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THE IMPORTANCE OF INDUSTRIAL AND TRADE SCHOOLS.

There is matter for congratulation in the fact that the technical press is taking up the question of industrial schools and the training of the apprentice in earnest; and there seems to be a consensus of opinion that our methods need reforming, and that our present trade schools, excellent as they are, are inadequate for our needs and should be greatly multiplied. At the same time there have appeared articles, of greater or less length, deploring the increasing scarcity of the skilled mechanic; from which it appears that many of the higher industrial trades, or those trades which call for the exercise of special intelligence and skill, are unable to secure the services of competent workmen. As a consequence we are confronted with the curious spectacle of employers with vacancies which they cannot fill, and an army of unemployed clamoring for work which they cannot get. Our progress in the appliances of the mechanical arts has outstripped our present methods of turning out workmen competent to handle those appliances. This growing scarcity of the skilled mechanic is undoubtedly due to the decadence of the apprenticeship system and the inadequacy of our present industrial and trade schools, excellent as they are, to meet the growing necessities of the case.

It is a marked feature of the progress of civilization, that while it provides for existing needs, it creates others. Especially is this true of industrial development; and there is no country where these self-created needs have been so quickly seen and provided for as in America. An exception, however, is to be made in regard to the question under discussion, for while our ingenuity has called into existence a system of shops, factories, tools and general appliances which are unrivaled in the world, we have in our haste or oversight neglected to provide for that all-important factor the "human element." In our endeavor to provide tools for the workmen, we have here been in danger of forgetting to provide workmen for the tools.

There is a lesson to be learned in this matter which we shall do well to lay to heart. The rapid advances which the world has made of late years in science and art has tended to remove the dividing line between the two. The brief definition of our school-boy days, based upon the root-meaning of the two terms, which told us that science meant the "knowing" and art the "doing" of a thing, is only half true in these later days, for while the scientist may "know" without being capable of "doing," the artist (artisan) cannot always "do" without "knowing."

The march of modern industrial progress has set a discount upon the man who is merely a "handy," "all around," workman, and a premium upon the man who, to a thorough mastery of his particular craft, has added an intelligent grasp of its scientific principles, and who can interpret a complicated drawing, or make his own sketches with chalk and draughting board.

There is no doubt that the reluctance of the average American in the past to bind himself in an apprenticeship was largely due to his natural intelligence, and the rapidity with which he could, to use an expressive term, "catch on," by observation and practice, in the shops. The farmer's son, for instance, who, under the stress of necessity, had learned to repair a plow, replace a broken bolt or pin in a reaper, or even forge a link in a chain, when he entered the shop was quick to pick up such knowledge and skill as were necessary to advance him to a full journeyman's wage. But though it is true that a natural ingenuity and adaptiveness are valuable to a workman to-day, they do not count for nearly as much as they formerly did; and the industrious boy of average ability, who goes through the double instruction of a trade school and a course of apprenticeship, will have a greater value when he applies for employment than the boy who, with perhaps a greater natural talent, has picked up his knowledge in a knockabout experience of half a dozen various shops.

It is simply the systematic training of the German artisan that enables him to secure work, almost at the first application, and the past record of the American artisan is proof that were he subjected to the same training, he would invariably capture the best positions, and be intrusted with the highest skilled work, in his own country.

We have been favored by Mr. L. R. Klemm, of the United States Bureau of Education, with very full description and statistics of the Industrial and Trade Schools of Berlin. They are too lengthy for insertion in these columns, and will be found in the next issues of the SCIENTIFIC AMERICAN SUPPLEMENT.

It is well known that the Germans have worked out the Trade School problem in their usual scientific and practical manner; but our readers will many of them be surprised to learn that in the various Trade Schools of Berlin there were in 1894-95 336 teachers, 8,992 students, and that this city alone spent in this good work a sum of \$209,102.

AN umbrella covered with a transparent material has been invented in England, enabling the holder to see where he is going when he holds it before his face.

REGENT PATENT AND TRADE MARK DECISIONS.

J. & P. Baltz Brewing Company vs. Kaiserbrauerei, Beck & Company (U. S. C. C. A., 3d Cir.), 74 Fed., 222.

"Kaiser" as a Trade Mark.—The word "Kaiser" used in connection with a brand of beer does not indicate the class, grade, style or quality of the beer or locality of its manufacture, and hence is not descriptive, and is a proper trade mark.

Effect of Foreign Trade Mark Law.—Under the provisions of the treaty with Germany, that citizens of Germany shall enjoy in the United States the same protection as native citizens in trade marks, etc., a citizen of Germany is not prevented from acquiring, by prior use as a trade mark in the United States, a trade mark in a particular word, although such word could not be used as a trade mark in Germany. Nor do the provisions in the treaty with Austria, that if a trade mark has become public property in the country of its own origin, it shall be equally free in the territory of the other contracting party have any effect on trade marks in the United States.

Scheuer vs. Muller (U. S. C. C. A., 2d Cir.), 74 Fed., 225.

Misleading Statements on Labels.—A statement on a label used in connection with the preparation of chicory that the contents is "Chicorien Kaffee aus der Fabrik von E. B. Muller & Company, in Roulers (Belgian)," is misleading and unfair when the only thing done in Belgium is to harvest the chicory root, while the roasting, grinding and further manufacturing is done in this country.

Estoppel.—The fact that the firm to which a foreign manufacturer consigns his product in this country itself puts up a similar American preparation with labels somewhat similar, although not deceiving, will not deprive the foreign maker of his right to stop the sale by third parties of an American preparation dressed up to imitate his own.

Preliminary Injunction.—In a trade mark case a preliminary injunction will be granted when the court is satisfied from the affidavits and the exhibits that the defendant's labels were devised with the intent to deceive purchasers into the belief that they were buying complainant's goods, and where such label is, in fact, well calculated to accomplish that purpose.

Beadleston & Woerz vs. Cooke Brewing Company (U. S. C. C. A., 7th Cir.), 74 Fed., 229.

Descriptive Word not a Trade Mark.—The word "Imperial" designates quality, and is, therefore, not a trade mark for beer.

Adoption of a Trade Mark.—The plaintiffs made for several years beer named "Kulmbacher," and afterward two other kinds of beer, to one of which they gave the name "Imperial." All packages bore their own name, the coat of arms of the State of New York, and the name "Empire Brewery" with the special name of the beer added. On the bottles of the Imperial beer, designed for export, this name was placed on the label with the plaintiff's name, and the coat of arms and "Empire Brewery" were printed in the corners of the label with the words "Trade Mark." It was held that the plaintiffs had not adopted the word "Imperial" to indicate origin or ownership, and, therefore, were not entitled to its use as a trade mark.

Hostetter Company vs. Bower (U. S. C. C., N. Y., Cox, J.), 74 Fed., 235.

Hiring Witnesses to Procure Evidence.—In a trade mark suit witnesses hired by the manufacturer of a "patent" medicine to procure evidence against supposed infringers are not entitled to much weight, and where they state that they purchased of defendant imitation bitters put up in genuine bottles procured for the purpose, it appearing that they relied wholly upon the opinion formed by tasting the liquor, it is insufficient to establish infringement where such witnesses were opposed by the testimony of defendant and his employes and others that the bitters were genuine and not an imitation of complainant's.

National Harrow Company vs. Quick (U. S. C. C. A., 7th Cir.), 74 Fed., 236.

Spring Tooth Harrow Patent.—The Reed patent, No. 201,946, for improvements in spring tooth harrows, has been declared void for want of novelty.

Anticipation of a Patent.—To constitute an anticipation of an invention it is enough that a like structure had been in well established use whether all features of it originated by design or by accident.

Dodge Manufacturing Company vs. Atkins (U. S. C. C. A., 7th Cir.), 74 Fed., 241.

Limitation of Split Pulley Patent.—The Sanborn patent, No. 275,947, for a split pulley, is limited as to the first claim by the language of the patent and the prior state of the art to a solid wooden pulley divided into two sections in a serpentine or irregular course so that the parts will interlock when adjusted together on the shaft.

Thomasson vs. Bumpass (U. S. C. C. A., Va., Hughes, J.), 74 Fed., 243.

Patent for Chicken Coops.—The Thomasson patent, No. 444,561, for chicken coops for shipping purposes, shows no patentable novelty except in the form of the

wovenslatted mat forming the bottom of the coop, and, therefore, is not infringed by a coop with a different kind of bottom.

Milton vs. Kingsley (Court of Appeals, D. C.), 75 O. G., 2193.

Assignment of Future Inventions.—An inventor agreed to assign a three-fifths interest in his present and future inventions relating to a particular subject, and the assignee thereof agreed to furnish funds necessary for patenting such inventions and exploiting them, the two becoming partners in such business. Afterward they each claimed to have made a certain invention relating to the subject matter which was reduced to practice by them jointly. In an interference arising afterward between them, the only question is, which procured from the other the idea of the invention. In such a case it would be wrong to permit the assignee to procure patents in his own name only on improvements that grow out of the development of the business. It is against the theory of law of partnership that one partner should, without the consent of the other, carry on, for his own exclusive use, any business within the scope of the partnership business.

Inventions by Partners.—Where inventions are made by partners, and one has applied for a patent, it might be proper, in case of a quarrel, to have the patent issue, and then by process in equity compel an immediate assignment to the proper parties.

Croskey vs. Atterbury (Court of Appeals, D. C.), 76 O. G., 162.

Reduction of a Process to Practice.—The actual reduction to practice of a process consists in the active performance of the process. Making a device by which the process may be carried out is not a performance of the process, and is, therefore, not a reduction to practice.

Constructive Reduction to Practice.—The filing of a complete allowable application for a patent for an invention is a constructive reduction to practice, and is as effectual in contests of priority as actual reduction to practice, and filing is reduction to practice, although subsequent amendments are necessary to make it allowable.

Diligence in Reducing to Practice.—There is no general rule for what constitutes "due diligence." It is reasonable diligence, and that must be determined by all the facts in each case. However, inactivity for eighteen months in the absence of controlling adverse conditions is not reasonable diligence in the case of an invention which would not require more than a month for actual development.

International Pavement Company vs. Richardson (U. S. C. C., Acheson, J., Pa.), 76 O. G., 166.

Transfer of a Licensed Plant.—The transfer of "plant and goodwill, including the contract of license," is a contract for machines forming a part of the plant, which machines are transferred subject to the restrictions of the license, and therefore such machines cannot be used or sold except in accordance with the terms of the license.

Notice of Defect in Title.—Where machines are bought by a contract which refers to a license, the purchaser is held to have notice of the limitations set out in the license, whether he had actual knowledge thereof or not. Hence, when machines are brought under a license that prohibits the disposal of the machines except to other licensees and permits a purchaser to use the machine on certain conditions, he is bound by the terms of the license.

Boston's New Union Station.

The Boston and Albany, the Boston and Providence, the Old Colony and the New England Railroads are now about to follow the lead of the northern lines, and take advantage of the act passed by the last legislature to build a new union passenger station on the south side of Boston. The new station will front on the extension of Summer Street, Federal Street, the main line of communication between Boston and South Boston being closed. Uptown stations on the various roads will be provided for the convenience of those who visit the museum, library, or the Back Bay residential section. The freight business of the Boston and Albany will be kept upon the site of the present passenger station and of the Old Colony station. The freight business of the New England, of the Boston and Providence, and of the consolidated (Old Colony division), will all be transferred to the land of the New England road, on the east side of Fort Point Channel. The new station will bring visitors nearer to the retail and business district than before, and will tend, when taken in conjunction with the north union station, to make the business part of the city more stable.

The preliminary plans for the station are as follows: The façade on Summer Street will be four stories in height for a portion of the width, and there will be a tower 120 feet high. The general waiting room will be 300 feet long, 76 feet wide, and 30 feet high. The train shed will be 825 feet long, 610 feet wide, and will contain 33 tracks. The station and terminal will cover about 23 acres. The estimated cost of the undertaking is about \$6,000,000.

The Successful Essays of the Late Prize Competition.

The publication of the winning essay in the late prize competition has brought to this office a large number of requests from our contemporaries for permission to republish the essay—requests with which we gladly comply. Those who have not as yet read the second essay, by Mr. Edmund Becker, published in the last issue of the SCIENTIFIC AMERICAN SUPPLEMENT, should hasten to do so. The writer has an acquaintance with the subject of invention, which is at once broad and detailed; and, while he has condensed the essential facts into a small compass, he has done so in such original fashion as to make the article exceedingly good reading.

The third essay, which is published in the current number of the SUPPLEMENT, was written by a gentleman whose name and versatile pen have been long familiar to the readers of the SCIENTIFIC AMERICAN—Mr. George M. Hopkins. For a period of twenty years Mr. Hopkins has been an important contributor to our columns; and his elaborate work, Experimental Science, is one of the best known works of its kind in existence to-day. The essay is just what we should expect from the author: pointed, comprehensive, well balanced, and characterized by that directness and lucidity of style with which our readers are so well familiar.

Nassau's Phosphorescent Lake.

Having in remembrance old Sampson Stamp, of Key West, the discoverer of the sea gardens at Nassau, we took a pilot and sailboat the following morning and sailed some four miles up the channel. There we embarked in a rowboat with a glass bottom, made by inserting therein plates of thick glass, through which the bottom of the sea spread out before us like dry land. A strange feeling crept over me and in imagination I fancied myself with Jules Verne on the voyage of Twenty Thousand Leagues Under the Sea. We could see all the little fishes, minnows one inch long and larger kinds one foot, two feet and three feet in length, some white and black and blue, besides many angel fish, all yellow like a canary, with bright blue fins and tail, swam by beneath us. As the ripe wheat fields in summer sway to the breeze, so there in the submarine currents waved great bunches of fan leaf coral, purple, yellow and white. The water was clear as air, and, pointing to some especially beautiful specimens of rock and fans, our little darky dived over, and, like the fish, we could see him swimming down until at last, clutching the growth with two hands and feet firmly braced against the coral, he gave a tug and away he came to the top, fan in hand. Indeed, God hath wrought marvelous things in this world of His, but nothing of greater bewitching fancy than the sea gardens of Nassau.

When night came and before the moon was up a drive of two miles back on New Providence Island brought us to a most interesting work of nature. A lake some 1,000 feet long and 300 feet wide lay quiet and black as any other sheet of water at night might do. But once in a rowboat and shoved off from shore what a mighty change was wrought! Two small out-swimmers, the hue of the surrounding darkness, accompanied our boat of fire, for such it seemed. Like two human torches our darkies swam by our side as in a cloud of phosphorescent fire. At the slightest disturbance the whole surrounding water lit up like molten silver. Each boy's toes and fingers were as though the sun shone on them, and fish darted through the quiet water like skyrockets, leaving a glittering trail behind. The light was so vivid I could see the time by my watch, and when a wave was sent upward with the oar the falling drops were like blue tinted pearls. The movements of our boat made enough light to plainly show the bottom, for the water is from the ocean and as clear as all that which nature makes to flow about those lovely Bahamas. Enticed by the water's warmth and the hot night my friend and I went in swimming, but only for a few minutes. From this swim comes a story hard to believe, but as true as Gospel. That night, as was my custom before turning in, I went to the bathroom, which I could easily darken, to change some photo plates in my holders. When about to pull the slides I noticed the phosphorescence, which I had brought from the lake, shining from my bare feet and giving so much white light I had to cover them with a towel before I dared expose the plates to what a moment before had been intense darkness.—Forest and Stream.

A Big Shipyard Fire.

The famous shipyard of Harland & Wolff, on Queen's Island, near Belfast, Ireland, was visited by fire on July 27. The fire began in the engine fitting department, and as a high wind was blowing, the flames spread rapidly. An immense quantity of valuable machinery belonging to vessels in course of construction at the yards was ruined, as were also the tools and machinery in the various shops. A conservative estimate of the loss is \$1,250,000. The yards occupy an area of eighty acres.

Cycle Notes.

Cycling was strictly prohibited during the recent coronation fetes at Moscow.

In attempting to tighten up a worn nut, put a little resin on the jaws of the wrench; this will enable it to get a better hold.

Prof. Virchow was recently thrown down by a bicycle on one of the Berlin streets; fortunately he was not much injured.

It is now a misdemeanor in New York State to throw upon a public road tacks, glass or any sharp substance likely to injure the tires of bicycles.

The soldiers of the United States Army can thank General Miles for the arrangements he has made by which they can obtain wheels at low prices on easy terms of payment.

The French bicycle manufacturers propose to test each wheel and mark upon it the weight of the rider which it will bear without injury. This is an excellent suggestion, and could be adopted with profit in the United States.

The city of Copenhagen, where the world's championships are to be held in August, has probably the largest proportion of cyclists to the population of any large city in the world. In a total population of 450,000 there are 30,000 riders.

The whaleback steamer Christopher Columbus, now running from Chicago to Milwaukee, has been provided with a bicycle track (eight laps to the mile) on the lower deck. This track is so arranged that it does not interfere with the other passengers.

The lot of the small number of Roumanian cyclists is a hard one, for not only must they have their names and addresses fastened on their machines, but they must also have it on their lamps, and cyclists in the streets of Bucharest must ride in single file.

One bicycle has been supplied to every police station in the suburbs of Paris for the use of the force. If the training of policemen proves successful, more machines will be supplied. Meanwhile, every policeman who uses his own bicycle while on duty will receive fifty francs.

The sextuplette team of Syracuse has been practicing for some time with their large machine. It is said that they recently beat the Empire State Express of the New York Central Railroad. It does not appear that the train was under full headway, however. The machine ran in a specially prepared track four feet wide, and is said to have finished four lengths ahead of the engine No. 999.

To clean a muddy bicycle proceed as follows: Let the mud dry, then take a cloth with a little oil on it, pass it around each tube of the frame, and holding the ends, one in each hand, pull them alternately, dragging the cloth backward and forward. By this means, and with the aid of a spoke brush for some of the parts, the mud is quickly rubbed off and the enamel left unscratched.

A newspaper in the City of Mexico keeps the following standing matter at the head of its cycling column: "Pedestrians should not stop short or run ahead when crossing the path of a wheelman, but should pursue their course unmindful of him, as the cyclist has all the advantage in dodging front or rear. All accidents are caused by the indelicacy of pedestrians. This rule should become universally known."

The ball bearings ordinarily used on bicycles should be so adjusted that no side "play" is perceptible, but not tight enough to "bind." This is in reply to a number of readers who have asked whether the bearing should not be loose enough to allow the shaft to move slightly sidewise. In the language of a prominent bicycle manufacturer, "bearings should be absolutely tight and yet perfectly loose." Although seemingly paradoxical, there is a point, and not a very narrow one either, where the bearing may run perfectly free, and yet be tight enough so that no "lost motion" is apparent.

In repairing a single tube tire, it is well to exercise a little care in estimating the size of the plug patch. The tire is often condemned when the plug does not hold, while, in reality, the fault lies in the inefficient material used. A plug with a blunt edge patch should in all cases be of as ample area as the aperture in the tire will permit of inserting. A common mistake is the application of a thick plug with no patch base, which common sense should tell the user will not answer the purpose. A single tube tire can be repaired both easily and permanently, provided proper care is used in the selection of the material.

A bicycle chain should not be tight, says the L. A. W. Bulletin. No chain and wheels can be made which will run well unless there is a little "slack" to the chain. In fact, there is no danger of the chain being too loose so long as it cannot possibly get off the teeth of the sprocket wheels. If you have any doubt as to whether a chain is loose enough, roll the machine forward a few steps, and while it is still moving forward, slightly take hold of the lower part of the chain, and unless it has the feeling of being perfectly loose, the adjustment is too tight. A chain should be kept well oiled in its bearings. But very little oil, however, should be allowed to remain on the outside.