

## SCIENTIFIC MUSEUM.

## Testing of Lubricators in the Crystal Palace.

GENTLEMEN.—I propose, in the prosecution of my duties as Director of Machinery in the Crystal Palace, to test the qualities of different oils offered by manufacturers for lubricating machinery. To this end I propose to receive, say five gallons, from each manufacturer or seller of such oils or lubricators, who is willing to submit the same to trial under the following rules:—

A suitable person shall receive such oils or lubricators, and deposit them in cans containing 2½ gallons each—the one a duplicate of the other, and both bearing the same number—making five gallons of one kind from one manufacturer. If one person sends more than one kind, it must be understood that there shall be two cans of 2½ gallons of each sample. The person in charge of the oils will record the numbers of the cans, and the names of the depositors. I will see that the same numbers as those on the cans, are marked on the hangers of 800 feet of shafting, and that the same boxes will be oiled with the same oil for four months, employing no more than what is suitable for the perfect lubrication of each joint. At the end of four months, the oils left in different cans will be measured, and the bearings examined, to see their state, also the quality of the waste oil in the dripping cans. I will be assisted by competent persons, either as judges in the Exhibition, or selected on account of skill and experience in such matters, and will report all the facts connected with this testing of lubricators. On the closing, when the report is made, the record kept by the person who received the oils and kept the names of the contributors secret, shall make known the same, so that the public can judge of the merits of different lubricating materials employed for machinery according to the price at which they are sold. The greatest care will be exercised to have the test a most perfect one.

JOSEPH E. HOLMES.

New York, May 7th, 1853.

Those who are not afraid of testing them with others, will have a good opportunity of so doing.—[Ed.]

## Important Invention or Discovery.

At a late sitting of the Austrian Academy of Sciences at Vienna, Herr Von Amer read a paper upon a newly discovered process of printing from all sorts of objects with comparatively plain surfaces. Among the articles mentioned, which have been copied by the new process, are plants, some of them in flower, embroidery, etched agate, insects, fish-scales, &c. The speaker calls this "Naturesolbetdruck"—printing from Nature—and said that this discovery forms a new era in the pictorial illustration of works on science and art. The objects copied were given with singular fidelity to the originals. No hint was given as to the process.

## Guano and Phosphate of Lime.

At the present moment guano is exceedingly scarce in New York, in fact it cannot be obtained, we are informed, in large quantities at all. An article of manure called "Improved Super-phosphate of Lime"—artificial manure—manufactured by Prof. Mapes, sold for \$50 per ton, is asserted by some to be equal if not superior to guano; it has been analyzed by Prof. Johnson, of Yale College, who sets forth its true character. According to these analyses, 100 pounds of "Mapes's improved super-phosphate of lime" is composed of sulphate of lime (plaster) 37 pounds; insoluble phosphate, 21 pounds; soluble superphosphate of lime, 15 pounds; free sulphuric acid, 5 pounds; ammonia, 2½ pounds. The non-nitrogenous organic matter, water, and sand, which compose the other 20 pounds, are of course of but little value. It is, therefore, far less valuable than Peruvian Guano.

According to the chart of Lake Erie, it is ascertained that the lake is divided into three sections. One of these extends from the head down to Pt. Pelle island, and the bottom presents a general level, with a depth of 30 feet in the average. The second is of much larger extent, and stretches to Long

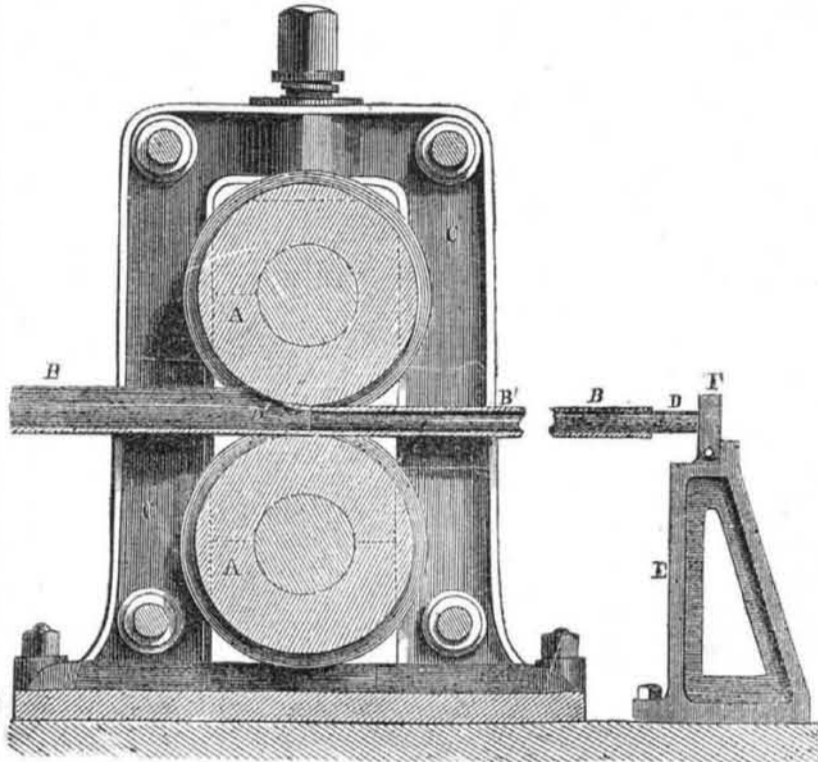
Point, is also a level, with a depth of 60 to 70 feet. The third section extends to the Niagara river, and is an uneven bottom, with various depths of water, ranging from 60 to 204 feet. The Atlantic steamer lies but a short distance from the greatest depth of water.

An ingenious Yankee has constructed an india rubber stove. It is a great improvement upon cast iron, inasmuch as if some

sticks of wood are too long, they can be crowded in, the material being sufficiently elastic for the purpose. The india rubber stove, too, is not liable to be cracked with the heat.—[Ex.]

[What a conscience the author of the above has, in attributing the elastic stove to a Yankee, who usually prefers granite to gammon.]

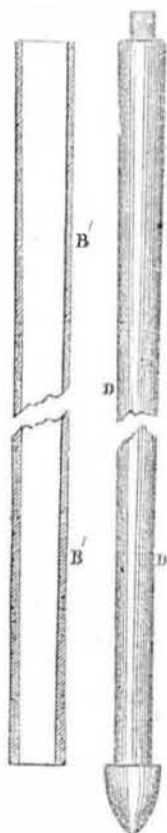
## WELDING CONICAL IRON TUBES---Fig. 1.



The annexed engravings are views of an improvement for welding iron tubes, by J. Clark and C. Robinson, of Birmingham, Eng., and which they have secured by patent in that country.

Figure 1 is a sectional elevation of rollers for forming, welding, and drawing tubes; figure 2 is a view of the mandrel, with the bulb upon it; figure 3 is the section of a manufactured tube. The skelps, B, of iron plate, for forming the tubes, are of equal thickness throughout, the same as are used in manufacturing tubes in the ordinary manner; these skelps, after being brought to a welding

FIG. 1



heat, are submitted to a pair of rollers, A A, of the usual construction, set in suitable frames, C. These rollers at once, while the skelp is at a welding heat, turn over the sides of the skelps, and bring the edges in contact, and then weld them. This operation is effected upon the bulb, D', of the mandrel, D, over which the newly-formed tube, B', is drawn towards the other end of the mandrel,

the length of the skelp being dependent upon the length of the tube to be manufactured.—The tube thus formed is, however, notwithstanding the taper form of the mandrel, cylindrical in shape and equal in substance throughout, the interior diameter being equal to the diameter of the bulb, which will be about equal to the greatest diameter of the mandrel. The outer end of the mandrel, D, is supported and held by the standard, E, abutting against the stop, thereon, thereby maintaining the bulb, D', at the other end of the mandrel, in its proper position between the rollers, A A. When the whole of the skelp is passed through the rollers and the tube passed over the mandrel, the stop, F, is lowered, and the tube (with the mandrel within it, but the bulb at the end removed) passed on to another pair of rollers, similar to the last, between which the tube is drawn. These rollers have somewhat smaller grooves upon their peripheries, and thereby reduce the thickness of the tube at the end where the thickest end of the mandrel is situated, and roll the superabundant metal therefrom towards the other end, where the metal thickens, thus forming the tube of cylindrical exterior, but gradually taper within, conforming to the shape of the mandrel. Should the tube now be found to be sufficiently formed, both exteriorly and interiorly, and of the proper thickness required, it is passed to the draw-bench, for the purpose of extracting the mandrel; but should it not be considered properly finished and smooth, it may be again passed through another similar pair of rollers for further reducing it and completing it.—The draw-bench employed is of the usual construction; and should there be any difficulty in removing the mandrel from the tube, re-heat the tube, and then submit it to the action of the draw-bench, or by means of cold rolling the tube between three rollers, as is well known, and thereby loosening it upon the mandrel. The object of making the tubes conical for steam boilers is to make them stand the unequal tear and wear of fire exposure. The ends of them nearest the fire being subjected to greater heat, and, consequently, wearing away faster than the ends more remote therefrom, in the case of the use of tubes of the usual construction, namely, when they are cylindrical and parallel from end to end, and the tubes of equal thickness throughout, the result is, that when the end nearest the fire is worn out and rendered unfit, the other end will still be in good condition, and

might, if dependent on itself, be still used without removal; but it will, in consequence of the worn-out condition of the one end, be necessary to remove the whole tube; it is intended by the present invention to remove this inconvenience and disadvantage, by the employment of tubes so made and constructed that the part of the tube most subjected to the wear and tear shall be in better condition to resist it, and cause the tube throughout its whole length to be so affected by the wear and tear as to be worn out or rendered unfit for further service, equally. This the patentees effect by increasing the thickness of the substance of the tubes at the parts most exposed and subject to the wear and tear, and, at the same time, reducing in thickness the parts less exposed—in fact, forming them of a gradual taper upon their interior, while their exterior still remains cylindrical, and of the same diameter as when constructed as usual; by this mode of construction, the tubes will be worn out or rendered unfit for further use equally. Although this mode of forming the tubes renders them capable of sustaining a greater degree of wear and tear, lasting longer, and consequently being more economical. It is not attended by any increase of weight of the whole of the tube, as the quantity of the metal necessary to increase the thickness of the one part of the tube will be obtained from the other part, by the reduction of the thickness there.

A hundred mill girls, selected by an American speculator in Glasgow, have sailed from the Clyde, to commence a new cotton mill at New York. The party sailed in the Mary Morris from Greenock. News here.

## LITERARY NOTICES.

BOOK OF THE WORLD—No. 7; Weik & Wiecek, 195 Chestnut st., Philadelphia, is an encyclopedia of choice literature and knowledge, it contains many thrilling and instructive historic tales, with sketches of philosophy and natural history of the most interesting and useful character.

ORNAMENTAL DRAWING, FOR PAINTERS, SCULPTORS, CARVERS, ARCHITECTS, &c., by Sullivan, Biordeaux, Rotterman, Metzger, and others, published at the same place as the above, is one of the most beautiful publications we have lately met with, the designs are chaste and elegant, as well as bold and ornamental; the work is executed in a very superior style, and deserves an extensive patronage. No. 3, 4, and 5 are received.

Putnam's Monthly for May, No. 5, continues as entertaining as ever, it opens with a posthumous publication from the pen of Cooper, the novelist, being the naval biography of the frigate Constitution, familiarly known as "Old Ironsides." This vessel was one of the six ships that formed the early marine of our country, and was commanded at different times by some of our most celebrated sea captains. A perusal of this last writing of such a celebrated man as J. Fenimore Cooper, is interesting for many reasons. The other articles are all well written. Success to Putnam's Monthly



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