Scientific American.

MUNN & COMPANY, Editors and Proprietors

PUBLISHED WEEKLY AT
NO. 37 PARK ROW (PARK BUILDING), NEW YORK.

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☞ "The American News Company," Agents, 121 Nassau street, New York
☞ "The New York News Company," 8 Spruce street.

VOL. XVIII., No. 5....[NEW SERIES.].... *Twenty-third Year.*

NEW YORK, SATURDAY, FEBRUARY 1, 1868.

Contents:

(Illustrated articles are marked with an asterisk.)

INVENTORS---THEIR OPPORTUNITIES AND INTERESTS.

The number of patent claims published in our columns weekly is sufficient evidence of the existence of a large amount of inventive talent in the country; that all these patents do not prove remunerative, or that some of them are improvements only in name, does not militate against this statement. Still, the long list of patents might be much further extended, we think, by the more general cultivation, by our mechanics, of a habit of close observation. An observing and reflective man, possessing natural mechanical capacities, can hardly pass through a workshop in any department of industry, without seeing opportunities for improvement either in the tools and other appliances used, or in the methods of doing work. But it not unfrequently is the case that the mechanic who is constantly engaged on the work does not notice the room for improvement which the stranger sees at a glance; the familiarity induces indifference. Yet, the working mechanic is continually meeting with obstacles to rapidity and perfection of work, and in providing temporary expedients for relief, he may as well perfect them and make them permanent and valuable fixtures of the shop. If properly elaborated and wrought out in the brain before being built, he may find that in developing them he has unconsciously become an inventor—made a patentable and valuable improvement—where he looked only for a present aid, or a "make-shift." Perhaps the exactions of his business will not allow him to devote the necessary time and attention to the improvement, and he must content himself with getting up hastily a temporary aid to his work.

But there come opportunities for this mental labor, which, however, are not always embraced. Such is the present state of dullness in business. The enterprising mechanic whose ordinary work fails him, can profitably employ his otherwise unoccupied time in attempting improvements in the materials, methods, tools, or other appliances used in his business. If he is compelled to a state of comparative physical idleness, so much more room and opportunity is afforded for the exercise of his mental powers. Plenty of instances of valuable discoveries, inventions, and improvements could be adduced to prove that such periods of enforced bodily inactivity have been advantageous to the observant and thinking mechanic.

It is the interest, also, of the inventor to make use of the means offered by our patent laws to secure to himself a portion of the advantages which his improvement possesses. A false idea of honor is that which either carelessly or supinely refuses to allow the inventor to reap a benefit from his improvement. He may consider it as not worth the expense, time, and trouble necessary to make him secure as its originator; but if others deem it valuable enough to use, he should deem it valuable enough to be paid for. It is not the marked and notable improvement that is always the most remunerative to the inventor, but often the little and seemingly unimportant advance on previous attempts, which proves a mine of wealth. If the inventor has any idea which he has so far brought toward a practical and visible form as to be understood, and which promises to be an improvement on processes, machines, tools, etc., it is his duty, as well as right, to secure his proprietorship by a patent at once. By this course he will be benefitted, while nobody will suffer an injustice.

CUMBROUSNESS OF TOOLS FOR IRON WORKING.

A correspondent insists that the massive lathes and enormous planers, etc., which are deemed requisite in the large machine-making establishments, where heavy work is done, are a waste of material, an annoyance by their excessive weight, and unnecessary absorbers of power. He proposes lathes with hollow arbors, planers where the tool, rather than the work, shall be moved, and drills brought to the work instead of the work brought to the tools.

Many years ago, we knew of a "big planer," got up by Mr. Seth Wilmarth, then of South Boston, Mass., the "feed" of which was a screw, we think sixty feet long, but which was cut on a ten or twelve feet lathe by being fed through a hollow arbor and delivered through another hollow arbor on the tail of the lathe. The consequence was a screw-fed planer which could not, at that time, be matched in the world.

Now, it seems that if a continuous screw could be cut on that lathe for that especial purpose, another screw might be cut, or a shaft be turned of any requisite length, on any ordinary lathe having proper heads.

We have seen a planer, the movable bed of which could sustain a load of thirty tuns, and which was run by a special steam engine, take off two chips at a time of seven-eighths of an inch in depth by over one-eighth in thickness. But all the mass of thirty tuns must be moved alternately back and forth, the machinery sustaining the immense shock of the weight and the inertia of the load in the change from one part of the reciprocating movement to the other. It requires power—its direct exercise and palpable expenditure — to run such a machine, while it seems as though the lighter weight of the tools and their head might be much more easily moved. In regard to the use of boring tools on a massive gear or pulley, the plan is already in practical use. If the boring machine (portable) is carried to the work, power is emitted from the boiler through pipes in the form of steam, or is taken from a convenient shaft by means of belts.

We do not believe in carrying so called "improvements" so far as to shock common sense by the advocacy of novelties which cannot be proved to be real benefits, but it does seem to be practicable to so adapt the proportions of work to be done to the tools to do it, that some, at least, of the heavy labor now really necessary in our large machine and engine shops might be avoided, and some of the power now expended saved.

COMPRESSED AIR AS A POWER.

The successful machinery used for tunneling Mont Cenis, in Switzerland (by which the water power of a mountain torrent is made to compress air, and this compressed air led by strong tubes in the tunnel is made to move the boring machines), has given occasion to some mechanical engineers in France to make plans for transmitting the water power of a river through air tubes to the adjacent city, and bring the tubes into the houses, as gas and water pipes now are, so that by turning on the supply of compressed air, the escaping air may ventilate the building, after moving small appropriate engines, and so serve for sewing machines, turning lathes, and many other kinds of machinery requiring so little power that the erection of a steam engine would be a needless expense. In many instances the total amount of work done at intermissions during a whole day amounts to only three or four hours, for which the steam engine is kept running ten hours; therefore a great saving would be accomplished with this power, which would be consumed only when real work is done.

At present steam power costs in France 62 centimes (12 cents in gold) per hour per horse power; the gas engines are said to cost 73 centimes; this new compressed air power, when steam engines are used to compress the air, will cost 67 centimes; and when water power is used it would come as low as from 12 to 16 centimes (about 3 cents) per horse-power per hour.

With the exception of a few weeks in dry summer seasons, an amount of water falls over the dam at Fairmount, Philadelphia, representing several thousand horse-power, which perhaps could be utilized in the same manner, compressing air and distributing this fresh air through tubes to localities where small amounts of cheap power and good ventilation are needed.

Compressed air is now beginning to be used to dispatch letters and parcels through tubes. In Paris such a system is in operation, and in New Jersey one is in course of construction between the cities of Newark and Jersey City. In London even a passenger railroad is propelled through very large tubes by the same means. However, in all these instances steam is the initiative power used. At the late Fair of the American Institute an experimental machine of this kind by the same means propelled thousands of persons through a large tube.

NITRO-GLYCERIN---ITS USE, ITS DANGER---WHO SHALL DECIDE WHEN EXPERTS DISAGREE?

Although the existence of this substance, and a knowledge of its explosive nature, has been long known to chemists, it was only in the year 1864 that it was brought into public notice as a substitute for gunpowder. Consequently, all our practical acquaintance with its effects has been gathered within the last three years, and new facts are continually presenting themselves as its use becomes more and more general, which it is well to note.

The elements of nitro glycerin separate with immeasurable velocity, and hence the violence of its explosion, which has been variously estimated at from five to ten times the force of gunpowder. Other economical advantages over gunpowder, in mining operations, may be summed up as follows:

Fewer men are required for working the same sized piece of ground, and fewer holes have to be bored to dislodge an equal amount of rock. Hence a dearth of miners may, to a certain extent, be remedied in this manner, and less steel and iron need be used than hitherto.

Nitro-glycerin does not take fire readily, and when lighted burns but does not explode and goes out as soon as the flame is taken away. The holes can be tamped without danger. After firing the amount of smoke is small compared with that of powder, so that workmen can go back immediately to the place where they have blasted without inconvenience. Finally, holes that have missed fire can be retamped and fired, an operation at present either impossible or accompanied with great danger.

Against these advantages, it appears that the gases formed during the explosion have an injurious effect on the organs of sight and respiration. In course of time, however, the workmen get accustomed to it, and it is no longer looked upon as one which need restrict its employment. Nitro-glycerin, further, freezes easily, and explodes on being sharply struck, but the latter property is not more dangerous than the danger of gunpowder in taking fire readily and exploding.

The latest nitro-glycerin disaster that has come to our notice was the explosion at Newcastle, Eng. In the course of the inquest on one of the victims some interesting evidence was brought out. From the testimony given on that occasion by a Mr. Isaac Bell, whom *Engineering* seems to accept as good authority, it would appear that under a great variety of conditions this substance is liable to spontaneous decomposition. At ordinary temperatures this catastrophe may take place, and particularly is it dangerous if impure in composition. The gases given off, if confined to the vessel containing the liquid, exercise pressure on the remaining liquid, and explosion of the vessel is liable under the least shock or movement. If the explosive is brought from a cool to a warm place; if the substance be exposed to a temperature of 46° Fah., crystallization ensues; or if the temperature is high enough to cause ebulition, under any of these circumstances spontaneous decomposition would result.

The inventor of "blasting oil," Mr. A. Nobel, of Hamburg, asserts that nitro-glycerin can be stored for an indefinite length of time without deteriorating in quality, and that the peculiar property of not exploding by mere contact with fire, renders its carriage, storing, and handling very safe, even when in an explosive state. Mr. Bell, *per contra*, asserts that the compound is liable, from its specific gravity (which is 1·6) to explode from mere movement, and is consequently very dangerous merchandise for a railroad company to transport.

The former gentleman, writing to the London *Times* relative to the same Newcastle accident, bitterly complains that the introduction of this valuable explosive, owing to the accidents resulting, as he afterwards shows, from gross careness, has been systematically opposed, and thinks it high time that the public should know that nitro-glycerin has won its battle over prejudice, and obtained far to firm a footing in several countries ever to be banished from use unless it be by something better. The want of that useful knowledge has been the real cause of the late accident, for no one surely would attempt to store an explosive substance in a city unless unreasonable fear threw an obstacle in the way of conveying it to and storing it in its proper place. He says: "My own printed precautions, lately produced at the trial, best prove how strongly I object to that unreasonable mode of storing; but the puerile refusal to receive it in a powder powder magazine may place an agent in a very embarrassed situation. Instead of adopting every measure to paralyze the circulation of a powerful and useful agent, it were far better to follow the example of Mr. Warrington Smythe in enlightening the public as to its use, thus making it a beneficial instrument for the development of our mineral wealth.

"It not to be wondered at that the immense accidents of Aspinwall and San Francisco led to rigorous measures restricting the transportation of nitro-glycerin; but in Sweden and Norway that substance was already so favorably known and had got into such constant use, that the excitement abroad had no influence on the liberal regulations there, and until this day it is freely carried by rail in both countries, nor has it led to a single accident.

"In Germany, also, before the prohibition took place, thousands of parcels containing nitro-glycerin were sent by rail, without causing the least damage.

"On the other hand, we find upon inquiry that accidents have only occurred when nitro-glycerin was transported under a wrong declaration. Such was the case at Aspinwall and San Francisco, and it is only too natural that such unwarrantable neglect should lead to calamities. It is the same with gunpowder. Whenever people convey an explosive material the first thing they ought to know is its nature."

Then follows a list of nitro-glycerin accidents which have come to his knowledge, and in looking over the list it must be admitted that the substance has been very strangely abused:

"In five cases congealed nitro-glycerin has been melted purposely over fire.

"In three cases a red-hot poker has been inserted into the oil in order to melt it.

"In one case a man kept a cartridge with a percussion cap and fuse affixed and lighted it in his hand until it blew off.

"In one instance a man stood watching the burning of a fuse inserted into nitro-glycerin, until it went off and hurt him.

"In one case a captain set fire to a sailing vessel with a cargo of nitro-glycerin, and people went on board to extinguish the fire, but saved themselves, seeing what was the cargo, and the ship was eight hours on fire before it blew up, which could not possibly have been the case with gunpowder.

"In one instance two workmen, while filling cartridges with nitro-glycerin at the light of a tallow candle, set fire to some gunpowder strewed on the floor, but found time to save themselves and carry away considerable quantities of nitro-glycerin before the explosion took place.

"In one case two leaky canisters, full of nitro-glycerin,

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were soldered under continual reports produced by the heating of drops leaking out, but caused no accident.

"In one case a captain of artillery was hammering on a shell filled with nitro-glycerin, until it exploded and killed him.

"In one case a man took to greasing the wheels of his wagon with nitro-glycerin, not knowing what it was, and it went all right until it struck hard against something, and the wheels went to pieces.

"In one case it was burnt in a lamp, as an improvement on petroleum."

Last in the list comes the Newcastle explosion, which, it seems clear, was caused by the grossest violation of the printed instructions. The cans containing the nitro-glycerin were opened with blows of a spade, and then thrown into a hole one upon another. From the shock thus occasioned the explosion took place.

This list is published that these accidents may serve as a warning against similar attempts to perform these feats, but the inventor protests against the very narrow view of trying to check the career of any improvement on the plea of liability to accidents. "There is," says he, "a very easy way of getting rid of them; we need only prohibit the use of steam, fire, poisonous substances, cutting tools, firearms, explosives, etc., and return to those days when ignorance and safety went lovingly hand in hand. But unless civilization is to be stopped, we cannot possibly confine the community to those articles only which it is impossible or even difficult to abuse. Something must be left to the understanding, and it is an excellent regulator. Thus, for instance, phosphorus, one of the most dangerous poisons and combustibles, is in every child's hand, and yet does but little harm."

THE AMERICAN WOOD PAPER COMPANY AND THE FIBER DISINTEGRATING COMPANY.

A case of great importance to patentees, upon the validity of Reissues, and illustrating the importance of having a correct description of the invention in the original specification, has just been decided in the U. S. Circuit Court for the Eastern District of New York.

In this case the American Wood Paper Company filed a bill against the Fiber Disintegrating Company to restrain the defendants from the use of certain inventions for which Letters Patent had been granted to the inventors in this country and by them assigned to the complainants. The whole of the inventions related to the manufacture of paper pulp from crude vegetable substances by means of chemical agencies applied at a high degree of temperature in a vessel or boiler of peculiar construction.

The patents, five in number, alleged by complainants to have been infringed by defendants, were:

(1st and 2d.) Watt & Burgess patents, being two reissues (Nos. 1,448 and 1,449) dated the 7th April, 1863, of a single reissue, 5th October, 1858, of original patent, dated 19th August, 1853, for improvements in the manufacture of paper from wood.

The two reissues were one for the product obtained by, and the other for the process of treating wood so as to produce paper pulp by boiling in caustic alkali under pressure.

Mellier's patent, dated 7th August, 1854, for an improvement in making paper pulp from straw. The process being very similar to that described in the reissued patents of 7th April, 1863, and 5th October, 1858.

(4th and 5th.) For improvements connected with the machinery for the purposes of making paper pulp. But the only question of general interest to inventors is in connection with the reissues of the Watt & Burgess patents, and on the Mellier patent, to which we confine our report.

The original Watt & Burgess patent, of August, 1853, contains the following words:

"The shavings are then to be boiled in a solution of caustic alkali, the strength of which, being dependent on the nature of the vegetable substance operated on, can be only learned by experiment. For deal or fir wood we find that a solution of alkali of the strength indicated by 12° of the English Hydrometer answers very well. The length of time necessary for this part of the process is somewhat dependent on the nature of the vegetable substance to be heated. We find boiling in a solution of caustic alkali under pressure, of considerable service. We do not claim this operation as part of our invention."

In an English patent obtained by Watt & Burgess, 1st August, 1853, their complete specification, which is dated 18th February, 1864, contains exactly the same words. In their French patent, dated 27th September, 1853, boiling in alkali is mentioned, but there is nothing whatever to indicate that this boiling should be under pressure, but it states "We have found it very advantageous to have a heating apparatus in the vats where the alkali solution is added; the pulp should be heated by steam, or other convenient method, to the boiling point."

In October, 1858, Messrs. Watt & Burgess obtained a reissue of their patent, and their specification contains the following words:

"The length of time necessary for this part of the process is somewhat dependent on the nature of the vegetable substance to be heated; that is, its resinous or gummy nature, and boiling in a solution of caustic alkali under pressure is of considerable importance. By the words 'under pressure' is meant a pressure at, near or above 300° of Fahrenheit's scale."

To the specification to the two reissued patents of 1863, the words used are substantially the same, the claim in the first (No. 1,448) being for the *product*, viz., a pulp suitable for the manufacture of paper made from wood or other vegetable substances by boiling in alkali under pressure; the claim in the second (1,449) being for the process of boiling in an alkali under pressure.

The defendants contended as to the Watt & Burgess patent (among other things), that the reissued patents of 1858 and 1863 were improperly issued, being for a substantially different invention to that described by the specification to the patent of 1854; and with regard to the Mellier patent, they alleged that as they treated bamboo and not straw, and that while Mellier claimed the employment of a pressure of seventy pounds, and a heat of 310° Fah., as the pressure used by defendant as denoted by the steam gage, never exceeded sixty pounds, they did not infringe on Mellier's patent.

It was argued by Mr. Jenckes for the complainant, and by Mr. Russell and Mr. Harding for the defendants. Mr. Jenckes contended that the reissue of the patents by the Commissioner was conclusive until reversed by a substantive proceeding for the purpose; that the inventions therein described were those really invented by Watt & Burgess, and incorrectly described in the first instance; and he very ingeniously argued that, by inserting the words "under pressure," Watt & Burgess narrowed their claim. That Burgess believed, when he took out his English patent, that he could cover the open boiling process, as well as boiling under pressure. On examination, it was found that Coupier and Mellier, in 1851, treated wood precisely in that way. His action was, therefore, exactly within the requirement of the law, that where by mistake a patentee has claimed too much in his original patent, he should surrender it and take out a narrower claim in his reissue.

The Court took time to consider, and on the 7th of January, 1868, rendered a judgment of which the substance, so far as of importance from the point offered above indicated, is:

First, that the Watt & Burgess reissued patent (No. 1,448) is void, on the ground that it is impossible to consider that to be a new material, patentable as a new product, which is simply a substance long well known to exist in wood and other substances in a state nearly pure.

Second, that the Watt & Burgess reissued patent (No. 1,449), is also void, on the ground that the process described is substantially different from any described in the original patent. And this decision, which seems sound from every point of view, serves to establish as a principle, that even though an invention be so undescribed and the evidence of actual invention at the date of application so clearly established before the Commissioner of Patents as to entitle the inventor to a reissue, that the reissued patent will be void if the invention described in it be the description of an invention essentially different from the one previously described.

Third, the Mellier patent was held to be good and a decree made in favor of complainants on the ground that the 70 pounds pressure mentioned by the inventor was evidently meant in accordance with the French method of reckoning, viz., internal pressure, from which one atmosphere has to be deducted to get at the pressure denoted on the steam gage, as was further apparent from the temperature given of 310° Fah., which, on the French scale, corresponds to 70 pounds pressure, meaning internal pressure. That, further, Mellier's description sufficiently covered the treatment of bamboo, which is of the same natural order as the wheat, oats, and other plants, to the stalks of which the term straw is usually applied.

Decree in favor of the complainants on the Mellier patent bill. Dismissed as to the others.

Rotary Ventilating Fan or Blower.

At the November meeting of the Massachusetts Institute of Technology, Mr. S P. Ruggles exhibited and explained a model of the ventilating fan or blower, invented by himself, now in practical operation at the Institute and about to be introduced into the State House in Boston.

It consists of three floats of which one remains for a short time stationary while the other two are moving, each in turn becoming stationary. The object of the stationary fan is to act as a wall to prevent the air going back, and to cause the air brought by the ascending float to pass upward through the passage which conducts it to the building. This action of the floats is produced by the shaft which carries them, being made in three parts, one within the other, each carrying a float. From the condition of rest the first float begins to move slowly, and gradually increases in speed for a quarter of a revolution, then carries the body of air at a uniform speed for half a revolution, and then decreases in speed in the last quarter of revolution to the state of rest. When the first float has completed a half revolution, the second begins to move, to follow in like manner; the third float begins to move when the first has completed its revolution, and follows in the same manner as the other two, the action of the three producing a constant and uniform current.

This movement is produced by an ingenious arrangement of wheels of irregularly oval shape producing a crank motion. The fan at the Institute is vertical, ten feet in diameter, and ten feet high; it makes about twelve revolutions per minute, forcing out seven to eight hundred cubic feet of air at each revolution; this amount must go forward and never can go backward on account of the wall of the stationary float. It requires only about one sixth of the power required for ordinary fans of this size to move it.

Prof. Rogers alluded to the great number of rotary aspirators and blowers in use in Europe and this country, in all of which centrifugal action from rapid revolution is depended on; in the apparatus of Mr. Ruggles centrfiugal action is not the motive force, but the mass of air is drawn in below and forced or bucketed up, and delivered to the discharge pipe. The temporary stationary condition of a float in a fan blower had been used before the apparatus of Mr. Ruggles; but in fans with two floats only, in which no provision can be made against the backward flow of the air. In Mr. Ruggles' invention, the use of three floats, by the novel and ingenious arrangement of shaft and wheels, render this retrograde action impossible, as all the air drawn in can pass in no other than a forward direction, where it is required for use. K.

Preservation of Stone.

This subject, which has attracted the attention of so many chemists, seems now to have been brought to a very successful point. We have received some specimens of chalk treated by a process discovered by Messrs. Dent and Brown, of the Chemical Department, Woolwich. Their process consists in the application of a solution of oxalate of alumina to the stone. The experiments date from December, 1865, and the results they have now obtained are most encouraging. The process is applicable to limestone, dolomite, and chalk, and may, we think, be made subservient to the preparation of lithographic stone. Oxalate of alumina is readily soluble in water, and the solution, which is simply applied with a brush, is made of a strength varying with the porosity of the material to which it is to be applied. The specimens we have before us are left in the original condition at one end, and have been prepared with the solution at the other. The physical characteristics of chalk so treated are—lightness, the possession of a glazed surface approaching somewhat in appearance to marble, and greatly increased hardness; in this respect the stone is about equal to fluor spar, or 4 in Mohs' scale. Furthermore, the lime being transformed into one of the most insoluble and unalterable of its compounds, and the alumina being precipitated, the pores are filled with a substance almost unacted upon by water or by the impurities present in the atmosphere of large cities. We should be glad to hear that the discoverers had one of the experimental bays of the Houses of Parliament placed at their disposal. They might thus prove their process to be a formidable rival to that of their colleague Mr. Spiller which, according to present appearances, is likely to be the numerous schemes now *sub judice* at Westminster.—*Chemical News.*

PRIMITIVE GEOMETRY.—M. Lenormant, a member of the French Academy, has been devoting considerable attention to the study of an interesting papyrus, just added to the British Museum collection. This ancient relic contains a fragment of a treatise on geometry applied to surveying, including a description of the modes of estimating the areas of a square, a parallelogram, of various kinds of triangles, and of the computation of the area of an irregular figure by means of triangles, and of the volume of a pyramid, the whole being illustrated by appropriate diagrams. M. Lenormant, in a report to the Academy, refers the production of this papyrus to the period of the twelfth dynasty, which would be cotemporaneous with the reign of Solomon.

STEAM MAN.—A lengthy account is going the round of the newspapers of a wonderful piece of mechanism in the form of a "Steam Man," invented at Newark, N. J., by one Zaddock Deddrick. We have taken the pains to investigate the truthfulness of the wonderful story and we learn that, although an invention of the kind is in progress, it is far from being perfected; and we have the promise that as soon as the steam man is in a condition to travel we shall have an opportunity of witnessing it, and the liberty of explaining its construction and operation. In the mean time we advise our contemporaries not to get excited over the steam man for he is likely to remain harmless for the present.

ELECTRICITY IN A VACUUM.—A new apparatus for demonstrating the fact that the electric spark will not pass through a perfect vacuum has been contrived by M M. Alvergniat, of Paris. A glass tube, having inserted in it two platinum wires placed at a distance of two millimeters (three thirty-seconds of an inch) apart, is attached to a mercurial pneumatic machine. After half an hour's action the tube is heated over charcoal to a dull redness, and the vacuum continued until a point is reached when, in spite of the slight distance between the wire points, electricity ceases to pass.

HOW TO HOLD PEARLS.—It is stated that certain native artists resort to an ingenious plan for firmly securing in any desired position such pearls as they wish to drill or work upon. The gems are first fitted loosely in holes bored in a piece of soft wood. A few drops of water are then sprinkled over them, and this penetrating the fibers, causes the wood to swell and the pearl is held as in a vise, but without marring it or in any way depreciating its value. After a time the water evaporates, the fibers gradually relax, and the gem is again set free.

ABSORPTION OF GASES BY SOLIDS.—Atmospheric air by passing through india rubber, Mr. Graham, master of the British Mint, has observed, becomes super-oxygenated, and will rekindle smoldering wood like pure oxygen. He has even collected this gas by creating a vacuum in a thin india rubber bag, which latter is kept distended by mechanical means. Mr. Graham states that gases passing through solid films are first condensed into liquid form within the substance, and then pass off on the other side by evaporation.

"WASHING-DAY SPRING."—A correspondent says that "in Saline county, Missouri, is a spring, a few miles from the Missouri river, which flows freely on Fridays, but is dry on every other day, and the people thereabouts call it washing-day spring for this reason." From the above it would seem that the traditional washing-day, usually considered as following Sunday, is not recognized in Saline county. If the spring was hereaway its usefulness would be much enhanced by a change in its day of flowing.

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