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PERSISTENCE THE ESSENTIAL ELEMENT OF SUCCESS.

How many projects calculated for the improvement of the race have been suffered to die, after receiving shape and form, will probably never be known. There are many really inventive minds which possess no quality of perseverance. They nurse the germ of a discovery or improvement into vitality until it promises to arrive at a useful maturity, and then, apparently without reason, let it die a natural or an unnatural death, without serving any useful purpose whatever. Unable to rest, they immediately conceive another idea, which in its turn is stillborn or dies in immaturity. The lack of adequate return for the labor and mind employed in these cases is not because the improvement itself is not valuable, nor because the inventor wanted confidence in its merits; it is wholly because he lacked persistence of purpose. Frequently the invention is re-invented, the improvement re-discovered, and the original discoverer sees the product of his own brain which he himself neglected, enriching and benefiting others. Where one man with energy, perseverance, persistence in overcoming obstacles, and well directed endeavor, will succeed with a comparatively unimportant and trifling invention, another with one of general usefulness and great intrinsic value will never realize either wealth or fame.

He who merely conceives an idea and thinks about it, but makes no attempt to bring it to the notice of others and to introduce it into the living, breathing world, has no right to claim any credit or reward if afterward another shall utilize what he merely dreamed about. Not that success alone should be the measure of estimation for a well directed attempt; for many who have not succeeded themselves have opened the path and pointed the way for others. Such should and do receive the credit due to their endeavors. But the possessor of a useful idea who selfishly keeps it as a plaything for his leisure hours, as a hobby on which to ride, or neglects to develope it into activity, can claim nothing justly of him who gave it life and purpose.

The career of Cyrus W. Field in his thirteen years of labor on the Atlantic cable is an illustration of the value of persistency. He, a retired merchant, peacefully settled, as he believed, for the remainder of his life, determined to attempt the great enterprise, and enlisted by his enthusiasm some other gentlemen in the project. A land line of four hundred miles with a good bridle path had first to be constructed through the wilderness of Newfoundland. This employed a force of six hundred men for two years. Then a submarine line had to be laid across the Gulf of St. Lawrence. This was once lost and had to be replaced. Then the great Atlantic line was four times broken, but amid all these discouragements, seeing his own fortune and those of others literally "cast into the sea," subjected to the discomforts of over thirty Atlantic voyages, and enduring the annoyances of loudly expressed unbelief and illy concealed ridicule, he persisted until his proudest monument is his success in the laying of the great ocean telegraph.

If the inventor has discovered a really good thing, or the mechanic made an indisputable improvement, there is no adequate reason for discouragement if the world does not at once accept his view of it. If it has merits and they are persistently and continually presented in the proper manner, it is impossible but they will attract attention. If, however, the inventor is satisfied with having perfected his improvement, and does not follow up this success by further attempts in properly introducing it, he may as well give up the career of a successful inventor. There must be persistence: first in working out into active form and palpable shape the idea; then there must be the same persistence in presenting it to the attention of others, whatever may be the discouragements and rebuffs which meet him. Without this quality the inventor is useless to others and powerless to aid himself; with it, to him all things are possible.

RIGHTS OF PROPERTY IN INVENTIONS.

"The large share which the inventions of Americans have had in promoting industrial progress throughout the world, renders the degree of effective protection given to inventors in the United States and other countries, a subject of pressing importance. It is not merely that the spirit of invention is aided just in the degree that encouragement is given to the inventor, but that any country desirous of maintaining her superiority over other countries, will find that the utmost liberality in giving effective protection is coincident with the soundest policy. If France, for instance, were to do for other branches of industry what it has already done for its art-industry, insure to the inventor a property in his invention in perpetuity: and the patent laws of England at the same time to remain unchanged, it would certainly happen in no long period of time that England would be unable to compete with France in the very commodities in which at the present time she has the indubitable superiority. By giving perpetuity to inventions, England, on the other hand, besides giving a stimulus to the national talent, would attract thousands of foreign inventions, now kept back by fees unreasonably high, taken in connection with the limitation of time during which a patent is valid. So long as England alone possessed a patent law, this law, imperfect as it was, produced a beneficial result to her advantage as compared with other countries, but so soon as other nations adopted similar, or even better laws, the patent regulations in England should have been more completely amended. On comparing the condition of industry in different nations with each other, we find that in proportion to the length of time encouragement has been given to the inventor, and to the liberality and effectiveness of the laws affording protection, the industry of such nation has progressed. Turkey, Persia, and China are without patent laws, and the industry of these countries is, as a natural consequence, very nearly in the same state it was two or three centuries ago, when England was politic enough to attract by the promise of property in inventions, the inventors of the whole world to develop their ideas on English soil."—*London American.*

REMARKS.—The writer thinks that patents, instead of being granted for a limited term, should be made perpetual. This would be convenient for patentees, and encouraging to that large class known as assignees, who generally purchase the patent from the poor inventor for little or nothing, and then grow rich by taxing the public.

The European masses have for centuries been ground down by monopolies. By means of patents for special privileges, taxes, imposts, and various legal devices, the lords, dukes, and other monopolists, have maintained a perpetual system of robbery and oppression upon the working classes, the baneful influences of which language is inadequate to describe.

If patents were made perpetual, a patent aristocracy would quickly spring up to revel upon the industries of this republican nation.

The aim of law is to benefit the whole people. Laws which burden the masses but fatten the few, are bad in principle, and should never be perpetuated.

Every citizen is bound to labor for the common good; and some philosophers say that the just reward for labor should be in accordance with the prices of bread and the severity of the work done; he to whom brain work is most suitable, receiving no more pay for eight hours' labor, than the man of muscle for the same period. But we do not endorse this theory. If patents were paid for on this principle, some of the poorest inventions would bring high prices, and some of the best only a trifle.

The object of the patent law is to benefit the people by putting them in possession of improved tools, machines, appliances, processes, and other agencies by which industry is assisted, intelligence promoted, and the comforts of life augmented. The law encourages inventors to make known their improvements by giving them brief monopolies and permitting them to tax the people. When the patent expires, the monopoly ends and the people come into free possession of the improvement.

We believe in the expediency of patent laws, but we think the world could revolve without them. We have been accustomed to attribute the stagnation of the Orientals to ignorance of revealed religion and lack of moral power. Our cotemporary thinks it is due to want of patent monopolies. True, the Celestials have no patent law, but the Chinese compass guides our patent ships, and Chinese powder thunders from our patent guns. Many of the most marvelous discoveries were achieved without the help of patent laws.—[EDS. SCI. AM.

SOURCES OF NATIONAL IMPORTANCE.

Neither extent of territory nor strength of armies and navies, alone constitute the power of nations; nor even the possession of vast deposits of the precious metals, although each of them under favorable circumstances may contribute to national importance. More important than either of these however, is population. The British empire, with an area of 3,555,092 square miles, has a population of 223,500,000. Russia with an area of 8,281,000, has 74,000,000 population. France, 546,000 square miles and a population of 44,000,000. The United States 2,819,811 square miles exclusive of Walrussia and a population of about 33,000,000. England's preeminent importance and influence is largely a consequence of the great population she controls, and the diversity of their productions. The people of every variety of climate and soil contribute to her wealth and add to her power. Outside of herself and her colonies she really requires nothing necessary to contribute to her ascendency; the resources of a world are virtually her own. Her colonies furnish her with all manner of useful material, which she manufactures and returns to them and sells to the world, while the islands known as Great Britain and her North American colonies supply food for her mechanics. Every essential element of prosperity, so far as material needs are concerned, she possesses to a greater extent than any other European nation. The main drawbacks to this independence are the wide separation of the parts of her empire and the difference in the language and customs of her people.

In these respects we excel her. Our territory is embraced in a single boundary line, and our people speak a common language. Our productions are those of the north temperate, temperate, south temperate, and torrid zones, and of every diversity of soil, situation, and climate. Our country contains every kind of metal and mineral, many varieties of useful timber, the best grain-growing lands on the globe, and a greater number of valuable manufacturing material than any other, except, perhaps, that of the British empire. Our population is increasing faster than that of any other country, and our institutions are not only liberal, but alike from one end of the country to another. Possessing these present and prospective advantages, it is difficult to conceive a limit to the future importance of the United States among the nations.

MALLEABLE CAST IRON.

For some reason, not fully clear to us, malleable cast iron has not assumed the position among the useful metals it is entitled to from its merits. There appears to be a prejudice against its use which arises from a doubt as to its strength. For resisting a transverse or a longitudinal strain it may not be equal to wrought iron in tenacity, nor to cast iron in rigidity, but in some situations it is actually superior to either wrought or cast iron and in some respects better than steel.

If cast from the proper metal and then properly annealed and softened by the process of semi-fusion, it is more homogeneous than either ordinary cast iron or steel. When these conditions exist it may even be forged and drawn under the hammer without crumbling; its tenacity is wonderful under some circumstances. The carbon is almost entirely abstracted, reducing it to the condition of nearly pure iron without, however, the fiber of wrought iron produced by hammering or rolling, which fibrous condition is sometimes an element of weakness: for instance a small gear with a large hole upon which a great strain comes, has been proved to be much stronger made of cast malleable iron than of wrought iron or steel.

A case came under our observation some years ago, where the spindle gear of a screw-cutting lathe containing only 20 teeth was broken. Between the bottom of the teeth and the hole for the spindle, the metal was less that one quarter of an inch thick. The ordinary cast iron gears would fly in pieces whenever the carriage was reversed. A blank was forged of a bar of tough wrought iron, turned into a ring and welded with a scarf weld. Of course the fiber or grain of the iron followed the circumference, and the vertical sections of the teeth were cut through it. This gear would not stand. Cast steel gears, both annealed and hardened, were tested and failed, when a gear was cast and made malleable and worked satisfactorily for many months. In another instance the wheels for a wringing machine, which connected the rollers, could not be made to stand when of ordinary cast iron. They were made of cast malleable iron and no after trouble was experienced.

It is poor economy to employ a cheaper material merely because it is cheap; but when cheapness and superiority may be combined, as is the fact with malleable iron in many cases, it is the part of wisdom to do so. It can not be doubted that malleable iron may be used for many purposes to which wrought iron and steel are now applied.

PRACTICAL MECHANICS AS VISITORS TO THE GREAT EXPOSITION.

A correspondent, alluding to the raising of funds in England to pay the expenses of practical workmen to the Paris Exposition, inquires why a similar movement here might not be feasible and advantageous. In our opinion, there is little in common between the two cases. First, England is separated from France by a very little distance and a very brief time. To go from New York to Chicago, or from New York to Boston by steamer and rail, is a much longer and full as difficult and dangerous jaunt; we are not certain but it costs more money. Compared with the trip from any part of England to Paris, a journey from this country to the same place. even if the start is made from New York or Boston, is a great undertaking.

Second, we do not think the same conditions exist in relato the requirements of the parties. A very large proportion of our employers of mechanics are themselves practical men, and quite a number of these have already gone to the Exposition. Our most successful mechanics—masters—are those who have raised themselves from the position of employes to employers. It is doubtful if this fact exists to so great an