



NEW YORK, DECEMBER 2, 1848.

The Power of Water.

It is but a few weeks since the water in one of the large reservoirs of the Schuylkill Water Works, Philadelphia, burst through its embankment and swept every thing in its path before it. The damage of that accident, however, was small in comparison with another which has since occurred in a different part of our country. We mean the destruction of the newly erected dam over the Connecticut River at Hadley Falls, Mass. The Hadley Falls Manufacturing Company with the gigantic capital, it is said, of \$5,000,000, undertook the gigantic project of throwing an immense dam over the river mentioned above, at Hampden City. The dam was completed on the 16th ult., and the day of its completion was the day of its doom. A great number of people from distant places had assembled to see the gates shut down and the dam filled, and the waters of the Connecticut arrested in their course. But from the first, after the gates were shut down, imperfections were discovered in the work, and although great efforts were made to stop the leak, yet the breach, small at first, widened with great rapidity, and when the waters in the dam had arisen within a few feet of the top, with a crash louder than the roaring of Niagara, about three-fourths of the embankments burst away before the mighty mass of angry waters. The scene by an eye witness is described to have been terrific and grand, and the people who went there to behold the mighty river arrested by the hand of man, beheld with dismay two thirds of the huge water wall more than 1000 feet long and 30 feet high hurled from its moorings and torn into fragments. The dam was constructed of immense timbers, fastened together and to the rocky bed of the river, on which the whole structure rested, with iron bolts. Great pains were taken in the construction of all the parts of the work, but the fault must be attributed to the principle of its construction. It neither possessed sufficient basis nor was it tapered on both sides and well puddled with clay between, which should have been the case. We know more than one man who predicted its destruction, "the first freshet." The loss has been variously estimated: perhaps it will be about forty thousand dollars, a great loss indeed—all swept away swift as the host—

"Which at sunset was seen,"

Like leaves of the forest when summer is green,
Like leaves of the forest by wintry winds blown
This host on the morrow—was scattered and
strown."

The art of Dam building requires experience, practical experience, and a sound knowledge of the power of water. Both these qualifications are necessary. The dam broke away in the centre—at that part in the river where the greatest water power is exerted, showing that a great velocity as well as weight of water exerted a mighty force against the log wall vainly raised up to bear it backwards. Just let us reflect for a moment, that on a space of one foot behind that wall (counting its whole height and length) there were exerted against it the astonishing pressure of 937½ tons of water, and we may form some opinion of the power exerted against the dam by that amount being doubled every tier of cubic feet behind the first 1000 for the length and 30 for the height. We do not know what is the velocity of the Connecticut river at Hadley Falls, and we have not alluded to it, but the power of water "is as the quantity and fall of the perpendicular height." Let us consider that every cubic foot of water weighs 62½ lbs. and if the fall is 16 feet, the water will fall through that space in a second, then if we consider the weight of every cubic foot discharged, as being like the blow of a hammer, for a 16 feet fall, sweeping through that space every second, we will be able to form

some estimate of the power of water, a power which can shatter the strongest steel like glass—a power which has torn cities from their foundations, destroyed kingdoms—aye, and made sport for "for forty days and forty nights" of the world itself.

Patenting Inventions.

A paragraph is going the round of the papers, stating that "Mr. Junius L. Clemmons of Davidson County, North Carolina, invented the Chemical Telegraph of Mr. Bain, and that he addressed a letter some years ago to the Patent Office on the subject of his invention."

Whether this is true or not we cannot tell, but it is exceedingly foolish to suppose that the Patent Office can take notice of such letters. It is not the business of the Patent Office to examine into the originality of any invention unless it is a legal application for a patent. Mr. Burke issued a circular stating that it was a common thing for persons to apply by letter to the Patent Office for information about new inventions. These letters are consigned to oblivion. When a person invents a new machine, or makes an improvement or discovery, he should make diligent enquiry of persons acquainted with the business relating to his invention or discovery, and having satisfied himself about its originality, he should make application for a patent forthwith. If the invention is new a patent will be granted, if not, no more expense than about twenty or thirty dollars is incurred. Two thirds of the fee for a rejected application is returned if there is no appeal, and the rest of the expense would be for drawings and duplicates, with the necessary papers,—some cost more and some less, according to the labor required. Many inventors have lost their inventions by procrastination.

Patent Cases.

Before Judges Grier and Kane, in the U. S. Circuit Court at Philadelphia, a case was decided on the 17th ult. for the infringement of a patent for Railroad Curves. The complainant was Stimpson, the defendants Lieper and others. The Jury returned a verdict for plaintiff for infringement in sixteen cases. The verdict was fifty dollars for each curve, with interest from the time they were commenced to be used.

On the 20th ult. before Judge Kane in the same court, an injunction was granted to Richard S. Childs against George W. Cross for manufacturing lampblack in violation of plaintiff's patent.

The Telegraph Case in Kentucky.

Mr. Woolford and Mr. Zook, connected with O'Reilly's Southern line of telegraph, who were arrested and taken at Frankfort three weeks ago, by order of Judge Monroe, on a charge of having violated the injunction issued by his court, were fined \$250 each and laid under bonds not to violate the injunction hereafter. The fines were subsequently remitted.

We understand that the U. S. Marshal for Kentucky has been directed by Judge Munroe to take possession of O'Reilly's telegraphic line through Kentucky forthwith, to seize so much of the posts and wires, and by breaking, interrupt the electric current of the People's line, as may be necessary to protect Morse & Co. from the violation of their patent; and give to him a continued power at his discretion to do what may be required for that purpose. In his opinion he says that the defendants are from the evidence prima facie violators, and that they will continue in that course, and that if they wish to use their line lawfully they must apply to the Judge.

We thought that Mr. O'Reilly had purchased House's Telegraph for Kentucky. It had been so reported, and it would have been wiser to do so than to have run the gauntlet, in violating an injunction.

By late foreign exchanges we learn that a patent for improvements in the manufacture of hydrogen gas from water, obtained recently by a Mr. S. White, was contested by a Mr. S. North of Manchester, who claims to be the original inventor.

A valuable coal bed has been discovered at Kellog in Arkansas. This is a treasure to the owners of the lead mines.

American Copper.

A mass of pure copper was discovered in the Lake Superior region last spring which weighed about 11,537 pounds. A lump of this copper rock has just been received at No. 239 Water st., this city, which weighs about 4000 pounds. This is the rock which was found in the process of exploring an old open cut of Aborigines digging, which was discovered by the appearance of a slight depression on the surface of the ground. In the bottom of this cut, covered by fifteen feet of earth in which were growing trees fully five hundred years old, lay this mass of pure copper, weighing 11,537 pounds, with every particle of rock hammered clean from it, supported by skids, and surrounded by traces of the use of fire either in the hope of melting it or to aid in freeing it from the rock. Near it were found several implements of Copper, showing that the ancient miners possessed the arts of welding and of hardening Copper—arts now unknown. It would seem that they failed in their attempts to break up this immense boulder or to lift it out of the cut.

What were the people who first were the miners, will never be known. This assertion we make with all due allowance for the antiquarian lore and zeal of the indefatigable Squires and the the Smithsonian Institute. What were the calamities of war or pestilence or famine, that stopped the ancient miners, no one can tell, and never will, but they were at least a more civilized people than the race that succeeded them. The works of the old miners may be traced for two miles on this vein, and on other veins in the vicinity for a considerable distance. They were ignorant of the use of iron and worked very awkwardly. The locality of these developments is the cluster of hills known as the "Three Brothers," two miles east of the Ontonagon, about twelve miles up that stream, and some 300 feet above the level of the lake. There are three large and rich veins here within a short distance of each other, at least one of them rich in silver, and which belongs to the Minesota Company in this city.

In the History of Columbus by Washington Irving, it is stated that the Spaniards discovered in St. Domingo old mines of gold diggers but no tradition of the miners was found among the natives.

Inland Navigation.

A short time ago a steambot was launched at the Fish House Bridge, in Fulton County, this State, intended for the navigation of the Sacondaga river, between the former place and Conklin's Mills, a distance of about twenty miles. The circumstance so novel as the launch of a steambot in such a locality, drew together a crowd of some five hundred persons, and was the occasion of great congratulations with the villagers and surrounding neighborhood.

The Sacondaga is a tributary to the Hudson, and the region referred to in the above paragraph is on the confines of the great wilderness in this State known as "John Brown's Tract." The existence within the limits of New York of a district of country embracing an area of nearly 5,000 square miles—equal to about two-thirds of all Massachusetts—and yet wilder and less known than any other portion in the United States, is a very remarkable fact. This region is the hunting ground of the Northern huntsmen, and the panther and deer are still found there. The whole region we know in respect to soil is barrenness itself. There never was a crow that spread its wings to cross the tract but made its will before it took its flight.

The Value of Steam Power.

Suppose for a moment that the power of steam was wrested from our service—the labored breathings, the shrill whistle heard no more—the factory lately instinct with life, a deserted ruin—the gigantic ocean steamer, floating a crippled hulk upon the deep—on our mighty rivers no longer seen their floating palaces, nor our mountain solitudes startled with the impatient neighings of the iron horse—the printing press thrown back a century, no longer giving forth its hourly thousands, and the necessary intellectual food of our reading millions. What would we be—and where?

A new kind of Wheat.

Advices from St. Petersburg to the 12th of August, mention that a new variety of the Arnauka wheat has recently been discovered and cultivated in Bessarabia. It is called the Kolus, or large-eared wheat, on account of the peculiar beauty of its ears. At present it is limited to mere seed wheat, and fetches twice the price of the ordinary Arnauka. One other and important peculiarity of this grain is, that it is less affected by drought than any other varieties. At the same time it possesses several other features, being distinguished by its greater fertility, its deep amber colour, and its earlier ripening. This important discovery was made by a peasant of the name of Bulatowisch, in the village of Troitzk, in the district of Bender, who being a close observer of nature, detected in his crops certain ears which were larger and became ripe more speedily than the rest of the crop. These he collected and sowed separately, and the result was an abundant harvest, and the introduction of a new and valuable variety of wheat. The event had created a great sensation amongst the agriculturalists and dealers in grain, and the new wheat well merits being named after its discoverer.—[Although it is, perhaps, a kind which would resist excess of moisture, it might be quite beneficial on high lands as being capable of withstanding the effects of drought. The event is interesting speculatively; and as such we would direct the attention of our agricultural readers to the subject, as this wheat must be important to farmers in many sections of our country.]

Experiments with Propellers.

C. H. Haswell Esq., the engineer in chief of the navy is now engaged in making a series of experiments, by order of the Navy Department, with the various descriptions of propellers from the Archimedean screw up to the kinds now in general use. The wheels are attached to the little steam yacht May, belonging to Captain R. F. Loper, and her speed tested with each, by running between certain points on the river, where the distance is known with accuracy by the government survey. The Archimedean screw, the straight blade Loper propellers, and the other of his improved wheels with cast iron hubs, and the blades attached at various angles, have already been tested, and four other varieties are yet to be tried. The wheels with which the experiments are making, are all of the same diameter, and on a par with regard to their propelling surface. An interesting report upon the subject will probably be submitted to the Department by Mr. Haswell, upon the completion of these experiments.

Antiquarian Search.

E. G. Squier, the well-known antiquarian author has gone westward for a thorough examination of the traces of early civilization in this country. He goes under the joint auspices of the Smithsonian Institute and the Historical Society of New York.

We have been informed that Mr. Squier has lately discovered a key to the hieroglyphics that are found engraven on a number of ancient rocks, &c. whereby he is enabled to read their meaning. The result of this discovery may gratify some curiosity.

Copper Mining.

There is a valuable copper mining establishment now in active operation at Perkio Creek, Pa. The miners are principally English and the ores are shipped to Baltimore to be smelted.

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Woodworth's Patent.

"The schedule referred to in these letters patent, and making part of the same, containing a description in these words of the said William Woodworth himself, of his improvement in the method of planing, tonguing, grooving and cutting into mouldings, of either, plank, boards, or any other material, and for reducing the same to an equal width and thickness; and also for facing and dressing bricks and cutting mouldings on, or facing metallic, mineral and other substances.

The plank, boards, or other material being reduced to a width by circular saws, or friction wheels, as the case may be, is then placed on a carriage, resting on a platform with a rotary cutting wheel in the centre, either horizontal or vertical. The heads or circular plates fixed to an axis, may have one of the heads moveable, to accommodate any length of knife required. The knife fitted to the heads with screws or bolts; or the knives or cutters for moulding fitted by screws or bolts to logs, connecting the heads of the cylinder, and forming with the knives or cutters a cylinder. The knives may be placed in a line with the axis of the cylinder, or diagonally.—The plank or other material resting on the carriage, may be set so as to reduce it to any thickness required; and the carriage moving by a rack and pinion, or rollers, or any lateral motion to the edge of the knives or cutters on the periphery of the cylinder or wheel, reduces it to any given thickness. After passing the planing and reducing wheel, it then approaches if required, two revolving cutter wheels, one for cutting the groove, and the other for cutting the rabbits that form the tongue; one wheel is placed directly over the other, and the lateral motion moving the plank or other material between the grooving and rabbiting wheels, so that one edge has a groove cut the whole length, and the other edge a rabbit cut on each side, leaving a tongue to match the groove. The grooving wheel is a circular plate, fixed on an axis with a number of cutters attached to it, projecting beyond the periphery of the plate, so that when put in motion, will perform deep cut or groove parallel with the face of the plank or other material. The rabbiting wheel, also of similar form, having a number of cutters on each side of the plate, projecting like those on the grooving wheel, cuts the rabbit on each side of the edge of the plank, and leaves the tongue a match for the groove. By placing the planing wheel, axis, and cutter knives vertical, the same wheel will plane two planks or other material in the same time of one, by moving the plank or other material opposite ways, and parallel with each other against the periphery of the planing or moulding wheel. The groove and tongue may be cut in the plank or other material at the same time, by adding a grooving and rabbiting wheel.

Said William Woodworth does not claim the invention of the circular saws, or cutter wheels, knowing they have long been in use, but he claims as his invention, the improvement and application of cutter or planing wheels to planing boards, plank, timber, or other material; also his improved method of cutters for grooving and tonguing, and cutting moulding on wood, stone, iron, metal, or other material, and also for facing and dressing brick; as all the wheels may be used separately and singly for moulding, or any other purposes before indicated. He also claims as his improved method the application of circular saws for reducing floor plank and other materials to a width. Dated Troy, Dec. 4th, 1828.

WILLIAM WOODWORTH.

Witnesses: Henry Everts: L. S. Gleason.

I certify the above is a true copy of the Schedule attached to my patent.

WILLIAM WOODWORTH.

Improved Claim.

This improved claim is the basis of all the issues of Woodworth's patent; and revised from the original, by Mr. C. M. Keller we believe.

CLAIM.—The employment of rotating planes substantially such as herein described, in combination with rollers or any analogous device to prevent the boards from being drawn up by the planes when cutting upwards, or from the

reduced or planed to the unplanned surface as described. And also the combination of the rotating planes with the cutter wheels for tonguing and grooving, for the purpose of tonguing and grooving boards, &c., at one operation as described. And also the combination of the tonguing and grooving cutter wheels for tonguing and grooving boards at one operation as described. And finally the combination of either the tonguing or the grooving cutter wheel for tonguing or grooving boards, &c. with the pressure rollers as described.

Printing and Literature in China.

The Chinese lay claim to the invention of printing, at an early period. From the nature of the language however, this art does not appear capable of much improvement, since the Chinese language consists of between 70 and 80 thousand characters, each character representing a distinct word. It seems almost impracticable to use moveable type, and therefore they adopt the plan of cutting in relief all the characters of the work to be printed, on slabs of very hard wood. The printer daubs these over with a preparation of Indian-ink, and the paper, being pressed upon them, receives the impression. One coating of printing fluid is sufficient for two or three impressions, but the paper being of too porous a nature to receive impression on both sides it becomes necessary to fold the paper. These doubled sheets are then stitched together, the fold is at the outer edge, with two coarser sheets of paper to form a cover. But the wealthier classes are as particular as we are, in their bindings, which are of beautifully figured silks and satins, sometimes of gold or silver tinsels. The Chinese being a reading nation, never destroy the slabs on which the characters are cut, which are laid by with great care, and the place of their deposit is referred to in the preface of the work.

Books are sold at so cheap a rate that they are within the reach of all. But it is deplorable to witness the depravity of taste so publicly exhibited in China, by the circulation of an enormous number of obscene publications and indecent engravings, which are eagerly sought after. The taste for reading may be very cheaply gratified in China, by means of itinerant circulating libraries, which are carried about by their proprietors, in boxes slung over their shoulders. In no part of the world is education so universal as it is in China. In such estimation is literature held that literary attainments form the only passport to the highest offices in the state.—Each province is furnished with officers appointed to examine claimants or aspirants to state preferment, who go their circuits twice in each year. Each candidate must submit to repeated examinations previous to the distinction of being placed upon the books for preferment. When a man has reached the highest class of literary attainments he is examined by the Emperor in person, and if approved of by him he attains the highest honors. It would appear that genius or originality is not so much admired in China as memory. The power of reciting the greatest number of the sayings of their ancient sages is considered the acme of learning. Every literary honor confers the rank of a mandarin on its possessor; and each grade is distinguished by its peculiar dress. Although honors are not hereditary (even the emperor selects whom he pleases as his successor from the royal blood,) yet the descendants of men of learning are treated with the greatest respect. In proof of this the descendants of Confucius, who died more than two thousand years ago are treated with the greatest consideration by all classes from the emperor to the lowest coolie. So highly is learning prized, that very frequently, deceased ancestors are ennobled in compliment to the attainments of their descendants. The emperor causes a book of merit to be kept, in which are recorded the various titles and descriptions of the mandarins, and those of their actions which are deserving of praise. Should however a mandarin be degraded (which frequently occurs) the reason of his punishment is stated with equal accuracy. Gazettes, by the emperor's command, are commonly published at Peking, which contain imperial grants of land

remission of taxes, public acts, &c. &c. The day which is selected by the emperor for all public executions is notified by means of this gazette. The degradation of mandarins is here announced; and the events of war are bombastically set forth, which invariably represent the deeds of the nation as successful. The official reports contained in this gazette, during the late war, of the thousand upon thousands of the English who were daily slain and driven before their conquerors, were truly astounding.

Loss of the Victoria Balloon.

Mr Green, the veteran English aeronaut, has had the misfortune to lose his celebrated Victoria Balloon, by means of which he has made many voyages, sometimes accompanied by a number of his friends. He had given notice of his intention to make his 409th ascension at Halstead on Oct. 27th, but a violent storm of wind and rain compelled him to postpone the excursion to the following day. On that day the weather had undergone no improvement. A great concourse of visitors, however, having assembled, the process of inflating the balloon was suffered to go on, in the hope that the storm might abate. The sequel is thus described by the London Times:

The committee had made the best possible arrangements; all parties concerned were in harmony, and anxious to give satisfaction—but the elements forbade the fulfilment of their desires. The storm increased, the wind kept up its attacks on the restrained aerial monster as though determined to sweep it away. Moored to the earth by five strong ropes and stakes, ballasted by about one ton and a half of iron weights attached with ropes to ring or hoop, surrounded by about 30 or 40 powerful laborers and members of the committee, employed under the control of Mr. C. Green and his brother, in governing the furious rolling and violent lifts and plunges of the grand prisoner; it seemed for a long time the efforts and resolute energy of humanity might be allowed a victory over the fury of the blast. But alas! about a quarter to 12, o'clock, when the hurricane was at its height the immense inflated creature was raised by a sudden jerk a few feet from the earth. Again and again it lifted and rolled and dashed itself to the ground; and on the part of the brave fellows who stuck to the ropes and netting there was an indomitable perseverance scarcely conceivable. The danger of being dashed among the dangling weights, or violent hurled to the ground, was most imminent but all held on manfully until, at 12 o'clock, one of the long strained ropes was snapped by the throes of the immense machine. At once, the hoop with the iron weights and 20 human beings were lifted up six or eight feet from the ground. The hoop broke in halves, dropping men and iron weights in a confused heap beneath; and doubling its height, the balloon rose to 16 or 18 feet, with the stakes by which it had been confined wrenched from the ground, and two or three men still hanging on the hoop. The netting however being no longer equally retained by the broken hoop, and the balloon rolling entirely over on its side in the air (owing to the detention of one remaining rope,) the netting suddenly ripped up on the side of the balloon then uppermost, and the silk enclosure, shelling itself out of the ripped envelope, burst from end to end. The men and weights and netting fell mingled in confusion—away flew the immense mass of silk, rent in every direction, and the grand balloon was no more!

The Power of Music.

Music exerts a singular influence over the minds of men, but perhaps over no man did it exert such a singular influence as over Martin Luther. One striking peculiarity of his character was his singular and enthusiastic love of music. Not that there is abstractly any thing remarkable in such a passion; but in him it had a singular effect—contrasting strikingly with the bold and indomitable qualities of his nature. He had an admirable ear for harmony, and by no means unproficient on several instruments. He had also a beautiful voice, which he constantly kept in order by the chanting of hymns and several songs. The principles of church music he studied profoundly—and he composed several pieces

of great merit. But the most striking thing about his musical character was the power which melody had over himself. He seemed melted and subdued into a state of almost helplessness by its tones. Amid their influence, all other faculties of body and mind appeared suspended:—he was in a state of ecstatic rapture. In letters which he wrote to Liuccius, (Frankfort edition 1647,) we find him jesting about his extreme susceptibility—which he considers as a weakness in his character. He tells Liuccius seriously that it was his custom to sing a hymn every night before he retired to bed; and, such was the soothing power of the melody on him, that however much he might have been excited or troubled throughout the day, from the moment when the key fell upon his ear, he forgot all earthly matters and vexations.

TO CORRESPONDENTS.

"F. R. B. of Ill."—The engine we have would answer your purpose fully and you would be pleased with it. We could not dispose of the engine apart from the boiler. You probably saw the engraving and description of them which we published in No. 9 of this vol. Scientific American. Much obliged for the names you sent; hope to receive more from you. \$2, all right.

"H. J. B. C. of N. C."—J. Grant, Providence, R. I., we believe is the name of the gentleman to whom you refer. Further we have no recollection or way of ascertaining.

"G. W. of N. Y."—The expense of printing your table would be \$25. We do not think it would pay.

"J. & P."—We have not yet got the claim you desired but whenever it is received you shall have it.

"H. C. of —."—We doubt whether the application of a syphon formed pipe to the upper end of a pump would accomplish the object at which you aim. You can easily try.

A. S. of Ky."—Please accept our thanks for the very fine list of subscribers you have sent: we hope to keep them on our list always, together with others which you may hereafter send. We are glad to know that you are so well satisfied with the engine lathe we sent you, we presume you will not need any hint from us to tell your friends that whenever they wish machinery to send to the Scientific American office. A 4 horse engine and boiler, new and complete will cost you \$450, 6 horse ditto \$600. We can send you one of either size whenever you wish. Good second hand engines can be had for nearly one third less. Mr. S. has paid for your third volume. \$8 all right.

"W. W. H. of Pa."—We received your letter and pamphlet with much pleasure. The first and second vols. of the Scientific American cannot be obtained. We saw sometime ago one of your muskets with which we were highly pleased. Would you not like to publish engravings of some of your inventions in our paper? It would give you much creditable notoriety, and aid you in disposing of your Patents if you so desire. The expense would be trifling.

"F. of N. Y."—In last week's paper you probably saw an account of Remington's bridge which gave an outline of his mode of construction. The paddle wheel you refer to is not yet patented, though measures are in progress. The paddles come from the water perpendicularly owing to the superior gravity of the metallic part; but they do not preserve their perpendicularly in the water unless the pressure upon both surfaces is the same. On entering the water they seek such an angle as makes the pressure on both surfaces equal.

"J. A. P. of Ala."—You can obtain such a machine for from \$10 to \$35 of any manufacturer of Cotton Machinery.

"G. M. G. of Mass."—We could not dispose of one volume of the work as both must be taken together. Price \$25. We have never seen a sieve exactly like yours. Send on your drawing.

"A. B. of Mich."—Both your letters have been received and the money remains with us subject to your disposal.

"C. L. of Ct."—There is little prospect of doing any thing this winter with our windlass. Relative to the other invention see answer to "I. A. of Pa." under Patent Correspondence.