



The Cincinnati Water-Works—The Engineer's Report.

MESSRS. EDITORS:—Permit me to suggest that the conclusion arrived at by the chief engineer of the Cincinnati Water-Works, as to the policy of using large steam pipes for pumping engines (as stated in an extract from his report in a recent number of your paper), is scarcely warranted by the facts instanced. It is doubtless true, that with an excess of thirty pounds pressure in the boilers over that used in the cylinder, the necessary supply of steam for even a higher rate of motion than is used in some pumping engines may be forced through a smaller pipe than is sometimes used. The question arises whether a greater loss of heat would not occur by radiation from the use of pipes of the ordinary size, or from the increased temperature of the boilers due to so great an excess of pressure over that required to drive the engine? If it is claimed that the boilers are so covered as in a great measure to prevent the evil referred to, it is true on the other hand that the pipes may be covered with equally good effect, without reference to their size. I submit that a true solution of the question lies in the employment of a variable cut-off, by which the large steam passages are useful in maintaining a pressure in the cylinder as nearly as possible equal to that in the boilers, thus gaining a higher rate of expansion and a proportional economy. I am aware that the utility of a high rate of expansion is questioned, but I have seen pumping engines cutting off at one-third of the stroke, but running at so low a rate of speed as to lose the benefit of it; the whole moving weight being lifted against the force of gravity; it required 7.3 lbs. of coal per horse-power per hour. I have also seen apparently reliable accounts of Cornish engines in which a rate of expansion as high as one-twelfth is used (and the essential condition of speed attended to) that gave a horse-power for 1.3 lbs. of coal per hour. I am not informed as to the consumption of coal by pumping engines in this country, but my impression is that few of them approach the figures of the best English engines. Some I know do not, and I attribute the fact to a want of faith in the principles of arithmetic.

S. H. WILDER.

Central City, Colorado Territory, May 28, 1863.

[The utility of a cut-off depends very materially upon the circumstances under which it is applied. If the cylinder is too small the cut-off is only a useless incumbrance, and if the boiler is also deficient the cut-off is equally unnecessary. A great many errors have been made in this respect, and have caused the principle of working steam expansively to fall into disrepute, simply because the most obvious precautions to insure success were neglected. It is impossible to get something out of nothing, and we think our correspondent places the figures relating to the consumption of coal per horse-power per hour very wide apart. The first amount is too great and the second too small. If he had said that the consumption of coal in our best engines amounted to between 3.75 pounds and four pounds an hour per horse-power, he would have been nearer the mean. Our correspondent is doubtless aware that we print many communications that we do not indorse. Every person is entitled to a fair expression of his views when they are based on common sense, and we endeavor to follow this principle in conducting our paper.—Eds.]

Power Machines for Domestic Uses.

MESSRS. EDITORS:—I beg leave to fully endorse the sentiments of F. N. Blackman, published on page 390, Vol. VIII (new series) of the SCIENTIFIC AMERICAN. The assertions of "John Smith" are all rubbish, as every mechanic must know; and I was a little surprised at their finding place in the SCIENTIFIC AMERICAN, as the conclusions of its editors are generally sound. I hardly think with Mr. Blackman, however, that a small, cheap steam-engine is the desideratum to be sought as a domestic power. I have at different times thought much on this matter when I have seen the women worn down and ex-

hausted by a hard day's washing, and the conclusion I have come to is that a horse-power is the best power for domestic purposes. I believe the thing to be sought after is a cheap, simple horse-power, and I think inventors of such machinery would do well to advertise it in the SCIENTIFIC AMERICAN. There is one point of the question I cannot omit, and that is that I have discovered by experience that the more machinery there is about a house, the more plague there is to the men. All machinery requires more or less attention, and occasional "fixing"; and the women are not good at such work. Every now and then it is: "John, I wish you would look at that sewing machine"; or "John, that wringer has something wrong about it"; and so on. Well, the only way to meet that is to buy the very best machinery; you will then have little trouble. Some churls may say: "I won't buy so-and-so; what else have the women got to do? Let them work!" All I have to say to such is that I have no sympathy with them. I hate to see the women of the family borne down with the fatigue of severe labor; and if it is a little troublesome to fix machinery for them, I for one am content to endure that trouble.

JOHN GRAY.

Dundas, C. W., June 18, 1863.

[Our correspondent's views are sensible on this point, and we think that the overtaxed farmers' wives and country women generally will feel obliged to him for espousing their cause. The communication from "John Smith" which has excited so much comment was inserted by us as a simple act of justice to an inventor, and for no other reason. We are not responsible for his opinions, and we wish it to be understood by all interested that we cannot defend mistakes or want of judgment on the part of our correspondents. We give all of them a chance to be heard, but our duty ends with that privilege.—Eds.]

The "Scientific American" as a "Life-Preserver."

MESSRS. EDITORS:—On Saturday, June 6th, at the depot in this place, while the regular noon train was standing in readiness to depart for Covington, the "Kenton," a beautiful locomotive engine, exploded her boiler with terrific violence, killing some eight or ten United States troops and wounding fifteen or twenty others. The engine was almost a total wreck, the report was loud and the concussion very great. Some of the fragments were picked up a mile distant from the scene of the disaster. At the time of the explosion there were two trains standing side by side, the opposite train was loaded with troops and was partly demolished. The fireman, seeing the engineer standing on the opposite side of the track, stepped off the engine to speak to him, but just at that moment the "Kenton" exploded. Scarcely half a minute after the fireman left his engine, he stated that he just tried the water and had two cocks and 115 pounds of steam; 130 pounds being the regular pressure. In consequence of this disaster the engineer was terribly censured and assailed by the excited crowd; to save his person from violence he was placed in close confinement. At this critical juncture I had with me two numbers of the SCIENTIFIC AMERICAN, that I had borrowed from one of your subscribers, containing some very useful and important information upon the subject of boiler explosions, the theory of boiling water, &c. I introduced the numbers to the notice of the mob, and they had a good effect, and were instrumental in delivering the engineer from his bondage. The numbers were dated March 23, and April 18, 1863.

D. C. SHELBY.

Nicholasville, Ky., June 9, 1863.

[We think that engineer should thank his lucky stars that he got off so easily. Explosions will occur in the best regulated engines; but it is rather unfortunate for those in charge of the engine at the time, that a mob of illiterate men should undertake to decide questions which puzzle the scientific world.—Eds.]

RUTTAN'S VENTILATED CARS.—One of Ruttan's ventilating cars has been placed on the Philadelphia, Wilmington, and Delaware Railroad. We understand that thirty new cars, ventilated upon the Ruttan principle, have been ordered for through trains to run between New York and Washington when the junction railroad is completed.

Capture of a Rebel Iron-clad.

The *Atlanta*, formerly the *Tinian*, a rebel iron-clad, was recently captured by the *Weehawken* while trying to run out to sea from Savannah. A short action of thirty minutes sufficed to put an end to her fighting, and she was then surrendered by her crew. Probably those on board have a very different idea of the powers and prowess of our iron-clads from that which they entertained previous to the engagement. The following are the dimensions, &c., of the *Atlanta*:—Her length over all is 180 feet; breadth, 40 feet; draft of vessel, 16 feet; height of smokepipe, 12 feet; she has engines of 300 horse power; her pilot-house is five feet square, with six inches of wood-backing, and five inches of iron plate; her deck, forward and aft, is plated with iron two and a-half inches thick; her armament consists of four of the Brooke rifles; her ram is 6 feet long by 3 feet wide; her roof, which slopes at an angle of 30 degrees, is 20 inches thick—15 inches wood covered with two layers of 2½ inch plates; her plating is all 2½ inches thick by 5 inches wide; the holes in her pilot-house are 1 inch in diameter; she has four water-tight compartments: her pilot-house and smokepipe are square; her forward and after guns train to starboard and port; in the lower layer of her plating is an alternate layer of pine wood.

The *Weehawken* fired but five shots at the *Atlanta* when she succumbed. The first shot from the *Weehawken's* fifteen-inch gun, fired by Captain Rogers himself, took off the top of the pilot-house and wounded all the persons therein. The *Atlanta* was converted into an iron-clad by the rebels, and had sloping sides at an angle of 30 degrees similar to the *Merrimac's*; they were fifteen inches thick, plated with five-inch iron. There was also a saw and a torpedo attached to the ram at the bow which was intended for blowing up the *Monitors*. The armament of the *Atlanta* consisted of four guns, two seven-inch rifles, and two six-inch of the same class; there were a large quantity of stores on board, showing that the *Atlanta* had prepared herself for a long cruise. Her career was brought to an untimely end. The fifteen-inch guns, in this case at least, have done some service to the country, and shown that the powers attributed to them by the inventor were not over-estimated. We have it from indisputable authority that at a recent trial in Washington the fifteen-inch shot penetrated a wooden target four feet thick, faced with six inches of iron, with a charge of forty pounds. Recent experiments with this formidable gun shows that their qualities have been underrated, and that the charges can be increased very materially. This discovery will be hailed with gratification by the people, but we think that it should have been made long ago.

Naval Triumphs.

After a long period of apparent ill luck our naval commanders have recently obtained signal advantages over the enemy. The iron steamer *Calypso*, a notorious anglo-rebel blockade-runner, was captured by the United States steamer *Florida* after an exciting chase of four hours and a half. The *Calypso* is 250 feet long and 30 feet beam, and is a steamer of great speed; she is fore-and-aft rigged; her cargo consisted of dry goods and liquors; no arms were found on board of her. The vessel was owned by a club of 24 Charlestonians; her cost is stated to be only \$25,000, a very low figure, probably intended for \$250,000; she has given the blockading fleet a great deal of trouble hitherto. She will probably be turned into a blockader herself, to assist in capturing some of her coadjutors, after being condemned in a prize court. Captain Black, who commanded her, is a desperate character; while being chased by the *Florida* he endeavored to destroy the ship when he found that he had no chance of escape. He cut the feed-pipe and let water into the ship until there was four feet of it in the hold; he also endeavored to burst the boiler but without success. During the chase the engine of the *Calypso* was disabled by the breaking of the connecting rod.

Another blockade-runner was sunk on the 5th ult. by the fleet off Charleston; she is supposed to have been the *Isaac Smith*. Still another rebel craft, said to be the much vaunted blockade-runner *Beauregard*, was run ashore and set on fire off Folly Island, in Charleston harbor, on the night of the 10th ult.