

SCIENTIFIC MUSEUM.

Books for Mechanics.

Since we penned the article on "Intelligent Mechanics," we have received communications making enquiries respecting the most appropriate books for reading and study. It is no easy matter to point out from among a great number of authors the best works for a small library. There is Tredgold, on the steam engine for engineers, and Scott's Millwright and Machinist Assistant, both very excellent works, but expensive, the latter being \$24, and the former much higher. There is a small work of Evans' on Millwrighting, (we do not know who is its publisher) and there is another by Hughes, published by H. C. Baird, of Philadelphia a very excellent little work; it is however, more a millers' book than a millwright's. A first rate book for millwrights is still wanting. Lardner's Mechanical Philosophy is a good work, as it is written in an interesting style. Mahan, on Civil Engineering, published by J. Wylie, N. Y., is a good work on that subject, and Prof. Bartlett's Philosophy of Mechanics, published by Barnes & Co., this city, is the best work on the subject extant.

The best way for every mechanic and artisan to do in selecting a good library, is to choose works treating of the peculiar trade or calling of each one. In speaking of intelligent mechanics, we want it distinctly understood that each one should endeavor to possess a great amount of general information. A man cannot be intelligent who merely knows one thing well; he should be acquainted with our standard authors of English literature, such as the works of the best English poets, historians, and men of science, also with the best authors of our own country, our divines, poets, and historians, and let us add, with the profoundest feeling of respect, our great law-authors.

We want our mechanics to be men of profound intelligence respecting the processes and workings of their own particular trades, and to possess a general, sound, intelligence on other useful subjects.

One branch of science and art is enough for each one, and along with that, general information. We are quite willing to give any correspondent all the information we possess about the best works relating to any branch of philosophy and science, but to specify all the books which we think should belong to every mechanics' library would occupy too much room in our columns. In our literary notices of books, when we say, "this is a useful book for mechanics," we mean it, when we do not say this, it may or may not be useful for mechanics.

Our Textile Manufactures.

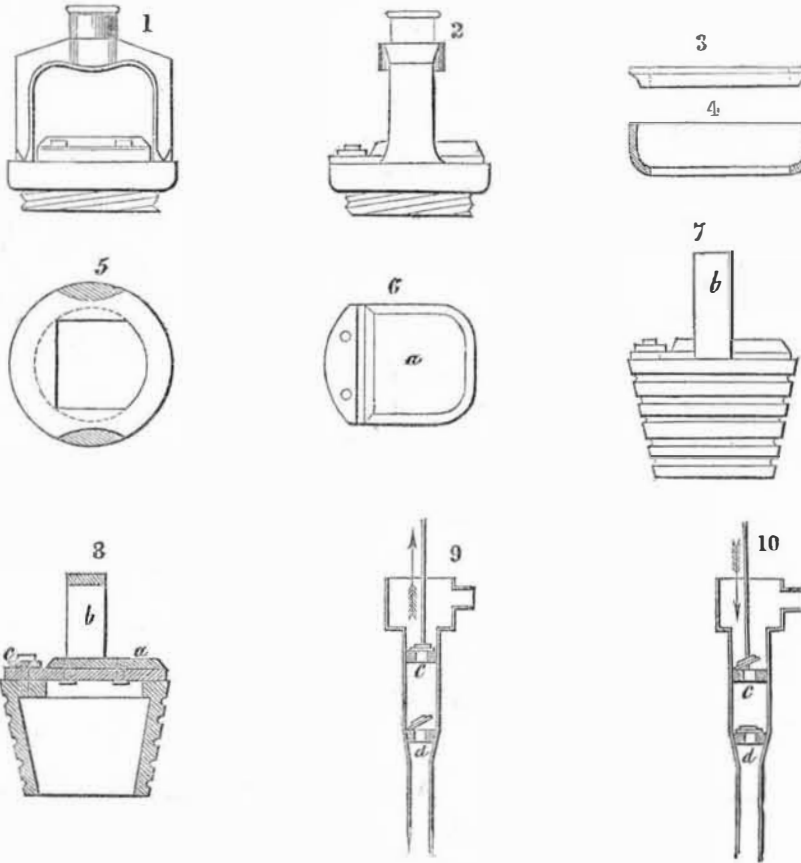
The forests of chimneys which, in Lancashire, Yorkshire, and some parts of Scotland, tell so plainly of the immensity of our factory system, usually impress the casual observer with the idea that manufacturing enterprise has outgrown itself, and even become a mere unmanageable excrescence. But what does M. Leonard Horner tell us? Why, that, in place of any diminution in the means of production, not fewer than 81 new factories were set to work last year (up to October) in the limited district of Manchester alone. And to work these new mills, 2,240 steam horsepower were required, besides 1,477 horse power to work the machinery consequent upon the enlargement of old mills. This gives a total increase in the district of 3,717 horse power, affording additional employment to somewhere about 14,000 hands. The still greater abundance of capital since this time shows itself with even greater results, and we now learn that new factories of extraordinary magnitude are springing up on every side. We should exhaust the space of a page of our print were we to attempt the bare recapitulation of these new concerns; but of the more notable ones we may mention that of Mr. Titus Salt, of Bradford, for the manufacture of alpaca. This mill will cover six acres, the principal building being a fine stone edifice, containing a single room 540 feet long.—Messrs. Fairbairn are engaged in the construction of the engines, of 1,200 horse-power, and the gas works, rivalling those of a mode-

ately-sized town, are being erected by White's hydro-carbon gas company; they will cost £4,000, supplying 5,000 lights, the power of production being 100,000 feet of gas per day. Mr. Salt is also colonizing the place by building 700 workmen's cottages. The total cost of this unrivalled undertaking is calculated at £500,000. Great Britain must prosper whilst her textile manufactures flourish.—[London Expositor.

Wells, Artesian--Raising Water.

(Continued from page 128)

Artesian wells require no pumps, their principle, as differing from other wells is, that they overflow, while the water has to be raised from other wells by machinery of some



the whole of a pump are represented in two working positions; the sections are on a larger scale than the pumps. Figures 9 and 10 are sections of the same pump; c is the bucket; it has a valve in it opening upwards. A similar valve, d,—opening upwards also—is situated at the bottom of the handle, and is termed the sucker. The action of the pump is as follows, when the bucket is drawn up in the barrel as represented by the arrow, a partial vacuum is formed under it, as it works air tight. The valve in the bucket is kept close by the pressure of air above it, while the sucker valve, d, is opened by the water following up after the vacuum created by the act of the bucket or plunger as shown in figure 9. The water is forced through the barrel upwards, by the pressure of air on the water in the well, while the pressure of air has been removed from the surface of the water in the barrel by the act of the bucket.—When the up stroke of the bucket is complete, and the space under it in the barrel filled with water, the water cannot turn downwards through the sucker valve, when the down stroke is commenced, for that action closes the sucker valve, the downward pressure on the bucket—water being incompressible—forces open the valve in c, and the water then gushes through it, and thus the water passes above the bucket. On the next up-stroke of the bucket, c, it is evident that the water which is above it will be lifted up and forced out of the spout. This is the principle of the common pump's action, and there is not a single handy mechanic in the world but can make one for himself. The details of such a pump as that described—a good one—are shown in the sections above. Figs. 1 & 2 are elevations of the bucket, and for a first rate one are made of brass. The screw at the bottom is for leather packing, shown by figure 4. Fig. 3 is a ring, the cup leather packing can be removed or refixed, by screwing or unscrewing said ring over it. Figures 7 and 8 are an elevation and section of the lower clack valve or sucker, the grooves are for

kind. Many different machines have been and are employed to elevate water. The common bucket and windlass is the most simple arrangement for raising water; this we represented in our last, and the apparatus is so well known that no words were required for explanation. There are other machines, however, and the number is neither few nor far between, and some of these we intend to present to our readers. The number and variety of pumps is not small, indeed it is legion.

The principle of the common pump is very simple, it consists merely of a barrel or cylinder into which is fitted a light bucket or plunger with a valve in it as represented in the annexed figures, where the sections and

hemp packing. To remove this sucker, a hook is inserted in the pump barrel to catch part of it; the clack (really the valve) is of leather, with a plate of lead, or brass, or iron screwed to the upper side, as shown in figures 6 and 8; a is the brass or metal plate, and c is a metal strip to screw the clack to its seat. Figure 5 is the sucker valve seat. The hinge of the valve is formed by the elasticity of the leather itself. The body of the pump may be of cast iron, or a hollow log.

The Caloric Steamship.

Many of our newspapers do great injury to community by publishing flaming accounts of projects with which they are not acquainted, and attempting criticisms about machines in a way calculated to deceive the public. It requires a mass of scientific historical information about inventions, and great reflection to form a correct judgment about new inventions and discoveries. The public has had occasion to know that within three years some professors of chemistry, and editors of some reputation were deceived, and did deceive the public about the decomposition of water and the formation of a new light.

At the present moment there is a new ship at one of our docks getting in very large engines, which are to be operated by hot air. The hull of this ship is very fine; independent of any power but wind, she must sail well, but there is a grand furor among the press (because it is something singular) to give the best and most flourishing accounts about it. One day recently the wheels of this steamer moved, and straightway every daily paper in our city noticed the important event next day. Here is the substance of the language used by them all: "Fire was applied to the furnaces for the first time yesterday afternoon, and resulted in the triumphant success of the experiment. At the start the wheels made three turns per minute, and shortly afterwards reached five turns per minute, at which speed she continued working for several hours, and would be kept in motion the whole of the night. This is much more than

the most ardent friends of the invention had reason to expect."

In respect to news, some of our newspapers do very well, but when they touch upon scientific matters, inventions and new discoveries in mechanics and engineering, they utter, as the above quoted lines show, the most consummate nonsense. Those who reported the wonderful event must have been a long time headed up in barrels; surely they had never seen a steamboat in all their lives. We thus judge because the paddle wheels or a steamboat sometimes move, and to our knowledge we have never seen a record made of the same as an important event. If the moving of the wheels of the "caloric ship" "is much more than the most ardent friends of the invention had reason to expect," why in the name of common sense did they build it, for a mule could have turned them; but the proprietors expect a great deal more, and will no doubt obtain it; time, however, will try all, better far than tongue can tell.

LITERARY NOTICES.

HINTS TOWARDS REFORMS.—By Horace Greeley; Fowler & Wells, New York: 12mo., pp. 425; price \$1. The volume before us is the second edition of a work, by our well-known contemporary, the Editor of the Tribune newspaper. It consists, principally, of political and social disquisitions in the shape of lectures and addresses delivered at various periods, by the author, expressive of his sentiments upon those subjects. Many of the ideas broached are original, but the main fault of Greeley, as a Reformer, is in the visionary character of his plans, or rather in their want of practical details, which are usually overlooked as of none or of only secondary importance. The present edition is somewhat enlarged, with an appendix, containing the "Crystal Palace and its Lessons." We were, however, disappointed on reading his account, which is very meagre, and contains but little information on the subject. The "Lessons" are not worth much, and, on the last page, Horace Greeley has proved himself a false seer, for his prophecies of what was to take place, in 1852, have not turned out as he had anticipated—Europe has remained in tranquil repose, Kosuth lives quietly in London, and the "false juggler of the Elysee Bourbon," instead of dreading "the idea of May," to quote the words of the Author, is now Napoleon III, by the votes of the French people.

LIFE AND MEMORIALS OF DANIEL WEBSTER—2 vols., 12mo.; price 50 cents; Appleton & Co., New York. These volumes, which form a part of the series of "Appleton's Popular Library," contain a biography of the late Daniel Webster, with personal memorials of the departed statesman, and other original and interesting memoranda, respecting him while alive. A part of the contents have already appeared in the "New York Daily Times," from which they are now re-printed under the author's supervision, but additional information has been gleaned from other sources. The second volume is particularly interesting and well worthy of perusal.

Graham's Magazine for January is one of the most beautiful numbers yet issued of this sterling serial. In point of beauty of illustrations, typographical appearance, and withal its choice array of contents, it has never been equalled by any other publication of the kind.

MEYER'S UNIVERSUM—Part II contains four beautiful steel engravings and descriptive text. The present number commences a new volume. Price of each part 25cts.: H. J. Meyer, 164 William street, N. Y., publishers.



Manufacturers and Inventors.

A new Volume of the SCIENTIFIC AMERICAN commences about the middle of September in each year. It is a Journal of Scientific, Mechanical, and other improvements; the advocate of industry in all its various branches. It is published weekly in a form suitable for binding, and constitutes, at the end of each year, a splendid volume of over 400 pages, with a copious index, and from five to six hundred original engravings, together with a great amount of practical information concerning the progress of invention and discovery throughout the world.

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