

For the Scientific American.

Reaction Water Wheels.*(Concluded from our last.)*

Again, Mr. B. asks, "if a body B, under motion should impinge or press against the body C, in a direct line or obliquely, and thus communicate its momentum to C, would C owe its motion to action or reaction?" This is a simple question susceptible of as simple an answer, and cannot well enlighten the public on the subject of "reaction wheels."

I have seen experiments made with reaction wheels so minute that the twentieth part of an ounce of momentum would be indicated, and in these developments it was clearly shown that the same wheel running free without any load, would attain a greater velocity when running by reaction alone than it would when the percussion was combined with its reaction. But when the percussion was combined with its reaction the wheel would maintain a greater working velocity and indicate a great increase of power.

Again Mr. B. says: "Now it is clear that the action and reaction are equal, and no greater power can be obtained by the same agent by reaction than by action. The mechanical effect of a reaction wheel (rightly constructed) must be the same, but the coefficient, or power of many wheels supposed to be driven by reaction is from 6 to 8 of the whole power of the water yielding *double* the amount of power to a percussion wheel. Now I would ask in reply, whether this great gain of power is not the effect of combining percussion with reaction, and thereby creating a combined power. It is certainly common to see a horse and an ox working the same machine

Again Mr. B. says: "I know of such wheels in use yielding *double* the amount of power to any reaction wheel in existence."—Now this assertion I do not think is sustained by facts. I believe that it is the general acknowledged opinion that the overshot wheel returns the greatest co-efficient of all the power of the water expended, and it must be a good one which will return 75 of the whole power. In a Report of a Committee on Science of the Franklin Institute of some experiments made with Mr. Parker's Reaction Wheel they establish a co-efficient for it of 72 of the whole power. I have seen even greater results. It would be of vast importance indeed were it possible to produce a surplus co-efficient of 44 over the whole power expended, which must be the case with a wheel "yielding double the amount of power to any reaction wheel in existence."

Mr. Bishop charges Mr. Parker with "obtaining those answers (contained in the report of said committee) to subserve certain purposes and not to enlighten the public mind on a subject upon which they needed light." I have no doubt but Mr. Bishop would change his opinion were he acquainted with Mr. Parker. No person can point out a man in existence who has done more to enlighten the public mind on the subject of reaction wheels than Zebulon Parker, of Ohio, or who has made greater improvements in the application of Hydraulic Power. E. C. A. C.

Peoria Co. Illinois, April 1848.

Last Machine.

Publishers Scientific American.

GENTLEMEN.—I noticed in your paper of the 22d ult. a communication from Mr. James Johnson of your city, in which he makes some inquiries in regard to a machine for turning irregular patterns, which from his language he seems to have heard of as being invented by Mr. Elbridge Webber or Mr. W. M. Davis. In answer to the same I would say that Mr. E. Webber of this place, has succeeded in perfecting a machine for the above purpose, which in the opinion of many of our best mechanics will accomplish the long desired object. I understand that Mr. Blanchard has heretofore been able to overthrow all attempts that have been made by divers ingenious mechanics to evade his patent, by being able to make in his machine from their model a thing like that which they desired to make from said model in their machine. By this plan of Mr. Webber's, Mr. Blanchard cannot make a thing like the thing which the model will cause to be made in this machine out of the model used, any easier than

he can out of a stick of cord wood. This machine of Mr. Webber's also obviates a serious objection to Mr. Blanchard's machine, as his model and block hang in a swing frame which as it describes a part of a circle causes an imperfection in the thing turned which has to be remedied by hand, whereas in Mr. Webber's machine the model and block move in straight lines. Mr. Webber has also an improved method of chipping from the block, which together with various other improvements united in his machine, make it in my opinion altogether superior to any now in use. Notwithstanding the broad ground which Mr. Blanchard has been allowed to enclose by a special act of Congress giving him a second renewal, it is hoped that he will not be allowed to make a turnpike of it and hold the office of tax-gatherer.

I understand from Mr. Webber that he expects to be able to show you a machine upon his plan in a few weeks.

Yours respectfully,
C.
Gardiner, Maine, May 2, 1848.

For the Scientific American.

Terrestrial Magnetism.—Central Heat.

Many philosophers have firmly believed that the centre of the earth was a great fire and that the inhabitants of our globe lived walked and slumbered on the crust of a huge furnace of which Vesuvius, Etna, Stromboli, and many other volcanoes were but the smoke pipes. These views have lately been yielding to others more rational and more in accordance with many terrestrial phenomena which the igneous theory as it was called failed to explain. All the phenomena attributed to fire may be produced by electro-magnetic currents. It is difficult to imagine fires un-supplied with the oxygen of the atmosphere; and a singular fact has come to light with regard to the earthquakes in South America, based on observations continued during nine years: the oscillations are from east to west, while the rumbling sound by which they are accompanied, travels north and south, showing the influence of some law similar to that by which magnetism is governed. "Even the cause of the variation of the needle, mysterious as it has hitherto appeared to be, may probably be referred to the relative energies of the opposing electrical currents, which are perhaps subject to occasional modifications; and the appearance of earthquakes and volcanic action from time to time seems to countenance the probability of any such changes."

Taking the ocean as the connecting medium between pole and pole, it is the universal menstrum whence all the variety of materials that constitutes land is derived. The great ocean currents are from south to north, which, with the upheaval, and subsidence of continents and islands, the changes of level continually going on, may be referred to the action of magnetic currents passing from one to the other pole. Everywhere, in fact, there appears to be a tendency towards the north, or pole of decomposition, from whence the decomposed substances are carried back to the south, to take on new combinations and resume their part in perpetuating the operations of nature. In various parts of the world, the latitude of places is found to be slowly moving northwards, at the rate of from ten to twenty minutes in a century. It is a generally received fact, that the climate of Europe is colder at the present time than in the earlier periods of history. The first settlers in Iceland, described it as fertile in many parts, and covered with trees, and there is evidence that the vine was cultivated where now is nothing but an icy desert. With regard to the material diminution of temperature in the northern hemisphere, "we know that there are constantly some small variations in the respective geographical positions. And while in the north we find fossils, and other remains of the torrid and southern regions, we never find in the south any but those of the adjacent seas, or peculiar to the locality.—In the coal beds of Melville Island, fossil plants are found which required tropical heat and light for their growth, and could not possibly have flourished through the cold and six months night of the arctic regions. An island or

continent moving from the south would naturally carry its sponges, ferns, corals, and animals to the north, modified by the changes of temperature through which it had passed; and the immense deltas of floating wood in process of formation at the embouchure of the Mississippi and other rivers, to be alternately elevated and submerged during the ages of transit, would seem to be the means of providing an endless succession of coal-beds for the inhabitants of the chilly north.

Theory of Population.

A recent English writer on this subject has brought forward facts and reasonings that have been entirely overlooked by writers on political economy, and which will forcibly strike every thinking mind. He assumes that if any species, animal or vegetable, receives an immoderate supply of nutriment, or becomes plethoric, it does not produce itself but sparingly, if at all—that if very moderate aliment be administered, they become prolific and reproduce themselves.

He says: "It is a familiar and well known fact that over stimulation, by an excess of manure, causes most of the grains to fail in producing seed, and to cause the single flowering plants to become double, by a transformation of stamens into petals, in which case they are always seedless. It is exceedingly rare that you can find poor, healthy and laborious parents without an excess of offspring; indeed, "children, the poor man's blessing," has become an adage. Look into the by-ways and alleys of towns and cities, and into the mansions of the wealthy and high livers, and the indications of this theory are visible.

"On this assumption the decrease of the Peerage and Baronetage of England is at once accounted for. How often it occurs that the large estates of the oldest families become extinct in the direct line, and some discarded offshoot, perhaps once a poor emigrant to this country, succeeds to the honors and hoarded millions of an ancient and time-honored name.

The Quaker families are found to be diminishing in numbers. They are almost exclusively, from their peculiar tenets, that enforce prudence, industry and economy, either wealthy or above want—and consequently never find it necessary to buffet the storms of poverty and adversity, and from the necessity of intermarriage among themselves, increase the influence of non-productiveness.

Look at poor, famished, starving Ireland, evidently the most prolific country on the globe; their immense emigration, disease and starvation, does not keep pace with the births. The same reasoning applies to the blacks at the South; the whole navy of the United States could not remove and colonise them as fast as they increase. China is overstocked with population, merely from the want of food, or from their inability to procure a rich and generous diet, or even plenty of any kind.

"The whole animal creation is subject to the same laws. Every farmer knows that a pampered, high fed and fat animal, which requires no exercise to procure its daily food, is not in a fit state to produce its kind; in fact it is barren. These facts all go to prove that constant labor, and a stinting of nutritious food, even to a state bordering on destitution are favorable to the reproduction of all organized beings; and the opposite state, of high and generous living, where the pallid appetite is provoked with the most pungent provocatives, or any state approaching to it, is unfavorable and often unfavorable to that desire of offspring that is inherent in every human breast."

It is very easy to make out a very strong case from a few facts—a case apparently impregnable to overthrow. But let an array of facts be presented on the other side and the fabric becomes apparently founded upon sand. This is our opinion in relation to the above theory. The Highlands of Scotland are poor to a proverb, both in the comforts of life and in the reproduction of the species. Does the half starved Esquimaux increase rapidly, or the miserably fed Russian serfs? Nay do we not all know that as the mass of the people in any land are comfortably fed and clothed, so in proportion is life prolonged, eye, and life increased too.

For the Scientific American.

The Patent Office.

Mr. Editor:—I am a constant reader of your valuable paper, and am always pleased to meet in your columns with any article expressing sympathy for inventors.

You have recently alluded to the importance of the bill now before Congress, for the appointment of additional Examiners in the Patent Office. The importance of such an alteration of the present system, as to facilitate the business of the office, is certainly not only desirable, but due to the hundreds of Inventors who desire to avail themselves of the protection guaranteed by the Patent Laws.

I am informed that the time now devoted to the business of the Office by the Examiners and Assistants per day, is but *five hours*; if this is so, let it be increased to *ten hours* and with reasonable allowance for relaxation, the efficient force will be nearly doubled. Many of the hard working inventors are compelled to toil *fourteen hours* of the twenty four with but a scanty support, and it may surprise them to learn that that the respectable Examiners at \$2500 a year devote but five hours out of the twenty four in attending to duties for which they are well paid.

I agree with you, that none but men of superior talents and sterling integrity should occupy so important a position, but surely it is but just that their time and talents should be entirely devoted to the work.

You will confer a favor on several of your subscribers by informing them, through your columns, whether I am rightly informed in this matter.

INVENTOR.

[We would inform "Inventor" that the corps of the Patent Office labor frequently *twelve* hours per day, although not required to do so by law, and we have lately received information from Washington of their continual labor for twelve hours per day during the past two months. Our views accord exactly with those of "Inventor," with but one exception. We believe that nature claims only eight hours daily labor from man and that the majority of our working people labor three and four hours per day more than they should. The business of the Patent Office has increased for years at the rate of thirty per cent, without any addition to the examining staff. This is very unjust, not only to the members of the Patent Office, but to inventors and the cause of science. Congress will banter for days upon some unimportant—sometimes very foolish point, and yet bestow but little attention upon matters of invention. This should not be.—Ed.]

A Republican Blacksmith.

Amid the many curious scenes that the European revolutions have caused, the following is too good to be lost. It should be immediately dramatized.

"The Elector of Hesse Cassel (a small state with about 700,000 inhabitants) was deaf to all appeals from the people. The mob therefore determined to use force. Seeing this he fled into his gardens and attempted to escape. He was caught, however, by a gigantic blacksmith, who carried him back to his drawing room. The man then locked the door, and demanded compliance with the popular demands. The Elector still said no! The blacksmith, then, by way of giving an example of physical force, smashed with one blow of his arm a highly ornamented table into atoms. This done, he shook his fist at the Elector, and told him he should never leave the room till he yielded all that was required of him. The result need hardly be told. The Elector consented. The blacksmith, however, was a practical man, and was not disposed to trust the promise of a prince, without fortifying himself with collateral evidence. He compelled the Elector to write a proclamation. "Willingly according to all his people's just requests." This was forthwith promulgated. Thus by one brawny arm, and the rough good nature of its possessor, a State was saved. The Elector and his people are now on the best terms."

Miss Freeman the celebrated Boston Clairvoyant has made a grand mistake about a Mr. Marshall, who was missing, who she said was in New Orleans, but has since been found dead near the Maine Railroad.