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AN INDUSTRIAL UNIVERSITY.

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Constant applications at the rate of from one to a half a dozen a day, from bright young men, begging for opportunities to learn the machinist or foundry trade, compel me to think of the worn-out subject of the apprenticeship system, and the many times worn-out discussions upon it. Although not unmindful of the oft-repeated assertion, that no student or apprentice can learn a trade at school, and being so thoroughly convinced that such a conclusion is wrong, and that it not only can be done, but done better in the same time than has ever been done, even in the best of places, the country machine shop, the writer is impelled to revive the subject in an aggressive manner.

To insure a fair understanding of the following suggestions, it may be well to emphasize the fact that, for every mechanical engineer thoroughly employed, there must be from ten to one hundred workmen, including draftsmen, blacksmiths, foundrymen and machinists, and no matter what, or how extended, or thoroughly technical their education may be, while they are executing the work designed and planned by the engineer, they are workmen. And it is well, too, to take into consideration the fact that while there are men, and plenty of them, whose highest ambition it is to have a thoroughly classical education, there are other men, and plenty of them, whose highest ambition is to be thorough workmen of some special kind. Which may be the higher ambition of the two, few ever stop to think; quite likely this generation would be nearly unanimous one way, and possibly the next generation, (measuring the difference between the man who strives for a selfish aim and the one who works to improve things for the public good), be equally unanimous the other way. Be that as it may, workmen there certainly must be so long as industries go on as at present. So long as we inhabit the temperate zone, people must have houses and clothing, furniture and machinery, and whatever else may be done, there must be masons and carpenters, tailors and shoemakers, cabinetmakers and machinists, and we can never have these without they have first been apprentices somewhere, as trades can never be

acquired in any possible way, except by years of direct and prolonged application in the use of tools, directed by constant and inquisitive thought. Proprietors of engineering establishments, machine shops and manufacturing industries are largely indisposed toward the old apprentice system. Binding out their sons for a term of years is not an agreeable thing to contemplate for most parents, and the result is often bad for all concerned. The trades unions, also, in many sections and industries, limit the number of apprentices to far below the number necessary to keep up the supply, and hamper those who are admitted, so the army of our workmen, if this nation is to keep pace with others, must be recruited either from foreign countries, or by some system of school education. As has been proven by the Industrial school in New York, where good workmen are trained in the art of bricklaying, stonecutting, plastering, plumbing, etc., the writer believes the same can be done equally well in the machinist and other trades, and offers the following hints as to a method of procedure.

Hundreds will be ready to claim that the thing has been tried over and over, with very indifferent success, or with no success at all. It is just here that will be found the greatest difference in opinion; for, according to the writer's idea, the thing has never been tried, or at least not to a fair extent, or in the right way. The trade schools are started as schools, conducted as schools, and aim to teach the use of tools, drawing, mechanics, the English language, mathematics, and many of them other things also. Our universities and colleges that have a mechanical course, and the technical institutes, are all schools with machine shop, foundry and laboratory attachments—all quite right in their way, where the aim is the production of mechanical engineers; but to expect to have a school succeed in doing something except just what it is designed to do, is an unreasonable expectation.

If a sufficient endowment, not greater than has already been given in many places for a like purpose, was at hand, and the objective point was to establish a school where an apprentice was to have an opportunity to learn the machinist's trade, and nothing else, the natural way to proceed would be to build a machine shop—a good one, but in no way extravagant or particularly different from any good shop—and stock it

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