New Method of Application for Artificial Heat

MESSRS. EDITORS—Under the above caption I wish to propose to those interested in the matter, the application of an agent which has never, at least to my knowledge, been used for domestic purposes, viz., superheated steam. Everybody is well acquainted with the defects of the present modes of warming buildings, and cooking. There are three methods of accomplishing the first object: 1. The direct use of fire in stoves, grates, &c. 2. Hot air furnaces. 3. The use of a heated material, such as steam or hot water, circulated in the building through a series of pipes.

The first method—which is the most common, and, in a great many instances, the only one ever applicable,—is also the most defective in regard to the expense of fuel, improper and irregular heat, trouble and dirt, danger from fire and injury to health.

The second, although much better for large buildings, is less objectionable. The frequency of destructive fires caused by defects in the flues, is proof sufficient for this assertion, not to speak of the nature of the hot air (so-called) distributed through the building, which is mostly composed of noxious gases, deprived of the necessary dampness.

The third system—that of steam or hot water pipes—would be the most perfect, but for one circumstance: it does not produce ventilation, and the renewal of the air in the rooms depends entirely upon the accidental opening of the doors and windows.

Now, in my opinion, all these defects could be done away with by the use of steam, heated to a sufficient degree. By leading steam from a boiler into a coil of pipes placed in a furnace, it (the steam) acquires a very high temperature, and its nature and properties differ entirely from the common or wet steam; it becomes what is called "dry," or "hot steam," and some persons have given it the name of *stame*. This remarkable agent has been applied with great success in several operations in manufacturing chemistry, such as the treatment of oils and the distilling of fats for the manufacture of candles, and in other cases where the object is, in addition to the exclusion of air, a perfectly regular heat; it is capable of many other uses, not thought of at present. When heated to a sufficient degree it is able to set a piece of wood or other combustible substance on fire, when it comes in contact with it in the presence of air. The method I would use for its application to the warming of buildings, is to distribute it somewhat in the manner of gas, that is, by iron pipes encased in a fire-proof covering, with a branch for each room, furnished with a jet and a faucet, and this jet opening into a drum, or sort of stove, of any suitable shape and size, combining ornament with a large heating surface. The drum should be provided with a tube, rather smaller than a common stove pipe, leading into the chimney flue, for the double purpose of carrying off the waste steam, and creating a ventilating draft. The perfect regulation of the heat would be easy, by means of the stop-cock, so as to admit more or less steam, and could be secured by suitable openings in the drum, which could be opened or shut at pleasure. It will be perceived that, in addition to a very regular heat, no noxious gases would be carried into the rooms, a perfect ventilation would be secured, and no undue dryness of the atmosphere would ever take place. The boiler and heating apparatus might be placed outside of the house, and the danger of fire from these be thereby obviated.

Its application to cooking purposes might appear strange to persons unacquainted with it, but from actual experiment I am enabled to state that it is the most perfect means of performing all the operations of cookery, including baking, roasting, broiling, and frying, besides boiling, and that by exceedingly simple apparatus. For instance, let the hot steam be conducted into an oven of the necessary size, supplied with a waste pipe to carry off the vapors, the supply always to be regulated by means of a faucet; and it is hardly possible to conceive the perfection with which a piece of meat or any other substance can be roasted in this way, all danger of burning any part of it being completely prevented. It may also be used, by a simple arrangement, for the purpose of drying wet clothes and other articles almost instantaneously, also for roasting coffee, &c. An apparatus might easily be contrived for the ironing of dry goods by its use.

Among the manufacturing purposes to which it may be applied with advantage are the baking of bread, biscuits, crackers, &c., the roasting of coffee and cocoa, the manufacture of British or starch gum, which is now done by roasting the starch in a kiln, and the distilling or subliming of certain chemicals, such as sulphur, vermilion, calomel, &c. It will be perceived that, although fit to use in the way proposed above, stame opens a wide field to inventors for improvements and new applications.

LOUIS BONNET.

New York, Jan. 1856.

(For the Scientific American.)

Treating Flannel to Prevent it from Fulling.

Being a constant reader of your valuable journal, I desire to present a few remarks on the article on page 134 relating to red and white flannel, and the property possessed by the one over the other, which prevents the red "fulling up" like the white.

Common red flannel is colored with the muriate of tin and the laca insect, as was described in last volume SCIENTIFIC AMERICAN—very seldom with cochineal. This "tin acid," when used in coloring, changes the property of the wool—the metal destroys the felting property of the wool—it flattens or kills it. Muriate of tin has a strong affinity for oxygen therefore all colors dyed with muriate of tin as a mordant, are faster than those which give off oxygen. Soap suds neutralize this acid, especially when hot; and so does the ammonia given off in perspiration. The changing of lac red flannel to a crimson color is a good test of the neutralization of the muriate of tin in the flannel. Strong warm soap suds, without rubbing of the flannel, will not full it up, nor change its red color much, and yet it will remove the grease and dirt without rubbing, as recommended by the SCIENTIFIC AMERICAN.

If white flannel be boiled with the muriate of tin—1 lb. of it to 10 lbs. of flannel—it will impart to it the same negative fulling property that it imparts to lac red flannel. The muriate of tin can be purchased for ten cents per pound, therefore its use for the boiling of white flannel will not involve much expense. If white flannel becomes yellow when boiled in the muriate of tin, it is a sign that the flannel was not previously deprived of its grease or oil, and that it contained sulphuretted hydrogen; or that the acid itself—the muriate of tin—contained sulphuretted acid. This I have found to be the case with common muriatic acid, which I always strain through a woolen cloth before using.

If red flannel shirts, by frequent washing and sweating, become a dark crimson color, by the discharge of the muriate of tin, if a little of the latter be added to hot water, and the flannel steeped in it for an hour or two, the color will be restored, or greatly beautified.

E. C. H.

Lake Village, N. H., January, 1856.

[If it is the tin in the mordant, or spirits of the red lac dye used for flannel, which prevents it *fulling up* like white flannel, the common opinion in the rural districts respecting the negative fulling qualities of red flannel dyed with madder, must be wrong. The method described in the above for restoring the color of common red flannel is correct, and may be very useful to many of our readers. Military men who wear scarlet uniforms, can remove black iron, or dark ammonia stains from their coats by using some muriate of tin in hot water, and applying it to the spots with a sponge. A wine glass full of the muriate of tin added to a pint of hot water will be about the right strength to use. When the spots disappear from the cloth, the dilute acid must be absorbed from the coat, and the spots so treated be afterwards washed with hot water. This can easily be done with the sponge. When squeezed in the hand, and then applied to the coat, the sponge will absorb the spirits from the cloth, and *vice versa*.

Whether our correspondent is correct or not in relation to the effects of the muriate of tin being the preventive for the fulling of flannel, his hints are very useful, and will no doubt lead to experiments which will determine the matter fully, and thus be the means of increasing useful knowledge.

Machines Wanted by Farmers.

MESSRS. EDITORS—In the first place I want a corn stalk cutter: I have never yet found one having sufficient power and simplicity of construction. The universal fault within these machines is, they are forever out of "kilter,"—they are not strong enough to encounter the stalks of our large corn here in the West. Let us have a corn-stalk cutter, gentlemen, which is simple, powerful, and durable; which may be worked by hand or horse power, and I will warrant any man a fortune.

Another thing I want, is iron feeding troughs or boxes, for horses and cattle. Wooden feed-boxes need cleaning every other day to keep them perfectly sweet, when meal or shorts is fed twice a-day. It is quite a task to wash out thirty feed boxes three times a week, and a task which might be avoided could we but have these necessary appendages made nice and light, of cast-iron. Pig troughs of cast iron have been in use for many years.

But, most of all, I want a cheap and simple steam engine. If the steam engine could be simplified and cheapened, so that one of sufficient power for farm uses could be made for $100 or $125, the sales would be far more extensive and their use more general than that of the different kinds of horse-powers all put together. Of this there can be no doubt. Common horse-powers would very soon be numbered among the things that were and are no more to be.

FARMER.

Chicago, Ill.

Blueing White Paper.

A great deal of letter paper has a blue tinge, and this shade seems to be preferred by most persons. In a work called "Herring's Paper and Paper Making," the practice of blueing paper pulp is stated to have had its origin in a singularly accidental circumstance, which, not merely as an historical fact, but as forming an amusing anecdote, is perhaps worth mentioning:—"It occurred about the year 1790, at a paper mill belonging to Mr. Buttonshaw, in England, whose wife, on the occasion in question, was superintending the washing of some linen, when accidentally she dropped her bag of powdered blue into the midst of some pulp in a forward state of preparation, and so great was the fear she entertained of the mischief she had done—seeing the blue rapidly amalgamated with the pulp—that all allusion to it was studiously avoided, until, on Mr. Buttonshaw's inquiring in great astonishment what it was that had imparted the peculiar color to the pulp, his wife, perceiving that no very great damage had been done, took courage and at once disclosed the secret, for which she was afterwards rewarded in a remarkable manner by her husband, who, being naturally pleased with an advance of so much as four shillings per bundle upon submitting the 'improved' make to the London market, immediately purchased a costly scarlet cloak (somewhat more congenial to taste in those days, it is presumed, than it would be now,) with much satisfaction for the sharer of his joys."

It is a fact that the best bleached paper—that which is called *white*—is not really a pure white, but has a yellow tinge. This is also the case with bleached cotton cloth. To make the paper pulp and also cotton cloth a pure white after being bleached in the ordinary manner, they are colored (very lightly however) with blue, in the same manner that wearing linen is tinged by washerwomen. If a tinge of some red coloring dye drug like acidulated cochineal were combined with the indigo blue in tinging bleached paper pulp or cotton cloth, a purer white would be obtained than by the use of blue alone. A ray of white light is composed of three colors—red, blue, and yellow. If bleached cotton cloth, therefore, has a yellow tinge, it requires the presence of red and blue to make it a perfect white.

Dean Cotton.

The following from the New Orleans *True Delta*, relating to the above cotton, will be of interest to our cotton planters:—

"An occasional notice of the sale of a small lot of this article, at rather more than the prevailing prices, seems to be all the attention it receives from the public. Many persons have an idea that it is much less productive than the common short staple varieties. Such persons may do well to refer to the Patent Office report of 1853 for the following statement of A. M. Hana, near Danville, Montgomery Co., Texas:

'The fact that I made 51 bales of cotton, (Dean seed,) 500 pounds to a bale, 1,800 pounds to the acre, and 17 bales to each hand, can be well authenticated by all of my immediate neighbors. I had 70 acres of "hog wallow" prairie land, of a black and stiff soil, cultivated chiefly in cotton, oats, sweet potatoes, and Indian corn.

I planted my cotton very early, preparing the land in the best manner, and had no drawbacks to contend with from crab-grass, insects, unpropitious weather, nor evils of any kind. It was the second crop in the field, on which no cattle had been permitted to run, and had been made mellow and easy to work by copious rains and winter frost. It was well worked throughout the season with three hands, including myself, with four hands to save the crop.

Mineral Wealth of Russia.

Minerals of the most valuable and useful kinds abound in Russia. Salt is found in various places; but there is a district of country on her southern frontier, extending nearly in a line parallel with the northern coast of the Sea of Aral and the Caspian, and to the north of the line mentioned, and between both, where salt is found of the finest quality. Immense beds of sulphur have lately been discovered about Secamara, on the banks of the Wolga; and vast gold fields have been discovered around the sources of the Lena. Silver is most abundant at Nartshinsk, on the Chinese boundary. There is good reason to believe that all Siberia abounds with the precious metals. Very large fields of fine coal have been found in different parts of Russia, especially in the iron districts. To the westward of the Ural Mountains, and on the Don, a vast field of the very finest anthracite coal has been found, and is now working. The gold produced in the Ural Mountains was in 1851, $12,000,000. Besides gold and silver, Russia has a vast extent of iron mines, yielding metal of the very finest quality. There are also large mines of platina, copper, lead, and zinc.

Mineral Wealth of Lake Superior Regions.

The mining business has been very prosperous during the past season; and up to the close of the navigation, the total product for the year was 4855 1-2 tuns. The value of the copper at the wharves was $140 per tun, making the money value $679,770. The increase of this year's shipments over last was 1800 tuns, and it is estimated that those of the ensuing year over the present one will be about double. The Lake Superior copper contains silver, some having produced as much as 3 3-4 lbs. to the tun. Of the copper shipped from Lake Superior, 1600 tuns go to Pittsburg 2000 to Detroit, and the remainder to Cleveland and Boston. The Minesota Mining Company sold a considerable portion of last year's copper to Rothschild's house. It was smelted in Paris, and found to contain, besides the usual alloy of silver, a trace of gold.

Mineral Wealth of England.

Estimated value of the metalliferous productions for the current year:—

Coals, at pits	£23,000,000
Iron ore	3,000,000
Copper ore	1,300,000
Lead ore	1,500,000
Tin ore	700,000
Silver	200,000
Zinc ores	15,000
Salt, earths, sulphur, building stones, &c., &c.	3,000,000
Total	£32,715,000

[The above is from the London *Mining Journal*. We entertained the opinion that the raw mineral products of England were far greater than they are. They only amount to $158,667,720. The export of one American product—cotton—amounts to more than one-half of all the mineral wealth of England. The value of American cotton exported for the year ending June last, is $88,143,884. Of this nearly two-thirds were taken by England and her dependencies, the amount being $57,730,259.

Fat pork is employed on some of the Ohio Railroads for lubricating axles. It is placed, in thin slices, in the axle boxes.