

which at a temperature of 110° feed water, and 260° in the boilers, causes a loss of 16.9 per cent. in the whole amount, during one-fifth the time, or for the whole time, $\left(1 + \frac{16.9}{83.1 \times 5}\right) \times 7.360 = 7.660$ lbs. water to a pound of coal.

No foaming was observed in the boilers during the trip.

For the Journal of the Franklin Institute.

Explosion of the Steamer Redstone. By THOMAS BAKEWELL, ESQ.

To the Committee on Publications.

The steamer *Redstone*, on which the explosion occurred, was a new boat, built at Brownsville, Pa., with three boilers, 42 inches diameter, and two flues, each 15 inches diameter. She plied as a packet between this place and Madison, 100 miles below, and was owned by parties in that place. The explosion happened 12 miles this side of Madison.

I have annexed the answer to my letter of inquiry to Mr. Sopher, the Clerk of the boat. The Captain may in a few weeks be able to visit this City, when I shall not fail to see him.

You will please observe that Mr. Sopher states that "the opinion of Captain Pate was, that the water must have been too low." This "opinion" arises not from any facts justifying it, but is a sample of the prevailing idea, that boilers cannot burst with plenty of water.

There can be no question in this case, that the accumulation and retention of steam under the constant expectation of being able to "go ahead," and then the prolonged delay of the engine hanging on the centre, was the cause of the explosion.

I enclose a newspaper account of the explosion of the *Redstone*, and also that of the *Glencoe* at St. Louis, giving the *testimony* of an assistant engineer, (say opinion of himself and friends,) as to the cause. This newspaper slip of the St. Louis explosion was shown to me as the strongest case known, conflicting with my views of explosion, viz: that boilers burst simply from excess of steam; and that want of water contributes only so far as the metal may be heated and weakened thereby; that in no case of water on a heated part of a boiler, can steam be generated in quantity so suddenly as to explode the boiler, without previous indications by the safety valve, or any approach to it, although steam *may* be generated from that or other cause more freely than the safety valve will *continue* to discharge under its usual weight.

The very disastrous explosion of the boilers of the *Moselle* at this place in 1836, was followed by the usual newspaper statements and verbal gossip, of want of water, boilers red hot, hydrogen gas, &c.; and persons were ready to testify to pieces of the boilers being red hot, as they flew through the air.

The boilers, as arranged in the boat, side and side, about $3\frac{1}{2}$ inches apart, are connected near the fire end by a double concave cast iron washer, 7 inches diameter, with a hole in the middle, 2 inches diameter, to meet corresponding holes in the boilers, for a water passage, the joints between each side of the washer and boiler being made with lead. This

kind of joint is over the fire, and apt to give trouble in ordinary circumstances by the lead melting out.

Now, a piece of each of the two boilers, still connected as above described, was found and examined by myself and others, the lead joints of which were perfect. We also found the lead joints of the manhole and connecting cross pipes in their original perfect state.

From the above facts, it is evident that the water must have been at least three inches above the middle of the boilers, which would cover (or nearly so) the flues.

Cincinnati, April 22, 1852.

Letter from Mr. Sopher.

The *Redstone* left Madison at 12 o'clock, 3d of April, for Cincinnati. She took in tow at the time a loaded corn boat, containing about 2000 bushels, for Carrollton, a distance of 12 miles, and made it in the usual time, say one hour and thirty minutes. After leaving the corn boat, we landed at the wharf, and remained fully ten minutes, taking on eight passengers. We then got under weigh, and after running $3\frac{1}{2}$ miles, landed at Scott's Farm, on the Kentucky shore, where we took on the Rev. Perry A. Scott.

At the time the wind was blowing hard ashore, and instead of backing out as usual, she only commenced backing down the shore, the wind preventing. The Captain then gave the order to stop backing, and go ahead on the starboard wheel, that being the wheel next the shore. Instead of going ahead, the engine "caught on the centre," and whilst the engineer was working the levers, two of the boilers exploded.

I am unable to say how much steam we had on at the time, but usually carried 140 pounds, and have had as high as 170 pounds, which was the most I have ever known. Nor can I tell you any thing in regard to the water, as the first engineer of the watch was killed. The opinion of Capt. Pate was, that the water must have been low.

Aurora, April 30, 1852.

Extract from the Newspaper Account.

The question naturally arises as to the cause of the explosion. It is a notorious fact, that she has been "shoved," and in for a race, whenever she came across another steamer, making it a rule to pass her under weigh if possible. The following paragraph from the *Madison Courier* of Saturday tells its own tale:

"The steamer *Redstone* came in last night with some eighty passengers and a fair freight list. The *Redstone* is one of the fast ones, as the crack steamer *Buckeye* found out yesterday, after laying out in the river to wait for her. The *Redstone* took her on the wing—passed her under weigh easy. Captain Pate is very much elated—thinks of making a fast run from Louisville to Cincinnati."

From all the information we can gather, the boat was heavily charged with steam, in case another steamer came along, and the consequence was, the explosion of the boilers on the fourth revolution of the wheel.

The Cause of the Explosion of the Steamer Glencoe.

We made mention in yesterday's issue of the fact, that Mr. John Ryan, one of the assistant engineers on the steamer *Glencoe*, had made some

dying declarations in relation to the explosion of the boilers of this ill-fated boat. Yesterday noon we met with two brothers of the deceased, who were present when these disclosures were made, and from them glean the following facts, in substance the same as said by Ryan on his death-bed.

A short time previous to his death, Mr. Ryan called those into his room, among whom were his two brothers, residents of Alton, Mr. Samuel Rogers, a respectable brass founder on North Main street, and others, and told them that he desired to make a statement previous to his death, which he felt assured was near at hand.

He then went on to state that, on the evening of the arrival of the *Glencoe* at this port, himself and George Buchanan, first engineer of the boat, were on watch. Some time before reaching port, he (Ryan) tried the water in the boilers, and found it very low, and called to B., and informed him of the fact, and received some evasive answer. He again tried the water, and again called to Buchanan, who told him to mind his business, that there was water enough in the boilers, and he would take her with it to St. Louis or to h—ll.

Not satisfied, Ryan expostulated, and Buchanan told him in substance that it was his (Buchanan's) watch, and that he (Ryan) had nothing to do with pumping up, and, moreover, that if he (Ryan) had his way, he would have the water from the boilers running out at the tops of the chimneys. Subsequently Buchanan remarked that the boat was making good time, and he would take her into St. Louis kiting. This was perhaps the last remark made, and when the boat reached the wharf, and commenced trying to effect a landing, Buchanan turned on the gauge-cock, and let on the water. The instant the cold water came in contact with the heated boilers, now nearly dry, the explosion took place.

This statement was made, we understand, over three or four times, at the solicitation of the dying man's friends, who thought, perhaps, his mind was wandering. He was told the weight and importance of his declaration, and was asked if he was not out of his right mind; to which he replied, that he was perfectly conscious of what he was saying and doing; that his declaration were facts, and that he designed making the same statement in the event of his recovery, and now that he felt conscious of his approaching end, he was the more anxious to unburthen his mind. In a short time after, Mr. Ryan breathed his last.

We give the facts substantially as related to us, without exaggeration. Comment is unnecessary, the declarations speak for themselves.

St. Louis Intelligencer, April 9.

For the Journal of the Franklin Institute.

Explosion of the Steamboat "Mary Kingsland." By A. C. JONES, Eng'r.
(With a Plate.)

To the Committee on Publications.

On February 29th, 1852, at 6 o'clock, A. M., about 30 miles below New Orleans, the tow boat *Mary Kingsland* exploded the starboard middle boiler. She had in tow, a ship, a barque, two brigs, and a schooner, and