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Preservinz.—Burnetizing Timber.

Since the publication of the articles on preserving timber, in our last volume, and the description which we gave of Boucherie's process, we have received a number of letters making inquiries regarding the cost, and other particulars relating to the process, and whether the preserving of timber is now conducted in any part of our country.

The preserving of timber with a solution of the chloride of zinc—Sir Wm. Burnet's process—is now carried on at Lowell, Mass., and a pamphlet recently published on the subject by J. B. Francis, Esq., gives some very useful information, which will be of interest to many of our readers.

Sir William Burnet secured a patent for his invention in England in 1838, but no American patent was ever taken out for it. It consists, as stated in the patent, "in destroying the tendency of certain vegetable and animal substances to decay, by submitting them to the action of a solution of chloride of zinc. In preparing wood by this process, a suitable tank is provided, and filled about two-thirds full with the solution, composed of 1 lb. of the chloride of zinc to every five gallons of cold water." The timber, (by the plan first proposed by the inventor) was steeped in this for about twenty days, when it was taken out and dried under sheds. This process was first introduced into Lowell in 1850, by the proprietors of the locks and canals on the Merrimac river, at the joint expense of the manufacturing companies. The original intention simply was, to prepare timber for their own purposes, but the apparatus erected was found to be capable of preparing more than they required, and accordingly they have also prepared considerable quantities of lumber for other parties. The price charged is for spruce lumber \$5 per 1000 feet board measure; for all other kinds of lumber, \$6; shingles 75 cents per 1000. Spruce, it seems, does not take up so much of the solution as other kinds of timber, and this is the reason why it is cheaper. About one million feet, board measure, have been Burnetized annually since the year the apparatus was erected. This apparatus consists of a cast-iron cylinder an inch thick, in which the timber to be prepared is placed; it is 60 feet long, 7 feet diameter inside, with one head movable. A pair of rails of about 2 feet gauge are laid on its bottom. A heavy truck is loaded with timber, which is chained down to prevent it floating, and it is then run upon a railroad into the cylinder, and its movable head put on perfectly tight. A wooden cistern containing the chloride solution lies below the iron cylinder. An air pump of 12 inches in diameter and 3 feet stroke, and a force pump 4 inches in diameter and 2 feet stroke are employed and worked by a small steam engine, which also warps the timber in and out of the cylinder. The air pump exhausts the air from the cylinder and timber, when the solution flows in by atmospheric pressure, from the cistern. The air pump then gives place to the action of the force pump which forces in the solution until it attains to a pressure of 130 lbs. on the square inch, at which point it is maintained for two hours, when the process is completed. The surplus of the solution not taken up by the timber is then run off, and the prepared timber run out, to make room for another batch.

The time required in performing all the operations and operating on 7000 feet—board measure—of timber, is seven hours; but two batches can be prepared every day, by allowing one batch to drain off during night. The strength of the solution employed at Lowell is one and a half measures of the dry chloride of zinc to a hundred measures (gallons it may be) of water; but the chloride used is obtained from manufacturers in the condition of a concentrated solution, containing 45 per cent. of water. The apparatus described is the same as that employed at Gloucester, Eng., under Brunel, for preparing railroad timber, which establishment was visited by Mr. Francis in 1851.

A thousand feet of timber—board measure—if it is dry, will take up nearly 40 gallons of the solution; wet timber takes up less.

Since the time this company commenced to preserve wood in this manner, sufficient time has scarcely elapsed to test the timber so treated, fairly. The timber on the Charles River Bridge, over an arm of the sea near Boston, was so prepared in 1850, but it has now decayed to a considerable extent. It was young pine, second growth, and contained a great quantity of sap. On the other hand, the timber prepared for the Lowell Bleach Works has been perfectly successful. F. P. Appleton, Esq., the agent of the Works, in a letter to Mr. Francis, states, that a plank road of Burnetized timber, 200 feet long, was laid down in 1850, and alongside of it, a portion of the same lot of timber, not so treated, was also laid down. The latter is now wholly decayed, while the prepared timber is as sound as the day on which it was obtained. The ground walks around the Works, laid with spruce plank unprepared, did not last over two years, but Burnetized spruce used for the same purpose has stood six years, and is still sound. The shingles, clapboards, and other timber used in these works have all been Burnetized, and the advantages have been very great. Saml. L. Dana, chemist, at the Merrimac Calico Print Works, also adds a favorable testimony to the value of Burnetizing timber for some purposes.

As this process is common property, it appears to us that it ought to claim the attention of our railroad companies, for the preserving of the timber which they require in such immense quantities. We believe that the New York Central, the New York & Erie, the Illinois Central, and other great railroads, would each find it to their advantage to erect such an apparatus as that described, and thus treat all their sleepers, and other like timber. The same process and apparatus will answer for a different solution, such as the sulphate of copper, which is employed by Dr. Boucherie for railroad timber in France, and which has been asserted to be superior to the chloride of zinc. At any rate, it cannot be doubted but that timber so prepared with either of these solutions will endure much longer exposed to the weather than unprepared timber, and thus be the means of saving large sums of money annually.

Timber can be prepared for bridges, houses &c., (without the use of the apparatus described) by simply immersing it in the solution in a tank for about twenty days. Owing to the rapid consumption of timber in our country since railroads became so numerous, thus causing a great rise in its price, it will be short-sightedness we think, on the part of those companies who expend so much for it every year to neglect this subject much longer.

Lectures for Mechanics' Associations.

As the Lecture season is approaching, a word on the subject will not be out of place to our Mechanics' Associations. As these Associations have committees appointed to procure suitable persons to lecture, we advise them to be as careful of the subjects of the lectures as of the lecturers. There has been for a few years past a fashionable furor for lectures, no matter what were the subjects, if the men who delivered them were popular characters. Mechanics Associations, as well as mere literary societies have been tainted with this fever, hence lectures quite foreign to the nature of the objects for which they were founded have been altogether too common.

We advise all our Mechanics' Associations to organize for regular courses of useful lectures on the Arts and Sciences especially—such as chemistry, mineralogy, engineering, botany, photography, &c. We do not object to a few literary lectures; they are like seasoning to food; they will give the others a better relish, but they should be the seasoning only, not the food of the lecture season in our Mechanics' Associations.

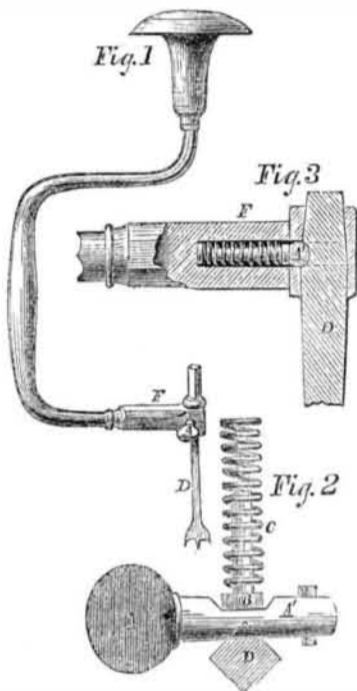
The Frigate Niagara.

The new steam frigate *Niagara*, the hull of which was built by the lamented George Steers, is an index of the slow-coach system pursued at Government Yards, in comparison with private enterprises. The work of put-

ting in the machinery and fitting up the whole vessel goes on so slowly, that it is not now expected she will be ready for sea before next spring.

New Hitt Stock.

Our engraving illustrates the invention of Horace Lettington, Norwich, N. Y., to whom Letters Patent were granted, May 13, 1856. Fig. 1 gives the general appearance of the stock, which is of the usual form. The improvement relates to the button for holding in the tool. Figs. 2 and 3 are enlarged sectional views of the improved parts.



The button, A, is applied at one extremity of the crank bow, as usual. The shank of the button, A' (fig. 2,) is flattened on one side, and against this flat surface, a dog, B, is pressed by means of the spiral spring, C. The dog and spring are hidden from sight in a cavity made in the extremity of the crank at F. The dog and spring serve to hold button A, in a given position, preventing it from moving out of place by accident; figs. 2 and 3 show the button as turned to fasten the tool, D, to the stock, the round side of A' fitting into a corresponding cavity of tool D, and preventing its removal. By turning the button A half round, its flat side will be presented to the tool, which may then be removed.

This is a very neat and cheap fastener for bit stocks, and operates with much satisfaction. It securely fastens the tool, and yet permits its easy removal. Address the inventor as above for further information.

Exhibition of the Franklin Institute.

The Annual Exhibition of American manufactures by the Franklin Institute of Philadelphia, Pa., is now open in that city, and is attracting much attention. The premises occupied comprise the large and splendid hall in Dr. Jayne's new building on Chestnut street near Seventh, together with several adjoining apartments and basements.

The articles displayed consist of American cloths, silverware, hardware, chemicals, perfumes, furniture, new inventions, and, in fact, samples of all the various goods that are generally seen in industrial exhibitions.

The display is very creditable to the Franklin Institute, although, compared with that lately made by the American Institute at the Crystal Palace in this city, it is a miniature. The truth is, there is no suitable edifice in Philadelphia for such exhibitions, and therefore it is not to be expected that much can be done.

The Mechanical Department of the Franklin Institute Exhibition does not embrace a very extensive assortment. Among the principal novelties we notice the Rotary Pumps and Rotary Engines of Messrs. Silsby, Mynderse & Co., of the Island Works, Seneca Falls, M. Y., (Holly's patent.) The principles involved in the construction of these pumps and engines will be seen by reference to the engraving and description, which we published in the SCIENTIFIC AMERICAN of Nov. 15th last.

John Twemper, of No. 1 Sixth street, Philadelphia, Pa., exhibits his patent Pneumatic Governor for marine, locomotive, and stationary steam engines. This invention was illustrated and described on page 244, Vol. 8, SCIENTIFIC AMERICAN, to which the reader is referred. It is very highly spoken of and is, undoubtedly, a good improvement. The inventor alleges that this governor is so sensitive that it never allows the engine to change its speed, no matter how unequal the work. Price \$45 and upwards.

Thomas Silver, of Philadelphia, exhibits his patent Marine and Stationary Engine Governor. We have before spoken of this invention in high terms, and on page 356, Vol. 12, SCIENTIFIC AMERICAN, it is fully described and illustrated by engravings. This governor is in use at the U. S. Mint, Philadelphia, on the Collins' steamers, and elsewhere, giving great satisfaction in all cases.

J. P. Ross, of Lewisburg, Union Co., Pa., exhibits, on a small scale, his patent Blowing Engine for iron and other furnaces. A striking feature of this invention is that the blowing piston is attached directly to the piston rod of the steam cylinder, the piston rod being elongated for that purpose. In appearance, therefore, it looks like an engine having two cylinders, one at each end of the same piston rod. An ingenious device is employed for operating the valves and regulating the cut-off. This engine requires no fly wheel, works with the utmost ease, is much less expensive both in original construction and use than ordinary engines, and has still other advantages. For an engraving and description see SCIENTIFIC AMERICAN of Oct. 18th last.

Griffin & Ryan, of Wilmington, Del., exhibit Ryan's patent Self-acting Car Coupling, by which cars may be connected by merely pushing their buffers together. The connection is effected by means of a peculiar hook-shaped bar, weighted at one end, and so made that when the buffers come together the bar turns slightly upon its side, which allows the hook to enter the buffer, and then assume its first position, thus hooking the cars together. No springs are used. This is a very cheap and effective improvement. The uncoupling is done by merely turning the bar sideways. For description and engraving see SCIENTIFIC AMERICAN of Oct. 4th, last.

Richard Kitson, of Lowell, Mass., exhibits his patent machines for picking and opening fibrous materials. They are applicable to cotton, wool, flax, etc., and open the fiber without injuring the staple. They are also self-cleaning and self-sharpening.

The Aubin Gas Co., of Albany, N. Y., exhibit N. Aubin's patent portable gas apparatus in operation. This invention consists of a stove-like looking contrivance, in which a small coal fire is kept burning. The gas is obtained by the distillation of common rosin. 300 cubic feet of gas are made from 30 lbs. of rosin. Price of apparatus, with gasometer capable of holding 100 feet, \$150.

Pierson's patent Hoop Sawing Machine, Philadelphia, attracts considerable attention. It was stated to be capable of sawing 1000 hoops per diem.

John A. Roebling, of Trenton, N. J., exhibits splendid specimens of his patent wire ropes of various sizes. They are superior to any articles of the kind that we have seen. Mr. Roebling is well known as an eminent civil engineer, and constructor of the great Railroad Suspension Bridge at Niagara Falls.

Silsby, Mynderse & Co., Seneca Falls, N. Y., exhibit some improved Carriage Axles, of excellent workmanship.

H. Diston, Philadelphia, exhibits several noble specimens of circular saws and other articles in steel.

Wm. H. Harrison, of Philadelphia, exhibits an improved double-action Force and Lift Pump, so arranged as to lift the water almost in a straight column from the bottom of the well to the discharge. It is alleged to be very simple and effective.

A. L. Archambault, of Philadelphia, exhibits a portable Steam Engine for farming purposes. Strength and compactness are its prominent characteristics.

L. Wright, of Newark, N. J., exhibits his patent scroll saw. It is remarkable for the ease and steadiness with which it runs, al-