Scientific Museum.

For the Scientific American.

The Motion of the Earth Rendered Visible.

[We request the particular attention of our readers to the following perspicuous description of the new beautiful experiment which *demonstrates* the motion of our planet.]

The accounts of the interesting exhibition now being made at the Pantheon, in Paris, brought to us by the foreign papers a fortnight since, employ methods of illustration that, to some minds, are obscure. The following may prove less so:

Suppose a pendulum at the North Pole vibrating across a circular table. As the plane (or direction) in which the oscillation takes place does not change, while the table below revolves with the earth from west to east, the pendulum will approach an observer at each oscillation from a new point, its plane will seem to revolve. In twenty-four hours the plane of oscillation will have completed an entire revolution from east to west around the earth's axis: or, more correctly speaking, the plane having been at rest, the earth will, in twenty-four hours, return to its former position.

Suppose now, for convenience of illustration, the earth northward from this meridian of latitude to be flat, the table to be extended from the pole on every side to the meridian, and over it a pendulum of proportional length to be suspended. What is true of the lesser table will be true of the larger: it will revolve with the earth. The pendulum thrown into oscillation above, will continue to oscillate in the plane of its first vibration, and will seem to be approaching an observer successively from points farther to the right.

Now, conceive a small table in the margin of the larger, and over it a lesser pendulum made to oscillate in a plane parallel to that of the larger pendulum. As the lesser table revolves with the larger, it will, in twenty-four hours, accomplish a revolution—not around its own centre, but around that of the larger table, and the lesser pendulum oscillating continually in a direction parallel to that of the larger, will perform an entire revolution round the table. If the larger table and its pendulum be omitted from the illustration, we shall, with a little modification, have the phenomenon now exhibited at the Pantheon.

At Paris, the time required for the return of the pendulum to its first point of departure, is more than 30 hours (30 hours and 40 minutes). That the time must be more than that required at the poles (24 hours) will be obvious if we reflect that at the equator the plane of oscillation of the pendulum, with regard to the poles or any object fixed upon the earth, will not revolve.

Any where between the poles and the equator the time will vary from 24 hours (the least time) to infinity.

In a latitude lower than that of Paris, the time required for the return of the pendulum to its first point of departure, will be more than 30 hours. At Boston it will be 35 hours and 36 minutes, a quantity obtained by dividing 24 by the sine of the latitude.

These facts suggest a new method of determining latitudes: the arc through which the plane of oscillation sweeps in a given time bearing a certain relation to the distance from the poles.

The above experiment has now been ten days on exhibition in the Laboratory of the Scientific School at Cambridge, and has been the centre of considerable interest to persons in the vicinity. The pendulum is 36 feet long, and consists of a slender copper wire less than a medium sized pin in diameter, suspending a pear-shaped weight of four pounds. A few inches above the weight a wooden circle is erected, and upon it, on opposite sides, are placed two movable cards, subdivided by the same number of vertical black marks, an eighth of an inch apart, the centre lines of the two cards being diametrically opposite to each other. When the weight is drawn to the rim of the circle, so as to bring the wire of suspension against the extreme right division on the card, and, after coming to rest, is permitted to sweep, it reaches the extreme left division on the opposite card. The advance of each individual oscillation cannot be readily seen, but after sweeping two minutes, its progress becomes abundantly apparent, and in about 20 minutes it advances nearly an inch, or speaking more correctly, the earth advances that distance while the plane of oscillation remains unchanged.

It may not be uninteresting to your readers to know that this beautiful experiment is so simple that it may be readily repeated in most of our dwellings. Wherever a clear space of from 25 to 40 feet in height, even if it be not more than a foot in breadth, can be commanded, there the experiment may be made. The continuous stairways, from the first floor to the attic, in many houses, provide the desired space. Over this a screw, driven into the ceiling, furnishes the point of attachment. From the screw, by a slender copper or iron wire, of a diameter less than that of a medium-sized pin, a weight of about four pounds may be suspended.

An ordinary steelyard weight, of the larger size, attached to the wire, not by the hook but by the eye to which the hook is fastened, will answer the purpose well. The weight should come within two feet of the floor; place two chairs, back to back, at the extremes of the sweep of the pendulum, some four feet apart, and fix by pins a strip of finely ruled paper (the lines perpendicular) on the top piece of the back of each chair—on the *back* of the chair more distant, on the inside or front of the chair nearest the observer. Now, having tied a thread around the weight, draw it near to one of the vertical marks. When the weight and the wire have come entirely to rest, burn the thread, and the pendulum will commence its oscillations. Note the point of departure, and the mark to which it sweeps on the back of the chair opposite. It will be observed in a few moments that the pendulum will return to a mark a little to the left of that of its first departure, and will sweep to a point a corresponding distance to the right of the mark on the chair opposite. E. W. H.

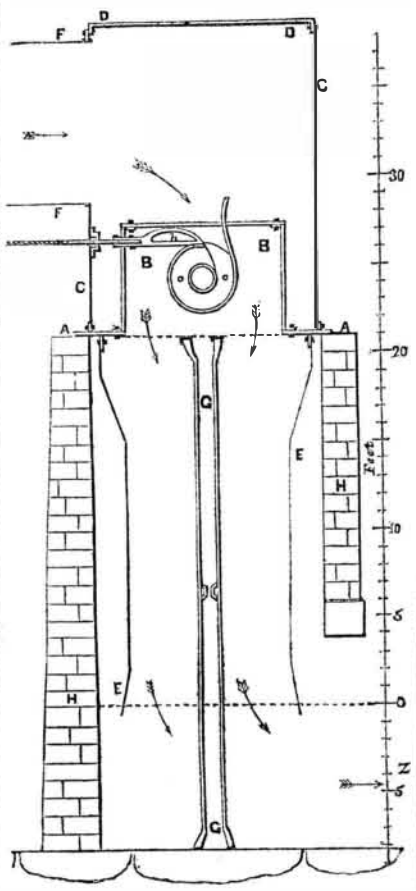
Cambridge, May 8, 1851.

For the Scientific American

Hydraulics.

(Continued from page 272.)

FIG. 49.

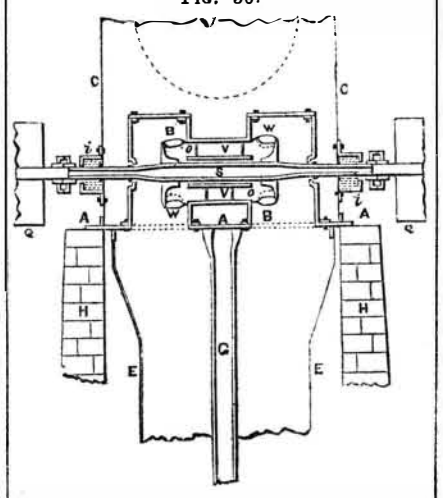


We select the accompanying figure from the MS. of Mr. Z. Parker to illustrate the application of his water wheels and air-tight drafts, to falls of great height. This subject is one for which we solicit the strictest attention, because it is so important, and opens up a new field of Hydraulic Engineering.

Fig. 49 is a vertical section across the axis of the wheel with elevation of draft chambers and double helix.

Figure 50 is a vertical section through the axis of the wheel with the drums, Q Q, (in broken lines) on the shaft, A is the main disc, B B draft chambers, C cylindrical penstock, D is the cover, E is the draft tube, F is the induction tube, G is the column to support the main disc, H is the pit wall, W is the wheel, S shaft, *i i* journal pillows, O is the double helix sluice, V is the double helix partition forming sluice, *h* is the gate.

FIG. 50.



The engravings, without the conduit from the mountain, exhibit the application of the wheel to a fall of 100 feet, and of 1,320 horse power.

DIMENSIONS.—Orifices of wheel, 400 square inches; diameter, 44 inches; 9,597 cubic feet of water discharged per minute; working speed of wheel, 363 revolutions per minute; drums 5 feet 4 inches diameter; speed of belts, 6,084 feet per minute; tension 7,110 lbs. (711 lbs. each belt); width of belt, 13 inches at 40 lbs. tension per square inch; downward pressure on main disc, 894,700 lbs.; upward pressure of water on penstock cover, 548,880; pressure per square inch at bottom of penstock, 26,47 lbs; diameter of pulleys on a line of shafts of the mill for 150 revolutions per minute, 12 feet 1¼ inches.

We shall give the estimated cost of a wheel of this kind in our next. We shall also present Mr. Parker's views on the system.

Treatment of Cancer.

We have had occasion before to call the attention of our readers to the success with which Dr. Samuel Gilbert, of New Orleans, has treated the horrible disease of cancer. We have not done this without positive and satisfactory assurance of the facts being beyond a question. We learn that ex-Governor Tucker, of Mississippi, was induced to apply to Dr. Gilbert in his own case upon the strength of our endorsement, and we have since been informed by letter, and we also notice the successful issue of his case in the New Orleans Delta, a journal of undoubted standing. With this and other corroborating testimony we feel that we are doing the community good by publishing the case of Wm. Baldwin, which was communicated to us a few days since. The editor of the Delta, under date of April 28, says he saw Mr. Baldwin, and bears testimony to the facts we present below, which are given in Mr. Baldwin's own words:

"About eighteen years since, a cancerous affection made its appearance under my left eye. It increased in size, and grew deeper and deeper. Becoming alarmed, I applied to Dr. Hubbard, a highly respectable physician, then of Natchez, who prescribed for me, but he frankly stated that he considered the case a very doubtful one. Subsequently, I applied to Dr. Crane. His treatment failed. In 1848, in company with Dr. Rex, I went to Philadelphia and consulted Dr. Mutter, a distinguished professor of surgery. He advised against the use of the knife. He candidly said that he considered the case incurable, and that I had better submit with fortitude to my fate. Now, despairing of getting cured, I returned home to endure it with patience and resignation. On the 18th of April, having in the meantime suffered severely, and with the prospect of a speedy death, I was pursuaded to put myself under the care of Dr. Gilbert At that time my vision was almost entirely destroyed, the cancer had affected my nose, the adjacent bones had become diseased, and even occasionallally rotting out. I was under treatment until the 15th of June, and thanks be to God and the miraculous skill and perseverance of Dr. Gilbert, I am now well. Without the aid of a knife, he removed the cancer and a part of the bone. My sight has been restored, and my general health is good. I have been a resident and planter of Jefferson county in the State of Mississippi, in the same settlements where I now reside, since 1800. I am a member of the Baptist Church, and in gratitude to God and the truly eminent man who has snatched me, as it were from the grave, I make this statement for the benefit of my fellow-sufferers."

We learn that Dr. Gilbert intends to make this city his permanent residence before long.

Old Oil from the Sea.

A Plymouth paper states that fourteen forty-gallon casks were thrown on shore at Marronet Ponds during the late gale, containing linseed oil in good condition. The casks were covered with barnacles, and considerably decayed, showing that they had been in the water a long time, and all that remained of the iron hoops were the marks of rust. The Boston Advertiser thinks they came from the brig Hollander, of Boston, from Rotterdam, which was lost in Massachusetts Bay ten years ago.

The French have at last claimed the honor of being the first inventors of the locomotive, but such claims will not be easily admitted.

LITERARY NOTICES.

THE SOUTHERN LITERARY GAZETTE: Edited and published by our friend W. C. Richards, Esq., Charleston, S. C., is just entering upon its fourth Volume. It is, unqualifiedly, one of the best literary papers in our country, and we hope our southern friends will not forget that they have so good a paper among them. Terms $2 per annum.

DICTIONARY OF MECHANICS AND ENGINE WORK.—No. 28 of this able work, published by D. Appleton & Co., New York, contains articles on the Mechanic Powers, Mensuration, Metals and Alloys, Metallurgy, the Micrometer, and the Microscope.

"Leonard Normandale, or the Three Brothers," is a very ably written romance just from the press of H. Long & Brother, 43 Ann st.; 25 cts.