

Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIII.

NEW YORK, MAY 15, 1858.

NO. 36.

THE SCIENTIFIC AMERICAN,

PUBLISHED WEEKLY

At No. 138 Fulton street, (Sun Buildings,) New York,
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns in the United States.

Sampson Low, Son & Co., the American Booksellers, 47 Ludgate Hill, London, Eng., are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

Single copies of the paper are on sale at the office of publication and at all the periodical stores in this city, Brooklyn and Jersey City.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

See Prospectus on last page. No Traveling Agents employed.

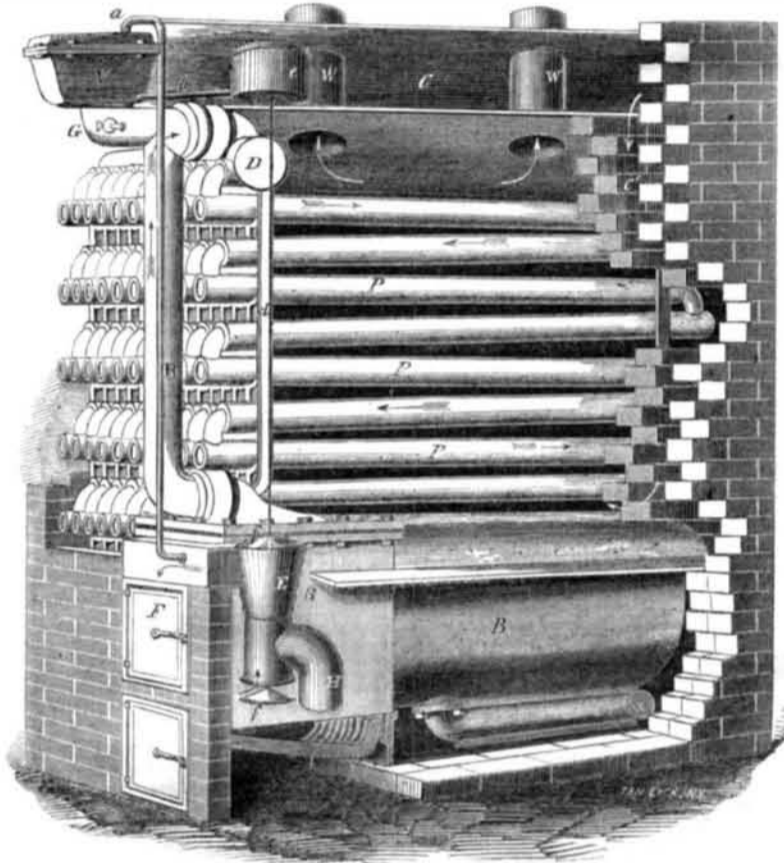
Fulminating Quicksilver.

On the late trial of Dr. Simon Bernard, in London, for conspiracy to murder Louis Napoleon, some very interesting scientific information was elicited in the testimony regarding fulminating powder. J. D. Parker, a druggist, testified that Bernard on the 14th of November, 1857, bought of him 8 pounds of absolute alcohol, 10 pounds of pure nitric acid, and 1 pound of quicksilver, which were the exact proportions for making fulminating quicksilver. C. Nicholson, chemist, engaged in the manufacture of fulminating powder for the government, testified that the ingredients and proportions for making fulminating mercury were 1 part by weight of mercury, 8 of absolute alcohol, and 10 of pure nitric acid. In order to make this powder, the mercury is first dissolved in nitric acid, and the solution thus obtained is added to the alcohol. When this is effected, a violent reaction ensues, accompanied with evolved masses of white vapor, and the fulminating mercury is precipitated in the form of a dense powder varying from a white to a gray and a yellow brown color, but the white is the purest and strongest. It is more explosive than gunpowder when dry, but it is kept prepared in a wet state, when it is perfectly harmless. M. C. Picot, director of the chemical laboratory connected with the artillery department in Paris, testified that the powder of the shells or grenades employed in the assassination act in Paris was pure fulminating mercury. He had examined their contents and was sure of this. W. Tozer, of the artillery works of the Woolwich arsenal in England, testified that fulminating mercury was twenty times stronger as an explosive agent than gunpowder. This he had proved by experiments with shells.

Burning of Western Steamers.

It appears to us that the new steamboat law has become a dead letter on our Western waters. Never before in all the dark history of Mississippi steam navigation, have more steamers been burned in the same space of time than from the beginning of the present year up to this date. Some of these disasters, with the awful consequences attending them, we have noticed in former numbers, and now we have to add another to the dread catalogue. On the 22d of last month, the *Ocean Spray* was consumed by fire about five miles above St. Louis while racing with the *Hannibal City*, and although it was broad daylight, the flames spread so rapidly that a great number of the passengers lost their lives. The testimony of those who were saved goes to prove that turpentine was sprinkled among the coals in the bunkers, and this took fire from the furnace, when the entire destruction of the vessel followed. What report will the inspectors for that district make of this horrible affair?

BROWN'S HOT WATER APPARATUS.



The best means of warming buildings, and of producing an artificially warm atmosphere in conservatories and forcing houses, has often been the subject of discussion in the columns of the SCIENTIFIC AMERICAN; and the general testimony has been in favor of heating by means of hot water, the numerous advantages of which it is needless to recapitulate. It may not be out of place, however, to mention that with them the air is never in contact with red hot metal, it cannot by any possibility reach a temperature as high as in the hot air furnace, and it becomes charged with no deleterious gas, but always remains the same in chemical and mechanical characteristics as when it entered the arrangement to be heated.

Our illustration is a perspective view of the excellent arrangement for heating air by hot water, invented by J. Brown, of this city, and patented by him May 30, 1854, and re-issued to him August 14, 1855. A portion of the brickwork is removed to show the arrangement of the tubes, and the course of the air and water.

A solid brickwork foundation being prepared, the boiler, B, is set therein, the fire door, F, being let into the front of it, and the fire box is made of the boiler itself, so that there is always a mass of water surrounding the fire; by this means all the heat produced by the combustion of the fuel is made available, and is absorbed by the water. The whole of the apparatus being filled with water, when it gets warm it gradually begins to ascend from the boiler, B, up the rise pipe, R, and from that to the distributing pipe, D, from this the cold water descending the pipes, P, allows the warm water to descend in them also, and come by the return pipe (seen at the bottom of the boiler) into the boiler again; thus a continuous circulation of warm water gradually becoming hotter, is secured—the arrows in the pipes indicate the direction of the cur-

rents. But if the fire is kept up, the water would commence boiling, and steam be generated, which would totally stop the action of the apparatus. This is prevented by an ingenious device. When the apparatus is full of water, it rises through the pipe, G, up to about an inch in the box, V, which is divided into two compartments up to about four-fifths of its height, and a siphon connects the two compartments. When ebullition commences, this water is, of course, thrown over the top of the compartment, and passes through the pipe, b, into the box, e. In this box, e, there is a float, which, as it rises, closes the lower valve, f, of the draught box, E, that admits the air under the fire, and thus supports the combustion, and elevates the upper valve or damper, f, which admits the cold external air on to the top of the fire, and thus checks the fire, and the current of air cools the water in the boiler down to a proper temperature. The external air finds its way to the draught box, E, by means of the pipe, H, which is represented as broken off.

a is a pipe by which any steam that may by chance be generated can pass down into the fire, and thence to the chimney. The cold air coming down through flue, C, and space, C, is warmed by contact with the pipes, P, and passes up through the pipes, W, to the registers, or other means of rendering it available for warming the building. The white arrows indicate the direction of the current of air passing in cold and out warm.

It will be seen from this description that the air can never become too hot, and the apparatus is self-regulating in all its parts, and compensates for any expansion of the water at the boiling point. A continuous ventilating, as well as warming current of air is secured through the building, and the air is as pure as the moment it entered the flue.

Any more information concerning this ap-

paratus can be obtained by addressing Brown's Water Furnace Co., 274 Canal street, three doors east of Broadway, New York.

The Uncertainties of History.

During the confinement of Marie Antoinette, the Queen of France, by the Jacobins of Paris, she was deprived of the use of the cosmetics with which she was wont to give the raven hue to her naturally silvery locks; and history, in describing her execution, represents her hair as changing from a jet black to gray color through the mental anguish she experienced. The assassin Orsini, lately executed in Paris for attempting the life of the French Emperor, and ruthlessly murdering twelve innocent persons, presented the same apparently strange anomaly from the same cause. When Orsini was arrested, his luxuriant locks were as black as night, but when guillotined, they were of an iron gray color, simply because he either neglected his toilet, or else was deprived of the usual hair dye he previously employed to give them their black color. His friends, and the papers generally, attribute the change to another cause, of course, and we have no doubt that history will represent the effect as being produced by the mental activity and agony he experienced during his incarceration.

The Government and Agriculture.

The House of Representatives at Washington have passed a bill donating land to the several States for the benefit of agriculture and the mechanic arts. The bill was introduced by Mr. Morrill, and passed by yeas 104, nays 101. It grants six millions three hundred and forty thousand acres of land, to be apportioned to each State in a proportionate degree with its number of Senators and Representatives—which is equal to twenty thousand acres for each Senator and Representative in Congress—to which the States are now respectively entitled. The proceeds of the sales of these lands are required to be invested in stocks of the United States, or of the States, or some other safe stocks, and the money so invested to constitute a perpetual fund, the interest of which shall be inviolably appropriated by each State to the endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific or classical studies, to teach such branches of learning as relate to agriculture and the mechanic arts, in such manner as the Legislatures of the States may prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life.

Traction Engines.

From our English exchanges we learn that Messrs. Tuxford & Sons, of England, are exporting quite a number of their traction engines to Cuba. They are intended to draw the sugar from the mill to the railway, to plow, and to be made generally useful. Senor Placide Generis is the enterprising importer, and we hope that he may be well repaid for his appreciative spirit.

A Deadly Color.

It is said that the new Azof green of the Paris spring fashions is dyed of such poisonous materials that seamstresses who prick their fingers while sewing it lose the use of their hands, and ladies have been taken violently ill from wearing shawls of this color, and in consequence, inhaling its poisonous odors. The tint is very brilliant.