



Manufacture of Wrought Iron.

MESSRS. EDITORS:—In your paper of the 3d instant your correspondent "Monitor" has propounded some questions that I take pleasure in answering, and, at the same time, correcting the erroneous impressions held by himself and other parties concerning my invention.

I am well aware of the efforts of Harvey, Salter, Renton and others, to make wrought iron directly from the ore; they have failed, and I have succeeded, and it is natural for "Monitor" and others to inquire the reason.

Iron ores in a pulverized state have been mixed with carbon and exposed to heat under two conditions; the first, where the flame from a furnace has been brought directly in contact with the ore, and more or less atmosphere has been present, as in Harvey and Salter's experiments; the second, where the ore and carbon have been confined and stationary in a heated vessel as in Renton's.

In Harvey and Salter's experiment the presence of oxygen defeated the end sought; in Renton's, the mass of iron and carbon required such a high heat to operate throughout the ore, that the vessel containing the same was speedily destroyed.

My apparatus overcomes both difficulties by entirely excluding the air, and so agitating a thin layer of the ore and carbon that the deoxidation is accomplished at a comparatively low temperature and the apparatus is not destroyed.

As an example of the durability of my apparatus, I remark that I have used one cylinder for about three months, and treated therewith ore that produced more than one hundred and fifty tons of iron, and the cylinder appears to be as good as when put up.

I have also a second cylinder in operation, and the two are capable of making four tons of iron per day, and I find practically that less than two tons of coal is required for making one ton of blooms.

All the iron I have been able to manufacture has been taken by R. A. Douglass, of the Rockaway rolling mill; and he has a contract for all I can make for three months to come. Besides this, five furnaces are being constructed on my plan by Mr. Douglass.

I am now manufacturing wrought iron directly from the magnetic iron ore. I have also thoroughly tested the hematite and Cornwall ores of Pennsylvania, and with very satisfactory results.

There is a general misapprehension as to the amount of heat required in the deoxidizing process. It will not answer to use so much heat as to burn the carbon. I only employ a dull red heat scarcely visible, and not sufficient to ignite the carbon within the cylinder.

This invention is in regular daily operation at Newark, where I shall be happy to show the same to "Monitor" or any other person interested in the iron manufacture.

ISAAC ROGERS.

New York, May 5, 1862.

The American Mode of Raising Flax.

MESSRS. EDITORS:—When cotton is so high in price and the enemy seem intent on burning what they have, rather than allow it to fall into our hands, I trust farmers generally will see the importance of attending to the cultivation of flax. There is no doubt that there will be a good demand for the fiber, and at highly remunerative rates, but, even if the fiber was worthless, at present rates the seed alone would be a good-paying crop. I was in hopes that the several articles which had appeared in the SCIENTIFIC AMERICAN would have been the means of drawing out the views of some of our successful flax growers; but as they don't speak out I would wish to offer a few remarks.

It is well to know how the Irish and Dutch cultivate flax, but more important to know how it is done here. Many rules given for Ireland, instead of stimulating our farmers, might alone be the means of deterring them from embarking in the business. The *Irish Agricultural Review*, from which you quote, observes:—"Unless under very careful management, flax is a most precarious crop, and while on the one hand it may be the most valuable which the farmers can raise,

on the other it may be the most worthless;" and Mr. McCudden says that when the plants are six or eight inches high they should be weeded by hand. The advice to a Western man to weed by hand would be equivalent to telling him not to sow flax. Flax, like all other crops, will give the best returns with the best cultivation, but in this section, where large quantities of flax are raised every year, and is found to be profitable, not one acre in a hundred is weeded by hand, and if one may judge from the price paid for the use of the land (from twelve to twenty dollars per acre) it is not considered a very precarious crop.

Again, the authorities already quoted from recommend too thick seeding, viz., seven to nine pecks per acre. In this section, from a bushel to a bushel and a quarter has been proved, by experience, to give the best results, both as regards seed and fiber. Even Irishmen, flax growers in Ireland, have, after coming here, abandoned the thick sowing as not being so profitable as the thin.

It would be well if farmers in different sections would make some careful experiments, and in the fall send you full details, of which you might publish a condensed report, stating description of soil, manner of cultivation, quantity of seed sown, and, on the same soil the difference in results from thin and thick sowing, other circumstances being equal. Water retting in Europe gives the best quality, but for the uninitiated dew retting is the safest, and in this section is the only system practiced, except, it may be, a little water retted now and then as an experiment. Water retting will give decidedly the best quality of fiber, but as great skill and experience is necessary to be successful the better way would be to adopt the dew-retting system, as being the most profitable, at first, and make experiments in water retting on a small scale.

GEORGE ANDERSON.

Lansingburgh, N. Y., April 29, 1862.

Cost of Water and Steam Power.

MESSRS. EDITORS:—In the SCIENTIFIC AMERICAN of 15th of February last, under the head of "Comparative Economy of Steam and Water Power," your Wisconsin correspondent gets a smart story but no answer.

In England it is considered that the cost of steam is £30 per horse power, and the cost of water power generally £3, or one-tenth. In Glasgow it is found that the cost of each horse power by steam is £36 annually. The cost water power in Greenock (22 miles on the Clyde below Glasgow), including water rent to Shaw's Water Company, interest on wheel, &c., is £5 6s 5d, or £30 13s 7d less than the cost of one horse power by steam at Glasgow. In both places the people pride themselves on working economically.

It is gratifying to see that the SCIENTIFIC AMERICAN still maintains permanently the first place in mechanical science, although to quiet folks the great number of articles connected with destruction and war is not very pleasing or interesting. Let us hope, however, that the time is near at hand when inventors' intellects will run in another channel, and the ax, the plow and the anvil supersede the rifle, the sword and the shell.

W. K.

Bristol, C. E., April 8, 1862.

[Our correspondent has furnished us with statistics of the cost of steam and water power in two places separated about 20 miles from one another in Scotland. We rather think he does not understand the gist of the story to which he refers, because the cost of steam and water power, as given by him, cannot be taken as a standard for other places. We are of the opinion that his estimated cost of steam power in Glasgow is too high, because the cotton manufacturers of that city, who use steam power, compete successfully with those who use water power in Neils-town, only about nine miles distant.—Eds.]

Instrument for Calculating Distances.

MESSRS. EDITORS:—In reading the accounts of battles where artillery is used, I see that it takes the artillerymen quite a while to get the range of their guns, as they cannot calculate the distance between the gun and the object fired at exactly. Now, I thought that if an instrument could be made to calculate the distance to a foot, it would save ammunition and time. So I have gone to work and have succeeded in making an instrument with which I can calculate the distance, anywhere from a foot to as far as I can see,

and as quick as I can get the focus on an object with a telescope.

Now, sir, if you think this invention will be of any use to the government please let me know, and also who is the proper person to show it to. If you would like I will send you a diagram of it.

E. GAYLORD.

East Winsted, Conn., April 26, 1862.

[Several instruments have been invented for this purpose, but from the fact that none of them have come into general use we infer that they are all defective. There can be no question of the value of one that should be unobjectionable.—Eds.]

Adornment of Country School Grounds.

MESSRS. EDITORS:—I desire to solicit attention through the columns of the SCIENTIFIC AMERICAN to what I consider an improvement, which, if carried out, is calculated to produce beneficial effects on our rural youth—I mean tasteful surroundings for our country school houses. If some benevolent millionaire would turn his thoughts in this direction I think a plan might be devised to insure good and lasting results.

The surroundings of our district schools are generally of the most forlorn character. Every farmer is anxious to keep a school as far away as possible from his own orchards. School grounds are usually bleak, exposed situations, entirely devoid of taste or cultivation. In my opinion they should be made to conduce to the mental and moral elevation of the scholars.

To accomplish this, at little expense, I think it will only be necessary for the trustees to surround the building with an inclosure, as large as could be compassed, and make it a part of the teacher's duty to lay it out in plats—the male portion to cultivate garden vegetables of different kinds, each boy his allotted bed, and the girls to care for the various flowers and shrubs in their different allotments. Simple botanical instruction might also be given. The chemistry of agriculture might be taught, and in lieu of spending their interludes in romping and making mud pies, the digging and hoeing would furnish ample exercise, and in after life would be a source of gratification and profit.

The advantage of such instruction to the girls would be still more apparent than to the boys, by encouraging a taste for the beautiful in the arrangement of flower beds and bouquets, and thus improve the female character. I think no educational system, especially in the rural districts, can be called efficient without coupling the study of garden and floral productions in their practical operations.

DELTA.

Substitute for Biting Cartridges.

MESSRS. EDITORS:—Cartridges may be made in a simple manner, which do not require to be first opened. Let each be formed with a small hole in the center of the bottom and thus cover this or the whole rear end of the cartridge with a paste made of pulverized gun powder and a thin cement of shellac dissolved in alcohol. I have used such cartridges for a Colt's pistol, and never had one that missed fire.

Yours,

G. L. W.

Washington, D. C.

American and English Patent Dress for Millstones.

The London *Engineer* of April 11th contains an illustration of what it calls "improvements in setting millstones by A. B. Childs, of New Oxford street." This millstone dress is the same exactly as that illustrated on page 328, Vol. XIII. (old series) of the SCIENTIFIC AMERICAN, for which a patent was granted to Gabriel Natcher, of Indianapolis, Ind., April 27, 1858. Upon the same day he also obtained a patent for the tool (a diamond) for putting his dress upon the stone. Both the diamond tool and the dress of the stone figure in the *Engineer* as improvements invented by Mr. Childs, who appears to be "no child" in the appropriation and application of other people's improvements.

A TOTAL ECLIPSE.—The "Confederate Almanac," for 1862, published by Rev. Dr. Sumners, at the Southern Methodist Publishing House, announces an "eclipse of the sun visible over the Confederate States!" To this the Nashville *Union* adds, that about the same time "there will be a total eclipse of the Confederate States, visible over all creation."