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Contents:

(Illustrations are indicated by an asterisk.)

BESSEMER STEEL IN THIS COUNTRY.

The old steamboats which ran upon the North River in the palmy days when a sail up that glorious water course was like a chapter out of a poem, present many features which, to the curious and those who love to compare present progress in the arts with past, are interesting in the highest degree. Wide of beam, long in the keel, with huge paddle boxes overtopping the frail hulls they looked more like some absurd and unnatural relic of the antediluvian period than modern vessels intended for the transportation of passengers.

The machinery of the steamers was not more remarkable than the hulls; and those details, which are now usually forged, were cast or constructed of such materials as the workmen in that day were able to manage. Thus one steamer—and doubtless others—had huge shafts of boller iron; they were six feet in diameter, adequately stayed and strengthened, and were adopted partly in order to solve the question of fitness between them and cast iron, and partly because forges to construct and lathes able to take in wrought iron or cast-iron shafts of the proper dimensions were unknown in the country. Since the period which marked the introduction of these boats and the adoption of their boiler iron shafts, the world has made great strides in the mechanic arte, and there are but few exigencies liable to arise wherein the remedy is not at hand.

The increased facility with which wrought iron can be worked and its adaptation to obvious purposes have rendered it almost indispensable. Iron in its three principal forms is the chief substance on which we rely for strength and durability, and since wrought iron has a higher tensile strength than cast, and steel a greater than either, it is obviously the material to be used where it can safely be to the exclusion of other.

The expense, however, has been one of the greatest barriers to general use, and its introduction in machinery has only been possible where large sums have been paid for work and makers instructed to spare no pains to make their work first class.

But by the success of the Bessemer process, and its practical adaptation to the production of steel in large masses of superior quality, the mechanic arts have received a wonderful impulse in all that relates to the durability of the machinery by which they are prosecuted.

The expense of repairs and renewal of railway stock, which are the chief items of outlay, involving often the sacrifice of dividends, and causing grief to stockholders, the breakage of costly shafts on steamships, the great advantages from dispensing with the transportation of non-paying weight and the perfect integrity of the material throughout, are reasons for advocating its adoption in place of wrought iron. English shipbuilders have used quantities of this metal in past years and the saving in weight above alluded to is very great—in iron vessels five-eighths of the thickness being used in place of iron; and we have no doubt but that our own mechanics will avail themselves of it at an early date. We have said enough in this artice to show a few of the uses to which it may be put, and we shall doubtless mark a new period in the dimensions and weight of machinery. Messrs. Corning, Winslow & Holley, who have introduced the process in this country, are now prepared to manufacture it, and we direct the attention of all interested to their advertisament in this number.

ONE RESULT OF THE ENGLISH LOCK-OUT.

The great strike of the English iron manufactures, or *masters*, as they are termed abroad, has been described and commented on in a previous number of the SCIENTIFIC AMERICAN. To those persons who may not have seen the account referred to it is necessary to state that by reason of some men in a certain locality refusing work the masters took concert in action and declared their works closed until the operatives should return to their labor. The injustice and meanness of this act needs no comment, and it now appears that agents went abroad on the first intimation of the troubles and by representing the great advantages of this country in respect to politicalprivileges, wages, permanent employment, and kindred matters, succeeded in inducing large numbers of operatives to embark, and many of them have already arrived.

So far as regards permanent employment and the want of workmen there can be no question as to the expediency of coming to this country, but between the days when the arts of peace shall supplant those of war and the disorder which now exists in society at the South, there must invariably be a period of relaxation when trade will be dull and times hard. From the tremendous strife and struggle in which we have been engaged we must take breath for the sober business which is to follow.

Already the Government is discharging the superfluous hands from its armories and navy yards. The contracts for iron-clads have been completed, and while there is work enough in store for all there will be a period of dullness, as we have remarked, which must of necessity ensue. We therefore warn our mechanics to be provident now when wages are high and prepare for the future, and if English workmen see fit to come here they should not come with empty pockets or expect to find employers coming off in small boats to take them from the ships before they land.

When the war first broke out, four years ago, there was a greater demand for workmen than there now is and emigration of artisans to this country at this juncture will result in overstocking the market so that wages will be very low.

WHO INVENTED ILLUMINATING GAS?

The last number of *Le Gaz* has a report of a lecture by M. Payen on lighting by gas, delivered at the Sarbonne before a brilliant audience of scientific men and men of the world. The first part of the lecture was devoted to a historical sketch of artificial lighting. After tracing the use of candles and oil, M. Payen said:—

"The invention of lighting and heating by gas is due to Philip Lebon. The priority of this discovery was acquired (*acquise*) by a patent dated 1798, and by the memoir more explicit which he presented the following year to the Academy of Sciences. This able engineer understood at that time all the scope of his bold conception; in his enthusiasm he said to his fellow citizens, "My friends, I shall be able to send you continually from Paris to Brachay by artificial light and heat." The peasants who heard him shrugged their shoulders and remarked, "He is crazy!"

M. Payen speaks of Murdoch having lighted the shops of Watt and Bolton with gas in 1792, but still awards the priority of the discovery to Lebon from the statements in his memoir.

PRIZES AT EXHIBITIONS.

On another page we publish a list of thirty-two prizes offered by the Industrial Society of Amiens, in France, and they will doubtless offer suggestions to our own people, not only to the managers of fairs and exhibitions, but also to manufacturers and others who may desire to call out some particular invention or information in connection with any part of their business. It will be observed that a manufacturer of velvet offers a prize of twenty dollars, in addition to the gold medal of the Society, for an improved dressing for his fabrics, and several other prizes are increased in value by donations from persons specially interested in the invention or information sought.

The distribution of prizes is a matter of sufficient importance to merit the fullest and most earnest consideration of the men to whose determination it is committed. The principal service of fairs to exhibitors is the advertising given to the articles exhibited. In order, therefore, to obtain articles for the fairs, it is necessary that the prizes should be so distributed as to call out an active competition among those having wares to sell. But as the object of this class of exhibitors is mainly to secure the certificate of a tribunal supposed to be impartial, diplomas would generally be as efficacious as costly medals.

There is another class of competitors for whom the only suitable prize is a sum of money—the experimenters. A few years since the Massachusetts Agricultural Society offered a premium for the best experiment to test the comparative value of cooked and uncooked food for swine; and the facts developed by this offer have passed into the standard literature, and have become a portion of the established science of agriculture. Reading the reports of such experiments may be dull and prosy compared with the inspection of mammoth oxen or over-fattened hogs, but they exert a powerful influence in permanently raising the position of the Society, and they are of immeasurable value to the community. The proper compensation for the labor of weighing, measuring and recording necessary in experiments, is an adequate sum of money.

If committees and managers to whom the arranging of premiums and prizes is committed will give their thought to the matter, doubtless many improvements over the usual stereotyped course will be suggested, our design at this time is simply to call attention to the importance of the subject.

MARKET FOR THE MONTH.

Notwithstanding the important public events of the month of April, the capture of Lee's army, and the assassination of President Lincoln, the markets during the month have been remarkably free from fluctuations. The following table shows the change in price of the leading staples:—

	Price March 28.	Price April 26.
Coal (Anth.) ₩ 2,000 lb.	$13 00 @13 50	$11 00
Coffee (Java) ₩ lb.	33 @ 35	33 @ 35
Copper (Am. Ingot) ₩ lb.	34 @ 36	34 @ 36
Cotton (middling) ₩ lb.	@ 50	50 @ 51
Flour (State) ₩ bbl.	$9 25 @ 9 75	$7 00 @ 7 90
Wheat ₩ bush.	2 25 @ 2 50	2 20 @ 2 50
Hay ₩ 100 lb.	1 60 @ 1 70	1 32
Hemp (Am. drs'd) ₩ tun.	275 00@300 00	275 00@350 00
Hides (city slaughter) ₩ lb.	7½@ 9	8 @ 9½
India-rubber ₩ lb.	65 @ 1 05	51 @ 90
Lead (Am.) ₩ 100 lb.	9 75 @10 00	9 75 @ 9 87
Nails ₩ 100 lb.	7 50	7 00
Petroleum (crude) ₩ gal.	33	37 @ 37½
Beef (mess) ₩ bbl.	$13 00 @21 00	12 00 @20 00
Saltpeter ₩ lb.	28	28
Steel (Am. cast) ₩ lb.	15 @ 27	14 @ 22
Sugar (brown) ₩ lb.	9½@ 14½	10½@ 15
Wool (American Saxony fleece) ₩ lb.	75 @ 85	75 @ 85
Zinc ₩ lb.	14 @ 15	13½@ 14
Gold	1 54	1 51¾

A SWEDISH MONITOR.—The launch has just been safely effected in Stockholm of the *John Erikson*, the first Swedish monitor. She measures 205 feet long by 46 wide. The side plating is five inches thick, and around the turret it is 12 inches, as is also that which protects the rudder. The vessel will be provided with six engines.