

## MANUAL TRAINING IN THE PUBLIC SCHOOLS.

BY HARRY E. BACK.

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Of recent years much has been written about manual training. The educators of this and other countries have discussed the matter in all its bearings upon the intellectual, ethical, and practical development of students. There has been much debate as to whether manual training, with the object of teaching some trade, should be made of prime importance in the study of a school boy arrived at the age of 14 years, or thereabouts, or whether it should be co-ordinated with other branches of learning in the interest of a comprehensive, well balanced educational system. The first method, which was favored by practical men, meant the conversion of ordinary schools into trade or technical schools. The second method meant only the addition of general dexterity and mechanical knowledge to the fund of information acquired by grammar and high school scholars. This second method was opposed on the ground that it gave only a smattering and fitted the student for nothing. As time went on, the people, not the educators, settled the question. It was found that boys from the schools where manual training had only a relative value soon surpassed those who had been fitted only for some particular trade. They stepped into higher positions requiring executive ability and the general knowledge in which they had been drilled. Consequently, the schools with the broad educational ideals met with public favor and developed and multiplied throughout the land. The advantages of this system were recognized even by the practical trade and technical school directors, who have repeatedly raised the standard of general educational requirements for admission to their schools.

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Manual training means to-day, then, the training of the hand and eye together with the mind in ordinary schools of general culture for the better development of all the faculties. It assumes that the pupils in the grammar and high schools are not old enough to know their innate possibilities or the compass and limitations of the various trades and professions. By its introduction and co-ordination with other branches of learning, the pupil learns the relation of his theoretical knowledge to the practical affairs of life. He learns how to apply his book knowledge to affairs of human concern, and in so doing develops an interest and ardor which animate him in all his study. The drudgery of abstract learning is turned into the pleasure of learning by the creation of something concrete and original. All this means indelible impressions upon the minds of the pupils and a rounding out of characters and developing of talents and energies which make shrewd, careful, well poised workmen and masters. Yet the end of the school life finds the young man's career open at the top. He has not been forced to learn some particular trade to the exclusion of all other knowledge. He stands at the threshold of his career with a general training, knowledge and dexterity which enable him to make an intelligent choice of his life work and to achieve successful results in whatever field he may wish to enter. If the young man enters the mechanical field he is not humiliated or compelled to lose time in learning the rudiments of, and the general dexterity required in, this industry. He takes his place with others of his own age, but with greater intelligence and understanding, which makes his work more valuable and causes speedy promotion. If, on the other hand, he enters an office, or takes some executive position in business, his knowledge of mechanics and understanding of manufacturing processes give him a weight and importance which comparatively few business executives possess. He is alike competent as superintendent and manager.

The modern manual training is of recent growth and flourishes to best advantage in this country. It is distinctively American in recognizing the pre-eminence of the individual. In England and on the continent individual interests are subordinated to commercialism and industrialism. There



trade schools and technical schools exist, not to offer alternative higher educational courses, but to mould the young boys and girls into industrial machines. Our manual training schools are the result of the great revolution in thought, sentiment and methods, which has changed the whole fabric of the American republic in every department of life and given us the world's leadership in two decades. Dissatisfaction with the old methods and a healthy desire for progress were the causes of this revolution in educational as well as business methods. There came a demand for the application of scientific principles to all matters, for the development of a broader and more liberal culture and the correlation of all man's faculties and energies. This was seen in the demand not only for manual training, but for physical culture, for the study of sciences and for elastic high school and college courses. The day of manual training was hastened by the remarkable success in all walks of life of boys born and bred in the country or rural districts, and by the marked failure of city boys to qualify for the important positions of life. The country bred boy possessed a general aptitude and fund of practical information which made him a commanding genius wherever he went. He had breadth of character and soundness of sense acquired by daily contact with, and practice in, the numerous routine affairs of the rural sections. As the cities increased their populations at the expense of the country districts, the pre-eminence of the citizens from the farms and villages was still more marked. How to overcome the disadvantages of city life and education and how to make industrious and useful citizens of the children of the uneducated foreigners became pressing problems.

Manual training seemed to furnish a solution, and the results of its introduction have exceeded the highest hopes of its sponsors. One of the best arguments for manual training has been advanced by Edward C. Vanderpoole, a New York teacher. It was made in answer to the statement of the Rev. Dr. Hillis that "a canvass of a large eastern city showed that ninety four per cent of its leading men were brought up on the farm. Of one hundred representative commercial and professional men of Chicago, eighty five were

reared in the country. A census of the students of four colleges and seminaries showed that the rural districts furnished eighty five per cent. The leaders are quickly succeeded by men from the country. They always have been, they always will be."

Mr. Vanderpoole takes up the cudgels at this point. Is this latter statement true? he asks. Will not the constantly enlarging influence of manual training tend to give city boys the tests so often imposed upon country boys by the varying duties of life on a farm? The country boy learns early that he can and must do something; he is constantly meeting emergencies. Dr. G. Stanley Hall declared that the farmer boy had to know about seventy different industries, and must daily meet and overcome the severest tests of industry and skill. He must think, and act while thinking, which makes him resourceful as well as self reliant. All this is education, and fits him for leadership; but manual training does all this and more.

There are now hundreds of schools throughout the country with manual training courses of varying kinds. For many years in Boston, and in several other cities, some form of manual training, as sewing, drawing or clay modeling, has been taught. The first real manual training school of the world, however, was opened in St. Louis, in 1880. Its history and progress have been remarkable and the methods have been copied the world over. Its success completely answered the various objections to the modern manual training system and furnished an incentive to progressive thinkers, educators and philanthropists everywhere. All the large and growing schools of this character embody the successful ideas of the St. Louis school and an outline of its work will indicate very nearly what is being done elsewhere. The newer schools are different only in admitting girls and arranging lines of work particularly adapted to them. The St. Louis school is not a free school. It is an adjunct to Washington university. It takes boys at the age of 14 or 15 years and is planned to cover the period of general development in a boy's life that is ordinarily passed in the high school. While the amount and thoroughness of the manual training and mechanical work are surprising, the gen-



eral culture work and mental discipline do not suffer. So much greater interest and energy is manifested by the pupils that the graduates are able to do the additional work without hardship or nervous strain. They possess all the intellectual qualities of the ordinary high school graduate, besides the magnificent equipment for the practical affairs of life. An outline of the three years' course of studies of the St. Louis school, follows:

First year. Algebra, through simple equations; review arithmetic; English language, the structure and use; history of England; Latin, French, or German grammar and reader may be taken in place of English and history; American classics; commercial geography; elementary physics; botany; drawing, instrumental and freehand from objects; penmanship; joinery; wood carving; wood turning.

Second year. Algebra, through quadratics and radicals; plane geometry; chemistry, theoretical and practical; English composition and literature; rhetoric; English or French history; Latin (Cæsar), French, or German may be taken in place of rhetoric and history; British classics; bookkeeping; drawing, line shading and tinting; forging; patternmaking; moulding; casting with plaster; soldering and brazing; military drill.

Third year. Geometry continued through plane and solid; review in mathematics; mensuration; English composition and literature; civics and political economy; general history; French or German may be taken in place of English and history, or in place of the science study; physiology; elements of physics, with laboratory practice; drawing, brush shading, geometrical, machine, and architectural; metal work with hand and machine tools; filing, chipping, fitting, turning, drilling, planing, screw cutting, etc.; execution of projects; military drill.

Says Professor C. M. Woodward, to whom a large share of the St. Louis school's success is due: "The manual training school has many windows through which all of the great professional and industrial fields may shine in upon the students, and where the student may look out upon all the activities of modern American life; and the school has many doors, through one of which the graduate may step out into the field of his final and deliberate choice."

More than 800 graduates have gone forth from the St. Louis Manual Training school and, almost without exception, the effect upon their careers has been very marked. Prof. Woodward, the director of the school, says the demand for the graduates is always in excess of the supply. As the boys have equal knowledge and skill with woodworking, forging, and machine tools, and with drawing instruments, those who want work scatter according to taste and opportunity in all directions.

Professor Woodward told the American association of officials of bureaus of labor statistics at St. Louis that his graduates earned before the end of the year from \$30.00 to \$75.00 per month, that they received higher wages than other apprentices from the beginning, and that they were in general demand for draftsmen, electrical workers, inspectors, apprentices, clerks, foremen and assistant superintendents. The number who remained long as machinists was small, he said, because their general versatility and executive ability earned speedy promotion. About one third of the graduates from this school go directly into the higher scientific and technical schools, where they attain the highest rank.

Pages might be written showing the growth of similar schools all over the country. In Chicago, Brooklyn, New York, Philadelphia, Baltimore, Boston, Worcester and other cities are manual training schools with equally good records. Their development has been one continuous story of triumph for the individual and society, as well as for American educational and industrial ideals, in the training of self reliant, self supporting, broad minded, vigorous and useful American citizens. Indeed, manual training has furnished the solution of a great sociological problem. It has long been noted by criminologists that most crime is committed by men who are uneducated in industrial pursuits. It has also been found by the penologists that criminals may be reclaimed as useful citizens by teaching them some trade at which they may earn a livelihood. Hence, the attention of the reformers has been turned to the establishment of manual training and trade schools in the state prisons for the cultivation of the hands and minds and for the development of all the faculties of the



inmates. The great Elmira reformatory in New York is the principal one of its kind in the country. It has accomplished a most beneficent work. The employment of the hands and the acquirement of a trade have given stability of character, moral appreciation, a due sense of responsibility and of the value of society and an elevated tone to hundreds of the fallen.

Because manual training has been found so efficacious in the reclamation of criminals, it has been urged as a preventive of crime by its introduction into the public schools. The amount of manual training now practiced in the city schools will show, it is believed, a greatly reduced percentage of criminals in a few years. The value in which this training is held as a preventive of crime is nowhere better illustrated than at the Catholic Protectory, Van Nest, New York, where two thousand incorrigible boys are sent for the reform which reforms. The Catholic Protectory is, in reality, a great school. Its system of education is now largely manual; and the effect upon the boys is astonishing. The idea here takes a highly developed form. The extensive shops are both educational and productive. In all the schools where manual training is in operation, it has been found that a boy's interest is keener, that he learns more rapidly, and that he retains what he learns more thoroughly, when he is constructing a workbench, or making the tools he is to use. At the protectory this principle is so clearly demonstrated that no one can see and question. For four hours every day the two thousand boys are as busy as the workers in any commercial factory. They are not kept at one monotonous task, but are taken from one stage to another, learning as they go. All the work about the buildings is done by the boys. They run the engines, and have charge of the dynamos. They have wired the buildings and fitted them with electric lights. There are squads of masons, painters, plumbers, some still wearing knickerbockers, who are as competent as many journeymen. I have presented some of the arguments of the advocates of manual training but, it seems to me, none is more convincing than the simple statement of the director of the protectory, Brother Leonine:

"I have come to believe," he said to me, "that there are no bad boys. We have here but a handful of the Brothers, in charge of almost two thousand of the worst specimens New York can send us. I would not ask for better friends than anyone can have in those boys, if he really wishes their friendship. They are generous and tender hearted. That they are exceptionally active and intelligent goes without saying. That is, at bottom, the reason why they are here. Most of them came to trouble because they were too eager in their blind scrambling in a strange world that did not know how to treat them."

Manual training, without reference whatever to any practical use, is taught more or less in most of the primary and grammar schools of to-day. Kindergarten schools are devoted almost entirely to manual training, because the hands and eyes of young children can be trained and disciplined much easier than the minds. The grammar schools have introduced clay modeling, wood carving, drawing, paper cutting and other simple exercises designed to vary the monotony of the older methods and to teach those habits of carefulness, accuracy, neatness and application which are essential in the acquirement of all education.