

THE IRON-HULL STEAMBOAT *VALLEY FORGE*

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THE first metal hull steamboat built for use on the Western Waters (Mississippi River and tributaries) was constructed on the left bank of the Monongahela River, at Pittsburgh, near and above the south end of the present-day Smithfield Street bridge, in 1838-1839. The iron plates which sheeted the sides and bottom of this hull were produced by Lyon, Shorb & Company, Pittsburgh, at Sligo Mill.¹

The *Valley Forge* was famous in other respects. She was the first metal hull boat, built of native iron, to be constructed in the United States. She was a lonesome pioneer on the Western Waters; no other iron-hull boat was built for Ohio or Mississippi service until 30 years later.

Another singular thing about the *Valley Forge* is that her hull was put together "without a drop of liquor of any description having been consumed by any of the hands employed on her, or about the shipyard where she was built." Such was the brag of the principals who built her, William C. Robinson, Benjamin Minis and Reuben Miller, Jr., who jointly operated a foundry and engine-building establishment styled Robinson, Minis & Miller, near the south end

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Author's Note: A sprightly array of material about early boat-building along the Monongahela River, researched principally from early Pittsburgh newspapers, was presented in serial form in a Monongahela valley newspaper some years ago. I did not know of it at the time. About a year ago, the retired lockmaster at Lock and Dam No. 3, Monongahela River, Jack H. Reed, loaned me a scrapbook he made of river matters, containing most of these articles. They were prepared by Mrs. S. Kussart, Pittsburgh, whose best known published work is the book *The Allegheny River* (Burgum Printing Co., Pittsburgh, 1938). Mrs. Kussart died some years ago. Her maiden name was Serepta Cooper, and her father, Captain John C. Cooper, was identified with Ohio River towboating at Pomeroy, Ohio, and elsewhere. I was attracted to Mrs. Kussart's story of the iron-hull *Valley Forge*, and have used it as the framework upon which the present paper is modeled.

¹ One of the earliest and perhaps the very first iron-hull boat built in the U. S. was the 60-foot *Codorus*, built at York, Pa., in 1825, for the Susquehanna River. This steamboat, named for Codorus Creek which flows by York, was built of imported iron, as was the case of the steamer *John Randolph* built at Savannah, Georgia, 1834, and of others.

of the Monongahela Bridge.² The usual bill of materials for "putting up" a wooden steamboat hull in those times included occasional barrels of beer, cider and ale, for the use of the hands.

According to U. S. Customs, the *Valley Forge's* iron hull measured 150 feet in length, 25 feet in width and 5½ feet "depth of hold." These figures quarrel with various published accounts of the boat, some of which provide more ample dimensions. As example of this, George H. Thurston sets her down in his *Allegheny County's Hundred Years* as 180 feet long measured on deck, 29 feet breadth of beam, and depth of hold 5½ feet. This seems too big. An unsigned correspondent, back in the 1880's, wrote a letter in the *Cincinnati Commercial* to say that the *Valley Forge* ran two seasons and then was lengthened 15 feet. He further states that the dimensions, after lengthening, were 165 by 25 x 5½, which figures agree with later documentations.

These dimensions apply only to the hull. There is no doubt whatever that the *Valley Forge* was a side-wheeler; she had two paddlewheels, one on each side, centered a little aft of amidships. Thurston's account indeed states that her "over all" width was 49½ feet, measured thwartship to the extremes of her paddleboxes. This seems to be a reasonable figure.

The frame of the boat (ribs) was built of angle iron, and the bottom and deck beams were made of T iron. The main deck was iron-plated. The floor and hull plates were plain, smooth surface, the sheets being closely jointed at the butts. The sides were clinker-lap.

Thurston further reports that the hull plating was ¼-inch Juniata boiler plate. The inference, I suspect, is that this Juniata iron was rolled at the Sligo Mill. The main deck was sheeted over with 3/16-inch iron plate. That the hull was compartmented, there is no doubt. A contemporary account states that the hull had "a center keelson of iron plate, running fore and aft, and two thwartship watertight bulkheads of iron plate." The style of wording here conveys the impression that the center keelson was not watertight, a quite likely possibility, and certainly the usual practice in building

² The original U. S. Customs documentation for the *Valley Forge* states that her owners were Robinson & Minis. George H. Thurston in his *Allegheny County's Hundred Years* explains that Robinson & Minis built, in 1836, the Washington Foundry & Machine Works. Reuben Miller, Jr., was admitted as a full partner the following year, 1837, at which time the firm became Robinson, Minis & Miller. Later on this same firm became Robinson-Rea Manufacturing Company.

wooden hulls. There was a weight of experience which frowned on longitudinal watertight bulkheading. A sudden rupture in a knuckle or in one side of the hull, as from a collision, was more apt than not to cause capsizing if the water could not flow freely throughout the width of the hull.

But, as though to confuse the issue, Thurston states that the hull had in it an iron bulkhead the entire length, divided into eight watertight compartments. —And George H. Thurston is not to be lightly dismissed when it comes to details of the Pittsburgh historical scene. In the absence of foolproof facts, I can only infer that changes were made in the boat's bulkheading possibly at the time she was lengthened.

Despite these technical disagreements, there is little doubt that the non-alcoholic shipwrights took a surprisingly long time to get the job done. The keel was laid, it seems, in the summer of 1838, with the idea of having the boat operative by July 4 of the following year. Such was not the case, and it was not until 5 o'clock on the afternoon of September 9, 1839, that the hull was launched.

A vast throng was present at this launching, attracted there by a barrage of newspaper publicity. For some time a contest had been run in the daily press to select the boat's name. A "flood of communications" had been printed, suggesting such titles as Number One, Pioneer, Experiment, Ironsides, Novelty, Alpha, Duquesne, Juniata, Adam, Ferreous, Ironia. The boat's owners had selected *Valley Forge* inasmuch as George Washington's long suffering army had encamped on the site of an old iron forge that miserable winter of 1777-1778.

A reporter on the scene had this to say: "As the hour approached, notwithstanding the short notice given, thousands were assembled to witness the launch. We were amongst those who were invited on board to enjoy the scene. About five minutes before five, everything was in readiness, the word was given to 'cut away,' and the boat started in beautiful style, gliding into the water without a surge."³

An unnamed and possibly long-suffering workman also rode the hull. Concealed on his person was a bottle of "Old Monongahela" rye. As the boat gained momentum down the launch ways he whipped forth the bottle, so that it was visible and recognizable to the spectators. He cried, "It is out of the question that she should

³ *Pittsburgh Advocate and Advertiser*, Sept. 10, 1839.

go into the drink without grog!" Whereupon he broke the flask against the transom.

And now back a moment to our newspaper reporter:

The first rush was to see how much water she would draw. In an instant a dozen joking banterers passed, touching her draught. Some stood for fourteen inches, some for thirteen, twelve, eleven, ten. These estimates were severally cried out. When she settled all were astonished. Nine inches astern, nine and a half forward. The instance is without parallel. A timber boat of her capacity, similarly constructed, would draw twenty-one inches; while the iron boat draws nine and a half.

The draught ascertained, the next rush was to the hatches to note how rapidly she leaked. It seems that many came to the launch expecting to see the boat sink. They must have thought the truth strange, when it was known that the boat did not leak a drop. We congratulate the spirited and enterprising owners on the complete success of their experiment. All that was problematical in their undertaking has been favorably decided. Their boat lies upon the water, a neat model, having extraordinary capacity for carrying, staunch as they could desire, and drawing as she lies ready for her engine and upper works, nine inches of water only. The iron steamboat will be completed, ready to run, in the course of five weeks.

The foregoing account suggests some interpretation. There is no doubt at all that the hull was given an "end launch," the usual procedure at river shipyards (old-timers preferred the term "shipyard" to "boatyard") until fairly recent times, when the "side launch" became the usual custom. The "end launch" required only two slides, or skids, sloped at an angle from shore to the river. The hull usually assumed the angle of this slope while being constructed, resting on these slides, and parallel to their length. Generally the boat's stern faced the river, and hence, in launching, struck the water first. The angle of an "end-on" set of slides (also called the "launchway") with the river's course varied, influenced by the local topography and available area, from a direct approach (*i.e.*, 90 degrees) to a gentler angle aimed either upstream or downstream. Despite the lively account of the *Valley Forge's* launching, with its plentiful details, our ancient reporter offers but a single clue as to the technical launchway set-up. He says she "started in beautiful style, gliding into the water without a surge." The description fits an end launch nicely.

The superstructure, known those days as the "upper works," was built on after the hull was afloat. The cabins, roof and pilot-house were built entirely of wood. The machinery, boilers and outfitting—in fact, everything above the main deck—was attended to after the hull was in the river. This final phase of construction was speedily completed, in something less than sixty days. This was a

sharp contrast to the sluggish progress on the metal hull, which had required a year's time. The answer is, the hull was experimental; once it was ready, the rest of the job dovetailed neatly into an assembly line routine commonplace enough in early Pittsburgh with its specialized machine shops, joiners, fitters, boiler-workers, chandlers and boat painters.

In physical outline, the *Valley Forge* did not differ from her contemporaries. She had a sharp model bow, exposed forecastle, boilers and engines on the main deck, passenger quarters on the second deck, two smokestacks spearing through the roof forward of the pilothouse, semicircular paddleboxes with her name painted thereon, and a yawl dangling on a single davit over her stern. About the sole difference a passenger might note, when walking aboard, was the iron-sheeted main deck.

Mechanically, she was fairly standard, with a few notable innovations. The engines which drove the side-wheels were two in number, and independent of one another, one on each side connected direct to its paddlewheel by means of slides, crosshead, pitman and shaft crank. These engines each were 18-inch bore and 8-foot stroke of piston, pretty "tall" machinery for a hull of such modest size. She had four horizontal return-flue boilers, connected in a battery, "western river style." The feed water supplying these boilers came from "two small engines, working at right angles, close to the after end of the boilers, for the purpose of working the force pump and the cold water pump." Here was a newfangled idea, for the independent "doctor" pump had not been invented in 1839, nor would it be for several years to come. The usual supply pump in 1839 was activated by cam motion imparted from either the paddlewheel shaft or the main engine.⁴

The boilers were equipped with an "Evans' Safety Guard" to prevent explosion. This apparatus, invented, patented and manufactured by a Pittsburgher, Cadwalader Evans, actually did not prevent explosions, let us hasten to say. Various steamboats equipped with the Evans' Guard went to Kingdom Come with unimaginable violence. The principle of the Guard was this: a slug of metal of relatively low melting point was pressed on the top of an interior boiler flue. Then, should the flue overheat, as when the water in the boilers became too low for safety, the slug promptly melted. Such melting released a lovely Rube Goldberg series of mechanical

⁴ *Ibid.*

events which terminated in releasing the main safety valve. At best, this was quack medicine designed to lull nervous passengers into a sense of security. It was an inexcusable nostrum, even in 1839, when the fusible plug was well known, and already required by law in France. The fusible plug, like the canoe, has never been improved upon, and is standard equipment on all marine boilers in the U.S. today.

But Cadwalader Evans was a promoter. He well knew the publicity value of his *Guard* on the new iron-hull *Valley Forge*, and to get it installed he knocked down the price to \$150, a mistake which cost him much wrangling in months to come, other customers demanding the same price-treatment. But perhaps he was right; the newspapers heralded the *Valley Forge* in these terms: "She cannot be sunk; she is proof against explosion, and she runs on almost no water at all; and what, we would ask, does the traveller or shipper want, more than these?"⁵

The new "iron wonder" was completed in November, 1839, getting her finishing touches moored alongside the Sligo Mill. On December 2nd she was moved over to the public landing along the Monongahela. The owners threw her open to public inspection and visitors arrived from far and wide.

The river being then at a fair stage, the owners decided to make a trial run from Pittsburgh to Wheeling and return. It would have been more prudent to run head-on into a hornet's nest. The citizens of Wheeling in 1839 and for some years after had a very low opinion of Pittsburgh or of anything originating there. Commercial rivalry was at white heat, and respective editors screamed at one another almost daily. But, nonetheless, the new iron-hull temperance steamboat loaded up with passengers and some freight for the 90-mile run down the Ohio to that self-styled "head of navigation," Wheeling. Departure was made from Pittsburgh on December 6.

Captain Thomas Baldwin, the good skipper of the *Valley Forge*, had scarce put out his ropes on the Wheeling levee when the trouble started. A mob armed with brickbats vocally threatened violence. The disturbance rose to such proportion that Captain Baldwin was obliged to leave his ropes behind, pull out into midstream and depart forthwith. If any freight was received or discharged, her manifests never showed it. One passenger, back in Pittsburgh, stated that he would rather ship aboard a boat loaded with a thousand kegs of

⁵ *Ibid.*

gunpowder under the boilers than repeat a visit to Wheeling on the *Valley Forge*.⁶

There is an historical sequel to this which belongs at this place. The upstairs passenger cabin on the *Valley Forge* had a long central hallway, running the length of the boat, flanked on either side by staterooms. Such plan, later to become almost universal, was fairly novel in 1839. An editor in St. Louis commented on it, after visiting the *Valley Forge* at that port. "Her staterooms," said he, "literally answer the name, being designated by the names of the different states, New York, Virginia, Kentucky, North Carolina, etc., so that a traveller on the *Valley Forge* need only to select the appropriate stateroom to feel himself perfectly at home, and may traverse the whole length of the Mississippi and Ohio without going out of his own state."⁷ Such was the origin of the term "stateroom," initiated on the iron-hull Pittsburgh-built steamboat. Now, in addition to such novelty, the door which led into the men's comfort room was labeled "Wheeling." Not uncommonly, into the present century, an older riverman would excuse himself from the pilothouse to go to Wheeling, and his initiated brethren well knew his intention. This Wheeling designation held true, of course, only on the Pittsburgh steamers, and it dates back to the *Valley Forge*.

Other than the interesting reception at Wheeling, the trial run of the new steamboat seems to have gone along smoothly enough. Low water detained the boat at Pittsburgh a day or so, but on December 10, 1839, she cleared for New Orleans. The *Memphis Enquirer* spoke of her touching at that place and said that "she seemed crowded with passengers." A Natchez paper noted her appearance there, saying that: "All accounts go to show she works well. In point of speed, she falls short of the best wooden steamers, although no doubt subsequent improvements in the construction of iron vessels will do away with the obstacles which cause this sort of inferiority. The superiority of iron steamers, in regard to fire, will recommend them strongly to the public favor."

A notice was inserted in a New Orleans newspaper, written and paid for by the downbound passengers, quite complimentary to the boat and its officers. Arrival was made on December 29, 1839.

General Andrew Jackson was in New Orleans at the time, and the town was celebrating the twenty-fifth anniversary of the Battle

⁶ Pittsburgh Post, Dec. 3, 1899.

⁷ St. Louis Bulletin, Feb. 7, 1840.

of New Orleans. On the appointed day, January 8, 1840, the *Valley Forge* took Jackson and a party of distinguished guests from the city to the battlefield. The aging General was described as in poor health, frame emaciated, form stooping, eyes sunken and step unsteady. The celebration nonetheless was a brilliant one.

Thereupon the *Valley Forge* loaded for Louisville, Kentucky, discharged freight and passengers at this Ohio River port, and thence returned down the Ohio and up the Mississippi to St. Louis. On February 17, 1840, she was back in Pittsburgh.

By this time certain changes were indicated. It had been learned that she had trouble holding adequate steam pressure and, to remedy the defect, the furnace under her boilers was enlarged. The *Pittsburgh Gazette* noted this improvement, and added: "Her security against snagging is ascertained to be very great. In addition to her having, without injury, run against a snag which had previously sunk another boat, we are told that she had another severe trial. During difficult weather, at night, she was accidentally run head-on into a bluff sand bank, full steam, without injury or taking a drop of water."⁸

Now the boat entered a regular run between Pittsburgh and St. Louis. An unsigned writer in the *Pittsburgh Advocate and Advertiser* made a trip on board, and sang high praise in print of the splendid ability of Captain Thomas Baldwin; of the splendor and comfort of the staterooms; of the unsurpassed excellence of the table; and of "the repose and quiet when the boat was running." In fact he had composed the letter while seated in the center of the cabin, and with perfect ease, while the boat was under headway. "This can scarcely be recorded of any upper cabined steamer on the Western waters," he beamed. Also, he strongly recommended "the absence of that eyesore of most steamboats, a public bar, and a corresponding absence of its votaries."

In the December, 1959, issue of THE WESTERN PENNSYLVANIA HISTORICAL MAGAZINE (page 340) a young lady on her bridal voyage aboard the *Valley Forge* penned these observations, made in the spring of 1840: "Our steamboat was very splendid, meals without extra charge—and everything nice and neat. The boat was entirely of iron and consisted of staterooms wholly—for private accommodation. There were three chandeliers in the gentlemen's saloon much handsomer than your Town Hall can boast, & an elegant cut

⁸ *Pittsburgh Gazette*, Feb. 18, 1840.

lamp suspended in the Ladies' drawing-room. We had a delightful passage down the Ohio River. . . . " The fare from Pittsburgh to Cincinnati, including meals, was \$5, and there was no extra charge for baggage.

The part about the boat being "entirely of iron" is probably the only overstatement.

In late May an advertisement was run in Pittsburgh papers for the Falls of St. Anthony. "The iron steamer *Valley Forge*, Baldwin, master, will leave for the above and intermediate landings on Monday, the 25th inst., at 4 o'clock P. M. For freight or passage, apply on board, or to M. Allen & Company."⁹

This voyage took her to the head of navigation on the Upper Mississippi, to St. Peters, at the mouth of the Minnesota River. A special pleasure trip was also run from Galena, Illinois, then an active river port, to St. Peters.

During the fall of 1840 the *Valley Forge* may have been extensively repaired, the hull lengthened 15 feet, and perhaps a change made in the hull's bulkheading plan. Unfortunately no contemporary notices of these important events have so far been disclosed.

Next we know, the boat is operating between Pittsburgh and Nashville, Tennessee, located on the Cumberland River, commencing in the early spring of 1841. On one such trip she departed from the Monongahela wharf "dragging her guards" with 2000 items of freight contained on 139 bills of lading, 27 cabin passengers and 93 deck passengers. On her return to Pittsburgh she brought in 323 bales of cotton, 49 hogsheads of tobacco, six kegs and two boxes of specie. She discharged 81 cabin passengers and 40 deck passengers. Each trip she is noticed carrying great loads of cotton to Pittsburgh; sometimes the boat looked like an immense cotton bale steaming up the river.¹⁰ On one Cumberland River voyage she went up to Rome, Tennessee, 100 miles above Nashville (between present-day Hartsville and Carthage).¹¹ It was noted in Pittsburgh papers that a great deal of the cotton brought from the south was forwarded by canalboat to Philadelphia and New York consignees.

In 1842 the boat's schedule was more enterprising still. She would load at Pittsburgh for Nashville, go from there to New Orleans, and then load direct back to Pittsburgh. While on this

⁹ Pittsburgh *Advocate and Advertiser*, May 23, 1840.

¹⁰ Harris's *Intelligencer*, April 30, 1841.

¹¹ Thurston, *op. cit.*, 117. This reference states "Rome, Georgia," obviously an error. Rome, Tenn. is intended.

schedule, in May, she was near Vicksburg on the lower Mississippi when a steam explosion occurred aboard the steamer *Diana* nearby. The crew of the *Valley Forge* rendered aid to the many persons who were scalded, and towed the wrecked boat into harbor. A number of cattle in the *Diana's* cargo were injured and killed by escaping steam.

During the low water season in the fall of 1842 the boat was drydocked at Pittsburgh. Her bottom was found dinged in several places, "in such a manner as to prove conclusively that had she been constructed of anything but iron, she would have been at the bottom of the river long ago."

Captain Thomas Baldwin resigned in favor of Captain William Baird at this time. Baird had lately been skipper on the steamer *Messenger*, plying between Pittsburgh and St. Louis, much in the news in the spring of 1842, having taken from Pittsburgh to Cincinnati the celebrated author Charles Dickens. William C. Robinson and Benjamin Minis were stockholders in both boats involved, and it seems that Captain Baldwin was transferred to the *Messenger*. Although the reasons for the exchange are not clear, the exchange proved a lucky one for Captain Thomas Baldwin.¹²

The *Valley Forge* spent most of October and November, 1842, perched on a sandbar on the lower Ohio, where 34 steamboats were stranded for low water. Finally released when rains fell, she continued to New Orleans, loaded aboard a cargo of Turk's Island salt, and departed for St. Louis.¹³

Presently the word commenced trickling northward and eastward that there had been trouble. The *Valley Forge* had been sunk and, worse, her hull had a twenty-foot rip in it. She had been snagged on a standard Mississippi River snag. The impervious iron steamboat was on the bottom, sunk to her main deck, between Cairo and St. Louis, at the notorious "Graveyard Reach," at Doolan's Slough. The accident happened in mid-December, 1842.¹⁴

Two snagboats were sent down from St. Louis to her relief. The hole was bulkheaded and the hull pumped dry. Steam was again raised in the boilers and the *Valley Forge* hobbled to St. Louis for a drydock program.

She got back to Pittsburgh on April 19, 1843, meanwhile having

¹² Pittsburgh *Morning Chronicle*, Sept. 9, 1842.

¹³ *Iron City and Pittsburgh Weekly Chronicle*, Oct. 29, 1842.

¹⁴ Louisville (Ky.) *Journal*, Dec. 19, 1843. Also Pittsburgh *Morning Chronicle*, Dec. 23, 1842.

made a trip or so up the Illinois River. A Pittsburgh paper noted that "notwithstanding her late disaster, she looks in first-rate trim." She brought into Pittsburgh an immense cargo of pork and lard from St. Louis, and a few hogsheads of tobacco. During the balance of 1843, and in the season of 1844, she plied principally between Pittsburgh and St. Louis. Captain Baird continued as her master.

While so engaged to St. Louis, she acquired a "texas" deck, one of the first so equipped. To achieve it, the pilothouse was raised on top of this new cabin on the roof, built principally for berthing the crew. It was dubbed "texas" inasmuch as the state of Texas was admitted to the Union about this time, following the scheme of naming the staterooms. —And "texas" it remains, even as these lines are written.

The interior river valleys were growing in population and commerce, and the new steamboats were longer, broader, more powerful and of greater tonnage. The side-wheel *Monongahela*, 200 feet in length, was now plying between Pittsburgh and St. Louis, operated by Captains Daniel, Stephen and Charles Stone. Clearly, the *Valley Forge* was outmoded. She was withdrawn from the trade. Her last voyage was from Pittsburgh to McKeesport and return, with a group of excursionists on the Fourth of July, 1845. As a drawing card, the excursion was advertised as a "Grand Temperance Celebration" and the fare set at twenty-five cents. The good folks at McKeesport were staging a local rally, and many of the men-folk were out of town. A rise had come in the river, and the McKeesport boatmen were busily at work barging coal down the river. When the *Valley Forge* disgorged her population there were embarrassments, lack of accommodations, and no suitable excitement. The voyage left much to be desired.¹⁵

The cabin and the engines from the *Valley Forge* were transferred to a new wooden hull later on in 1845. The "new" boat was christened *Robert Morris*.¹⁶ Five years later, in 1850, when the *Robert Morris* had worn out, the engines went over on another new hull, at Cincinnati, a side-wheeler being built for Lake Pontchartrain. This craft was christened *St. James*. On July 5, 1852, the *St. James* exploded her boilers in a notable disaster.¹⁷ Thirty persons were killed, including Judge Preston, chief justice of Louisiana's Supreme

¹⁵ Pittsburgh *Morning Chronicle*, July 4, 1845, *et seq.*

¹⁶ Cincinnati *Commercial*, 1878.

¹⁷ *Merchant Steam Vessels of the U. S.*, 1807-1868.

Court. It is said that the *St. James*, at the time of the catastrophe, was racing a rival steamer, the *California*.

The *Valley Forge's* iron hull was cut up for scrap at Pittsburgh. There is a persistent tradition that some of this scrap, at least, was sold to the United States, forwarded to Harper's Ferry, and gun barrels made of it.¹⁸

Captain Thomas Baldwin, the first master of the iron steamboat, later settled on the Illinois River and died at Peoria, Illinois, on August 23, 1879. His original crew, making the first trip to New Orleans on the boat in 1839, included John Dales, clerk; Samuel J. Reno and Dave Blashford, pilots (Ohio River); Allen Stephens and George Frazier, pilots (Mississippi River). Captain Reno became the first captain of the famed side-wheel *Buckeye State*, in the Pittsburgh and Cincinnati trade, 1850, and died at Cincinnati after only a few trips. The original engineer on the *Valley Forge* was William Hamilton, who, in 1874, was "chief" on the great side-wheeler *City of Vicksburg* plying between St. Louis and New Orleans.¹⁹

The original cost of the *Valley Forge* has been estimated at \$60,000, almost double the cost of a wooden boat of equivalent size and power.²⁰ She undoubtedly turned out to be an expensive luxury for her owners. The demonstration she provided was unconvincing, particularly because of the snagging. In those times the river shores from Pennsylvania to Minnesota for the most part were in forest. Mature trees toppled along the shores, hundreds of them, and were set adrift by rises. These "channel inspectors" drifted along until, as the river fell, the roots braked them to a halt. Engineers built ingenious "snag boats" to rid out these treacheries, but the efforts seldom met the demands. President Polk vetoed a Federal snag-removal appropriation and some old-timers called snags "polk stalks," a word-play on the common riverbank weed, the pokeberry. A snag-speared steamboat often was ripped end for end, great tree limbs crashing upward into the cabins, and into the machinery and steam pipes, usually at night, with pandemonium and slaughter. The *Valley Forge* was not the answer to the problem.

Regardless of this ill-starred experiment, Pittsburgh quickly became the center of an iron-hull industry, although such ships were built for far-away ports not associated with the local waterways. While the *Valley Forge* was in operation, there was built at Liberty

¹⁸ Cincinnati *Commercial*, 1878.

¹⁹ Pittsburgh *Commercial*, July 8, 1874.

²⁰ Thurston, *op. cit.*, 117.

and First Street a "knock-down" iron hull 177 feet in length for the U.S. Navy, the steamer *Michigan*, which later was set up and launched at Erie, Pennsylvania, the first metal hull war vessel the U.S. Navy ever owned.²¹ The superintendent of construction was a young Pittsburgher named James Rees. In 1878 this same man was to build, at Pittsburgh, the first *steel hull* river steamer constructed in America, the *Francisco Montoya*, for the Magdalena River in South America.²²

But from the date of the launching of the *Valley Forge*, in 1839, not another metal hull commercial steamer was built for the Western Waters until 1870, a lapse of 31 years. This was the raftboat *Clyde*, built at Dubuque, Iowa, by the Iowa Iron Works. Originally a side-wheeler, she was lengthened sometime later and converted to sternwheel. On November 12, 1919 this boat visited Pittsburgh, almost unnoticed, to gather up some new wooden barges which had been built up the Allegheny River for a Tennessee River customer. She then was 49 years old and going strong; she survived to the age of 71.²³

It was the long life-expectancy of the steel hull which ultimately won its initial acceptance.

21 The *Michigan* later was renamed *Wolverine* (June 17, 1905) and was retired at Erie, Pa., on May 6, 1912. She was opened to visitors as a relic; finally was dismantled. A move to bring her back to Pittsburgh as a souvenir failed in the summer of 1927.

22 *Steamboat Bill*, 1960 Fall, 79.

23 *Way's Directory of Towboats*, 1954 edition.