

THE NEED OF TRADE SCHOOLS.



EDUCATION is in a transition state. Systems that have come down to us from past ages are found incapable of meeting the wants of the latter part of the nineteenth century.

Especially is this the case

in the way in which the young are taught how to work. Silently the old plan has passed away, and as yet no definite scheme has taken its place. Neither in this country nor in Europe can the apprenticeship system be said to exist. It became the custom in the middle ages to bind a lad who wished to learn a trade by a written agreement to some master mechanic, for a specified number of years. In consideration of the lad's labor, the master was to care for him and teach him a handicraft. This custom continued until modern times. During the reign of Queen Elizabeth a law was passed forbidding any person to work at a trade without having first served an apprenticeship of seven years. Although this law was denounced by Adam Smith as tending to form labor monopolies, and the courts had decided it did not apply to any trade not practiced at the time of its enactment, it was not repealed until the year 1814. The English and American apprentice laws still provide for indenturing a lad to a master mechanic, but such indentures are seldom made except by the overseers of the poor for pauper lads. An indenture between a master plumber of New York and three of his "helpers" was recently published in trade journals as a curiosity. The old apprenticeship system perished, not because the indenture was looked upon as a species of slavery, nor because its results were unsatisfactory. It perished because the conditions of society under which it was possible no longer exist. The apprentice in former times lived with his master, sat at his table, and worked under his eye. For his conduct during his term of service and his skill when he became a journeyman, his master was responsible. The modern apprentice is merely a hired boy, who, while making himself useful about a workshop, learns what he can by observation and practice. If he sees the interior of his master's house, it is to do some work in no way connected with his trade, and which may not increase the idea of the dignity of labor in the minds of such of his associates as are employed in stores or offices. In old times skill more than capital

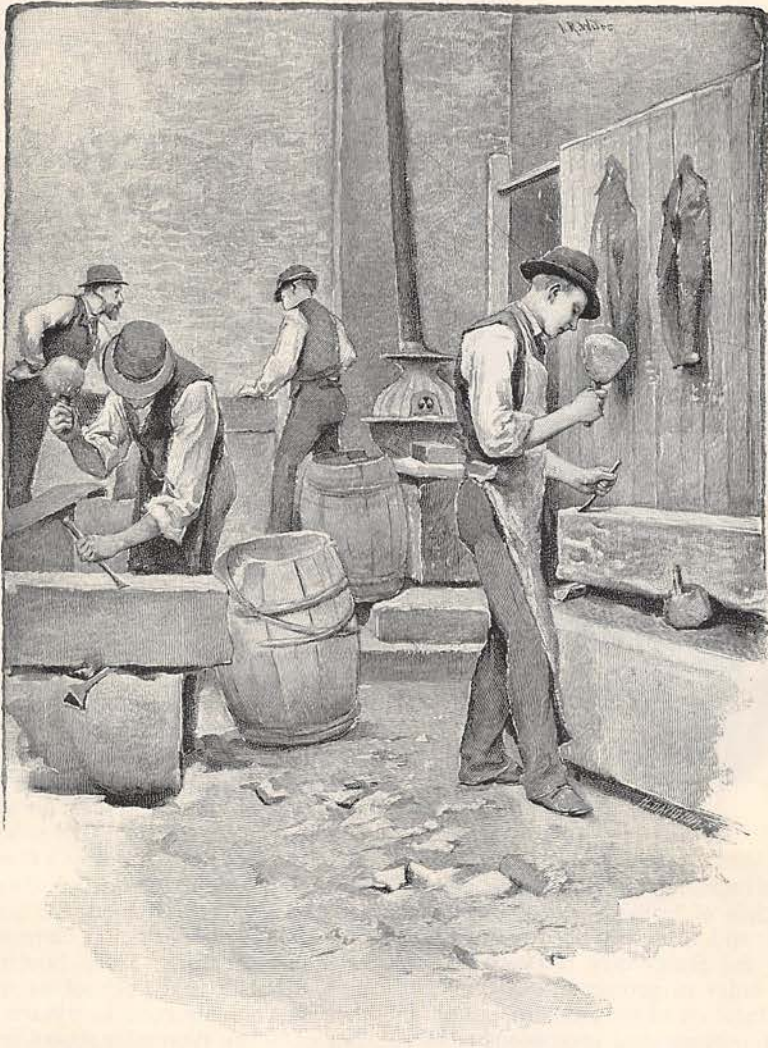
made the journeyman into a master. The master worked with his men. The more apprentices he could employ and the more thoroughly he could teach them, the greater his profit. The act of Elizabeth was intended to secure the lad's labor to the employer, not to be a law, as it afterwards became, to limit the number of workers. The master now rarely works at his trade. His time is more profitably spent in seeking for customers, purchasing material, or managing his finances. The workshop is put in charge of a foreman whose reputation and wages depend on the amount of satisfactory work that can be produced at the least cost. The foreman has no time to teach lads, and as there is but little profit in their untrained labor, does not usually want them. There still survives from the old apprentice system of former days the idea that a lad employed in a workshop shall, when he becomes a man, be a skilled workman and capable of earning a journeyman's wages. This theory fixes a certain amount of responsibility upon an employer, which he is not always willing to incur. Business may increase or diminish. At one time many workmen may be wanted; at other times few or none. If lads are employed with the understanding that at the expiration of a certain time they are to be converted into skilled workmen, there may be times during the customary four years of service when there will be nothing for them to do. If retained they will be a burden on the employer; if discharged the lad will not unreasonably feel that an agreement has been broken. It is not, however, with the employer that all the difficulty of learning how to work is to be found. The different trades are organized into trades-unions, and one of the accepted theories of the unions is the advantage to be derived from limiting the number of workers. Instead of the fact that work makes work, that one busy class gives employment to other classes, it is assumed that there is a certain amount of work to be done, and the fewer there are to do it the higher wages will be. It is, therefore, sought to make each trade into a monopoly, and although these efforts have been uniformly unsuccessful, they have marred the lives of thousands of young men, and still continue to do so. Such monopolies are not possible, because foreign mechanics, attracted by wages several times greater than they could earn at home, with living but little, if any, dearer, can-

not be prevented from crossing the ocean to better their condition in life; neither can mechanics be prevented from coming to the cities from country towns, and as the strength of a union depends upon the enrollment of nearly all the workmen in the trade the union represents, these mechanics are not only invited to join, but pressure is used to force them to do so. Thus, as the exclusive policy of the unions is powerless against the stranger, its force is directed against city-born young men. This term is used because in country towns there are no unions, and consequently no opposition is made to a lad's learning a trade, if he can find some master workman who is willing to employ him. In the country, however, the standard of workmanship is not so high as it is in cities, and country mechanics cannot usually compete on even terms with city workmen. Under union rules the employer is usually allowed from two to four lads, the term of service being from four to five years. This does not allow an employer to graduate under the most favorable circumstances more than one skilled workman each year. As there are not many employers even in the largest cities in any one trade, and, as already stated, some do not want young men, it becomes a matter of no small difficulty to learn how to work. So it often happens that although a lad may be willing to work and may have strong predilections for certain kinds of work, he is more likely to meet with rebuff than encouragement. His first lesson in life teaches him that he has been born into a world where there is nothing for him to do. This lesson as he grows older he will unlearn. He will discover he was standing in a busy market-place, importuning the crowds to buy when he had nothing to sell. He was willing to do anything; there was nothing he knew how to do.

The old apprentice system is not likely to be revived. The life of the system was the personal supervision of the master, which the lad cannot have again. It may be for the interest of the master mechanic to train good workmen, but it is not his duty. The attempt to teach any large number of lads would be troublesome, even if permission could be obtained from the unions. The workmen of the future must learn how to work before they seek employment. All professional men do this. What scientific schools are to the engineer and architect, what the law school and the medical college are to the lawyer and the physician, or what the business college is to the clerk, the trade school must be to the future mechanic.

Manual instruction in schools especially designed for the purpose is not a new thing.

Its rapid development in modern times is due less to the decay of the apprenticeship system than to the discovery that without such instruction the trades themselves were deteriorating. Transmitting a handicraft from man to boy carries with it wrong as well as right ideas. The practice of a trade may be taught; the theory on which that practice is based may be forgotten. The tendency of all shops is to subdivide work. A boy learns how to do one thing, and is kept at it. He has no chance to learn his trade. Trade schools first came to be regarded as important to the welfare of the state on the continent of Europe about the middle of the last century. In England, as in this country, they are of more recent origin. The report of the Royal Commissioners on Technical Instruction, London, 1884, shows not only the extent of technical instruction in European countries, but the value that is placed upon it by the people. This report gives descriptions of schools for the building trades, for weaving in wool and silk, for iron-work, furniture, clock and watch making, pottery, for the making of beer and sugar, indeed for almost every industry in which men and women are engaged. Many of these European schools, both those for general instruction in the mechanic arts and for special trades, are on a magnificent scale. At the Imperial Technical School at Moscow the annual expenses are \$140,000 per annum. The Technical School at Verviers, in Belgium, chiefly a school for weaving and dyeing, was built at a cost of \$100,000, the annual expenses being upwards of \$13,000. The Chamber of Commerce of Crefeld, in Prussia, a town of 83,000 inhabitants, having reported that the silk industry was languishing because of the superiority of the French training-schools, an establishment costing \$210,000 was begun, to which the state contributed \$137,000 and the municipality \$60,000, the remainder being raised by subscription. This town exports upwards of twenty millions of dollars of silk products, nearly all of which goes to England and the United States. At Chemnitz, in Saxony, now the rival of Nottingham in the hosiery business, and also the center of an iron industry, is a technical school which costs \$400,000. The report referred to says there is not a manufacturer in Chemnitz whose son, assistant, or foreman has not attended this school. At Hartman's locomotive works in the same town, employing nearly three thousand men, all the boys between fourteen and sixteen years of age are obliged to attend the technical school. To allow sufficient time to do so, their hours of labor terminate at four o'clock in the afternoon twice each week.



IN THE STONE-CUTTING ROOM.

At Arco, in the Austrian Tyrol, the founding of a small school with one teacher to give instruction in the manufacture of those articles in olive-wood which find so ready a sale to travelers, developed an important industry, orders being now filled from all parts of Northern Italy and from America. The city of Paris maintains a school on the Boulevard de la Villette for workers in wood and iron. Full wages are obtained, it is claimed, by the graduates from this school. A similar school is maintained in Paris by the Roman Catholic Church, with the idea of combating the irreligious sentiments of Parisian workmen. Besides the technical schools in various parts of France, free evening lectures are given in the large towns on scientific subjects connected

with the trades. In Sweden, according to a report made by Professor Ordway to the Massachusetts State Board of Education, there are about three hundred schools where manual instruction in the use of tools for wood and iron work is given. As a curiosity of technical education, it may be mentioned that in Ireland the Royal Agricultural Society maintains a model perambulating dairy, which, mounted on wheels, is drawn from village to village, the inhabitants being invited to witness the most approved methods of making butter and managing a dairy. In England the subject of technical education is now attracting much attention. A very fine school for apprentices has recently been completed by the city and guilds of London, and these

guilds also encourage technical education by subsidies to schools in different parts of the kingdom.

Some idea of the need of instruction in the mechanic arts in the United States was probably present in the minds of the Senators and Representatives when the Land Grant Act of 1862 was passed. A clause in this act reads as follows: "The leading object shall be, without excluding scientific and classical



TEACHER AND PUPIL.

studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts in such manner as the States may respectively prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life." The report of the Secretary of the Interior, on Industrial Education, 1882, gives a list of forty-two different schools and colleges in various parts of the union which owe their existence to this land grant. Most of these are agricultural and engineering colleges. The words in the act in regard to teaching such branches of learning as are related to the mechanic arts being usually interpreted to mean instruction in the use of carpenter's and machinist's tools. Of these land grant schools, the best known are the Massachusetts Institute of Technology in Boston and the Hampton Institute at Hampton, Virginia. Each of these illustrates an interesting experiment in industrial education. The Massachusetts Institute of Technology might properly be called a school for foremen, as its graduates can be found superintending indus-

trial establishments all over the United States. The pupil in weaving, for instance, is required to design or copy a pattern, and then work it out on the loom. In molding he makes a drawing, models the wooden pattern from it, and casts the pattern in the metal. The course of instruction is four years,—mathematics, chemistry, history, and the modern languages forming a part of the educational scheme. Hampton Institute was founded by General S. C. Armstrong as a normal school for colored teachers. General Armstrong, while serving as a staff-officer at Fort Monroe, during the war, was brought in contact with the fugitive slaves who took refuge at the fort. When slavery was abolished, and four millions of men, women, and children became the wards of the nation, General Armstrong conceived the idea that they could best be educated and civilized by the aid of their own people. It was as necessary to teach this vast multitude who had never been beyond the sound of a master's voice how to work for themselves, and how to care for themselves, as it was to teach them to read and write. Manual instruction was therefore a necessity at the Hampton Institute. The male graduates were to be leaders on the farm or in the workshop as well as teachers. The female graduates were to be capable of cooking, sewing, or caring for the sick. How thoroughly and successfully this scheme has been carried out need not be stated here. Another type of the industrial school is to be found in the Worcester (Mass.) Free Institute. At this institution three and a half years of general education is combined with instruction in mechanical engineering, in carpentering, and in machinist's work. This school more nearly approaches the trade school, as many of its graduates are returned as "journeymen mechanics." The Worcester school was founded by private liberality. Without such aid, it may be added, neither the Massachusetts Institute of Technology nor Hampton Institute could have reached its present usefulness. In the European technical schools provision is made for instructing young men already in the trades by a course specially adapted to their wants. In this country this important branch of industrial education has received but little attention. The Carriage Makers' Association in this city maintain a school in designing and construction for the young men in their trade. The Master Plumbers of Philadelphia, Baltimore, and Chicago have plumbing schools for their "helpers." The Cambria Iron Works in Pennsylvania, and several private firms like R. Hoe & Co. of this city, give scientific instruction to their lads, while two railroad companies, the Pennsylvania and

the Baltimore and Ohio, have shown not only what it is possible to do, but how much can be done at a trifling cost for the young men in the employ of great corporations. Beyond this short list, little has been done to supplement shop-work with systematic instruction. In the Baltimore and Ohio R. R. Company's shops at Baltimore five hundred young men are employed. They are placed in charge of a graduate of the Stevens Institute whose duty it is to see that they are not employed too long at one kind of work. He can change their work as often as it may seem desirable for their future interests. He can also take parties of them from their work at any time to explain to them the machinery they may be engaged upon or may see around them. A neat building has been erected for their use, which contains a library and class-rooms for instruction in mechanics and drawing. The lads are required to wear a uniform, which, besides giving them a jaunty appearance, tends to habits of personal neatness. What is done by the Baltimore and Ohio R. R. Co. could be done in any manufacturing town by the union of a few large employers.

The difference between manual instruction and trade instruction is not always clear in the public mind. By manual instruction is meant teaching a lad how to handle certain

ever having held a tool in his hands. Manual training-schools are meant to make a lad handy; trade schools to make him proficient in some one art by which he can earn a living. Manual instruction has already been incorporated in the public school systems of Boston and Philadelphia. The New York Board of Education has maintained for several years a workshop at the Free College. It now proposes to open schools all over the city where boys and girls will be taught to use their hands. A great impression was made last spring by the exhibition, held by the Industrial Education Association of New York, of children's handiwork, and of the different methods of teaching them how to work. Not only was it shown what varied and excellent work little fingers could do, but school-teachers and superintendents came to testify that the brain-work was benefited by the hand-work.

Admitting that trade education is practicable and that it is advisable both for the purpose of giving young men an opportunity to learn how to work and to keep the trades from deteriorating, it may be well to consider how such education can best be adapted to the wants of the American people.

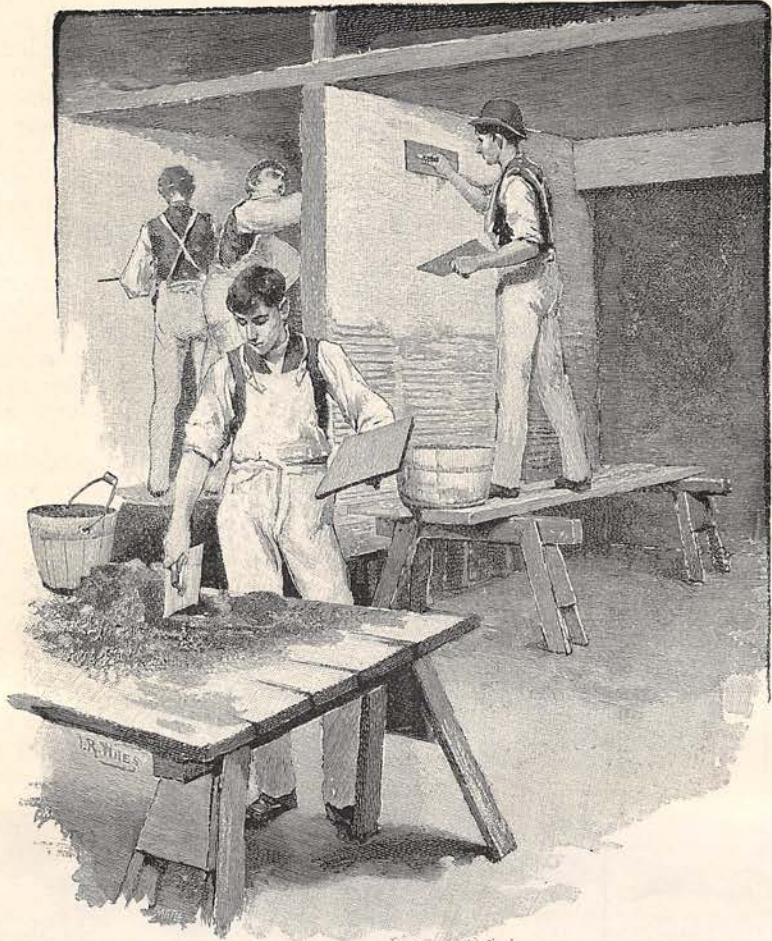
In most of the foreign trade schools the technical instruction is combined with a gen-



WOOD-CARVING.

tools, usually carpenter's and blacksmith's tools, for the purpose of developing his hands and arms, precisely as other lessons are given to develop his observation or his memory. This is not teaching a trade, although it would render the work of the trade school much easier. A lad who has gone through a course of manual instruction at a school would be more likely to be a better mechanic than one who had reached seventeen or eighteen years of age without

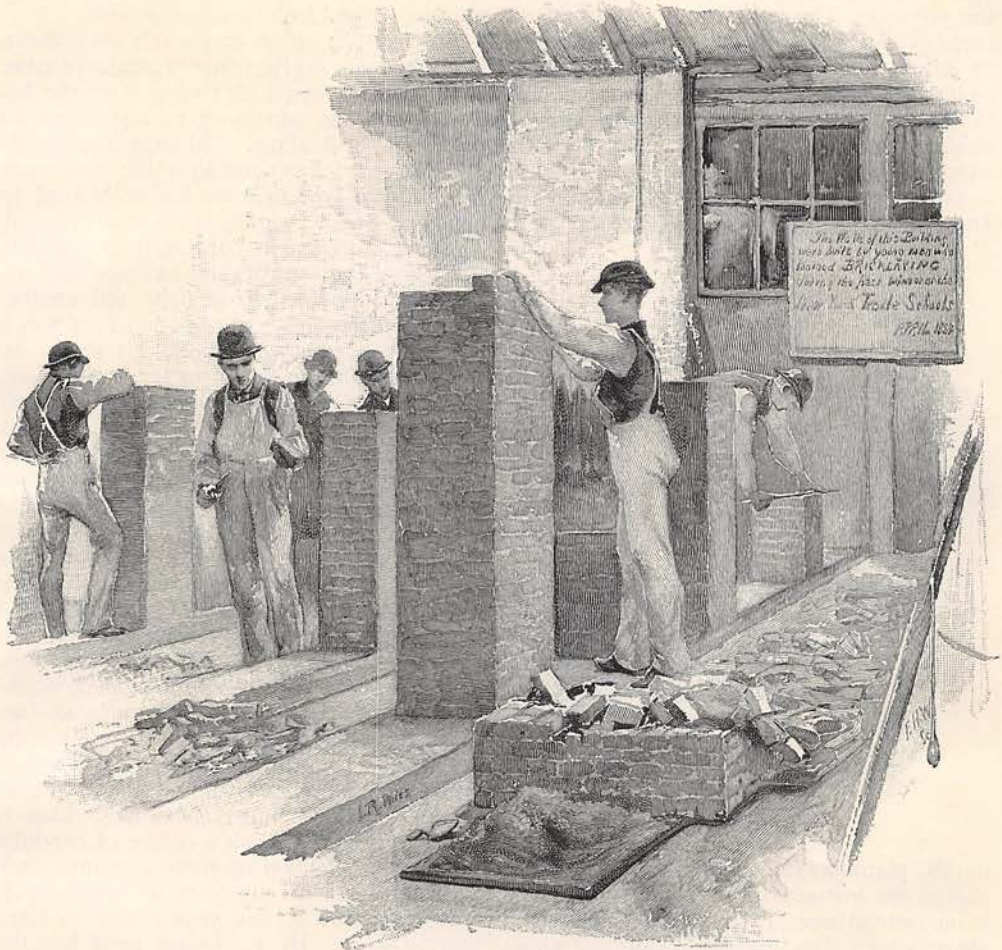
eral education, the course extending over several years. This system is also followed at the Hampton Institute, at the Indian school at Carlisle Barracks, at the Worcester Free Institute, and at the reformatories and asylums in this country where trades are taught. Except in special cases there seems no need of combining instruction in the trades with a general education. It is duplicating the work of the public schools and adding greatly



PLASTERING.

to the cost of industrial education. A lad can hardly be taught and boarded, even at a school or college which is liberally endowed, for less than two hundred and fifty dollars per annum. For a four-years' course this would be a thousand dollars, and to this sum must be added the cost of clothing, traveling expenses, etc. Such schools would be beyond the reach of those who are likely to lay brick, cut stone, or work at any of the mechanic arts. A simpler, shorter, more economical course of instruction is wanted for the future mechanic. It must be remembered that although the law requires the parent to support the child, it is an established custom that after a certain age the child shall in some way contribute to the family support. No system of trade instruction will be successful that does not recognize this fact. From eighteen to twenty years would seem to be the best age to enter a trade school. The lad is then old enough to know

what sort of work he likes and for what his strength is adapted. As regards the amount of instruction given, it would be wisest not to attempt to graduate first-class journeymen. That it is possible to do so in many trades there need be no doubt, but it would appear to be better to ground a young man thoroughly in the science and practice of the trade he has chosen, and leave the speed and experience that comes from long practice to be acquired at real work after leaving the school. Such a system would be more economical, as by it the cost of teaching and the waste of material would be greatly lessened. This probation course, as the time spent between leaving the trade school and becoming a skilled workman might be called, need not be long. Six months will suffice in most trades. Young men who begin work in this way are likely to get on better with their fellow-workmen than if taught entirely at a school,



BUILDING PIERS IN THE BRICKLAYING ROOM.

and they will understand better how to accommodate themselves to different situations. Trade schools should not be free. They will be best appreciated when an entrance fee is required. Lawyers, physicians, engineers, architects, and clerks are expected to pay for their instruction, and there is no need to treat mechanics as objects of charity; neither do they desire it.

At the Hampton and Worcester schools the work of the pupil yields a revenue. At Hampton, contrary to the usual experience, a student's labor has been found to be of sufficient value to pay for his board and tuition. When the course of instruction at a trade school is short, it is best not to seek for any return from the pupil's work. The same temptation, otherwise, will exist as in the shop, of putting a lad at what he can do best instead of teaching him what he knows least about. The pupil's future is of more consequence

than the material that may be wasted. In a well-organized trade school the waste is not a serious item, as the same material can be used many times.

In the belief that the most practical system was a combination of the trade school and the shop, of grounding young men thoroughly in the science and practice of a trade at the school, and leaving them to acquire speed of workmanship and experience at real work after their course of instruction was finished, the New York Trade Schools on First Avenue, between Sixty-seventh and Sixty-eighth streets, from which the accompanying engravings were made, were opened in the autumn of 1881. The schools were designed to aid those who were in the trades by affording them facilities to become skilled workmen not possible in the average workshop, and to enable young men not in the trades to make their labor of sufficient value to secure work and to become

skilled workmen in a short period after leaving the schools. The instruction was given on three evenings each week from November until April. Skilled mechanics were employed as teachers. How much it would be possible to teach during that limited time was unknown, neither were there any means to ascertain what effect the instruction received at the schools would have on the young man's success in life. Instruction was given the first season in two



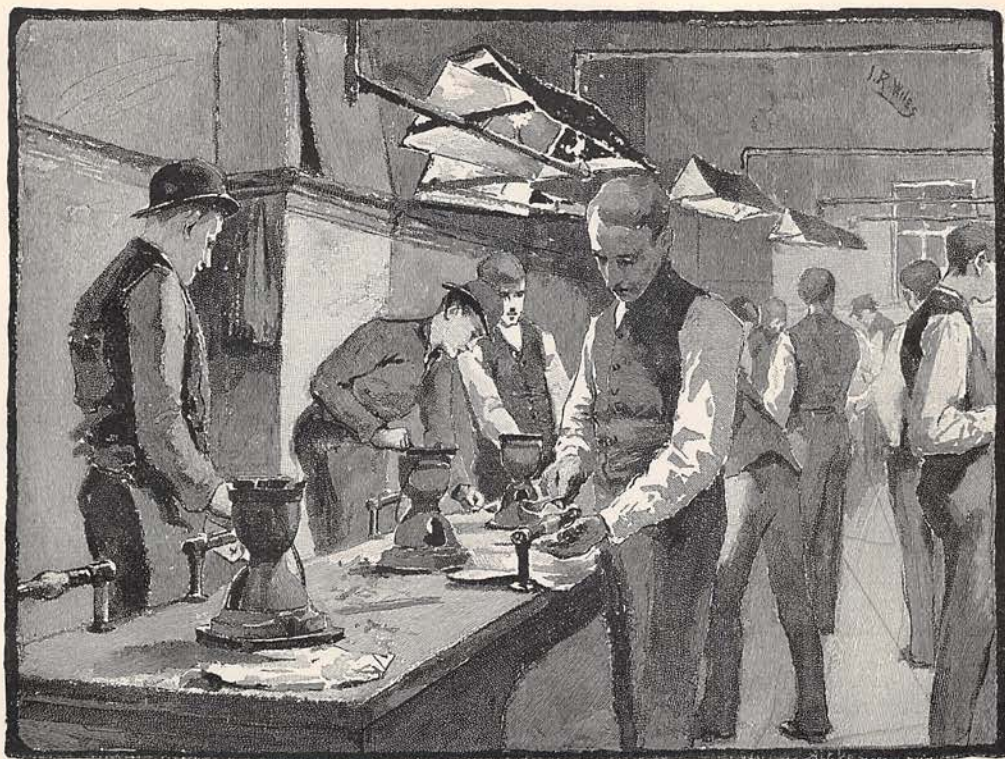
A FRESCO-PAINTER.

trades, plumbing and fresco-painting. The charge for instruction was made nominal to induce attendance. Twenty young men joined the plumbing class, about two-thirds of whom were in the trade as plumbers' "helpers," and thirteen joined the fresco class. Of this number one-third dropped off during the winter. The schools have now completed their fifth season. The attendance has increased from thirty-three the first season to three hundred and four the fifth season. The charges have been increased to a sum which it is hoped will ultimately meet the expenses of the schools. Instruction is now given in plumbing, fresco-painting, bricklaying, stone-cutting, plastering, carpentry, wood-carving, and gas-fitting. A class in pattern-making was abandoned for lack of support. Those who came to the schools from workshops surprised their employers and comrades by their suddenly acquired skill. Those who came to learn a trade have usually found work. There is a record at the schools of many of this latter class, who, to use the expression of more than one of them, owe their success in life to having joined the schools. Serious difficulties have to be encountered in obtaining work on account of

trades-union rules, but these difficulties have not been found to be insurmountable.

As the time spent at the schools is short, the instruction is given on a prescribed course. Each pupil is required to begin at the beginning and is advanced as rapidly as his proficiency will allow. Although the classes are kept as much as possible on the same work, no one is allowed to leave his work until he can do it well. Progress is necessarily rapid. A skilled workman is constantly on hand to show how the work should be done and explain why one method is right and another wrong. Attention is also given to the way a lad stands and how he holds his tools. An awkward habit once contracted is not easily overcome. On two occasions additions were made to the schools by the bricklaying class. The work was done at the termination of the regular course of instruction, the young men being paid in proportion to the number of bricks laid. This practice was found to be of so much value that the evening instruction for the bricklayers is now supplemented by two weeks' day work. The brick-work of three stores and a large apartment-house has also been almost entirely done by trade school young men. Better or more conscientious work it would be difficult to find. Those young men who are old enough to do a full day's work usually get from one-third to one-half a day's wages on leaving the schools, and full wages in from six to eighteen months afterwards. Thus it seems to be proved that a course of carefully arranged instruction on three evenings each week for a term of not quite six months, puts it in the power of any young man to learn how to work. He no longer need beg the employer to teach him. He stands in the labor market with something to sell.

Although the system followed at the New York Trade Schools could perhaps be improved, it has the merit of giving those who are likely to attend such schools what they want. Many well-meant schemes have failed because this point was overlooked. A longer course would be better; indeed, some young men lengthen their term of instruction by laboring two seasons, but to many, and often to the best, even a single season is a heavy tax on their strength. To work all day for a present living, and then to begin again and work during the evening to acquire the skill necessary to obtain a living in the future, requires no small amount of energy and self-denial. Work in the shop ceases at six o'clock. Work at the school can hardly begin later than seven. This leaves one hour only for food, for rest, and for travel. The young men at the New York Trade Schools come from all parts of New York, from Brooklyn, Hobo-



PLUMBING.

ken, and Jersey City. Some have come from Staten Island, Newark, and Orange. Between two and three hundred young men thus assembled to learn how to work, and who have paid their hard-earned money for the privilege, may almost be said to form an impressive sight. These young men are employed in offices and stores, in mills and workshops, and at the various occupations for which boy labor is needed, but which have no future for the man. During the five winters the schools have been open, no rude or profane word has been heard within their walls. The young men are attentive to their instructors, and although often inconveniently crowded, are courteous to each other. Costly tools are scattered about, but they are cared for as if they belonged to those who use them. If they are fair specimens of a class which comprises fully two-thirds of the young men of this city, New York has reason to be proud of her sons.

It is often said that American parents are not desirous of having their children learn trades. The mothers, perhaps, may be responsible for this idea. The present custom of requiring a lad to work for four or five years before becoming a journeyman necessitates his beginning at an early age. Plac-

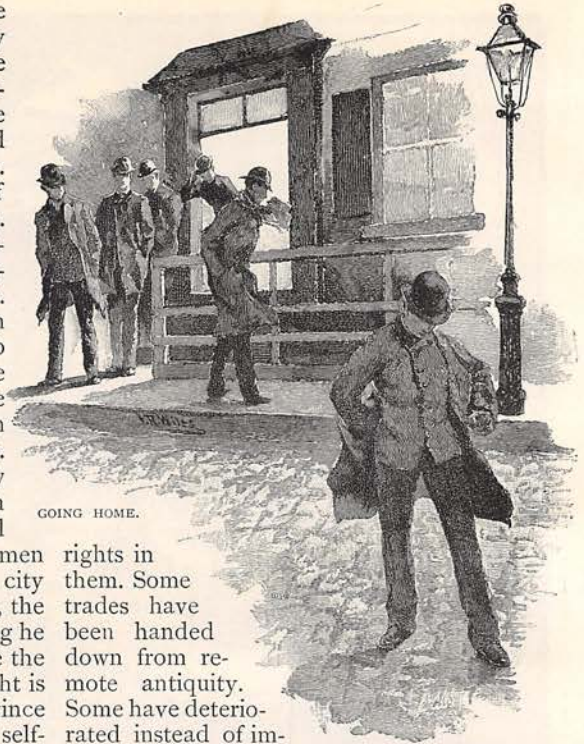
ing boys during ten hours a day with men of whose antecedents nothing is known is undoubtedly objectionable. Although less evil comes from it than is usually supposed, still injury may be done which a careful parent would guard against. A trade school not only avoids any danger of this kind, but it gives the parent an opportunity to ascertain for what sort of work the boy is suited. As it is now, the lad may work for several years at a trade and then find he has no taste for it. New places are not easily found; to change his trade may be impossible. He becomes a poor workman without interest or heart in his work. Six months at a trade school would be time well spent if it only taught the lad for what work he is fitted.

Could the opposition of the trades-unions to young men learning trades be overcome, a great source of wealth would be opened to those now approaching manhood. This opposition comes almost entirely from foreign-born workmen. The effect of their policy is a matter of indifference to them. Unlike the American, the foreigner cares but little for the future. He looks only to the number of dollars it is possible to extract for a day's work. He willingly surrenders his liberty and his judgment to his union officers. To keep their

places, these officers must be able to force the employers to obey the union rules. They not only believe in the advantages to be derived from limiting the number of workers, but they fear that if many lads are allowed to work, the employer, with the aid of his apprentices, can withstand a strike. This fear is as groundless as the theory of the benefit of trade monopolies is mistaken. Skilled work can only be done economically by skilled workmen. The master mechanics put but a small value on boy labor. Even the Chicago Master Plumbers, in their effort to educate their "helpers," do not make it easier to enter the trade. The Journeymen Stone-cutters' Union is the only union in New York which has shown any interest in the welfare of young men. The Journeymen Plumbers' Union lately passed a resolution which, if acquiesced in by the Master Plumbers' Association, will prevent three out of every four of the young men now learning the plumbing trade in this city from becoming mechanics. Until lately, the right of a man to follow any honest calling he may see fit, provided he does not violate the laws, has not been questioned. This right is now being reasserted. It is not the province of any body of men, certainly not of any self-constituted organization, to decide who or how many shall be allowed to work. No legislature is intrusted with such power. If a trade needs protection, it can be obtained in a legal manner. Lawyers and physicians seek to guard their professions and the public from incompetent men by legal enactments. The law requiring the examination and licensing of journeymen plumbers in the cities of New York and Brooklyn was intended to protect the public from ignorant workmen. Its provisions, with slight alterations, could be made to apply to any trade. The higher the standard of workmanship is made by which admission to a trade could be procured, the better for the trade and the public. Such a system would be better than "cards of protection" obtained by favor or by purchase. "An equal chance and no favor" are not idle words to the American mind. Mechanics did not invent their trades, they have no proprietary

rights in them. Some trades have been handed down from remote antiquity. Some have deteriorated instead of improving. Roman masonry was better than our own. In metal-work we do not excel the mechanics of the middle ages. Furniture of the time of Louis XVI. is preserved in art collections for its elegance and the beauty of its workmanship. The demand for skilled labor all over the United States far exceeds the supply. To such work city-born young men are admirably adapted. They are handy, quick, and generally well educated. They should not only supply the home demand, but the demand which comes from villages that are becoming towns, and towns that in a few years will be cities. A thorough knowledge of a trade often yields its possessor, if he works but two hundred days in the year, an income equal to that received from twenty thousand dollars invested in government bonds. Is this harvest to be reaped by the stranger and the foreigner, or are our own people to have a share?

Richard T. Auchmuty.



GOING HOME.

