

and the natural wish arose that its use might be proved in larger circles, and that other sick might experience its beneficial effects.

A young married lady, who, in consequence of inflammation of the ovaries, could partake of no solid food, was kept exclusively upon this diet for two months, and to the perfect restoration of her health; during this time she improved perceptibly, both in flesh and strength.

The patients generally take the soup without any resistance as long as they are sick, but as soon as they can partake of other food, they refuse it, which, perhaps, arises from the color and slight flesh smell. For many, therefore, it might prove of use to color the broth brown by burned sugar. *Annalen de Chemie und Pharmacie.* Aug., 1854. VOL. xci, p. 244.

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### *On Baker's Furnace.*

To the Committee on Publications:

BOSTON, MAY 18th, 1854.

SIR:—In consequence of the articles respecting Baker's Steam Boiler Furnace in your *Journal* for September and October, by Mr. Isherwood, I beg leave respectfully to submit the accompanying certificate, which answers any doubts as to the true value of the furnace; and I beg for it a place in your valuable *Journal*.

Respectfully, yours,

J. AMORY.

The undersigned having, at the request of Mr. Amory, the agent for Baker's patent boiler furnace, visited the blacksmith's shop at the Navy Yard, in Charlestown, for the purpose of observing the effect produced by the peculiar mode of setting steam boilers, in conformity with the said patent, as exhibited in the furnace which is in regular operation at that shop, respectfully submit the following statement:

Our attention was called to the prefatory remarks contained in a report made by Mr. B. F. Isherwood, and published in the *Franklin Journal*, of some comparative experiments on one of the said furnaces, at the Navy Yard in Washington, and on the furnace constructed under the direction of the Engineer-in-Chief at that Yard. In those remarks, Mr. Isherwood contradicts the fact asserted by Mr. Baker in the specification of his invention, that in the form of constructing what he calls "reverberating chambers," in combination with the fire places and boiler, "they are made to revolve and retain the volatile products underneath the boiler long enough to be consumed." This allegation of Mr. Baker's specification is controverted by Mr. Isherwood, by various arguments, in the course of which he uses the following language:

"As far as regards the revolving and retaining of the heated gases by means of the arches, it is quite certain these gases will not be at all *revolved* or retained, but instead of following the shading in Fig. 2, representing their course, according to Mr. Baker, they will follow in a straight line, taking the shortest and most direct route from furnace to chimney, and leaving the arches beneath the dotted line, Fig. 2, filled with quiescent gases. In a word, the reverberating chambers of Mr. Baker do not reverberate, and cannot, as arranged, be made to do so."

We are not called on to reply to the argument of Mr. Isherwood, but

to attest to a fact which, by an ingenious expedient adopted at the suggestion of Mr. Amory, is made obvious to the vision of any one who will take the trouble to inspect it; and which appears to be at variance with the statements above quoted. On visiting the shop at the Navy Yard, we found the steam engine which drives the works of the shop in regular operation, the furnaces being constructed on the principle of Baker's patent, with two inverted arches, as illustrated in the cut which accompanies Mr. Isherwood's statement.

For the purpose of exhibiting to view the effect produced on the movement of the flame in its passage from the fire grate through the arches beneath the boiler to the chimney, three square apertures of about 4 ins. in width, were made in one of the side walls of the furnace; one opposite to the centre of each of the arches, and one opposite to the narrow part of the furnace or flue, about three inches in height, where it passes over the sloping wall which separates the two arches. These apertures in the brick work were closed with glass, through which the movement of the flame in the furnace, at any time when it is in action, may be distinctly observed. We observed it during the regular working of the engine, the fire being fed by anthracite coal, the fire place being closed against the admission of air, except what was introduced from without by means of two iron pipes passing through the brick work at the bottom of the inverted arch nearest to the fire place, and so near its inner surface that the air so introduced must be considerably heated in its passage.

On looking through the aperture which opens upon that part of the flue between the two reversed arches, where the passage is narrowed to a height of three inches between the top of the brick work and the bottom of the boiler, a bright flame is seen to pass with a rapidity indicating a strong draft, and with the appearance of being driven horizontally by a strong gale of wind. On looking through the aperture opening to the centre of the arch nearest to the fire place, the flame is of nearly an equal brightness, but has a disturbed motion similar to the agitation of water precipitated over a dam and driven upward by its concussion with the rocks below. It seems to be a movement adapted to produce the effect described in Mr. Baker's specification of "revolving and retaining the volatile products underneath the boiler," and at the same time bringing the surface of the flame, in which the greatest degree of heat is concentrated, into immediate contact with the boiler.

On observing, by means of the third aperture, the appearance of the flame in its passage through the next inverted arch, it was found much diminished in brightness, but passing through with a disturbed and agitated movement, similar to that presented in the first arch. On throwing upon the fire grate, by way of experiment, some light wood kindlings, the brightness of the flame in this arch was very sensibly increased. From the manifest difference thus observed between the motion of the flame and the gases combined therewith, in its passage through the inverted arches, and in its passage from one arch to the other, we cannot doubt that Mr. Isherwood is mistaken in supposing that the heated gases, instead of being revolved and returned, as described in the patent, "will follow in a straight line, taking the shortest and most direct route from furnace to chimney." That the effect of the reversed arches is to pro-

duce the reverberating motion and mixing of the gases described in the patent, and consequently a more thorough combustion, appears to us manifest, from the inspection which we have here described.

NATHAN HALL,  
E. H. DERBY,  
THOMAS A. DEXTER.

*Boston, November 17th, 1854.*

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Translated for the Journal of the Franklin Institute.

*A New Mode of Building Ships.*

M. Lombo-Miraval called the attention of the *Society for the Encouragement of National Industry* to a mode of building vessels, which is entirely original. The boats, in this system, are entirely built of iron wire and hydraulic cement, and the author attributes to them the following advantages: great strength, absolute impermeability, quick repair in case of damage, perfect stability obtained by the ballast being at the bottom and making part of the hull; finally, incomparable quickness of building. A vessel built on this system six years ago, has been running ever since, without requiring any repairs, although it has gone through rough trials. Nothing easier, says M. Miraval, than to build in a few days, on board a fleet, as many gun-boats, or rafts for disembarkation, as may be wanted.

*Cosmos*, vol. v., p. 292.

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Translated for the Journal of the Franklin Institute.

*New System of Gas-Burners.*

M. Ador has at length succeeded in applying his system of gas-lighting on the largest possible scale. In the immense *Café Estaminet de Paris*, he has established a great number of apparatus, furnishing together nearly six hundred candle-burners. The Ador apparatus consists essentially of a tube on which are screwed two bulbs, the one above, which is surrounded by the flame and into which the gas passes from the meter, the other below, supplied by any hydro-carbon (liquid), the surface of which the heated gas licks, and then passes out by small tubes arranged at the summit of this second ball. By this arrangement, the gas is under conditions very different from those in which ordinary burners place it. For, first, the rise of temperature which it undergoes dilates it, causes it to occupy a greater volume, and consequently brings it into contact with a greater quantity of air; the combustion is thus more perfect, and there is no longer any smoke. And, secondly, the contact with the warm hydro-carbon supersaturates the gas with carbon, or solid particles in a state of extraordinary division, and increases in a considerable proportion the brilliancy of the flame, a brilliancy proportioned to the number of solid particles in ignition. This last effect is so certain and so excellent, that when applied to pure hydrogen extracted from water, a gas which in burning gives out a great deal of heat but scarcely any light, it transforms it into an excellent lighting gas. The final result of the two modifications which common gas thus undergoes, is an economy of at least fifty