

**THE PLACE OF INDUSTRIAL
AND
TECHNICAL TRAINING
IN POPULAR EDUCATION**

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The place of industrial and technical training in popular education by Henry S. Pritchett

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In attempting to speak to you upon the matter of Industrial and Technical Training in Popular Education, I am taking up a subject which is receiving at the present time the thoughtful attention of serious and far-sighted men. In order that the consideration of the question which is possible during the present hour may lead somewhere, I shall confine my consideration of the subject to a discussion rather of industrial training and its part in popular education than of the higher forms of technical training. And this for several reasons: First of all, technical training, as we use the word in America, has come to refer to the training of men and women in the higher applications of science. It seeks to equip the officers of the industrial army. This part of the problem of education has for forty years past received a constantly increasing share of our attention, with the result that the number of technical schools and universities in which the higher technical training is given has grown enormously. And whatever may be the merits or faults of our present education, and however far it may be assumed that its present stage is one of transition, it must at least be admitted that the needs of the higher technical training are receiving more attention than almost any other part of our educational processes. In every State in the Union there exist schools for this training for the higher industrial life,—the life of the engineer, of the chemist, of the manager, of the man who in one way or another is to act as a leader in the industrial army. But, after

all, the number of leaders who are needed is limited; and it is worth while asking what is being done in America and what can be done for training the sergeants and corporals and privates of the industrial army, the superintendents and foremen and skilled workmen who man our mines and mills, who build our roads and bridges, who make and transport our manufactured products.

There are in this country at present, approximately, 80,000,000 persons. Of this number, approximately 20 per cent., 16,000,000 in all, are between the ages of fifteen and twenty-four,—are eligible, in other words, to the opportunities of the high school and the college. Of this vast number of eligibles, less than one-third of one per cent. are receiving any formal instruction from the State or from private institutions concerning the sciences and arts which bear directly upon their occupations. It is at least worth asking whether our plan of popular education can be made to minister to this vast host which does not now share in its advantages beyond the elementary school.

In order that I may make myself clear, let me ask a moment's consideration of the wording of my subject and the conception of education which it implies. I am to speak to you concerning the place of industrial training in popular education. This language is assumed to apply to the United States, and that the people who are to be educated are those of this country. It assumes, further, that there is to be a popular education, or an education of the people.

Assuming all this, our inquiry concerns itself with the part in this education of the people which industrial and technical training should have; and I have limited the inquiry by confining the discussion to elementary technical training alone.

The subject assumes, furthermore, that there is a distinction between education and training, and that the latter is a factor in the former. The derivation of the word "education" carries a meaning not always remembered. To be educated is to be drawn out. Education embraces all the processes by which a human soul comes to have contact in larger and larger measure with all other souls. It is the resultant of all the forces by virtue of whose influence a human being finds his place in the world. The education is successful when the individual finds for himself the best place which he is capable of filling.

Human souls have various moduli of elasticity. Some are capable of being drawn out in many directions, and attach themselves by the threads of sympathy and interest to every object that offers. Sometimes these tentacles are very foolish ventures, like the thread which a spider spins from his web to the nearest object and directly across the path of the passers-by, only to be swept away. And, then, there are souls of such curious elasticity that they can be stretched out or educated only in one direction, so that ultimately they become hard, tense cords in the general structure of society, and can only be touched by some vibration which is adapted to their particular stress. However it is done or whether it be in large or in small measure, education is that drawing out process of the human soul by which a man finds his place in the world.

But the difficulty which has beset all serious inquirers is the question what to teach in order to educate. Plato and Aristotle, Milton and Rousseau, Spencer and Bain, all agree as to what education is; but the burning question is "how to educate," how to draw out the soul of a man so that it may find its most efficient contact with the world in which he is to live.

Men have agreed by one process or another that one of the most effective ways of stimulating the powers of youth is to bring them together in a school, and to teach them certain things which are believed to assist in the development of the latent powers of the individual. Now it is so much easier to point out the faults of a system of teaching than to indicate the means for correcting those faults that there has never been agreement among schoolmasters as to the subjects which might be taught in the schools in order to develop the qualities of a student. Men ask to-day as anxiously as did Aristotle in his day: "What, then, is education, and how are we to educate? For men are not agreed as to what the young should learn either with a view to perfect training or to the best life."

Furthermore, into most human lives there is thrust the problem of earning a living. So fierce is human struggle at this age that the earning of a livelihood, if the living is to be a comfortable one, requires the possession on the part of the individual of expertness in some one direction. This education in one or more directions to the point of expertness we call training, and training is admitted to be a part of the proper work of the school.

Now, while in America the schoolmasters have no more been able to agree than their brethren in other parts of the world, at least two general theories may be traced in the formation of our schools and colleges. One is the theory that the growing human being should have an opportunity to develop in many ways, that the elastic soul should be encouraged to throw out as many tentacles as possible, and that the system of studies which presents the greatest number of points of attachment is the best one. This process is usually called that of acquiring a broad and liberal education. A second principle, and one that finds almost equal

recognition in the institutions of learning of the present day, is the idea that the student must train to the point of expertness in some one direction.

In order to meet these somewhat divergent requirements, we have provided in our higher institutions of learning courses of study intended to minister on the one side to general culture and on the other to special training; and we undertake to furnish instruction which shall give the student a broader outlook and a wider sympathy, while at the same time he is guided into the straight and narrow path of professional expertness.

The working out of these two theories during the past generation has resulted in the development of two kinds of institution, one of which affords the student a greater or smaller opportunity for education with little or no training, and another which gives him a more or less effective training with little or no education.

Unfortunately, notwithstanding two thousand years of discussion, no criterion has been invented by the application of which it may be determined if a man be entitled to be called an educated man. It is rather by the absence of certain qualifications than by their possession that this test can be applied. Perhaps it would be generally admitted that no man may be fairly termed an educated man until he can read and write his mother tongue with ease and facility, nor until he has some acquaintance with, and has developed some taste for, the best literature of his own country. Judged by even so modest a standard, it seems probable that a large proportion of the graduates of our colleges and scientific schools of to-day are not educated men. One finds amongst these graduates a large number to whom the colleges have brought education without training, and a large number to whom they brought train-

ing without education. The two do not always go together. Charles Sumner was a better trained man than Abraham Lincoln. He was not so well educated.

This problem is a vital one before American colleges to-day,— how to combine education with training, how to make a human soul alive to literature, to art, to science, to nature, to religion, to human kinship, and yet at the same time to point out clearly that narrow path which leads to efficiency and economic success. And yet this ought to be possible. A narrow road may have, after all, the widest horizon, if only it leads over the heights.

All this is in one sense apart from the subject under consideration; but it has this relevancy,— that, so far as our discussion of education in this country has crystallized into practice during the past generation, it recognizes that education of the people should minister, in the higher institutions of learning, both to the expanding of the student's horizon and to his special training as well; that in the age in which we live the university should train as well as educate. If this principle is true for those who enter college, it is true in a still larger sense, then, for those who, while carrying on the struggle for existence, are at the same time striving for a wider outlook and a higher efficiency.

The practical question which actually confronts us is this. There are sixteen million persons in the United States between the ages of fifteen and twenty-four. About four millions of these are in high schools and colleges. For twelve millions the opportunity of the regular day-school has gone by. Can a rational and feasible plan be devised by which this large majority of the youth of our country may have opportunity to better themselves by further education, and to increase their efficiency by effective training given in schools such as they can find time to attend?

Let me answer this question, not by indicating an ideal solution, but by briefly describing the way in which the question has been answered in another city, in another land. Fifteen years ago the city of Berlin undertook the solution of this same question. The consideration of the problem was placed in the hands of earnest and thoughtful men. The result of their labors has led to the establishment of a system of secondary technical schools, whose character and function I shall endeavor briefly to describe.

In examining the plans for industrial education in Berlin, one needs to remember that the system of regular day-schools in all German cities includes not only the *Gymnasium* which leads to the university, and the *Realschule* which leads to the higher technical school,—corresponding approximately to our high schools and manual training schools,—but it includes as well a system of secondary schools intended for those who are to follow a particular trade or craft. Each of these secondary technical schools is usually adapted to the branch of technical education needed in the particular district in which it is situated. Where yarns are spun, a spinning school; in the midst of iron works, a school of elementary metallurgy. The instruction, while elementary, is thorough on both the practical and theoretical side; and all the questions involving the success and progress of the special industry are investigated and explained. These schools are neither high-grade engineering schools, like the Institute of Technology, nor are they simple trade schools, like the New York Trade School. Germany has her great technical schools for the higher engineering, and she has trade schools as well, although these latter seldom confine themselves to simple instruction in the trades they represent; but she aims also in these secondary technical schools to meet the