisfactory form of vocational education, must be closely related to the practical, it is evident that we still lack, to a large extent, the text-books and other guides necessary to this end. In fact, it may prove necessary that in each school, to a considerable extent, special syllabi, or text-books, be worked out, adapted to the local conditions. It will be apparent to any observer that the correspondence-schools, business-schools, and similar organizations have already worked out a variety of appliances of this kind. It may be expected that when within these schools the teachers have fully grasped the pedagogy involved, a large variety of syllabi and other helps will appear which will assist any teacher in finding problems and studies adapted to his local situation.

(*d*) It has been noted above that care must be exercised in developing vocational education that market conditions be not disturbed. It will also be evident that such schools present problems in connection with the labor market as well. In certain industries, the organization of labor

has succeeded in producing certain standards of compensation, the further maintenance of which appears to be dependent on a limitation in the supply of workers offering themselves. Specific situations will doubtless arise in which vocational schools may operate, if improperly managed, to break down prevailing rates of compensation. Here again, however, the larger social need must control, and the administrators of such schools must so organize their efforts as not to inflict undue hardship on existing employment. The controlling social need must be the supply of opportunities for vocational education to as many boys and girls as possible, in the conviction that the presence in society of a very large number of well-trained workers will redound to the benefit of all society. Subject to this controlling principle, special adjustment must be made, wherever possible, to prevent hardship.

The Support of Vocational Education

Experience already demonstrates that vocational education will prove to be expensive. Where part-time schemes do not succeed, the equipment of independent schools will prove costly. Under any circumstances, the teachers will be obliged to have a combination of practical

and theoretical training, which will make it necessary that they be paid more than skilled workers in the fields from which they come. These teachers, again, can handle effectively only relatively small groups of students, and it may be expected, therefore, that the annual per capita cost of genuinely vocational education will range from $75.00, at the lowest, to several hundred dollars, as a maximum. It may be anticipated, of course, that for large numbers of workers, a course less than four years in length will be sufficient. The expenditure for these lines must be looked at from the social point of view, and as a form of social investment. A given community may well expect to receive back far more than this outlay in the shape of the increased productive capacity of the workers turned out.

Owing to conditions promoting mobility in American labor, it has become customary for workmen to move easily from one community to another. If workmen stayed in the place of their birth and education, a given community could expect to find its wealth increasing proportionately, if it supported vocational schools, but there is no guarantee that the workman trained in one community will remain there; consequently, it becomes desirable and just that the larger ad-

ministrative units should contribute something to this form of education, since the benefits of it spread over the larger area. To this end, it is becoming recognized that the State, as a taxing unit, should contribute something — if not fully one-half — to the cost of maintenance of these vocational schools. In fact, it may be asserted that the National Government itself could legitimately be called upon to aid this form of education, since the general migratory tendency of laborers carries them constantly beyond State bounds. The National Government already contributes to vocational education of a higher, or semi-professional level, in the engineering or agricultural callings. From the administrative point of view, it is desirable and expedient that it should contribute to work still farther down the line.

Those who are interested in the expansion of vocational education must tend constantly to interpret it as a productive and justifiable form of social investment. It must be pointed out that already the American public expends upon a number of relatively unproductive lines of activity vastly greater sums than are expended for education. The actual cost of the liquor consumption of the American people is probably three or

four times as great as that of education. The outlay for tobacco is commonly supposed to be about equal to the cost of all forms of public instruction. Another field of expenditure, which can hardly be described as being as socially productive as education, is advertising; yet the total outlay on it is in excess of that for all forms of education.

Owing to imperfect systems of taxation, the burden of supporting either liberal or vocational education seems often to be an especially heavy one. The fault is to be found, not in the actual cost of such education, but in the imperfect distribution of its burdens. Communities must be made to realize that the total amount of social outlay for education is even now but an insignificant part of the total social expenditure; and that, on the other hand, that outlay is probably one of the most effective forms of expenditure yet devised. Constant insistence on these notions will, in the course of time, bring about reforms in taxing methods, devices for the reduction of wasteful expenditure, and a fuller appreciation of the value of expenditure for education, liberal and vocational.

The Teaching Force

It is by this time fully obvious that the problem of supplying teachers for vocational schools differs largely from similar problems in other departments of education. For many years, in Europe and America, attempts have been made to recruit the teaching force in vocational schools, from people trained along academic and pedagogic lines. In nearly all cases, this attempt has failed, mainly because such teachers lacked concrete and practical experience with industrial conditions. However well-intentioned, they were not able to keep themselves in touch with the actual requirements of productive industry. It is generally agreed to-day that a successful teacher in a vocational field must be primarily equipped as a practical workman. To this equipment of habit, skill, and knowledge, it is highly desirable that he should add as much pedagogic ability and general culture as possible. In the training of such teachers, therefore, it seems probable that for a long time society will have to endeavor to pick from the field of young workmen and others who have served a successful apprenticeship those who manifest some teaching ability, or ambition to enter this field. These may be given

a short course of training in theoretical pedagogy and, possibly, some beginnings in the practice of teaching. It is already obvious, of course, that there must be many types of vocational education and, consequently, there must be many sources of practical work from which teachers are to be drawn.

Whether it will prove practicable to assemble skilled young workers in a central institution for the purpose of giving them their pedagogic training is not now apparent. At first, it may prove feasible to have short courses or institutes in which practically trained men and women of some teaching aptitude can be gathered for the purpose of learning something of the art of teaching. The building up of a teaching force for the vocational schools ought not to prove an insurmountable problem when once the character of the field is recognized. These teaching positions may be made to pay somewhat better than the positions of skilled workmen along commercial, industrial, and agricultural lines. The permanency of the position and the agreeable character of the work should prove added attractions. It is improbable that we shall, for a long time, see training schools that will endeavor to comprehend the entire range of training for

this field, including the stages of apprenticeship; on the other hand, it may be expected, as vocational schools develop and succeed, that in the student body of each, there will appear young workmen with teaching capacity, and these may gradually be directed toward preparation for teaching as a career. At bottom, the question of supplying teachers is one of sufficient compensation; given a satisfactory financial basis, it will not prove at all impossible to find many intelligent young workmen who will gladly take up this work.

The Relation of Vocational to Cultural Education

Much confusion of thought exists as to the relation of vocational to cultural education. This is natural, in view of the attempts that have been made to carry on vocational education by the same administrative machinery, and along the same pedagogic lines as the well-established forms of liberal education, but it is necessary to recognize that the two forms are largely unlike as regards aims, administrative machinery, and pedagogic method to be employed. Both have something of a common basis in certain studies like reading, writing, number, and elementary drawing; even in the case of these stud-

ies, however, so far as the rank and file of workers are concerned, there relatively early appears the possibility of differentiation of aim according as the vocational or the cultural purpose is to control. Certain phases of liberal education, like history, civics, geography, science, and mathematics, may have contributed something of the knowledge and ideals which later come to be of vocational significance, but these must be looked upon as by-products, and, to a considerable extent, as accidental elements, from the point of view of strictly vocational training.

It was formerly supposed that any study, seriously pursued, resulted in a certain amount of mental training which could be employed in any field, related or unrelated to that study. Under the influence of this idea, it was believed that the study of higher mathematics or of foreign language resulted in a development of certain intellectual powers, and that these powers could be readily applied when vocational pursuits were undertaken. From the standpoint of modern psychology, this doctrine has been much discredited. It is probably true that liberal studies pursued with interest do result in some powers which may have vocational application; it is much more probable, however, that the vocational success,

which has so often attended those who have had the advantages of higher education, has been due rather to native ability which the institutions of higher education have been successful in selecting and putting into relief.

It is true that liberal education, as formerly carried on, did suggest means, or contribute to preparation, for certain callings more than to others. It is a common belief that persons with secondary or college education turn more naturally to the clerical, or commercial, than to the industrial callings. There is good ground for believing that many of the studies designated as liberal find their strongest justification in the elements which they contribute to professional training. From this point of view, it might justifiably be said that a liberal education is essential to certain kinds of vocational success, but a more correct interpretation would be that some of the so-called liberal studies are in reality vocational.

But any discussion of this subject must involve a clear recognition of the fact that liberal education primarily has to do with art, music, literature, foreign language, history, geography, natural science, and social science, from the standpoint of the individual as one who is to learn

to appreciate, on a broad scale, the world in which he lives. For most individuals, these studies have little or nothing to do with vocational efficiency, which is something to be attained by specialized endeavor, and along lines determined by its needs. All attempts to make the subjects of liberal education yield vocational efficiency are destined to fail, because to a large extent, such effort will result in depriving them of their true significance as factors in a liberal education. Even such subjects as mathematics, science, and drawing, when pursued in the general sense, may lend themselves only slightly to vocational application, especially in view of the modern tendency towards specialized production; on the other hand, these subjects may very well be pursued for vocational purposes, in which case the choice of material and method will be controlled mainly by the ends of vocational efficiency.

It is clear, however, that the aims of liberal education can be to some extent realized through the measures adopted for a generous vocational education. This result may be achieved in several ways. Vocational pursuits, by drawing upon the instincts of construction and upon creative tendencies, may develop thinking interests and mo-

tives in related studies. In practical life, we often find this in the active interest which is developed in the study of physics by one who has become vocationally interested in mechanics, electricity, or steam. At the present time, many women find their most active motive for the study of chemistry in the necessities suggested by investigation and practice of the home-keeping arts. It is well known that youths and men who have made some beginnings in scientific agriculture, pursue a wide range of studies and reading in their endeavor to grasp the principles underlying that subject. Not a few teachers who have become devoted to their work find in their professional interests sufficient motives for extensive studies into the evolution of educational practices. Girls who are studying dressmaking become interested in the possibilities of color combinations. Economic history becomes especially significant to the person who has had some contact with the commerce of the present time. These and many more possible examples suggest that the beginnings in vocational study may inspire interests and motives which carry the student far over into the field of liberal education, with a degree of vital appreciation, which could be procured in no other way.

Again, it frequently happens that a child has lost all interest in the more abstract studies of the school, and, for him, participation in active constructive work may be the means of inspiring intellectual activity which, in turn, becomes distinctly an aspect of liberal education. Examples of this are familiar to all teachers who have had to do with vocational education in trade schools, reform schools, and business colleges.

In still another direction, vocational education may contribute largely to the aims of liberal education. It has been previously indicated that one large factor in liberal education is the socialization of the individual; that is, bringing him into sympathetic and perceiving relations with the rest of the social life about him. Civic education has this as its chief aim, but to a large extent morality and civic efficiency rest on economic foundations, and for many persons, economic activities are the best approach to the insight here suggested. In connection with productive work, the virtues of thrift, honest effort, coöperation, and the like, can be more successfully imparted. It is not improbable that, for a great many boys and girls, particularly those not endowed with the higher idealism, this, under the right teaching, may be made the most effective approach

to an efficient and vital education in civic responsibility.

Liberal and vocational education are not identical, and have only certain elements in common; they aim in essentially different directions, and their valid aims can be realized only by making allowance for this difference. On the other hand, some of the studies which contribute to liberal education may be so handled as to give a basis, or approach, or means of choice to subsequent vocational education. For many persons, a vital vocational education, resting on concrete foundations and making due allowance for expansion into the related fields of science, art, history, economics, and civics, may become an exceedingly effective means of liberalizing the minds of several types of boys and girls, and especially those least capable of abstract thinking or social idealism.

The Types of Schools

The question is frequently raised as to the distinctions among various types of schools as now found. It must be acknowledged that in this field great confusion of terminology still prevails. Among the terms now in use are these: manual training school, household arts school,

technical high school, mechanic arts high school, industrial high school, manual training high school, industrial school, trade school, intermediate industrial school, etc. It will be evident that the confusion of terminology with regard to these schools rests upon a more fundamental confusion as to processes, methods, and aims.

Manual training, as has been shown, is essentially part of the scheme of liberal education, in spite of the designs of some who were instrumental in introducing it. It has suffered peculiarly from the psychological fallacy of formal discipline. It was long ago seen that the practice of many crafts involved, or required, extensive motor (mainly hand) training. Therefore, said the naïve theorist of the past, let us train the hand. But there are scores of kinds of hand-training, and the attainment of one kind of dexterity does not guarantee another, else would baseball and bicycle-riding be most useful forms of manual training. To-day we still call a variety of concrete work in the grades "manual training," but in some quarters, the term "industrial training," or "industrial arts," is used by preference.

Under the head of industrial arts should be included those studies which, employing manual and constructive, or other methods, are aimed

primarily to give appreciation, taste, and insight, but without being designed to secure proficiency in vocation. A corresponding range of liberal studies would be the household arts, and another, the agricultural arts. It is not impossible, indeed, that a group of commercial studies, as elements in liberal education, could be differentiated in the same way.

It was previously noted that the manual training, technical, or mechanic arts high schools originally had an implicit vocational purpose, which has largely failed of realization. With but few exceptions, these schools are essentially controlled at the present time by the aims of liberal education ; in some cases, more of manual training is given, and it is not impossible that in time some of these schools may develop into true vocational schools. In few instances, they aim to secure a considerable degree of proficiency in the technical, as opposed to the practical studies attending certain vocations; for example, they give the training in mathematics, mechanics, and drawing, which might, when coupled with practical proficiency, produce a high-grade mechanic. Owing, however, to their inversion of the pedagogic order of approach to these studies, which is deemed essential to vocational efficiency, it is

a question whether they can ever be called, in the true sense, vocational schools. As far as they are vocational, they are so only for a group of occupations which, like architecture and engineering, still involve largely the capacity for abstract thinking and organization.

Trade schools, in large variety, already exist in the United States, usually under philanthropic or private direction. Commonly, these have well-defined, practical aims, and, owing to their circumstances, their work commonly functions as designed. In a considerable number of instances, trade schools, like the apprenticeship system which they are designed to replace in whole or in part, receive the students at approximately the age of sixteen, and give them from six months to four years of intensive practical and technical training, as preparatory to practical industries.

Intermediate industrial schools are those designed to take children at or near fourteen, and to give them the beginnings of vocational training for groups of related occupations, or for specialties. They do not assume to give trade training, but a practical preparation therefor.

A new form of apprenticeship has in recent years made extensive progress in American industry. In this, the apprentices are put in charge

of teachers who supervise their training and guarantee such a conduct of their practical work and theoretical studies as will produce wide vocational efficiency. The factory or workshop becomes the school, time is set apart for theoretical studies, and the student is engaged mainly in productive work. This form of vocational education may be adapted to certain industries, but it is not certain that it will be able to assume the disinterested attitude of the publicly controlled forms.

Conclusion

The demand for vocational education under school conditions is a widespread one, and is rooted in the social and economic changes of the age. Rightly organized, vocational education will prove a profitable investment for society. The pedagogy of this education will differ widely from that evolved for liberal education, and especially in respect to making practice, or participation in productive work, a fundamental element. Vocational education must be so conducted as to contribute to the making of the citizen, as well as the worker. In the course of the development of a progressive social economy, we may expect it to be made obligatory upon every individual to acquire a certain amount of vocational educa-

tion, just as the present tendency of legislation is to prevent any one from remaining illiterate. Vocational education is not in conflict with liberal education, but is a supplemental form, and may be expected to reinforce it.

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IV. MODERN SOCIAL NEED OF VOCATIONAL EDUCATION

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VI. TYPES OF VOCATIONAL EDUCATION

OUTLINE

VII. PEDAGOGICAL DIVISIONS OF VOCATIONAL EDUCATION

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