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Improvements in the Use of Steam.

Our constant readers will remember that we published on page 24, Volume 5, "Scientific American," the Report of the Rumford Committee of the American Academy of Arts and Sciences, at Cambridge, Mass., of which Prof. Hosford was Chairman, on the alleged discovery of new properties in steam, by the late James Frost, of Brooklyn.

Count Rumford left a sum of money to Harvard University, directing the interest thereof to be distributed to any discoverer of new and useful properties of heat, and Mr. Frost submitted his invention to the faculty of the University claiming the honorary reward. The discovery claimed was new properties asserted to be acquired by steam when heated apart from water. The University turned the subject over to the Rumford Committee named, which ignored the claims of the discoverer in a curt manner. On pages 179 and 195, same Volume "Sci. Am." we illustrated Mr. Frost's experiments, and brought the subject prominently before the public. A patent had been denied in Washington, but one was obtained in England, and E. K. Collins, Esq., after some experiments made for his own satisfaction, paid the discoverer some consideration for its use. On the 25th of May, 1853, C. E. and S. Wethered, of the city of Baltimore, obtained a patent for the use of common steam and super-heated steam (Frost's "Stame,") in combination, for actuating engines, thus showing that the Patent Office had become more liberal in its management, it being for some years before notoriously tyrannical and despotic. With Mr. Frost's discovery and the invention of the Messrs. Wethered, a new impulse, it is stated, is about to be given to steam navigation, whereby an entire revolution in the saving of fuel is to be effected.

Important operations have been going on for some time in the Collins' steamer "Arctic," for the purpose, we understand, of using *stame* and steam combined, instead of simple steam, as heretofore. A portion of steam, after being generated in the boiler, is carried by pipes through the furnaces, when it becomes *stame*, and from thence passes to the steam chest, to be mixed with an equal portion of simple steam, before it enters the cylinders and actuates the pistons. It is asserted that by this means a saving of at least forty per cent. of fuel will be effected, amounting to no less than \$62,000 per annum to the Company. These changes in the principle of operating the engines of the "Arctic," have not been hastily undertaken. Through the spirit and liberality of Mr. Collins, a series of experiments were made to test the merits of this invention in this city, in the months of November and January last, upon a scale, reasonable in itself, to settle the question in all its bearings. The first experiments were made with a stationary high pressure engine, kept by Mr. Collins for such purposes, and were perfectly satisfactory; but it was resolved to test the invention on a larger and more practical scale, and for this purpose the tug steamer "Joseph Johnson" was procured and fitted up on the North River, with the tubes running from the boiler through the furnaces, to convey and super-heat a portion of steam and conduct it to the cylinder, where it was mixed with an equal portion of simple steam. By this arrangement the simple and super-heated steam (*stame*) could be used singly, or combined, and they were thus tried. From tables kept by D. B. Martin, Engineer-in-Chief U. S. N., and furnished to B. F. Isherwood, Chief Engineer, who communicated a paper on the subject to our respected cotemporary, the "Journal of the Franklin Institute," it appears that the economy of using the simple and super-heated steam combined, was 53 1/2 per cent. over the use of simple steam. This was less than by the stationary engine, in which the gain was 72 per cent. in saving fuel.

No information has been furnished respecting the economy of using super-heated steam

(*stame*) alone, although we have been informed that it is intended to use it in this state in the "Arctic." It appears to us that a portion of moisture in the steam (*stame* and steam mixed) must be more profitable than the *stame* alone. Steam in its nature is a partial lubricator, and must make a piston play more sweetly in a cylinder than dry super-heated steam. The high heat and dryness of *stame*, in licking up oil and injuring the packing, are also objections to its use, (these are also insuperable obstacles to the use of hot air as a motive agent),—and on a long voyage, we think, it would be objectionable, but the "Arctic" will determine this question fully. And here let us say, that although a sound judgment and scientific knowledge may reasonably lead men to form a very correct opinion of what may be the results; still, it is experiment, fairly and fully tried, not for a day nor an hour, but for weeks and months, that can alone settle the whole of the economical questions involved—fuel being but one of them. We hope and trust, however, that the invention will prove to be perfectly successful, and if so, we anticipate an increased speed in our Atlantic steamers. Thus if the saving of fuel amount to fifty per cent.—as the consumption of coal is now about eighty tons per day, and a voyage ten days—no less than four hundred tons of freight—dead weight—will be saved, which ought to shorten the voyage one day at least. Viewing this question in all its bearings, and looking with hope to new and important achievements in ocean navigation, we cannot but lament that so little credit has been given to the man who brought the subject before the public, and whose mind first conceived the project of heating steam apart from water for motive purposes:—we allude to the late Mr. Frost. We have looked in vain for the record of any other person so treating steam, and as "Honor to whom honor is due," is our motto, we allude thus feelingly, while presenting this information to our readers, because a number of paragraphs and articles on the subject have appeared in other periodicals, (some anything but correct), and in which much credit has been given to various parties, while the name of the *real genius* was never introduced. Yea, more than this, Capt. Ericsson, in one of the most brazen-faced letters we ever read, which was published in the N. Y. "Herald" of the 20th inst., claims to be the first who employed super-heated steam as a motive power, but he does so in such a clumsy manner, that the absurdity of the claim is as transparent as his heated air.

The Asteroids.

The Nebular hypothesists, in their efforts at uniformity in the Solar System, have never for a moment hesitated to propound the most absurd views in support of their notions. They set out with assuming that all the matter of our solar system was once in a state of gas, and that by cooling (where did the heat go?) and gravity it began to whirl round faster and faster, throwing off ring after ring, forming Neptune, Uranus, Saturn, Jupiter, &c.,—all of them, by some method not explained, becoming for a while globes of fire—the larger one on the outside, and the others growing smaller and smaller, until we arrive at Mercury. The relationship of these rings they calculated with assumed gravity, and held up their theory as the most beautiful and harmonious ever conceived. There was always one flaw in it, however,—that was the space between Mars and Jupiter, which, according to their views, should have contained a large planet, but instead thereof, it was found to contain a great number of exceedingly small ones. But never at a loss for some covert to hide their absurdities, they assumed that these small planets were the remains of the large one which should be there, and which, by some unexplained cause, had become a mass of ruins. D. Vaughan, who seems to delight in marshalling the starry hosts, and bringing them full tilt against one another, like knights upon the tented field, settled the matter of the Asteroids to his own satisfaction, by assuming them to be formed from the collision of two planets (a light and a heavy one). But the great astronomer, Le Verrier, in an article in a late number of the "Comptes Ren-

due," entirely demolishes all such nonsense. He says, "instead of explaining the existence of these bodies, by supposing an alteration in the primitive system of the universe, we are now led to believe, rather, that they have been formed regularly, like the others, and according to the same laws."

Instead of the matter of which the Asteroids are composed—according to the nebular hypothesis—being greater than the earth, he also says, "It cannot exceed *one-fourth* its mass."

That the matter in our solar system may, at one time, have been in a state of gas, we do not deny nor affirm, for no one can tell what was its primitive condition; and that the planets, large and small, were formed by certain laws, no sane man will doubt for a moment, for the great Creator works by means. But what is a law but the fiat of an intelligent being, consequently the laws which reign in the universe, which formed the stars and which guide them in their courses, as they did not create themselves, are simply the expression of the Divine Creator and Governor's will.

The discovery of the Asteroids belongs to the present century, the first having been seen on the night of January 1, 1801. Other planets have been known from the earliest times. New Asteroids have been discovered from time to time, especially of late years, and there are now known to be no less than *twenty-nine* of them, and perhaps as many more may yet be discovered. Those men who overlook common sense, in their zeal for such speculations—as the conflict of planets—are sure sooner or later to meet with discomfiture.

Royal and Republican Perfumes.

The London "Court Journal" announces the very important information "that it was Mr. Higgins who had the honor of supplying the toilet table of the Queen at the opening of the Crystal Palace, with the Kensington perfume, Lavender, Rose Water, and Eau de Cologne."

At the opening of the American Crystal Palace, President Pierce was supplied with a generous shower of rain which compelled him to seek a change of his wardrobe; this momentous fact may not be familiar to our brethren across the water, and it is perhaps equally important to know that M. Mass, a very polite Frenchman, had the honor also of supplying the President with a glass of brandy on the same occasion, it being feared that his Excellency would take cold without something to produce the re-action occasioned by the chill. Whether Mr. Barnum received any of those polite attentions or not at the re-inauguration, has not yet publicly transpired. It would seem prudent to suppose, however, that he did not, or else some public announcement would have been made of the fact.

The "Ericsson" turned into a Steamer.

It is creditably reported in our city, that the repairs which have been quietly making in this vessel for some time, have for their object the employment of steam as the motive agent; the hot-air project having been returned, *non est inventus*. Thus it is, "wonders will never cease," for this agent, after having extinguished Watt and Fulton through the medium of some of our very scientific cotemporaries, for a brief and intoxicating period, last year, has at last "fallen, fallen, fallen from its high estate," and bowed the knee to the gray-haired veteran in mechanism—steam.

This information we have received from more than one source, and as we have been unjustly the subject of much vituperation, for the candid views we expressed in reference to the affair, we will take occasion, at an early opportunity, of alluding to the subject at greater length.

Patent Laws.

If any of the grave Senators could occupy a desk in our office for about a week, we are satisfied that they would not hastily pass a patent bill containing so many absurd and really ridiculous provisions as are embraced in the one just reported by Senator James.

Objections to it are coming to us from all

quarters, and it gratifies our pride not a little to find them sustaining such views as we have already presented. Let inventors be active in remonstrating against its passage, and if they do not succeed in defeating it, there will be some satisfaction in the consideration of having performed their duty.

A Sewing Machine in a Palace.

We have received information from our foreign correspondent, that the Emperor of France, has purchased the French Patent of Avery's American Sewing Machine, for 95,000 francs. The inventor, Dr. Avery, had an interview recently with the Emperor surrounded by his ministers, at the Palace of St. Cloud, and he exhibited his machine amidst the plaudits of the Court. Louis Napoleon is a man of profound penetration, he can see into the merits and demerits of men and things with great rapidity, and he has displayed no small amount of sagacity in cultivating the good will of America by the purchase of the above named patent, which was obtained through and arranged by our agents in Europe.

Steam Fire Engine.

A committee appointed by the Common Council of this city, has visited Cincinnati, at their own expense, for the purpose of seeing the efficiency of the Fire Department of that city. In order to show the New Yorkers what that city firemen could do, an alarm of fire was given, and in seven minutes thereafter every engine in the city was on the ground ready for work. Among these were the two steam fire engines, which were throwing streams of water in nine minutes after the torch was applied to kindle the fires under their boilers. Both engines threw eight streams through three-quarter inch nozzles a distance of one hundred and twenty feet. They were tested in every possible way, and the Committee, we understand, are well pleased with what they witnessed.

Ohio State Fair.

We understand that Joseph E. Holmes, late Superintendent of the Machinery Department of the Crystal Palace, has been appointed to superintend the Machinery Department of the next Ohio State Agricultural Fair, to be held at Newark, O., in the month of September next. The Ohio State Agricultural Society has always been distinguished for patronizing mechanical improvements; in this respect we think it has rather surpassed the one belonging to New York, which in other respects has no superior. The late Mr. Delafield, its President, however, was a warm patron of improvements in Mechanical Agriculture, as many of his communications to us can testify.

Nova Scotia Industrial Exhibition.

An exhibition of industry is to be held in Halifax this fall, and it is expected that the adjacent Provinces will be ably represented there. We hope the mechanics and farmers of New Brunswick, Prince Edward's Island, &c., will be largely represented on the occasion. These Provinces are rich in natural resources, and we know they contain a great number of enterprising and intelligent mechanicians.

Kentucky Mechanics' Fair.

It affords us pleasure to direct the attention of our inventors, mechanics, and manufacturers to the advertisement on another page, of the Kentucky Mechanics' Institute, Louisville, in relation to its next Annual Exhibition, to be held in that city on the 26th of next September. We have no doubt but the Fair will be conducted ably and to the satisfaction of exhibitors. The mechanics of Louisville have a high character for skill and intelligence, and whatever they undertake to do, they perform with credit to themselves, their city, and State.

New Pavement.

Nassau street opposite the Custom House is in a state of civil blockade in consequence of the laying down of a new cast-iron pavement for the purpose of testing its qualities. It appears to be an excellent invention for the purpose, and we hope it may prove itself to be so. Those who have any desire to learn its character can do so by referring to page 244, Vol. 8, "Scientific American," where it is illustrated and fully described.