

Scientific Museum.

Skins for Door Mats.

A correspondent in a letter says, he has been reading numbers 16 and 17 of Vol. 5, Sci. Am., wherein are described processes for dyeing sheep skins for door mats. He now desires to know how these skins are tanned, the natural grease removed, and how prepared for dyeing.

Take the skins as fresh as they can be procured, and steep them for about half an hour in a weak ley of potash or soda, (do not have it very strong). This reduces some of the grease to a saponaceous compound. After this take and scrape the fleshy side with a dull edged knife (a hoe blade is a first rate instrument). The skin should be laid upon an inclined table or bench to perform this operation well. After this it should be handled in a strong solution of soap suds,—mind, strongly—carefully squeezing it between the hands, for about twenty minutes, after which it is taken out and washed. A tub of clear water (25 gallons) is made up, and about one lb. of alum dissolved in water is added and the skins steeped in this all night. In the morning they are taken out and hung up to dry, by nailing them on a fence or wood racks with tacks, to keep them full stretched while drying, when dry very strong alum water is put on the flesh side with a sponge, and also rubbed into the roots of the wool, then dried again. This operation is performed three times, when the mat will be finished and be a beautiful white. The alum tans the skin and is a preparation for any color, yellow, blue, red, orange, purple, &c. No sumac may be used for door mats unless they are to be of a black color, the sumac in that case is a good preparation; yellow mats may be tanned with quercitron (yellow oak bark) and alum, or muriate of tin may be used in place of the alum.

For the process of dyeing the mats we refer our readers to the pages of Vol. 5, designated above.

New Steam Navigation Act.

There is a bill in the British House of Commons (brought forward by Mr. Labouchere) to consolidate and amend the laws relating to the regulation of steam navigation, and to the boats and lights to be carried by sea-going vessels. There are forty-nine clauses in the bill. Some new regulations are to be made respecting steamboats which will prevent their being over-crowded. Steam vessels are to be surveyed twice a year, and the owners are to transmit the declarations to the naval department of the Board of Trade, which board will grant certificates, to be placed in conspicuous parts of the vessels. The number of passengers is to be limited by a certificate, and a penalty of 5s. to be enforced for every passenger beyond the number allowed. Persons forcing their way on board when vessels are full will be liable to a penalty of 40s., and 5s. penalty on persons who refuse to pay their fare or to quit a vessel. The Board of Trade are to appoint surveyors, and they are to be allowed to go on board and inspect vessels—parties obstructing them to be liable to penalties. Iron steamers are to be divided by water-tight partitions. The measure is to be called "the Steam Navigation Act, 1851."

Destruction of the Egyptian Pyramids and Temples.

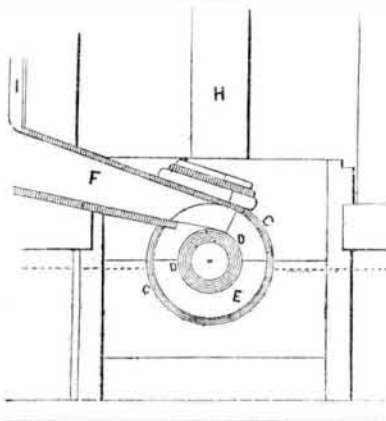
A correspondent of the London Athenæum says that the northern pyramid of Dashour is now in progress of being converted into a stone quarry, in order to build some new palace or villa in the neighborhood; the tombs of Sakkarah are used for the same purpose; the mounds of Abydos are ransacked for building materials; the temple of Erment is going for the same purpose; and temples have, within the last six years, been knocked down, and the materials removed from near Sheikh Fadi, entirely without the knowledge of travellers, to whom indeed, they have remained utterly unknown until now that they no longer exist.

Locks.

A correspondent writing to us says, "very few know what a good lock is, and are as liable to buy a poor as a good one. A powder

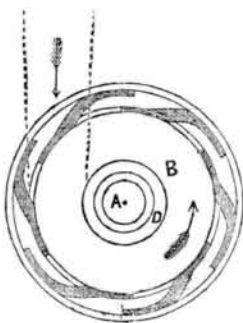
proof lock is valuable, but such locks are high in price. If there was competition in good locks, the price might be reduced to come within the reach of every one. Bramah's is a very good lock, if nicely made; Yates' Patent Pin lock, the qualities and objections the same; Butterworth's is good, but I think it can be picked, so also can Chase's. I have one of Lillie's on my safe, and I think it the most secure of any that I have seen, but it can be broken much too easily by a burglar, although it would not benefit him in the least by doing so."

For the Scientific American.
Hydraulics.
(Continued from page 256.)
FIG. 45.



Mr. J. B. Conger, of Jackson, Tenn., writing us on water wheels, dated April 8th, 1851, says, "since 1830 an entirely new principle of action of water has been applied, and a great many patents were obtained for wheels embracing that principle, unknown to the inventors." In 1842, he states, the principle was thoroughly investigated by him, and Dr. Jones, of Washington, stated that it appeared to be founded on just principles and patentable. Owing to sickness, Mr. Conger did not secure a patent until 1842. The nature of the invention consists in arranging the shutes and wheel, that the water on entering through the shutes into a space between them and the wheel, is given a direction and velocity similar to that of the wheel, and a contrary direction on leaving it, with equal velocity, as relates to the wheel, but without actual velocity, thereby causing the wheel to stop the water entirely, at the same time that the wheel has a velocity of rotation equal to 0.7; that of the water, if allowed to escape freely from under the whole head, being 1.

Water, when issuing out from under one half the head, will have a velocity equal to 0.7, that of the whole head being 1; and if water pass through an aperture into an apart-



ment, from which it issues at an aperture of equal size—then the velocity at each aperture will be 7/10 of that due the whole head, and the pressure of the water in the apartment will equal one half that of the whole column.

I make the area of the cross section of the shute (or all the shutes), by which the water is let on to the wheel, equal to that of all the issues at which it leaves it, and from the buckets so that the top or part where the water enters is the curv of a cycloid, and the bottom or part where the water leaves, is a tangent to its vertex.

To produce a maximum effect, the shutes and issues of the wheel should be of equal size, and they move with the same velocity as the water, viz., 7/10 that due the whole head."

In our last number the principle of the action of the water was illustrated and described. The construction of a Re-action Wheel with the inlet water running in the same di-

rection as the wheel, is of older date than the period mentioned by Mr. Conger, above. The accompanying engraving represents a vertical side elevation and a plan view of the buckets.

Figure 45 is a plan view of the buckets, showing by the arrows the motion of the water. A is the shaft; B is a water cylinder, fixed, and the water is admitted to it, as indicated by the arrow. D is the inside rim of this cylinder; its outside rim has an aperture through which the water passes through the buckets of the wheel, and is discharged at the circumference. The shaft works in the inside of the draft or cylinder, B, like as in a sleeve. The water discharges in an opposite direction to that shown by the arrow, and this is the reason why the inlet water and wheel move in the same direction, when the water is conveyed spirally to the wheel.

In figure 46 the wheel is placed on a horizontal shaft, and the inside of the cylinder only is shown. C is the outer and D the inner rim of the cylinder; E is the passage; F is the spout; I is the gate, and H is a hanging post, for the other end of the wheel shaft. A patent was granted for the wheel on the 19th Oct., 1829, to Z. & A. Parker of Coshoc-ton, Ohio. The claims for this invention were,—1st, two or more wheels on one shaft, 2d, concentric cylinders enclosing the shaft; 3rd, the spouts which conduct the water into the wheels from the penstock, with spiral terminations between the cylinders." The conducting of the water on to the wheel with a whirling motion, and this motion in unison with the wheel is embraced in this patent, from the specification from which the above is taken.

In 1827, says Mr. Parker, a common reaction wheel was erected for a flouring mill on a small stream of water. The water entered it so as to revolve contrary to the wheel motion; while working it, a plank accidentally fell into the stream and changed its direction to that of the wheel's motion, when the wheel was observed to start off with a nearly double speed. By frequently repeating this experiment, it was found that the wheel had nearly double speed and power when the water entered it whirling with the motion of the wheel. Mr. Z. Parker then applied a spiral draft to a re-action gig wheel, in 1828, and the same wheel which made only 80 revolutions per minute, made 280, and with an aggregate orifice of 250 square inches it sawed 3,000 feet of lumber in the same time that a flutter wheel, at the same fall, with a gate of 400 square inches, sawed 2,000 feet.

Sale of Prof. Webster's Apparatus and Chemicals.

The chemical and philosophical apparatus, which belonged to Prof. Webster, was sold at public auction in Boston, March 26.

What cost some four or five thousand dollars brought only about five hundred. But what was the loss of one party was the gain of the other—as it afforded some of our worthy and enterprising young chemists, who are in indigent circumstances a favorable opportunity for supplying themselves with much valuable apparatus.

The air pump, which cost some \$150; was purchased by Mr. Weeks for \$19.50, also most of the chemicals, which were said to have cost \$1,500, were sold to Mr. Weeks for \$90; a valuable apparatus for the condensation of carbonic acid was purchased by Prof. Hosford, of Cambridge, for a quarter of its cost. The famous magnet of Lavoisier was purchased by a Mr. Alger for \$5.25, and we understand he has refused an offer of \$250 for it.

T. S. M., M. D.

Woburn, Mass., April 16, 1851.

Telegraph Speed.

Intelligence by telegraph is transmitted at the rate of 13,000 miles per second—this is fifteen times slower than that of light.—Cin. Gaz.

If the transmission of news by electric telegraph is only 13,000 miles per second, fifteen times slower than light, we must insist on having a telegraph operated by light. Electricity will not do for this age. 'Twill soon be reckoned a slow coach.—Exchange.

[The above commentators, we see require

some light on the subject. Electricity travels at the rate of 200,000 miles, and light travels at the rate of 170,000 miles per second. It is one thing however to work with a swift messenger, and another thing to make the swift messenger work.

Flax in Ireland.

The annual flax sowing of Ulster averages 50,000 acres. For the rest of Ireland it is but 4,000. Supposing each of the other provinces to cultivate flax as extensively as Ulster, the value of the crop of all Ireland, it is estimated, would be £4,500,000.

The miners at the Cliff Copper Mine, Lake Superior, are at work upon a block of pure copper, 40 feet long, 18 high and three thick.

LITERARY NOTICES.

GRAHAM'S AMERICAN MAGAZINE, for May has several fine illustrations: "Spring Flowers" is beautiful, so also is the "May Queen." It embraces a brilliant list of original articles from James, Prentice, Hosmer, Herbert, Grace Greenwood, Mrs. Hemans, and others of known eminence in the literary world.

SARTAIN'S UNION MAGAZINE, for May, is received. The embellishments are 19 in number, and are all done in the highest style of the art. The contributions are of high moral excellence from authors of reputation and character. Dewitt & Davenport are agents for both the above.

SHAKESPEARE'S DRAMATIC WORKS—Published by Phillips, Sampson & Co., Boston. No 37 of this beautiful serial is issued: it contains "Hamlet," with an elegant illustration of "Ophelia." This enterprising firm are about to issue Shakespeare complete Poetical Works, with Notes on the same, in one volume of 600 pages, which is to be ready on the issuing of the last number of the Dramatic Works—on paper and typography equal to them. The volume will be put up in various forms of binding for those who wish it separately, and untrimmed for those who wish to have it bound uniform with the rest of the author's works. We call the especial attention of our readers to the above.

THE CARPET BAG is the title of a new paper just commenced by Messrs. Snow & Wilder, of Boston. It is one of the neatest sheets we have ever seen, and bears living evidence of success. Mrs. Ruth Partington is one of the ostensible editors, and affords the gratifying assurance of no decay. We wish the new Carpet Bag to supply the place of all the old ones.

BULWER AND FORBES ON THE WATER TREATMENT—A compilation of papers on the subject of Hygiene and Rational Hydropathy, edited by Roland S. Houghton. Fowlers & Wells, publishers, 131 Nassau st. This compilation embraces the views of Sir E. Lytton Bulwer, Dr. Forbes, and others of distinction, upon the importance of bathing, the whole forming an interesting and readable book of 258 pages. We have derived much pleasure from its perusal.

MECHANICS

INVENTORS AND MANUFACTURERS.

The Best Mechanical Paper

IN THE WORLD! SIXTH VOLUME OF THE SCIENTIFIC AMERICAN.

The Publishers of the SCIENTIFIC AMERICAN respectfully give notice that the SIXTH VOLUME of this valuable journal, commenced on the 21st of September last. The character of the SCIENTIFIC AMERICAN is too well known throughout the country to require a detailed account of the various subjects discussed through its columns.

It enjoys a more extensive and influential circulation than any other journal of its class in America. It is published weekly, as heretofore, in *Quarterly Form*, on fine paper, affording, at the end of the year, an ILLUSTRATED ENCYCLOPEDIA, of over FOUR HUNDRED PAGES, with an Index, and from FIVE to SIX HUNDRED ORIGINAL ENGRAVINGS, described by letters of reference; besides a vast amount of practical information concerning the progress of SCIENTIFIC and MECHANICAL IMPROVEMENTS, CHEMISTRY, CIVIL ENGINEERING, MANUFACTURING in its various branches, ARCHITECTURE, MASONRY, BOTANY,—in short, it embraces the entire range of the Arts and Sciences.

It also possesses an original feature not found in any other weekly journal in the country, viz., an *Official List of PATENT CLAIMS*, prepared expressly for its columns at the Patent Office,—thus constituting it the "AMERICAN REPERTORY OF INVENTIONS."

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P R E M I U M.

Any person sending us three subscribers will be entitled to a copy of the "History of Propellers and Steam Navigation," re-published in book form—having first appeared in a series of articles published in the fifth Volume of the Scientific American. It is one of the most complete works upon this subject ever issued, and contains about ninety engravings—price 75 cents.