OUR NEED FOR INDUSTRIAL EDUCATION: WHAT IT WOULD MEAN TO HAVE VOCATIONAL SCHOOLS ADDED TO THE PUBLIC SCHOOL SYSTEM: BY M. IRWIN MACDONALD

WHEN the American public awakens to the necessity of reform in any direction, it is a foregone conclusion that within a very short time the awakening will crystallize into action. Just now there is no question as to the general awakening of the people of this country to the fact that the elaborate and costly educational system of which we have been so proud is in the long run fatally defective in that it has little or nothing to offer in the way of practical training to boys and girls who must bear their share in the real work of the world. Also we are beginning to realize that, with all our energy and progressiveness, we are so far behind a number of European countries in the matter of industrial and vocational training that even now a large percentage of our skilled workmen are foreigners, and that, unless we take active measures to train our own children for the work which must be done if we are to maintain our position as a great industrial nation, within another generation we shall be obliged to import practically all our skilled workmen from abroad. Statesmen and economists see in this negligence one of the chief causes for the army of unemployed, consisting chiefly of unskilled workmen, which increases in numbers with every period of commercial depression. Liberal minded educators are becoming very much alive to the fact that a public school system which provides for all our children only to the age of fourteen years and after that has little or nothing that is of practical value to offer to ninety-five per cent. of them has serious limitations as a factor in shaping the future of the nation. Manufacturers are beginning to understand that unless the ranks of skilled workers can be recruited before long from a body of younger workers who are equally skilled, our industries will inevitably and speedily suffer even more than they have already suffered by comparison with foreign nations like Germany and France. And intelligent wage earners, always ambitious for the future of their children, now admit that their best chance for progress lies along the lines of thorough vocational training, such as will fit them to be skilled workers, rather than in a smattering of purely cultural information which does not tend toward the best mental and moral development and which in most cases is forgotten during the two years that intervene between graduation from the grammar school and the taking up of actual work.

A large part of the now general realization of our national de-
OUR NEED FOR INDUSTRIAL EDUCATION

iciency in educational matters is due to the efforts of the National Society for the Promotion of Industrial Education,—an organization of educators, manufacturers and progressive labor leaders which was formed a little over a year ago and which has already done most effective work in calling the attention of the people to existing conditions and in suggesting a line of action which bids fair to end in the establishment of a complete system of industrial training to be carried on as a part of our public school system. The first annual convention of this association was held a year ago in Chicago, and at that meeting the scope and character of the work which the Society has set itself to do was clearly outlined, and the task of giving the widest possible publicity to the need in this country for better industrial training was energetically taken up.

A Committee of Ten, made up of prominent educators and manufacturers from all parts of the country, was instructed at this first convention to look into the subject thoroughly from all points of view and if possible formulate a type of industrial school that could be adapted to the needs alike of city and country. The report of this Committee was given at the second annual convention of the Society, which was held last November in Atlanta, Georgia, and it speaks well for the earnestness of its members and the honesty with which they have grappled with the immense problem before them that the recommendations they made were suggestive rather than definite in character,—forming a basis upon which a more or less elastic system of industrial education could be built rather than outlining any definite plan. The majority of the children to be benefited by a public school system of vocational training are, of course, those who leave school at or before the end of the grammar school period, so it was decided that the first necessity was for vocational schools which would be directly connected with the grammar school, and which would carry on along technical lines a course of training already initiated in the grammar school, where pains would be taken to have each study taught so as to bring out its application to life in general, and particularly to the skilled vocations, although providing no preparation for any particular trade. To bring this preparatory training into line with the more advanced vocational work, it was recommended that the grammar school should emphasize elementary industrial training in some form or other that would be directly applicable to the needs of the pupils, such training to be substituted for something else in the already overcrowded curriculum. Happily, the general sense of the Committee was that the way to an adequate industrial education lies not in adding more work to the complex curriculum in existing schools, but in a larger variety of schools, each
one having a simplified course of studies and each seeking to do well the work it sets out to do.

THIS much for the preliminary or grammar school training. As for the kind of school recommended as continuation schools for vocational training, these would be more or less local in their character and would seek to serve the needs of local industries. The boy educated in one of these schools would not be made a skilled journeyman in any trade, but would receive a fundamental training that should enable him to become a skilled journeyman within a short time after actually beginning work in the shop or factory, and at the same time would promote him to a higher form of vocational efficiency than he would be likely to have under other circumstances. In short, the industrial training school as suggested would have much the same relation to the preparation of a skilled journeyman as the high grade engineering school has to the preparation of a practical engineer.

With regard to the more advanced technical schools for workers already engaged in some form of industry, it was the conclusion of the Committee that such schools must necessarily take the character either of the industrial improvement school or of the actual trade school. The industrial improvement school, which would be carried on for the benefit of the actual worker, would probably continue to be, as it is now, an evening school, in which would be taught the fundamental sciences upon which a trade rests, together with such technical information as could be given in a physical, chemical, or mechanical laboratory. For example, men who are employed by an electric railway, either as motormen, as electricians, or as linemen, could learn in such a school the fundamental theory of electricity, and the best methods of insulation, of electrical measurements and of the transformation of energy. All of these principles would be illustrated for them in the electrical laboratory, where it would be possible for ambitious workmen to acquire a foundation of knowledge which would enable them to become in time foremen, managers, or possibly inventors. A number of such schools are already in existence, and although they appeal only to men who have more than the usual amount of ambition or energy, the preliminary industrial training suggested for grammar-school pupils would inevitably tend to increase the number of such men and make necessary a considerable increase in the number of industrial improvement schools. The pure trade school, of course, undertakes to teach not only the fundamental processes of a trade, but also their technical application. Naturally, such schools emphasize continuous practice in the work-
OUR NEED FOR INDUSTRIAL EDUCATION

shop, seeking to reproduce, as nearly as possible, the conditions of actual work, so that students may be brought up to a point of expertness as close as possible to that of the skilled journeyman.

In recommending that the types of schools described here be used as a basis for a general system of industrial training, the Committee of Ten wisely based its conclusions upon experiments, that, to some degree, have already been tried in various parts of the United States, instead of branching out upon new and necessarily theoretical lines. All the types of schools mentioned are now in existence, and are considered as experiments that have a vital bearing upon the general problem which the nation must solve. The researches of the Committee evidently led it to the sound conclusion that success in industrial training does not depend upon the adoption for general use of one or another type of school or of any hard-and-fast system of training, but in the utilization along general lines of experience already gained, and the seizing of every opportunity to further a natural development. The thing it chiefly insists upon is the necessity for energetic and intelligent cooperation, on the part of educators, employers, students and the Government, to bring about the adoption of industrial schools into the public school system of the country, because sporadic efforts at industrial training, however good they may be in themselves, are not sufficiently far-reaching to affect the national life as a whole, and no system of specialized schools can survive which does not relate itself to the national public school system.

THE example set by Germany, and particularly by the little kingdom of Bavaria, has had a marked effect in bringing about a realization of the need for more thorough industrial education in this country. Bavaria, with only six million inhabitants, has now two hundred and ninety trade schools holding day and evening sessions and giving instruction in twenty-eight different trades and crafts to pupils from the first to the fifth grades. In this country, with its population of something over eighty-five millions, there are fewer trade schools than in that one little German kingdom of less than one-fourteenth part of our population. Furthermore, the rest of the German Empire, with its population of sixty millions, is very nearly as rich in industrial schools as Bavaria.

These elementary technical schools for apprentices in the trades and in business include every kind of trade and craft. In Munich alone there are thirty-eight different kinds of trade schools, all of which have been established since nineteen hundred. These schools represent the chief industries of the city of Munich, and the children
OUR NEED FOR INDUSTRIAL EDUCATION

who must leave the grammar school at about thirteen or fourteen years of age are sent directly to one of the technical continuation schools, where they may be well trained for any calling they wish to enter. By this means, all school children are kept under supervision and instruction until they are at least seventeen or eighteen years of age, when they are able to enter the shops and factories as skilled workers. Not only does this method increase by many degrees the industrial efficiency of the nation, but the moral effect of the combination of a good general education and thorough technical training is to give young people an excellent conception of the rights and duties of citizenship,—a course that tends not only to a higher standard of life and work for the individual, but also to the general welfare and efficiency of the citizen body as a whole.

One of the greatest difficulties with which we have to cope in this country is the question of a right disposal of the two or three years intervening between the time of graduation from the grammar school and the age at which a boy is expected to enter upon his life’s work. For those whose parents can afford to send them to a good technical or business school, the problem is solved, as well as for those who are fortunate enough to be taken on as apprentices in some of the large industrial concerns which carry on the apprenticeship system in their shops. But the great majority of boys drift about, picking up such odd jobs as they can until it is time for them to begin to learn a trade. The consequence is that it is only the exceptional boy who finally becomes a skilled worker through the sheer force of his own energy, persistence and ability. The rest remain unskilled workers, never earning more than a laborer’s wage, and consequently are the first to be thrown out of employment during a period of industrial depression.

SUCH manufacturers as have associated themselves with the Society for the Promotion of Industrial Education are strongly in favor of some system of apprenticeship. The old system, of course, has become obsolete under present commercial and industrial conditions and does not apply to present-day needs. But a new system of apprenticeship, or of industrial training, that will give to students the experience of the school and workshop together, is acknowledged by manufacturers and educators alike to be the most practical way of meeting the difficulty. The wage earners, as represented by the union men, were at first inclined to oppose a system of training that could be used to make the power of the employer more absolute than ever, but as they have acquainted themselves more thoroughly with the subject, a number of the foremost
union men have expressed their willingness to lend all the aid in their power toward bringing about a general public school system of industrial training. As one of them expressed it at the Atlanta Convention, the intelligent and ambitious wage earner wants his children taught not merely dexterity of hand, but also the theory of mechanics, reading of blueprints and the use of tools, as well as the history of commerce and of the ancient guilds, the origin and growth of trade-unionism and something of what it means to the workers of today. The significance of this attitude on the part of labor leaders is very great, because, while the educator sees in theory the value of industrial training and the manufacturer sees the value of its productiveness, the wage earner sees its human side and what it means to the boys and girls who are to be his successors.

One point that is strongly emphasized in this propaganda for the spread of industrial education is the wide difference between manual training as it is now taught in the public schools and the vocational training that actually prepares the student for the work he is to do. The work of such training schools as the Winona Technical Institute in Indianapolis, the Worcester Polytechnic Institute and others of the same sort, is regarded as a definite step in the right direction. No better examples of purely vocational training could be found than in the industrial training departments which have been attached to several large establishments such as the General Electric Company, the Westinghouse Electric Company, the Bethlehem Steel Works and the shops of the New York Central lines, where a thorough system of apprenticeship is carried on with the idea of training up skilled workers who are ultimately to take their places as employees of the company which has educated them. The system in these schools is excellent; but a certain danger to the individual worker lies in its very perfection for the reason that it tends to make him entirely dependent upon specialized work.

Therefore, the work that the Society for the Promotion of Industrial Education has set itself to do is to make vocational training general throughout the country and to place it at the disposal of all children who attend the public schools. To this end it purposes to use every endeavor to secure the creation of a Department of Industrial Education at Washington and by this means secure the certainty of the work being carried out on a national scale, as it is done in the Department of Agriculture. No better time than the present could be chosen for such a move, for the tendency now is to make all legislation constructive and any move toward greater national efficiency is sure to secure the cooperation both of the Government and the people.