

Scientific Museum.

Has a Balloon Weight.

NEW ORLEANS, June 20th 1851.

Messrs. EDITORS.—I want to ask you two questions which I have propounded to a dozen natural philosophers, of this city, and which have been answered in so many different ways that I do not know what to think or believe on the subject.

The first question is, "which is the heaviest, a balloon empty or the same filled with hydrogen gas?"

This question was suggested to me by a flourish of oratory made the other day in course of an argument by a lawyer. He said, "May it please your honor, my adversary's argument weighs no more than a balloon filled with gas." The other answered, "Your argument, sir, weighs less, for it weighs no more than the empty balloon." He emphasized the word "empty," and the whole was thought very witty, but as a tiro in science, I eschew the wit, if any there is, and want to know which was right, in fact.

A friend at my elbow who insists that the empty balloon is lightest, suggests the second question, which he propounds thus:—"Throw an ounce of cork and an ounce of lead into a bowl of water, and tell me which is the heaviest?" Yours truly, YANKEE CREOLE.

The remark of the first lawyer was full of wit, that of the second, empty of it. A balloon full of hydrogen gas in a full court is much lighter than an empty one. It is true, that hydrogen gas has gravity when weighed in a vacuum, but it could not be detected in the place where the wit was expended.

The friend at our friend's elbow, who threw the cork and lead into the water, is not a correct logician. He might as well say, "that ball of iron is of the same shape as that ball of wood, therefore, that mountain must be round."

Curious Experiment.

There is a pleasing and profitable experiment which I have often made in my youth—it is this:—If you place your head in the corner of a room, or on a high backed chair, and close one eye, and allow another person to put a candle upon a table; and if you try to snuff your candle with one eye shut, you will find that you cannot do it—in all human probability you will fail nine times out of ten. You will hold the snuffers too near or too distant. You cannot form any estimate of the actual distance. But if you open the other eye the charm is broken; or if, without opening the other eye, you move your head sensibly, you are enabled to judge of the distance. I wish not for my present purpose to speak of the effect of the motion of the head, but to call your attention to the circumstance, that when the head is perfectly still, you will be unable with a single eye to judge with accuracy of the correct distance of the candle.—[Prof. Airy, Royal Astronomer.

New Species of Sheep.

A new species of sheep has just been imported into Rhode Island, by M. B. Ives, of Potowomot. The sheep came from 300 miles in the interior of the East Coast of Africa. The variety is entirely new, and is distinguished by the enormous fatness of the tail, and a singular dewlap resembling that of cattle, and the absence of horns in the ram. The wool is very coarse, more resembling hair than the article which is beginning to form so important a staple in the productions of that State; but in recompense of this the mutton is said to be unrivalled in flavor and tenderness.

Rev. Mr. Muir, of Aberdeen, Scotland, made an experiment in his own church recently, to demonstrate the rotation of the earth. To the great confusion of the assembled savans, the machine indicated that the earth was turning the wrong way.

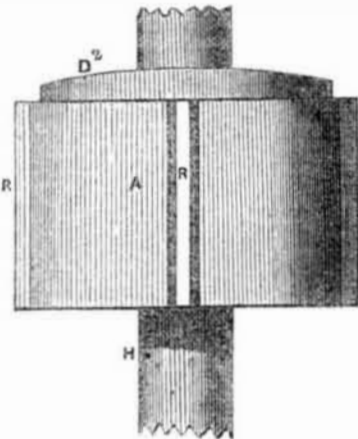
This is all we have heard about the pendulum experiment this week.

Anthraxite coal is now selling for \$4.50 per ton. This is the time to lay in a supply for winter.

Wade's Patent Mill Bush.

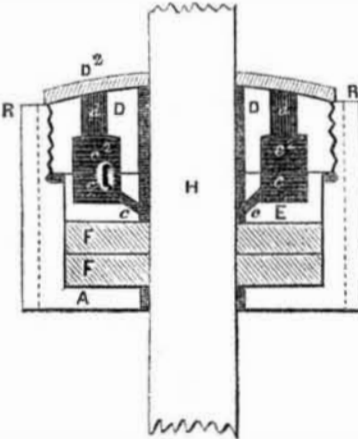
The accompanying engravings represent an improvement in Mill Bushes, invented by Mr. Robert M. Wade, of Wadesville, Clark Co., Va., and for which a patent was granted to him on the 5th May, 1844. Figure 1 is a side elevation, and figure 2 a vertical. The same letters refer to like parts.

FIG. 1.



The improvement consists in making a cup, A, containing the packing, F, and oil chamber or circular trough, C, whose bottom is perforated with a round aperture somewhat larger in diameter than the mill spindle, H, which is to pass through said aperture, and whose top, D, (which is also perforated with a round aperture for the spindle, H, to turn in), is a cylindrical piece of metal formed with a right-handed screw on its circumference corresponding with a left-handed screw made on the inside of the cup into which it screws; there is also a circular groove, C, on the underside, to correspond with a similar circular groove of the same diameter, made in the opposite side of the driver, E, which forms the chamber to contain the oil for lubricating the spindle. The cup, D, is perforated with several apertures, d, communicating with the oil chamber, C, for supplying it with lubricating material when required. These apertures are kept closed with stoppers and covered with a leathern cap, D², which is screwed down upon the top by screws. The said top contains apertures for the insertion of a wrench for turning it. F is the circular packing rings, put into the cup, A, around the spindle, resting on the cup bottom. E is the driver or piston, placed on the ring packing; it forms the lower part of the oil chamber, and is equal to the diameter of the cup. The circular groove, C, in the upper side of the piston, forms one half of the circular oil chamber, it is of less diameter than the cup, but greater than the spindle, H; the other half of the oil chamber is made in the under side of the top. When the top, D, is

FIG. 2.



screwed into the cup and hard upon the piston, the annular chamber, C C² is formed and supplied through the apertures, d, and discharged through the small apertures, c, on the inner ring of the piston next the spindle. Thus the lubricating material flows gradually to the annular rings of packing, lubricating the spindle in the most perfect manner. As the packing wears, the top, D, is secured hard down upon the piston, which expands the rings so as to touch the spindle always. New packing can readily be supplied by unscrewing the top, D, and taking out the piston, E. The outer surface of the cup has ribs, R, which fit into grooves in the bed stone to secure the cup against turning. Wedges may be used in

place of these ribs. To fill the oil cup, it is only necessary to raise the leather cap, D², take the plug from the aperture, d, and pour in the oil. The leather cap, D², is principally designed to fit close around the spindle to keep out dirt, &c.

The claim is for the "Mill Bush," constructed with an annular chamber, C C², for containing the lubricating material to oil the spindle, by making corresponding circular grooves in the bottom of the screw cap, D, and in the top of the piston, E, which thus answers the two-fold purpose of oil chamber and driver, to keep the annular rings of packing in the cup, A, supplied with oil to lubricate the spindle."

Mr. Wade now places this patented improvement frankly before the public, conscious of its merits, and other information about rights, &c., may be obtained of him by letter.

For the Scientific American.

Hydraulics.

(Continued from page 325.)

Our object in commencing and continuing a series of articles on Hydraulics was chiefly to draw out and present all the information we could collect about "Re-action Water Wheels." America is the country where the great improvements in such kind of wheels have been developed, and more of them are employed in the State of New York alone, than in all the other countries of the world put together. Although this is true, and although patents had been taken out for improvements on them as early as 1808, still there was a great want of general information on the subject. We have supplied that want, in a measure, and the series of articles published, collected together, forms the best work on the subject yet published. Some slips of the pen have been made, which, perhaps, may be corrected at some future time and published in a separate work, along with other practical and profound information on the subject now in our possession.

The progress of improvement has been from 40 and 45 per cent. on the old Barker Mill to at least 72 per cent. in the improved centrifugal wheels. It was the common opinion among all mechanical philosophers once, that no re-action wheel could be built which would give out more than 50 per cent. of the water power. This theory is now exploded. The great improvement made was in giving the water "a whirling motion—feeding it to the wheel in the direction of the wheel's motion." This improvement was claimed as a European invention, but we have satisfactorily proven that it was the subject of an American patent, "Parker's," ten years before it was known in Europe. The originality of the American claim was fully established in a trial before Judge Kane, Philadelphia, on the 7th of last May, 1851, in the alleged infringement of Parker's patent, by the use of one of Fourneyron's French Turbines. The value of this improvement was stated by Judge Kane in his address to the Jury, to be such as to place the inventor in the same category with Oliver Evans and Whitney. Like a great many other inventors, Mr. Parker has the faculty of benefiting others but not himself personally.

A long time ago we received a number of communications from James Sloan, Esq., Floyd'sburg, Oldham Co., Ky., a scientific and practical millwright of great experience, paying a high compliment to Parker's improvements as being the grand one. His opinion for various reasons, we look upon as that of a candid, scientific, and practical man. We have received two communications on the subject from J. B. Conger, Esq., of Jackson, Tenn., an inventor, and a gentleman who has studied and understands the principles of the Re-action Wheels thoroughly. In all likelihood we will be able to present his views (when more fully communicated) at some other period. The Barker Mill, the French Turbine, Whitelaw & Stirratt's Scotch Motor, Rich's, and Parker's Wheels, have all been illustrated, and in no other work can they be found.

With one or two future illustrated articles on Hydraulic Rams, this series of articles will be terminated.

Astronomy

Lieut. Maury reports that the new Asteroid "Irene," discovered by Mr. Hind, in London, has been observed at the National Observatory, by Profs. Keith, Benedict and Major, with Meridian Instruments, and the Orbit computed for it from these and other observations. A brilliant Meteor was observed in the constellation Scorpio at Washington, on Wednesday last, June 26th.

LITERARY NOTICES.

NEWTON'S LONDON JOURNAL AND REPERTORY OF ARTS, SCIENCES, AND MANUFACTURES, monthly, edited by Messrs. Newton & Sons, Civil Engineers.—This able publication comes to us with great regularity, and constitutes a valuable adjunct to our exchange list. Originally commenced in 1794, it has continued to increase in merit until it is now one of the most useful and popular publications extant, and must remain so while under its present able management. The engravings are finely done upon copper, from drawings by W. Newton, the text is bold and tempting to the eye, and the paper is of the heaviest linen fabric. The price of each number is 2s. 6d. sterling, or nearly 62 cents of our money. Office No. 66 Chancery Lane, London.

THE PARTHEON.—A beautifully illustrated work in quarto form, bearing the above title, has just made its appearance, printed on fine paper, with contents unequalled in selection from any thing that has been presented to the public for patronage for some time. Its object is to present original papers from American authors exclusively; and each contribution is signed by the fac simile signature of its author, thus presenting a new and desirable feature. The work is to be issued in 12 numbers, of 40 pages, at \$1 each and to those who have a taste for the fine arts, and have a desire to patronize American artists, it is particularly adapted. The work is beautifully embellished with 50 original engravings in each number, by the best artists in the country. Messrs. Loomis, Griswold & Co., publishers, 233 Broadway, to whom orders should be addressed.

THE INTERNATIONAL MAGAZINE, for July, has appeared upon our table: it is superb in illustrations and literary matter. It furnishes a fine portrait of Fitzreene Hallack, besides several views of the benevolent institutions of the city of New York. This magazine has justly acquired high distinction and is rapidly going forward. Messrs. Stringer & Townsend, publishers, 222 Broadway: 25 cents per number.

"The Countess of Salisbury: A Chronicle of the Order of the Garter," by Alexandre Dumas; published by Stringer & Townsend: price 50 cents.—This is the last work of the great French author, and must command an extensive sale, perhaps equal to the Count of Monte Cristo and other of his popular works. Dumas' name, associated with any publication, is an earnest of its brilliancy.

"Jenny Lind's Tour Through America and Cuba," C. C. Rosenberg, published by Stringer & Townsend. This is a neatly bound volume of 226 pages descriptive of the brilliant tour of Jenny Lind through the United States and Cuba. It forms a most attractive and interesting work and we doubt not will command an extensive sale. It is embellished with a fair portrait of Jenny.



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 *Quarto 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."

TERMS—\$2 a year; \$1 for six months.

All Letters must be Post Paid and directed to MUNN & CO., Publishers of the Scientific American, 128 Fulton street, New York.

INDUCEMENTS FOR CLUBBING.

Any person who will send us four subscribers for six months, at our regular rates, shall be entitled to one copy for the same length of time; or we will furnish—
10 copies for 6 mos., \$8 | 15 copies for 12 mos., \$22
10 " " 12 " " \$15 20 " " 12 " " \$26
Southern and Western Money taken at par for subscriptions.

PREMIUM.

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 the subject ever issued, and contains about sixty engravings—price 75 cents.