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How Machinery Increases Beneficial Labor.

About five years ago, when sewing machines were beginning to be introduced into this city, some furious attacks were made upon them by ignorant and mock philanthropists, who pretended to be anxiously concerned for poor seamstresses. They pictured the sad fate which awaited those persons; told how the hard-earned bread was to be taken out of their mouths by such capitalists as could purchase and use such machines, thereby dispensing with the labor of needlewomen, and thus bring them to want for lack of employment. Have such predictions been fulfilled? We who have for years carefully watched the effects of labor-saving machinery of every kind upon society, knew that such ideas, when uttered, were no better than the emanations of an idiot's dream, trusted to a few years' experience to prove the benefits of such machines to every class in the community. Thousands of such machines are now in operation in our country, and if we are rightly informed, more than a thousand of them are in operation in New York City alone; but instead of these having thrown any industrious females out of employment, they have rather increased the quantity of work for them to do. We were told a few days since, by one engaged somewhat extensively in providing needle work, that twenty stitches are now made on some garments, for one that was made five years ago—in short, that sewing machines had greatly increased the demand for sewed work. Thus coat linings, which used to be made plain, are now mostly elaborately worked, and finely stitched, and it is the same with almost every kind of sewed work. The amount of such work, he stated, had increased even in a greater ratio than the machines to execute it. A higher taste is now being gratified, and hundreds of women who used to ply the needle early and late with their fingers, for a mere pittance, are now better remunerated for their labor in attending sewing machines, while, at the same time, their hours of toil have been measurably reduced. It is our opinion that the very class—needlewomen—respecting whom so much was at one time said about being injured by sewing machines, will be the most benefitted. In many, if not in almost every instance, this has been felt to be the case already. Sewing machines, therefore, which are but a recent invention, afford abundant examples "how machinery increases beneficial labor."

Cause of the Open Polar Sea.

We have received a pamphlet by Samuel Hollingsworth, of Philadelphia, in which are some very ingenious speculations relating to the cause of the open Polar Sea discovered by Dr. Kane. He attributes it to the flow of a current of warm water from the equatorial to the polar regions underneath a colder current from the North to the tropical seas.—He says, "the water of the ocean at the equator and within the tropics is not only heated at its surface by the surrounding atmosphere, but is also heated at its bottom. This heat is derived from the earth, its temperature being elevated by the sun's rays passing through the water, and the water heated at the bottom to about 40 degs. rises to the surface, when it attains the temperature of 87 degs. The vacuum formed by the rising water is supplied at the bottom by the water flowing to it from the colder regions. This equatorial surface water would flow towards the north and return south [how could it do this?] were it not for the earth's diurnal motion, which gives it a westerly direction, and being confined by the north coast of South America, it proceeds along it to the Gulf of Mexico, where meeting with the North American continent, it takes a direction along our shores, and forms the Gulf Stream. This immense body of surface water flowing from the equatorial region, as it progresses northward, loses gradually its heat, until it meets with water colder than itself, which reduces it to 40 degs., at which point water is heavier than at any temperature above or below it. In this manner meeting with colder water—and consequently lighter than itself—it becomes an *under* current, moving onward in a direction opposite to that above it, towards the Polar regions, where, accumulating in an immense body, at a temperature of 40°, it forms an open Polar Sea. The Polar region thus becomes a basin as it were, to receive these under currents, thence they flow southward to restore the equilibrium at the place of beginning."

This is an ingenious theory. A wise Providence has constituted water with a quality by which it becomes heavier at 40 degs. than when it is formed into a solid (ice) at 32 degs. Were it not for this quality, our lakes and rivers would become solid fields of ice during winter. It is therefore a perfectly reasonable conclusion, that a warm under ocean current may be flowing to the Polar regions, but then we cannot see how these warm waters can *accumulate there*, unless by arresting both the upper and under currents.

A correspondent of the *United States Gazette*, Phila., endeavors to account for the Polar Sea by heat evolved from the rarified and cold air of the upper regions of the atmosphere, in consequence of the compression and condensation which it undergoes in descending to the level of the ocean, according to the theory of wind circuits set forth in Lieut. Maury's "Wind and Current Charts."

One of our correspondents—Wm. Slater, of this city—in a letter to us, "attributes the cause of an open Polar Sea to the earth being *concave* at its poles, and great heat being poured into that concavity." He believes that no under currents of the ocean could effect such a condition of things as an open warm Arctic sea. He also believes that there is a warm region at the North Pole, of an extent and capacity that might sustain a population equal to that of France. Thus three different persons have presented as many different views with regard to the open Polar Sea, and perhaps ten times as many other theories may yet be set forth. We entertain no positive opinion respecting its cause. We believe that another voyager to the Arctic regions might find the Polar Sea seen by Dr. Kane entirely covered with ice. We have come to such a conclusion from the fact of one Arctic voyager finding an open sea in one place, where another Arctic navigator, in a different season, saw nothing but impassable fields of ice.

Manufacture of Iron—Hot Blast; Saving of the Waste Gases.

This metal, in consequence of its comparative infusibility, and its invariable association with other mineral substances, which increase the difficulty of working it, was not brought into use until after other metals; but mention of it is nevertheless made in several parts of the book of Moses. That it was not, however, in general use 2000 years ago was proved by the discovery at Herculaneum of several cutting instruments made of bronze, which, before the introduction of iron, was commonly used for that purpose. Iron is manufactured from various ores, and the quality of the metal depends on that of the ore. Of all the various ores from which it is produced, the "magnetic" makes the best. This ore is found in great abundance in Sweden, and in the United States. A great magnetic iron ore region on our continent lies in the northern part of New York State, where, unfortunately, there is no coal. There are still, however, extensive primitive forests for making charcoal, which, although dearer, is much superior to coal, as it contains no sulphur. The best and cheapest iron for the manufacture of the best qualities of steel, should, therefore now be made in the State of New York, but such is not the case, for most of the steel used by our mechanics is made in England, from Swedish iron. The magnetic iron ore, although it produces the best quality of iron, is not so rich as the carbonate of iron, and yet this ore is not so much used as the common kinds of ore found in abundance in some of the coal districts. The association of iron with coal is an important advantage, as it requires about three tuns of coal for the production of one tun of iron.—Limestone, on which some coal strata rest, is eminently useful as a flux, for which purpose it is mixed with the coal and the iron ore, before they are thrown in the furnace. The first process to which the ore is subjected is that of roasting, for the purpose of expelling the volatile matters, particularly sulphur, the presence of which, even in small quantities, greatly deteriorates the quality of the iron. The furnaces in which the roasted ore is reduced are generally about forty-five feet high, and twelve feet in diameter at the broadest part, contracting towards the bottom, where the crucible that holds the melted metal is placed. The "tuyeres," or nozzles of the bellows that introduce the blast of air into the furnace, are cooled by being surrounded with fresh supplies of cold water, to prevent their being fused; and the continuous blast is kept up by a steam engine.

The quantity of air consumed in reducing iron ore exceeds in actual weight that of the ore, coal, and flux together, the proportions being seventeen tuns of minerals to twenty-two tuns of air. As the volume of air required is so immense, its entrance into the furnace tends to diminish the temperature, an effect which is prejudicial to the manufacture of iron. To lessen this cooling influence, the plan of heating the air before it is admitted has of late years been introduced with very beneficial effects; this is called the hot blast. The air is heated by passing it through a succession of hot tubes, and in this manner its temperature is raised to about 600 degs. of Fah. By the aid of the hot-blast, inferior kinds of ore and coals can be employed, which could not be worked by the former method; the good ore yields more abundantly, and the quality of the iron is greatly improved. A great improvement made of late years is in the employment of the waste gases of the furnaces for heating the blast, and for working the steam engine. The hot gases, as they pass up the chimney, instead of being allowed to escape directly into the air, are conducted under the boiler of the steam engine and among the pipes that heat the blast, by which means the fuel previously used for those purposes is entirely saved. It is a striking illustration of the unwillingness shown by some manufacturers to introduce any thing new, that the utilization of the waste gases of the furnaces has only been partially adopted in England and America.

Opposition to Inventions and Discoveries.

We live in better times than our forefathers; times of more enlightenment, and public candor in examining into the claims of discoveries and inventions, and in awarding their authors that honor and remuneration which they so justly deserve. It is sorrowful to reflect upon the sufferings which ancient inventors endured, for those heaven-born gifts, which now command so much admiration. Roger Bacon was forbidden to lecture; and when sixty-four years of age, was imprisoned in his cell for ten years, for the offence of making concave and convex glasses, the camera obscura, and burning glasses. Galileo was also imprisoned for his discoveries in astronomy, and good evidence of his being put to the torture secretly, for publishing his opinions, is not wanting. Guttemberg and Faust, the inventors of printing, were looked upon as having sold themselves to Satan, and were regarded with suspicion. We might present a long list of martyrs to science, discovery, and invention, but time and space would fail us. We rejoice that the days of such persecutions and trials are gone past forever. Still there may be many persons living in our day, who are imbued with prejudices against new projects and new discoveries, and may be given to the habit of sneering at new improvements in machinery, especially if made by inventors not engaged in the line of business which the machinery is designed to improve and advance. It is our opinion that such prejudices are not uncommon in factory and workshop, but they are wrong—very wrong. A machinist is liable to sneer at an invention made by a weaver if it relates to a tool; and a weaver to sneer at that of an engineer if it relates to a loom. These trade prejudices are perfectly natural, for the machinist may well consider that a weaver cannot be very conversant with lathes and drills; and the weaver may well exclaim, "what does an engineer know about a loom?" This is natural, we say, but not always correct. The man who is accustomed to work at one branch of business, becomes habituated to its very defects, and, in a measure, insensible or blind to them. On the other hand, a stranger to that business, if of an ingenious turn of mind, is more ready to notice such defects, and to plan and labor to make improvements.—This is perhaps not a general rule, but it has happened in very many instances. Arkwright was a barber, yet he invented a most valuable improvement in cotton spinning machinery. Whitney was not a maker of cotton machines when he invented the saw-gin. Cartwright, the inventor of the power loom, was an Episcopalian clergyman. Forsyth, the inventor of the percussion lock for fire arms, was a Presbyterian minister; and the Rev. E. Burt, of Manchester, Conn., was the inventor of the first American check loom. We could present a long list of inventors who have made valuable improvements on machines entirely out of their own line of business. In view of these facts, let us say to every man, banish every thought of prejudice against any new invention that may be brought under your consideration, no matter who its author may be. Examine the invention; do so carefully, and then candidly judge of its merits and demerits—judge it on its own account alone, for many good improvements have been prevented, for years, from finding their way into general use, simply because of prejudice in examining into their merits.

Franklin's Great Discovery.

In the last number of the London *Quarterly Review*, we find a just tribute of praise to Franklin. M. Arago, in his writings upon electricity, gives very little credit to Franklin for making the experiment which proved the identity of electricity and lightning. He says, "the first views of Franklin on the analogy of electricity and lightning, were only simple conjectures. The sole difference between him and Nollet was only reduced to the project of an experiment."

"This sole difference," says the Reviewer, "of which M. Arago makes so little account, was the grand difficulty to be overcome. The resemblances between lightning and electricity were too obvious to escape attention, and the idea, in fact, had occurred independently to three or four persons. 'If any one,' said Nollet, 'would undertake to demonstrate the notion, it would please me much.' It was just here where Nollet broke down. He could neither see what was the single link wanting to complete the chain, nor how to apply it.—Electricity was the rage of the day, and not one of its numerous students could hit upon the method any more than Nollet. The sole difference between Franklin and the rest resolves itself into this—that he did that which nobody else could do."

This tribute to the great discovery of Franklin, contains the kernel of the matter. The experiment of Franklin to prove the identity of lightning and electricity, was the most sublime ever performed. The old philosopher drawing lightning from the thunder cloud with a simple kite, well entitles him to the appellation of the "Lightning Tamer."

Horse Shoes by Machinery.

On the 19th of December last year, a patent was granted to Robert Griffiths, of Alleghany, Pa., for an improved machine for making horse shoes. Previous to this time, we have had no opportunity of examining into the nature of its action, and the principles of its construction, but during the past week the inventor has been exhibiting a model of it at the Johnson House, Warren street, this city, (where he may be found daily this week,) has explained its operations to us, and shown us specimens of its work. The iron bar of which the shoes are made is fed red hot into the machine, and is then cutoff the required length, bent by levers, and formed upon dies, swedged and punched at one continuous operation. A working machine in Alleghany, we are informed, makes ten horse shoes, with ease, per minute, and judging from the specimen we saw, these require very little to be done to them afterwards to fit them for use. The shoes are well formed, and exhibit no straining of the fiber of the metal. This machine accomplishes at one continuous operation that which requires three and four different operations, on other horse shoe machines.

The wheat now held by the millers of Rochester, N. Y., is valued at over $1,000,000.