

'Oh, that instant!'

[Case study of the explosion of the steamboat MOSELLE at Cincinnati, 1838 with national repercussions in federal legislation]

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A group of men employed at a quarry overlooking the Ohio River, upper end of Cincinnati at the district known as Fulton near present day Rookwood Crossing on old Eastern Avenue, paused in their labors late afternoon near 5:00 o'clock, April 25, 1838 to watch a fine new side-wheel steamboat just a month old named the MOSELLE dock at a river landing to pick up two large families of German emigrants and their possessions. The MOSELLE, owned by twenty-eight year old Capt. Isaac Perin, described as handsome, courteous, hard-driven in business and a bit yet untested, had come up from the Cincinnati Public Landing just a mile or so down in town. In addition to the two new German families, there were some 280 other passengers aboard with some 50 passengers booked in cabins; the remainder booked below packed like cattle as "deck" to fend for themselves amongst the cargo, piles of fuel cordwood, crew members. Nobody really knew how many as then no passenger manifests were required of "deck" passengers with even scant recording of those in upper or 1<sup>st</sup> Cabin. All were bound for the western frontier or southern lands aboard a boat considered more than fast having made a trip from St. Louis to Cincinnati in 2 days and 16 hours. The pride of Cincinnati, built in Cincinnati, she attracted spectators at her usual arrivals and departures.

Chief Engineer of the MOSELLE was J. Madden who that afternoon had made several rounds of taverns enjoying more than his share of Cincinnati's famous brew. Boarding the boat, Madden's 2<sup>nd</sup> Engineer, Halsey Williams was standing ready with engines and boilers hot and seething. The boat's safety valves had been weighted with iron to increase pressure for a quick departure. Madden, being told the boat would steam upriver, was in a drunken rage frustrated over not given the chance to race and pass another boat that had just departed. Standing behind four large boilers, he had called for them to be "blown down" with an unusually low level of water in now highly heated boilers to display a thrilling departure, build up water level as the boat steamed along. One experienced mariner watching the departure reported later the venting engines sounded "dry and sharp" with their exhaust. The hot boilers could only be supplied with river water when underway working pumps. There were then no required gages to register temperature, water levels or steam pressure aboard American steamships, steamboats in the emerging years of the Industrial Revolution.

During the twenty minute landing at Fulton, 2<sup>nd</sup> Engineer Williams grew frantic testing the boilers with a valve seeing blue steam erupt. Williams, in a heroic gesture, could have forced his boss aside, released a safety valve, ordered the firemen to draw the fires, let the boilers cool down. He shouted to Madden, "You're going to blow her to hell!" and darted behind a nearby protective deck housing. Capt. Perin ordered "all clear" with bells jingling, lines cast off with the boat moving just out from the landing.

At that instant, the quarrymen up on the hill saw a huge white ball of steam blow up from the boat expanding with a surge carrying decks, smokestacks, boiler fragments, kindling, wreckage and human bodies up in the sky with no effort followed by the concussion compared to the explosion of a military powder magazine heard in the streets in town and at the Public Landing. Highest of all were several human bodies that were calculated by a physicist to have reached a height of 441 ft. and above the hill tops we know as Columbia Parkway today with all raining down: bodies, wreckage, wood, boiler iron, fabric and fragments ashore, in the river for up to a quarter of a mile. Aboard 117 escaped, estimated 81 were killed but with no certainty, 55 unaccounted for with many later recovered or found ashore safe or injured. Young Capt.

Perin, recovered ashore, was buried at Perintown, Ohio near Milford; 19 emigrants were buried in a mass grave at public expense. In the days before telegraph the MOSELLE disaster reached newspapers around the then known United States and in foreign countries with much attention in England, France and Germany. The era was noted for similar marine steam disasters but not of the magnitude in Cincinnati that shocked the public in general, the marine industry, shipyards, boiler and engine builders, shippers and commercial interests in particular.

Colonel Samuel W. Davies, Mayor of Cincinnati, appointed a committee of five esteemed gentlemen to inquire scientifically into the causes of the explosion to suggest remedies for the prevention of future disasters, allay "the high degree of excitement in the public mind...the pageantry of the affair," in language of the day. Heading the committee of five was Dr. John Locke, professor of chemistry in the Medical College of Ohio, talented in botany, geology, medicine and science. Others were Charles Fox, Thomas J. Matthews, Joseph Pierce and Jacob Strader all noted rivermen in their own right. "Commodore" Jacob Strader built the finest steam vessels on inland waters, founder of the Little Miami Railroad, head of the U.S. MAIL LINE, banker, real estate interests, one of the regions richest men. Another longer list of noted citizens interested in the affair included Nicholas Longworth II and Edmund Dexter, names known to this Club from 1849 on. John Locke set to work with a vengeance while complaining quietly he was given no budget by city council and supplying much of the scientific equipment for experiments out of his own pocket. At nearly the same time arriving news reported on yet another steamboat boiler disaster aboard the Str. ORONOKO upbound on the Mississippi River extinguishing another 100 lives with increasing anxiety here.

In a matter of weeks John Locke, and his committee of four, submitted a detailed document of 76 numbing pages containing a staggering amount of scientific studies, analysis and professional opinions on the power of steam, metallurgy, engine and boiler manufacture, chemistry, physics, dynamics of boats in operation on water, skills needed by steam engineers, boiler tenders, references to existing practices in Europe with emergency steam valves, instruments, and gages for operation. Locke's report also clear in his "tell the whole truth...arrest this evil...our world already in horror...[findings] possibly injurious to those engaged in steam navigation" and related businesses...[disaster] "unprecedented in the history of steam." Locke, and his committee, boiled down their studies to eight clearly defined points of discovery and professional opinion. His stunning introduction bore truths.

"These causes have their foundations in the present mammoth evil of our country...love of gain. We are not satisfied with getting rich, but we must get rich in a day." In speed "we must fly. With competition, everything must be done cheap; boiler iron must be cheap, travel must be cheap, freight must be cheap, everything must be speedy. Young men should run risks...jeopardize everything, even life itself...the deity stands aghast with terrors at its elbows and powerless." His recommendations: 1. Nothing mechanically keeps itself in order. 2. No motives of vanity, speed, ego should be tolerated. 3. Moderate steam pressures in operation starting and stopping. 4. Passengers lodged in safe places. 5. Keep boat always in trim and order. 6. Two safety valves on each boiler with steam in safe limits and no forbidden weights on valves to raise steam pressure. 7. Boiler water always maintained at proper levels keeping boiler fires lower. 8. Clean and maintain boilers periodically while operating the vessel with near military duty vigilance. The heat of the MOSELLE boilers at moment of explosion calculated at nearly 500

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degrees with 500 pounds per square inch. Locke noted that similar accidents in Europe were practically nonexistent as metallic safety valve plugs were produced by the French and English mints calculated to melt at certain dangerous temperatures to release steam with no human meddling.

Diligent, thorough, Dr. Locke pointed his finger at leading members of the business community in Cincinnati dependent on river navigation, related commercial interests. Mayor Davies quietly pigeon-holed the report in his desk without dispersal to the general public or having printed to protect interests as a fox protecting the hen house. The case itself was the very first in the history of regulations handled by the U.S. Congress in the age of laissez-faire thinking in business and industry based in open free enterprise. Even Cornelius Vanderbilt railed, fumed learning he was required to fit his fleet of ships with life boats at his own expense.

As a result, 70 citizens of Cincinnati signed a letter of concern to Mayor Davies and City Council to have the document printed formally and made available. The report titled "*Explosion of the MOSELLE*, led to the formation of the Steamboat [and ship] Inspection Service now taken over by the U.S. Coast Guard. Also adopted was regular examination of boilers and engines, training and licensing of steam engineers and officers even if early on casually conducted at the time.

#### Enter Captain Frederick Marryat

At this point, in sad events of the MOSELLE and of interest to our Literary Club, enters the person of Capt. Frederick Marryat [1792-1848] Royal Navy Officer, novelist, friend of Charles Dickens, noted for writing pioneering sea stories, author of the children's novel, *The Children of the New Forest* in 1847, inventor of a maritime signaling system known as Marryat's Code. Son of a British merchant prince and member of Parliament, Joseph Marryat.

During his naval career Frederick was commander of HMS ROSARIO in 1820 later charged in 1821 with bringing back the dispatches announcing the death of Emperor Napoleon on St. Helena where he was allowed entry to Napoleon's death chamber to make a sketch of the emperor's body on his deathbed, later published as a lithograph that appears even today. In 1836 and 1837 he traveled extensively in Canada and the United States being, by chance, in Cincinnati the week of the MOSELLE explosion. His keen eyes made notes of American ship and boat building, development of our emerging rail road systems he recorded, sent to interested eyes back in London. His opinions on our transportation systems ranged from praise to horror calling American railroads as "cheap and inferior to those in England" while praising our southern fried chicken with hush puppies using the later term of slang we know today as the word "cool."

Marryat raced to the scene of the MOSELLE disaster making observations, gathering notes, talking with John Locke personally. His two volumes *Diary in America*, printed in England in 1839, contained his observations of American life and culture. The only criticism in England later was "he wrote too much and too fast." But there is more.

June 13, 1858, former Mississippi River steamboat pilot, humorist, writer, Mark Twain--a later guest in our Club--in 1885, was shocked at the news when his younger brother, Henry

Clemens, was killed by 'live steam' in the disastrous explosion of the steamer PENNSYLVANIA on the Mississippi River with an estimated 154 lost or missing, more or less, with again uncertain record keeping. Twain, never forgiving himself for encouraging young Henry to ship as a Purser aboard, recorded the event in his *Life on the Mississippi*.

But what does this melancholy tale mean for you or me personally? From 1880 to the 1940s, members of my own family were engaged in various capacities in steamboat operations as captains, engineers, mates, general crew and business management on the Ohio River from Pittsburgh to Cincinnati and Cairo. For some years family members were engaged in the operation and management of the Gardiner Docks and Shipyard at Pt. Pleasant, W. Va. on the Ohio and Kanawha Rivers in the heart of the coal country.

In March, 1928, the large passenger steamboat SENATOR CORDILL had undergone repairs and overhaul at the yards. Her three large boilers were lit off to raise steam after a period cooled down. The process with boat and ship boilers is to slowly, carefully raise volatile steam, warm the engines with residual water in pipes, engines and the main throttle worked or "blown out" gradually. By a simple mistake or neglect the throttle on the CORDILL was opened too fast allowing a tremendous head of steam to enter lines still filled with water. In an instant an immense explosion blew her main throttle and engines apart in a deadly 'cold hammer' in river terms. Her two engineers and a yard boiler maker were killed instantly with extensive damage to the boat. Though not a cause of the shipyard itself, it was a reminder of the dangers still involved with steam as late as 1928. For years as a youngster I heard family members talk quietly of the tragedy at family gatherings. For high pressure steam from the day of the MOSSELLE disaster even down to today was a power in 1836 then unknown as has been the vagaries of atomic power plants and reactors today. Our full understanding of various technologies, their potential and unrealized or controlled dangers if unchecked or monitored ever a threat.

Oh, that instant! When the TITANIC met her fate by nature's ice without proper bulk heading and compartmentalization in 1912. Explosion of hydrogen aboard the airship HINDENBRG, 1937. Sinking of the ANDREA DORIA, July, 1956. Nuclear disasters at 12 Mile Island, 1979, Chernobyl, 1986, Fukushima, Japan, 2011.

Next time you flip that switch, push that button, turn that dial, hit that floor pedal, pause to think of the potential even in this day and age to avoid Oh, that instant!

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