



Clay vs. Iron Gas Retorts.

MESSRS. EDITORS:—Can you inform me why iron retorts are still used in the gas works of this country? It is a well-established fact that fire-clay is not only more durable but, if made in a systematic manner, comes much cheaper than iron. I was connected with a clay-retort works in England and know that they have entirely superseded iron there.

CLAY RETORT.

Philadelphia, July 16, 1866.

[It is a matter of surprise to us that all large gas works have not adopted the use of clay instead of iron retorts, especially after informing themselves of what practice and experience has fully demonstrated both in this country and in Europe. In such gas works where the trial may not have resulted favorably, the result can only be attributed to defective setting or mismanagement, as they actually require less care in working them. It is only in very small works, which cannot, from their size, use an exhauster, that clay retorts are not so well adapted. Yet there are many such who do use them profitably.]

At a meeting of the London Institution of Civil Engineers, a paper was read on the use of clay retorts in gas making from which we make the following extract—

"The iron retorts, lasting 365 days and working 1½ cwt. of coal for each charge, effected the carbonization of 2,190 cwt. of coal, which, at 9,000 cubic feet of gas to the ton, gave a total quantity of 985,500 cubic feet of gas per retort, while clay retorts lasted 912 days, carbonized 5,472 cwt. of coal, which, at 9,000 cubic feet of gas per ton, gave 2,462,400 cubic feet of gas per retort.

"The most practical working of clay retorts was with the addition of an exhauster. This reduced the pressure on the retorts, and prevented the escape of gas through pores and fissures, and by that system, the quantity made was increased about 200 feet per ton of coal."

In the discussion the general results given in the paper were confirmed. It was, however, stated that the quantity of gas obtained from iron and from clay retorts must be in proportion to the quality of the coal used. In some places where 7,600 cubic feet of gas had been produced by iron retorts, as much as 9,200 cubic feet had been made in clay retorts, and the production had been as high as 11,000 cubic feet.

There are now, we believe, in the vicinity of this city three clay-retort works whose products are nearly, if not quite, equal to those formerly obtained from Europe.—EDS.

Pressure in Boilers.

MESSRS. EDITORS:—Your correspondent who inquires why his boilers fail to stand the pressure required, was properly answered so far as his queries and statement went. There is one important point which he does not state. That is, the size of his grate surface and the area of the passage between the bridge wall and shell of the boiler. The area of the flues would warrant a grate surface of 36 feet. The area of the passage over the bridge wall should not have been less than 1,200 square inches. There is a vicious habit, attending boiler setting, in making this passage too small, thereby concentrating the intense heat of the furnace in front and over it, thereby heating the plate so hot as to make globules of the water in contact, hence destroying the plates. I think the whole trouble will be found, if we get the facts in the case, in a contracted passage at the point mentioned. F. W. B.

New York, July 9, 1866.

Home-Made Aluminum.

MESSRS. EDITORS:—Being in want of some aluminum, I overhauled (as usual in case of a want) some two or three back volumes of the SCIENTIFIC AMERICAN, but only found a brief note in a recent number; acting, however, on the suggestions, I procured a lump of alum, dissolved, added soda, and to the washed precipitate added muriatic acid; to this solution I afterward added aqua ammonia, expecting

to see a metallic precipitate; but got only a pasty mess, which yielded alumina before the blow pipe, with no trace of anything like metal. Will you please put me right?

If there is any practicable method of obtaining the metal at a cheap rate, I think many of your readers would prize the information. AR. IND.

[The brief note to which Ar. Ind. refers, explained how to produce alumina, a very different thing from aluminum. The metal cannot be produced at a cheap rate.—EDS.]

Questions for Millers.

MESSRS. EDITORS:—I have been reading your paper for some time, and find there is a great deal of information to be gained from it. I wish to gain a little upon a point I have not yet seen discussed in its columns. I am at present running a steam flouring mill at this place, and have some trouble in keeping the bush of one of my burrs in order; it is a cast bush, with wooden followers, burr running with belt; I wish to know where the pull on the bush is—whether directly in front of the power, or at some other point. I wish to know this in order to set my followers in their proper position.

I also wish to know why the composition boxing, as it is generally used about engines, has not been adapted for bushing—if it is good at one place why not at another? H. C. WILKINS.

Bloomington, Ind., July 6.

Personal.

We understand that Congress proposes to establish a Commission of Education, for statistical and other purposes. It is an excellent idea, if it falls into right hands. We have heard the name of Alfred B. Ely, of Massachusetts, suggested in connection with the place. No better appointment could be made for the good of the country, and we hope the suggestion may be carried out in good faith. We have known Mr. Ely for several years, and feel assured that he would bring to the office ripe experience, large attainments, and great force of character, and qualifications which would insure both popularity and success.

SPECIAL COMMISSIONER OF REVENUES.—Mr. David A. Wells, of the present revenue commission, has been appointed to the office of Special Commissioner of the Revenues, created by the new Internal Revenue act, from on and after the 1st of August next. The office is one of wide scope, and Mr. Wells is necessarily invested with great discretionary power in investigating frauds and bringing offenders to justice. For a year past Mr. Wells has devoted himself assiduously to the interest of the Revenue Department, and his appointment to the new office is a well-merited compliment and reward.

The European Squadron.

Our present force in European waters amounts to twelve vessels, carrying 141 guns. But it is thought that should the existing war between Austria, Prussia and Italy continue for any length of time, this force will require to be largely increased in order to afford adequate protection to American interests in that quarter. The splendid new steam frigate *Chattanooga* has been assigned to duty in the squadron of Admiral Goldsborough, and will sail for Europe as soon as her outfit is completed. The *Chattanooga* will prove a most valuable acquisition, being not only a very powerful vessel, carrying a heavy battery, but also a very swift one, having on her trial trip made an average of 15 knots an hour under unfavorable circumstances. Several other vessels are also spoken of as being designed for duty in Europe, among which we may mention the new sloops-of-war *Madawaska* and *Neshaminy*, both fitting for service at this port.—*Journal of Commerce*.

RATHER WARM.—Prof. Loomis of Yale College states that on the 17th inst. the thermometer stood at 102 in the shade at New Haven, and that the day was the hottest that has occurred for 89 years. We are thankful for this information, and trust that the same length of time may elapse before the return of another such spell. At Wheatshaf, N. J., the thermometer actually reached 104 degrees for a short time in the shade.

THE HEATED TERM—HOW TO KEEP COOL.

It is probable, if not certain, that never in the history of this country, has a summer of such severity of heat as this been experienced. In our school-boy geography, we were told that the climate of the temperate zones consisted of "extremes of heat and cold." It is literally true. We have in winter polar cold, and in summer tropical heat. It is not an exaggeration to say that the temperature of the thermometer here during the first two weeks of July equals anything of the sort under the equator. Not only in large cities, as New York for instance, but in the country, that anticipated paradise to which the citizen flies on the approach of the warm season, the heat has been anything but temperate. Existence has resolved itself into the simple effort to follow the oft quoted advice, "keep cool," but how is it to be done? We have a few advisory suggestions to make, applicable, we are aware, not to all, but peradventure to some whose circumstances may make their adoption feasible.

1st—Diet. Eschew carbon-generating food, such as meats, rich cake, spiced dishes. Let alone crude substances which require a large draught on the force of the animal organism to prepare them for assimilation and absorption with the blood, as fresh fish, pastry, puddings, and rich soups. Eat lightly; only enough to keep the system in tone. Avoid repletion and over eating. Shun stimulants. Use ripe fruit freely, salt meats well cooked, fresh vegetables, bread, farina, moderately strong tea, no coffee, and but little ice-cold water.

2d—Condition of mind and body. Do not argue on politics, religion, or any pet hobby. Avoid scandal. Do not get angry, nor fearful, nor anxious. Don't fret. Don't arraign Providence, nor find fault with your neighbors. Cultivate patience, and a stoical calmness under provocation. Do not run, walk fast, nor get into a perspiration unnecessarily. Although perspiration may not, in itself, be injurious when provoked by a laudable endeavor, do not allow it to be suddenly checked by ceasing exertion and remaining passive in a cool place.

3d—Preventives. Wash the whole body every morning, and if convenient, at night, also. This can be easily done with a quart of water and a sponge or rag, or with the bare hands. Rub down dry with a towel. Apply a brush to the skin smartly, or a bit of hard woolen rag if you have not horse-hair mittens. Your body needs a surface glow as much in summer as in winter. Those who have a bathroom in their houses know the advantages of daily bathing, especially in summer. But a bowl of water is a good substitute. Change under-clothing every day if possible, if not as often as is practicable and convenient. Put in your ice-water a little spirit, or if you do not use ice, cool your water with a little tartaric acid. It is equal to lemon juice, and cheaper. A piece as big as a walnut put in a common bucket, or kept in the glass from which you drink, will give a delicious acidulated taste to the water, and increase its cooling properties.

To keep the house cool, hang up before your open doors or windows, or suspend in the draught across the rooms, blankets dipped in cold water and wrung out sufficiently to prevent dripping. This is an easy, simple and wonderfully effectual method of cooling rooms. Keep the door steps and pavement wet, and sprinkle water in your entry. Do not sleep on feathers nor hair mattresses. Straw, palm-leaf, or husks are preferable. Never sleep naked. Wear a woolen or gauze undershirt, and cover with a sheet. The sheet need not touch the body, but can be easily secured by the corners to the bed posts, leaving a space under its roof. It is a mistaken idea that entire nakedness is conducive to coolness. It is not so. Some material to absorb the perspiration should be worn next the skin.

These suggestions are drawn from an experience of years, and may be relied upon as worthy of at least one trial. The pivot upon which the whole turns is that of internal and external cleanliness, both of mind and body. A perturbed, anxious, excited mind, is as impure as a surfeited stomach or a neglected skin.

Photographic.

Card groups, now much in favor at Vienna, are as follows:—It is a card of the ordinary dimensions, containing a group of seven persons, distributed